7.8.2 Functions of the operation unit

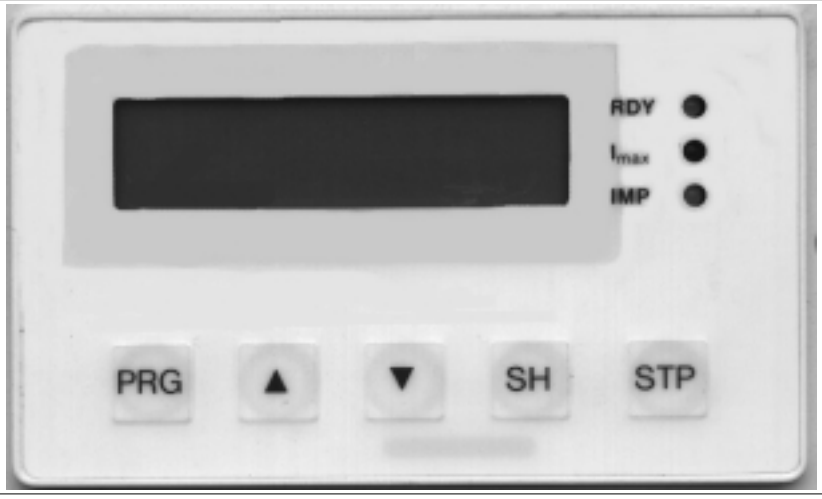


FIG 7-60 Front view: Operating unit with status display

LED	Colour	Function
RDY	green	Ready for operation not on in the event of TRIP
Imax	red	on, if the speed controller operates at current limit
IMP	yellow	Pulse inhibit on, if the controller is inhibited or message LU is displayed

Bedientaste	Key function
PRG	Change between code and parameter level
SH+ PRG	Accept change
▲	Increase displayed value
SH+ ▲	Increase displayed value fast
▼	Decrease displayed value
SH+ ▼	Decrease displayed value fast
STP	Inhibit controller
SH+ STP	Enable controller

Note!

- 'SH +'
  - Press and hold key SH.
  - Press second key indicated.
- Display
  - The position of the arrow "□" indicates the current operating level (code or parameter level).

7.8.3 Structure of the operating programme

The parameters are set in two operating levels the code leven and the parameter level. The symbol "→" in the display marks the active operating level:

1. In the code level select a code with ▼ or ▲ .
2. Change to the parameter level by pressing the key PRG.
3. Parameters are changed with ▼ or ▲.
   After acceptance, the operating program leads you back to the code level (chapter 7.8.4.1).
4. With parameters with a high resolution (e. g. C032, C033, ...), the values to be changed can be directly determined. When being in the parameter level, press the "SH" key and tip on ▲. . The cursor will move to the left to higher values. Press the "SH" key and ▼ to move the cursor to lower values.

Code level

The whole code set of the controller is subdivided into standard codes and extended codes:

Extended code set	
Standard code set (factory setting): Codes for most frequently used applications	Additional codes: Codes for special applications

With C000 = -2- you change from the standard code set to the extended code set by pressing SH + PRG.

Parameter level

- Each code provides parameters for drive adjustment or reading out the operating status.
- There are four different parameter types:
  - absolute values of a physical variable (e. g. 400 V, 10 s)
  - relative values of controller variables (e. g. 50% setpoint)
  - numbers for certain states
    (e. g. -0- = controller inhibited, -1- = controller enabled).
  - Display values
    These values can only be displayed but not changed
    (e. g. C054 actual motor current)
- Absolute and relative values can be modified in discrete steps. The steps can change in the parameter-setting range.
  - Example acceleration time T_{ir} (C012):
  - 3 steps in the whole parameter-setting range
  - T_{ir} of 0.01 s - 1 s Step 0.01 s
  - T_{ir} of 1 s - 10 s Step 0.1 s
  - T_{ir} of 10 s - 100 s Step 1 s

7.8.4 Basics for operation

7.8.4.1 Parameter change via a code

Note!
If changed parameter sets are required after mains switching, they must be stored (chapter 7.8.4.3).

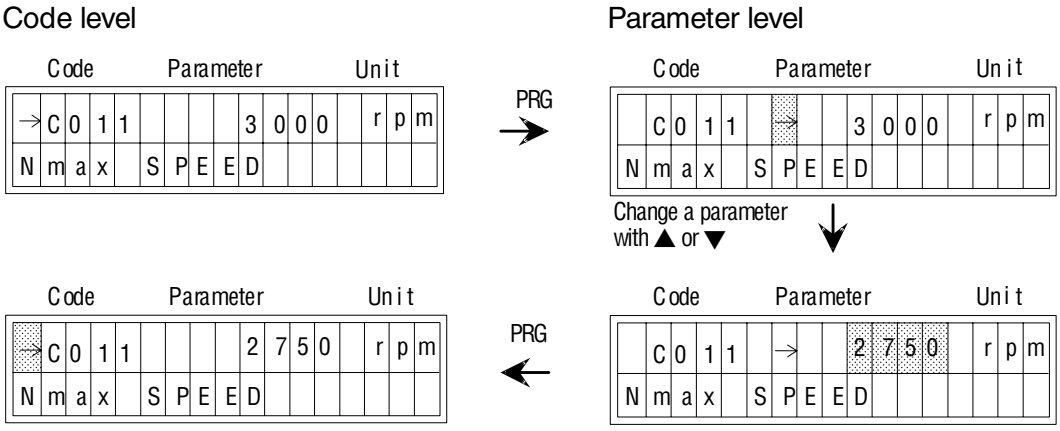
Each code with parameters, which can be changed, is factory set. Depending on the code there are three possibilities to change a parameter.

Each possibilities is explained by means of an example.

Direct acceptance (on-line)

The controller accepts the changed parameter immediately.

1. Select a code using ▲ or ▼ .
2. Change to the parameter level using PRG.
3. Select a parameter using ▲ or ▼ .
   The controller accepts the changed parameter immediately.
   This is also possible during operation of the drive.
4. Change to the code level using PRG.

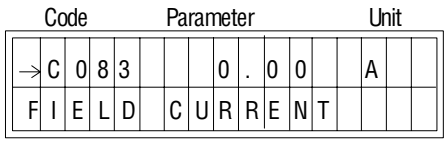


Acceptance with SH + PRG

The controller accepts the changed parameter only after pressing SH+PRG.

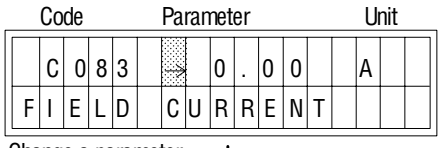
1. Select a code using ▲ or ▼.
2. Change to the parameter level using PRG.
3. Change a parameter (even while the drive is running) using ▲ or ▼.
4. Press SH + PRG. (--ok-- is displayed for approx. 0.5 s)
   The controller now works with the new parameter.

Code level

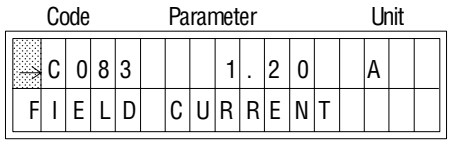


PRG →

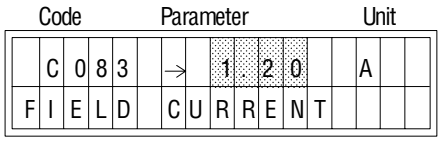
Parameter level



Change a parameter with ▲ or ▼ ↓



← SH + PRG

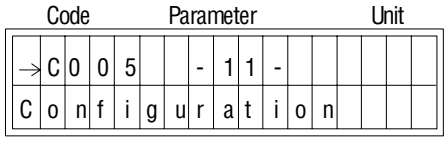


Acceptance with SH + PRG when the controller is inhibited

The controller only accepts the changed parameter when the controller is inhibited and after pressing SH + PRG.

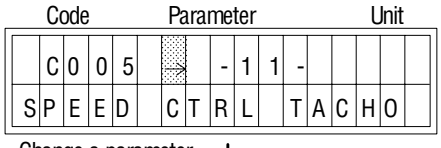
1. Select a code using ▲ or ▼
2. Change to the parameter level using PRG.
3. Change a parameter (even if the drive is running) using ▲ or ▼ .
4. Press STP to inhibit the controller.
5. Press SH + PRG. (--ok-- is displayed for approx. 0.5 s)
6. Press SH + STP to enable the controller again
   The controller now works with the new parameter.

Code level

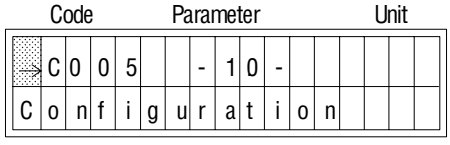


PRG →

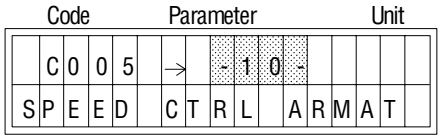
Parameter level



Change a parameter with ▲ or ▼ ↓



STP
2. SH + PRG ←



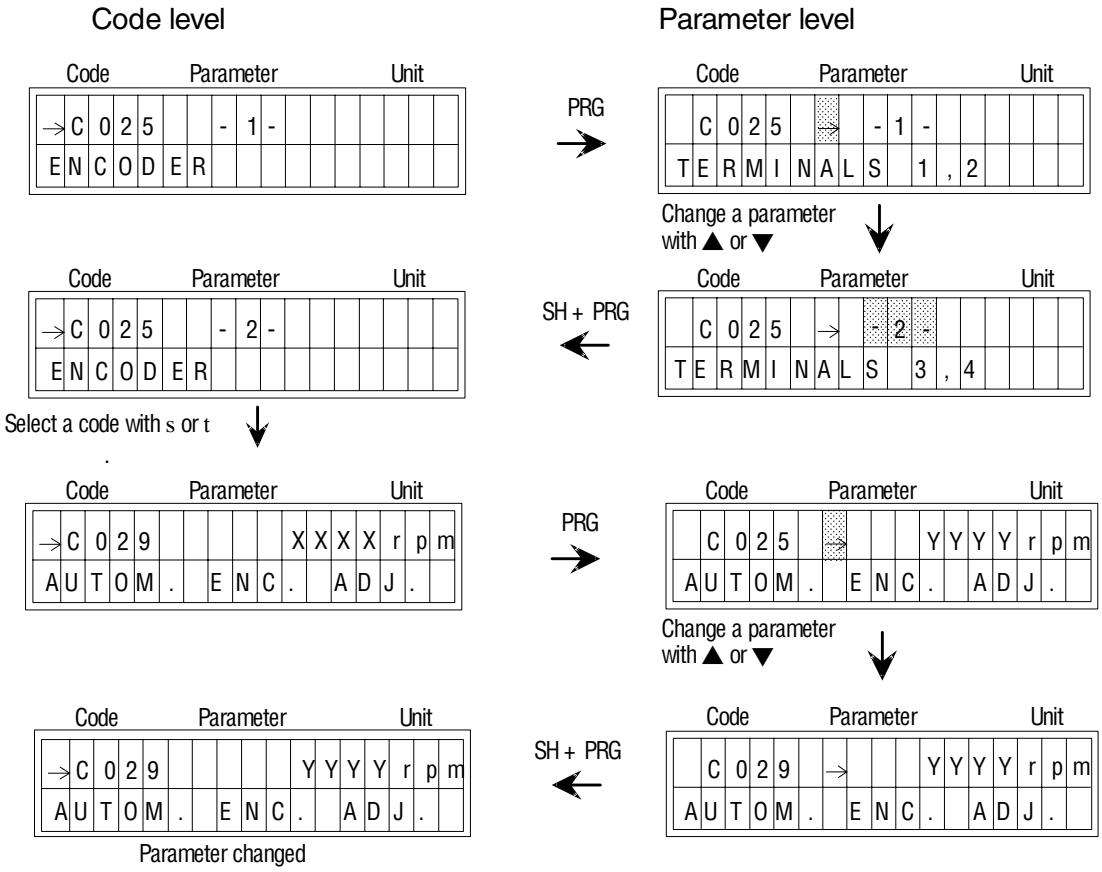
7.8.4.2 Parameter change via two codes

Some setting are parameterised via two codes:

1. Select the parameter to be changed with the input selection
2. Change the parameter in the setting code.

Selection code		for parameter input under	
C025	Encoder	C026	Encoder constant
		C027	Encoder adjustment (factor)
		C028	Encoder adjustment (divisor)
		C029	Automatic adjustment
C038	JOG setpoint selection	C039	JOG setpoint
C100	Additional accleration and deceleration time	C101	Acceleration time
		C103	Deceleration time
C110	Monitor output	C111	Monitor signal
		C108	Gain
		C109	Offset
C112	Selection of freely assignable digital inputs	C113	Function of the digital terminal
		C114	Polarity
		C115	Function priority
C116	Selection of freely assignable digital outputs	C117	Function of the digital terminal
		C118	Polarity
		C128	Delay time
C145	Selection of freely assignable analog inputs	C146	Signal input
		C147	Priority
C192	Selection of freely assignable fixed setpoints	C193	Fixed setpoints

Example “Automatic tacho adjustment”



7.8.4.3 Store parameter set

(see chapter 7.4.2)

The parameter must be stored to ensure that the setting will not be lost after mains switching.

Up to four different parameter sets can be created, if, for instance, a machine processes different materials or operates in different states (set-up, stand by, etc.).

If only one paramater set is required, store the change permanently under parameter set 1, because this parameter set is automatically loaded after switch on.

1. Select C003 usi ng ▲ or ▼ .
2. Change to the parameter level using PRG.
3. Set the parameter to -1- using ▲ or ▼ .
   This is also possible during operation of the drive.
4. Press SH + PRG.
   --ok-- is displayed for approx. 0.5 s.
   Your settings are permanently stored under ”parameter set 1”.

7.8.4.4 Load parameter set

(see chapter 7.4.2)

Loading is only possible when the controller is inhibited.

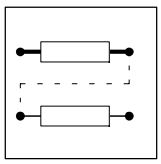
Warning!
With the loading a new parameter set, the controller is initialised and operates as if the mains had been switched.
User terminal X2/28 as source for the controller inhibit. Otherwise, the dirve can start in an uncontrolled way when changing to another parameter set.

Main connection

The controller automatically loads parameter set 1.

Via keypad

1. Inhibit the controller via terminal 28.
2. Change to the parameter level using PRG.
3. Select C002 using ▲ or ▼ .
4. Select a parameter set using ▲ or ▼ .
5. Acknowledge with SH + PRG (--ok-- is displayed for approx. 0.5 s).
   The parameter set selected is loaded. Enable the controller again.



Via terminal control

With terminal control it is possible to change to other parameter sets via the digital inputs.

- Assign ”select parameter set” to one or two digital input of each parameter set and ”load parameter set” to one dig. input.
- The assignment of the digital inputs must be the same for all parameter sets used.
- The controller reads the terminals assigned with ”select parameter set” as binary code. The input with the lower number is the first input, the input with the next higher number is the seconde input (e.g. E1 = 1st input, E2 = 2nd input). .

	1. input	2. input
Parameter set 1	0	0
Parameter set 2	1	0
Parameter set 3	0	1
Parameter set 4	1	1

The input with the function ”load parameter set” is signal triggered. Length of the HIGH pulse: 10 ms...2 s.

1. Address digital inputs assigned to the function ”select parameter set”.
2. Inhibit controller with a LOW signal at terminal 28.
3. Supply a HIGH pulse to the digital input assigned to the function ”load parameter set”.
4. After loading, C002 indicates the number of the loaded parameter set.
5. Enable controller.

Note!

The RDY message is not indicated for the time the controller needs to select a new parameter set and can thus not respond to new input signals (LED and terminal 44).

7.8.4.5 Password protection

Use a password (three digit number) to protect your parameter settings from undenied access. If the password is not entered, the parameter of the standard code set can only be read but not changed. The parameter of the extended code set can neither be read nor changed:

1. Enter the password under C094.
2. Set C000 to -0- (”Standard code - read only”).
   Code C000 can only be changed after input of the password.

7.8.5 Operating modes

The controller can be adapted to your application in different ways:

Terminals: The terminals are to control the controller.

Operating unit: There are five keys and the plain text display on the operating unit for parameter setting and control of the controller.

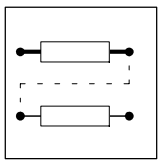
LECOM1: LECOM1 is a protocol for control and parameter setting of the unit via a PC or other hosts. The signals are processed to the interface standards RS232C and RS485. The controller can be connected to a superimposed system via X6.

LECOM2: For very difficult requirements, the controller can be parameter-set and operated with LECOM2 via fieldbus connection modules for standard bus systems (InterBus-S, PROFIBUS etc.).

Code	Name	Possible settings		
		Lenze	Selection	Info
C001□	Operating mode	0	**Control / Parameter setting** -0- Terminals / Keypad -1- Keypad / Keypad -2- Terminals / LECOM1 -3- LECOM1 / LECOM1 -4- Terminals / LECOM2 (*) -5- LECOM2 (*) / LECOM2 (*) -6- LECOM2 (*) / Keypad -7- LECOM2 (*) / LECOM1	With C001 = -2-, -3-, -4-, -5-, -7-, TRIP must be reset (C043) via the interface or the terminal. With LECOM2, TRIP reset is also possible via the control word of the process data channel. (*) Fieldbus

Note!

With control via keypad, LECOM1 and LECOM2, the terminal functions controller enable (X1/28), quick stop (X1/21 and X1/22) and the additional setpoint (X1/6) remain the same in the configurations C005 = -1X-, -4X-, -5X-.



7.8.6 Display functions

Code set

The factory setting is the display of the standard code set.
The extended code set is displayed when selecting C000 = -2-.

Code	Name	Possible settings				
		Lenze	Selection			Info
C000□	Code set	1	-0- (+PW) Standard code set read only -1- (+PW) Standard code set -2- (+PW) Extendend code set -9- For service only -11- Code set automation module			Can only be changed via keypad! If a password is defined under C094, a change from -0- to -1- or -2- is only possible after entering this password (+PW): 1. Change C000, acknowledge with SH + PRG . 2. Password setting with ▲ or ▼. 3. Accept with SH + PRG.
C094*□	User password	0	0	{1}	999	0 = No password protection (see also C000)

Language

Code	Name	Possible settings			Info
		Lenze	Selection		
C098	Language	0	-0- German -1- English -2- French		

Actual value displays

Code	Name	Possible settings				
		Lenze	Selection			Info
C051	n_{act} speed		-5000 rpm	{1 rpm}	+5000 rpm	Display: actual speed
C052*	Motor voltage		0 V	{1 V}	600 V	Display: motor voltage V_A
C054	Motor current		0.0 A 100 A	0.1 A} {1 A}	100 A 2000 A	Display: motor current I_A
C056	Torque setpoint		-100.0 % M_{max}	{0.1 %}	+100.0 % M_{max}	Display: Torque setpoint Armature setting range: 100% M_{max} correspond to 100% I_{max} (C022, C023)
C060*	Rotor position		0...2047			Display: absolute rotor angle position, standardized to 2048 incr./rev. Incremental encoder feedback: display only after zero track pulse.
C061*	I²t load		0.0 %	{0.1 %}	105.0%	Display: "I²t load". Starting value when switching on the mains is always 100 % !
C185	P_{motor}		-500.0 kW	{0.1 kW}	500.0 kW	Display: actual motor power
C186	M_{motor}		-999 Nm	{1 Nm}	999 Nm	Display: actual motor torque
C187	I_{Fset}		0.00 A	{0.01 A}	50.0 A	Display: actual field current setpoint
C188	I_{Fact}		0.00 A	{0.01 A}	50.0 A	Display: actual field current value
C189	f_{mains}		0.0 Hz	{0.1 Hz}	100.0 Hz	Display: actual mains frequency

Switch-on display

After switching on the controller, C083 is displayed first (field current). To change the switch-on display, enter the required code number under C004.

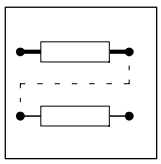
Code	Name	Possible settings				
		Lenze	Selection			Info
C004□	Switch-on display	83	0	{1}	999	Code No. for switch-on display: Can only be changed if C001= -0-, -1-, -6-

Identification

The controller type is indicated under C093.

Code C099 indicates the software version used.

Code	Name	Possible settings		
		Lenze	Selection	Info
C093*	Device identification		49XX	Display: controller type
C099*	Software versions		49 6.X	Display: Series and software version

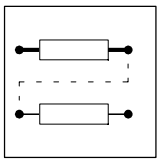


7.9 Code table

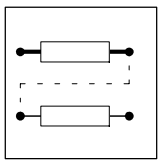
How to read the code table:

Column	Abbreviation	Meaning
Code	C013	Code C013 ● The parameter value is accepted immediately (ONLINE).
	C009*	● Code of the extended code set
	C001□	● The parameter value of the code will be accepted after pressing SH+ PRG.
	[C002]	● The parameter value of the code will be accepted after pressing SH+ PRG, but only if the controller is inhibited.
Name		Name of the code
Lenze		Factory setting of the code
Selection	1 {1 %} 99	Minimum value {smallest step/unit} maximum value
Info	-	Additional, important explanation of the code

Code	Name	Possible settings		
		Lenze	Selection	Info
C000□	Code set	1	-0- (+ PW) Standard code set read only -1- (+ PW) Standard code set -2- (+ PW) Extendend code set -9- For service only -11- Code set for automation module	Can only be changed via keypad! If a password is defined under C094, a change from -0- to -1- or -2- is only possible after entering this password (+ PW): 1. Change C000, acknowledge with SH + PRG . 2. Password setting with ▲ or ▼. 3. Accept with SH + PRG.
[C001]	Operating mode	0	**Control / Parameter setting** -0- Terminals / Keypad -1- Keypad / Keypad -2- Terminals / LECOM1 -3- LECOM1 / LECOM1 -4- Terminals / LECOM2 (*) -5- LECOM2 (*) / LECOM2 (*) -6- LECOM2 (*) / Keypad -7- LECOM2 (*) / LECOM1 (*) Fieldbus	With C001 = -2-, -3-, -4-, -5-, -7-, TRIP must be reset (C043) via the interface or the terminal. With LECOM2, TRIP reset is also possible via the control word of the process data channel.
[C002]	Load parameter set	0	-0- Factory setting -1- Parameter set 1 -2- Parameter set 2 -3- Parameter set 3 -4- Parameter set 4	Parameter set 1 is automatically loaded after mains connection. If another parameter set is selected via terminal, this parameter set will also be loaded.
C003□	Save parameter set	1	-1- Parameter set 1 -2- Parameter set 2 -3- Parameter set 3 -4- Parameter set 4	
C004□	Switch-on display	83	0 {1} 999	Code No. for switch-on display: Can only be changed if C001= -0-, -1-, -6-

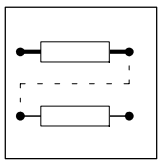


Code	Name	Possible settings		
		Lenze	Selection	Info
[C005*]	Configuration	11	**Speed control with additional setpoint** -10- Armature voltage control n_{set}: analog at X1/8 n_{add}: analog at X1/6 M_{limit}: analog at X1/1, 1/2. -11- Act. value encoder: tacho at X1/3,X1/4 n_{set}: analog at X1/8 n_{add}: analog at X1/6 M_{limit}: analog at X1/1, X1/2 -12- Act. value encoder: resolver at X7 n_{set}: analog at X1/8 n_{add}: analog at X1/6 M_{limit}: analog at X1/1, X1/2 -13- Act. value encoder: increment. encoder at X9 n_{set}: analog at X1/8 n_{add}: analog at X1/6 M_{limit}: analog at X1/1, X1/2 **Torque control with speed limitation and additional setpoint** -40- Armature voltage control n_{set}: analog at X1/8 n_{add}: analog at X1/6 M_{set}: analog at X1/1, 1/2. -41- Act. value encoder: tacho at X1/3, X1/4 n_{set}: analog at X1/8 n_{add}: analog at X1/6 M_{set}: analog at X1/1, 1/2. -42- Act. value encoder: resolver at X7 n_{set}: analog at X1/8 n_{add}: analog at X1/6 M_{set}: analog at X1/1, X1/2 -43- Act. value encoder: increment. encoder at X9 n_{set}: analog at X1/8 n_{add}: analog at X1/6 M_{set}: analog at X1/1, X1/2 **Dig. freq. of master with additional setpoint** -52- Act. value encoder: resolver at X7 n_{set}: analog at X1/8 n_{add}: analog at X1/6 M_{limit}: analog at X1/1, X1/2 -53- Act. value encoder: increment. encoder at X5 n_{set}: analog at X1/8 n_{add}: analog at X1/6 M_{limit}: analog at X1/1, X1/2 **Digital frequency bus** -62- Act. value encoder: resolver at X7 n_{set}: digital at X9 M_{limit}: analog at X1/1, X1/2 -63- Act. value encoder: increment. encoder at X5 n_{set}: digital at X9 M_{limit}: analog at X1/1, X1/2 **Digital frequency cascade** -72- Acutal value encoder: resolver at X7 n_{set}: digital, X5 M_{limit}: analog at X1/1, X1/2	If C005 = -10- or -40-, field control override is not possible. A change of the configuration changes the control structure and the terminal assignment and activates important monitoring functions. Change monitoring functions: C119 / C120 Change terminal signals: C145 / C146.
C009*□	Controller address	1	1 {1} 99	Bus participant number for operation via interface: Parameter 10 reserved for broadcasting to groups of participants. Can only be changed with C001 = -0- and -1-.

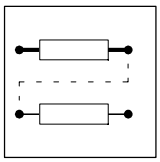


Code	Name	Possible settings				
		Lenze	Selection			Info
C011	n_{max} speed	3000 rpm	250 rpm	{1rpm}	5000 rpm	n_{max} is the reference for the analog and relative setpoint selection as well as for the acceleration and deceleration times. Parameter setting via interface: Inhibit the controller before substantial parameters changes.
C012	Acceleration time T_{ir} for main setpoint	0.00s	0.00 s 1 s 10 s 100 s	{0.01 s} {0.1 s} {1 s} {10 s}	1 s 10 s 100 s 990 s	Time refers to 0...n_{max}
C013	Deceleration time T_{if} for main setpoint	0.00s	0.00 s 1 s 10 s 100 s	{0.01 s} {0.1 s} {1 s} {10 s}	1 s 10 s 100 s 990 s	Time refers to 0...n_{max}
C017*	Threshold $n_{act} \square n_x$	-3000 rpm	-5000 rpm	{1 rpm}	+5000 rpm	If the actual speed falls below the comparison speed n_x, the corresponding output will be activated.
C019*	Threshold $n_{act} = 0$	50 rpm	0 rpm	{1 rpm}	5000 rpm	If the actual speed falls below the threshold, the corresponding output will be activated.
C022	$+I_{max}$ limit	Rated controller current	Current limit of thyrister bridge 1 0 100A	 {0.1A} {1A}	 100A 1200A	Current limit depends on controller: 29A (4902) 45A (4903) 90A (4904) 150A (4905) 240A (4906) 300A (4907) 400A (4X08) 600A (4X09) 840A (4X11) 1200A (4X12) 1350A (4X13)
C023	$-I_{max}$ limit		Current limit of thyrister bridge 2 0 100A	 {0.1A} {1A}	 100A 1200A	
C025□	Input selection: Input adjustment	2	-1- Terminals X1/1, X1/2 -2- Terminals X1/3, X1/4 -3- Terminal X1/6 -4- Terminal X1/8 -5- Armature voltage feedback -10 Digital frequency input X5 -11- Digital frequency input X9 -12- Resolver X7 -13- Encoder output X8			Select (under C025) the input which is to be adjusted with C026, C027, C028 or C029.

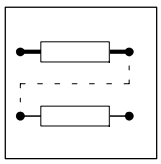
Code	Name	Possible settings		
		Lenze	Selection	Info
C026□	Encoder constant for C025	0mV	C025 = -1-, -2-, -3-, -4-: Offset correction of the analog inputs -9999mV {1mV} +9999mV	The encoder constants are not overwritten the factory setting is loaded.
		0V	C025 = -5-: Offset correction of the armature voltage feedback -100V {1V} +100V	
		1	C025 = -10-, -11-: Encoder constant of the digital frequency inputs -0- 8192 increments / revolution -1- 4096 increments / revolution -2- 2048 increments / revolution -3- 1024 increments / revolution -4- 512 increments / revolution -5- 256 increments / revolution	
		3	C025 = -13-: Encoder constant of the encoder outputs with resolver feedback -1- 256 increments / revolution -2- 512 increments / revolution -3- 1024 increments / revolution -4- 2048 increments / revolution	
C027	Gain factor for C025	1.000	C025 = -1-, -2-, -3-, -4-: Gain factor of the analog inputs -2.500 {0.001} +2.500	
		1.000	C005 = -11-, -41-: Gain factor of the tacho input X1/3, X1/4 0.010 {0.001} +9.999	
		1.010	C025 = -5-: Gain factor of the armature voltage feedback 0.100 {0.001} +9.999	
		0.1000	C025 = -10-, -11-: Gain factor of the digital frequency inputs -3.2767 {0.0001} +3.2767	If an analog signal source (C145/C146) is assigned, only the parameter will be displayed.
		1.000	C025 = -12-: Gain factor of the resolvers -32.767 {0.001} +32.767	
C028	Divisor for C025	0.1000	C025 = -10-, -11-: Divisor for the digital frequency inputs 0.0001 {0.0001} 3.2767	
C029□	Automatic adjustment for C025			Applies to all configurations: If an automatic adjustment is not possible, the previous value will be maintained. --ok-- will not be displayed.
			C025 = -1-, -2-, -3-, -4-: Automatic adjustment for analog inputs -100% {0.1%} 100.0%	1. Inhibit controller. 2. Set the setpoint at the terminal selected 3. Enter the corresponding value. 4. C027 displays the calculated gain factor
			C025 = -2- and tacho at X1/3, X1/4 or C025 = -5- and actual value from armature voltage feedback: n_{act} adjustment 0 rpm {1rpm} 5000rpm	Adjustment during operation: 1. Display of actual speed. 2. Measure real speed with hand tacho. 3. Enter real speed. 4. Drive accelerates to this speed. 5. C027 displays the calculated gain factor.



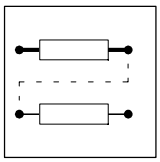
Code	Name	Possible settings		
		Lenze	Selection	Info
C029□	Automatic adjustment for C025		C025 = -10-, -11-: Adjustment of the digital frequency inputs X5, X9 -100.0% {0.1%} 100.0%	Automatic adjustment only possible, if X5 or X9 are not selected as acutal speed inputs: 1. Display of actual output value. 2. Enter required output value. 3. C027 displays the calculated gain factor.
			C025 = -12- Adjustment of the resolver -100.0% {0.1%} 100.0%	Automatic adjustment is only possible, if the resolver is not used as a speed feedback system: 1. Display of actual output value. 2. Enter required output value. 3. C027 displays the calculated gain factor.
C030□	Constant for the digital frequency output	1	-0- 8192 increments / revolution -1- 4096 increments / revolution -2- 2048 increments / revolution -3- 1024 increments / revolution -4- 512 increments / revolution -5- 256 increments / revolution	Number of increments per revolution for the digital frequency output
C032*	Ratio numerator	0.1000	-3.2767 {0.0001} 3.2767	Ratio numerator for configurations with digital frequency If an analog signal source is assigned (C145/146), only the parameter will be displayed.
C033*	Ratio denominator	0.1000	0.0001 {0.0001} 3.2767	Ratio denominator for configurations with digital frequency
C034*□	Master current	0	-0- i_{master} = -20 mA ... +20 mA -1- I i_{master} I= 4 mA ... 20mA	For master current input, the switch S3/1 must be set to ON. C034 = -1-: If i_{master} < 2mA, the monitoring message Sd5 will be displayed.
C038□	Input selection: JOG setpoint	1	-1- Selection JOG1 -2- Selection JOG2 ... -15- Selection JOG15	Select JOG setpoint to be set under C039.
C039	JOG speed for C038		-100.0 % n_{max} {0.1 %} +100.0 % n_{max} 100.0% JOG1 75.0% JOG2 50.0% JOG3 25.0% JOG4 0.0% JOG5 .. ... 0.0% JOG15	Enable JOG setpoints via the digital inputs or via C045.
C040	Controller enable		-0- Controller inhibited -1- Controller enabled	Input only via LECOM1 or LECOM2. C183 indicates the source which has inhibited the controller.
C041□	CW/CCW direction of rotation		-0- Main setpoint not inverted -1- Main setpoint inverted	Input only with control via keypad or interface. Display only with terminal control.
C042□	Quick stop		-0- No quick stop (corresponds to X2/21 or X2/22 = HIGH) -1- Quick stop active (corresponds to X2/21 and X2/22 = LOW) Drives decelerates to standstill following the quick-stop ramp C105.	Input only with control via keypad or interface. Display only with terminal control.



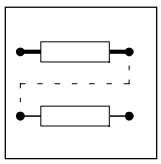
Code	Name	Possible settings				
		Lenze	Selection			Info
C043*□	TRIP reset		-0- Read: no fault Write: reset fault -1- Read: fault			Only selectable via the interfaces.
C045□	JOG enable	0	-0- Main setpoint (C046) active -1- Setpoint JOG1 active ... -15- Setpoint JOG15 active			Display only with terminal control.
C046	n_{set} speed		-100.0 % n_{max}	{0.1 %}	+100.0 % n_{max}	Display only with terminal control. If the terminal control is deactivated, the actual terminal value will be accepted for operation.
C047	Torque limit		-100.0 % M_{max}	{0.1 %}	+100.0 % M_{max}	Display only with terminal control. If the terminal control is deactivated, the actual terminal value will be accepted for operation. Armature setting range: 100 % M_{max} correspond to 100 % I_{max} (C022, C023)
C049	Additional setpoint		-100.0 % n_{max}	{0.1 %}	+100.0 % n_{max}	Display: additional setpoint from terminal
C050	n_{set} at controller		-180.0 % n_{max}	{0.1 %}	+180.0 % n_{max}	Display: speed setpoint at the input of the speed controller
C051	n_{act} speed		-5000 rpm	{1 rpm}	+5000 rpm	Display: actual speed
C052*	Motor voltage		0 V	{1 V}	600 V	Display: motor voltage V_A
C054	Motor current		0.0 A 100 A	{0.1 A} {1 A}	100 A 2000 A	Display: motor current
C056	Torque setpoint		-100.0 % M_{max}	{0.1 %}	+100.0 % M_{max}	Display: Torque setpoint Armature setting range: 100% M_{max} correspond to 100% I_{max} (C022, C023)
C060*	Rotor position		0...2047			Display of the absolute angle position of the rotor, standardized to 2048 incr./rev. With incremental encoder feedback, display only after zero track pulse occured.
C061*	□t load		0,0 %	{0.1 %}	105,0%	Display: "□t load" Starting value when switching on the mains is always 100 % !
C063	I_{set} at controller		-100.0 % I_{max}	{0.1 %}	+100.0% I_{max}	Display: current setpoint at current controller input



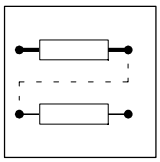
Code	Name	Possible settings		
		Lenze	Selection	Info
C065	Fault indication: message		**Display** **Meaning** --- no message EEr external TRIP (from terminal) LF mains frequency fault f_{mains} < 47Hz LU Undervoltage LU1 faulty phase, mains interruptions OF mains frequency fault f_{mains} > 63Hz P03 following error (tolerance exceeded)	When a message occurs: 1. The display changes to C065. 2. The message blinks until the fault is reset. Depending on the configuration of C119 / C120, the drive can inhibit itself while the message is displayed and restart when the fault has been reset. 3. The message is entered into the history buffer of C065. The last 8 entries can be displayed by pressing sind mit ▼ and ▲. The message saved last is displayed first. The history buffer is cleared when switching on the mains.
C066	Fault indication: Warning		**Display** **Meaning** --- no warning ACI armature circuit break CE0 communication error (automation interface) CE9 communication error (serial interface) dEr motor blocked or field break EEr external TRIP (from terminal) FCI interruption of the excitation circuit OC5 □t overload (controller protection) OC6 I^2□t overload (motor protection) OH overtemperature heat sink OUE mains overvoltage P03 following error (tolerance exceeded) Sd1 short circuit or interruption of tacho Sd2 open circuit of resolver Sd3 encoder fault at X5 Sd4 encoder fault at X9 Sd5 master current < 2mA with C034 = -1- SP wrong signal source polarity U15 □15V supply voltage is missing	When a warning occurs: 1. The display changes to C066. 2. The warning blinks until the fault is reset. 3. The warning is entered into the history buffer of C066. The last 8 entries can be displayed by pressing ▼ and ▲. The message saved last is diplayed first. The history buffer isn't cleared when the mains is switched on.



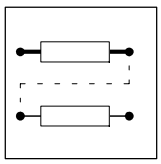
Code	Name	Possible settings		
		Lenze	Selection	Info
C067	Fault indication: TRIP		**Display** **Meaning** --- no fault at present ACI armature circuit break CCr System fault CE0 communication error (automation interface) CE9 communication error (serial interface) dEr motor blocked or field break EEr external TRIP (from terminal) FCI break excitation circuit LF mains frequency fault f_{mains} < 47Hz LU Undervoltage LU1 faulty phase, mains break OC5 I²t overload (controller protection) OC6 I²t overload (motor protection) OF mains frequency fault f_{mains} > 63Hz OH overtemperature heat sink OUE mains overvoltage P03 following error (tolerance exceeded) P13 angle overrun (angle difference cannot be compensated any longer) PER software error (please contact Lenze) PR all parameters reset (factory setting) PR1 parameter set 1 reset (factory setting) PR2 parameter set 2 reset (factory setting) PR3 parameter set 3 reset (factory setting) PR4 parameter set 4 reset (factory setting) Sd1 short circuit or interruption of tacho Sd2 open circuit of resolver Sd3 encoder fault at X5 Sd4 encoder fault at X9 Sd5 master current < 2 mA with C034 = -1- SP wrong signal source polarity U15 ±15V supply voltage is missing	When a TRIP occurs: 1. The display changes to C067. 2. TRIP blinks until the fault and the memory are reset. Reset memory: with SH+ PRG or via the input TRIP-Reset, with LECOM via C043 or via the input TRIP-Reset 3. TRIP is entered into the history buffer of C067. The last 8 entries can be displayed by pressing ▼ and ▲. The TRIP saved last is displayed first. The history buffer isn't cleared when the mains switched on. After PR-TRIP, the code C180 must be reset to 2Q operation for controllers 48XX or for 2Q applications.
C068	Operating state		**Bit** **Meaning** 0-3 Operation error (bit-decoded) 4-7 Communication error (bit-coded) 8 Controller enable 9 n_{act} = 0 10 Setpoint inversion 11 Pulse inhibit 12 Quick stop 13 I_{max} limit reached 14 n_{act} = n_{set} 15 TRIP fault message	16 bit status information Only readable via LECOM. The signals are described in the Lecom-A/B protocol.



Code	Name	Possible settings				
		Lenze	Selection			Info
C069	Controller state		**Bit** **Meaning** 0 Operation error 1 Communication error 2 Operating mode was changed 3 Control via LECOM active 4 Control via terminals active 5 Controller reset (CCr fault) 6 not assigned 7 Controller enable			8 bit status information Only readable via LECOM. The signals are described in the LECOM-A/B protocol.
C070	V_{pn} of the speed controller	8	1	{1}	1000	Gain adjustment of the speed controller: 1. With low motor speed, increase V_{pn} until the drive starts to oscillate (high frequency). 2. Reduce V_{pn}, until the drive runs smoothly.
[C071*]	T_{nn} of the speed controller	400 ms	20 ms	{10 ms}	2000 ms 9999 ms	Integral action time of the speed controller T_{nn} = 9999 ms: I-component switched-off (only when controller is inhibited)
C072*	K_{dn} of the speed controller	0	0 V_{pn}	{0.1}	5.0 V_{pn}	Differential component of the speed controller
C077*	V_{pl} of the field controller	1.0	0.1	{0.1}	5.0	Gain adjustment of the field controller
C078*	T_{nl} of the field controller	300 ms	70 ms	{10 ms}	2000 ms	Integral action time of the field controller
C079*	PT1 element Time constant for field controller attenuation	140 ms	30 ms	{10 ms}	9000 ms	The larger the time constant, the larger the decoupling between armature and field circuits.
C081*	Rated motor power	6.7 kW	0.0 kW 10kW	{0.1 kW} {1kW}	10.0 kW 1000kW	See motor nameplate
C083	Rated field current	0A	0 A	{0.01 A}	30.0 A	Rated current depends on the controller: 0A/0.1A ... 3.5A (4902, 4903) 0A/0.3A ... 10A (4904 - 4907) 0A/0.3A ... 15A (4X08) 0A/0.3A ... 30A (4X09 - 4X13) Data on the motor nameplate are setpoints for the field current. With very low field currents an auxiliary starting circuit should be provided.
C084*	CW/CCW armature time constant	10 ms	0 ms	{5 ms}	30 ms	Adaption of the current controller to compensated and uncompensated motors 0 ms = adaption not active
C085*	Thermal motor time constant	1.0min	1.0 min	{0.1 min}	100.0 min	Required for "I^2t monitoring" (motor protection)
C087	Rated motor speed	3000 rpm	300 rpm	{1 rpm}	5000 rpm	See motor nameplate

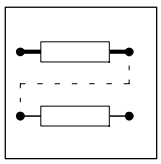


Code	Name	Possible settings				
		Lenze	Selection			Info
C088	Rated motor current		0 A 100 A	{0.1A} {1A}	100 A 3600 A	Rated current depends on the controller: 0..87A (4902) 0..135A (4903) 0..270A (4904) 0..450A (4905) 0..720A (4906) 0..900A (4907) 0..1200A (4X08) 0..1800A (4X09) 0..2520A (4X11) 0..3600A (4X12) 0..4050A (4X13) See motor nameplate
C090□	Rated motor voltage	420 V	150 V	{1 V}	650 V	See motor nameplate Observe max. permissible output voltage of the controller!
C093*□	Controller identification		49XX			Display: controller type
C094*	User password	0	0	{1}	999	0 = No password protection (see also C000)
C098	Language	0	-0- German -1- English -2- French			
C099*	Software version		49 6.X			Display: Series and software version
C100*□	Input selection: Additional acceleration and deceleration times for main setpoint		-1- Acceleration time T_{ir1}/deceleration time T_{if1} -2- Acceleration time T_{ir2}/deceleration time T_{if2} ... -15- Acceleration time T_{ir15}/deceleration time T_{if15}			Extends T_{ir} (C012) and T_{if} (C013) by max. 15 value pairs. Can be changed under C130: 1. Select additional times under C100. 2. Set under C101 (T_{ir}) or C103 (T_{if}).
C101*	Acceleration time for C100	0.00s	0 s 1 s 10 s 100 s	{0.01 s} {0.1s} {1 s} {10 s}	1 s 10s 100 s 990 s	Time refers to speed change 0...n_{max}
C103*	Deceleration time for C100	0.00s	0 s 1 s 10 s 100 s	{0.01 s} {0.1s} {1 s} {10 s}	1 s 10s 100 s 990 s	Time refers to speed change 0...n_{max}
C105	Deceleration time for quick stop	0.00s	0 s 1 s 10 s 100 s	{0.01 s} {0.1s} {1 s} {10 s}	1 s 10s 100 s 990 s	Time refers to speed change 0...n_{max}
C108*	Gain for C110	1.00	-10.000	{0.001}	+10.000	Gain for X4/62, X4/63, X8
C109*	Offset for C110	0mV	-10000mV	{1mV}	+10000mV	Offset for X4/62, X4/63 Loading of the factory settings does not overwrite C109. This code is only effective if the digital frequency output is selected under C110.
C110*□	Input selection: Monitor output	1	-1- Analog output X4/62 (monitor 1) -2- Analog output X4/63 (monitor 2) -3- Digital frequency output X8			The monitor outputs are freely assignable with the signals under C111: 1. Select monitor output under C110. 2. Assign signals under C111. 3. If necessary, adjust under C108 and C109.

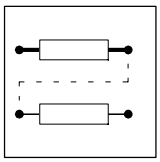


Code	Name	Possible settings		
		Lenze	Selection	Info
[C111*]	Signal for C110		-0- No signal -1- Main setpoint (C046), reference: n_{max} -2- Input ramp function generator, reference: n_{max} -3- Output ramp function generator, reference: n_{max} -4- Additional setpoint (C049), reference: n_{max} -5- n_{set} at n-controller input (C050), reference: n_{max} -6- n_{act} (C051), reference: n_{max} (X4/63) -8- n_{act} (C382), reference: n_{max} (X8) -20- n-controller output, reference: M_{max} -21- M_{set} (C047), reference: M_{max} -22- I_{set} (C063), reference: I_{max}(C022, C023), (X4/62) -23- I_{act} (C054), reference: (see 'Info') -25- M_{set} (C056), reference: M_{max} -28- It load, reference: 100% -29- I^2t load, reference: 100% -30- V_A (C052), reference: 1000 V -35- Mains frequency, reference: 30Hz = 0V, 70Hz = 10V -40- Fiel current setpoint, reference: max. controller field current I_{Fmax} -41- Actual field current, reference: I_{Fmax} -60- Output motor potentiometer, reference: 100% -61- Output process controller, reference: 100% -62- Output arithmetic block 2, reference: 100% -63- Digital frequency input X5, reference: 100% -64- Digital frequency input X9, reference: 100% -65- Resolver, reference: 100% -66- Digital / analog conversion 1 (C272), reference: 100% -67- Digital / analog conversion 2 (C273), reference: 100% -68- Motor power, reference: 5 V = P_{rated} -69- Motor torque, reference: 5 V = M_{rated} -70- Output dead band element, reference: 100% -71- Output DT1 element, reference: 100% -72- Output absolute value generator, reference: 100% -73- Output limiting element 1, reference: 100% -74- Output PT1 element, reference: 100% -75- Output arith.-block 3, reference: 100% -76- Output add.-block 1, reference: 100% -77- Output add.-block 2, reference: 100% -78- Output limiting element 2, reference: 100%	Armature setting range: 100 % M_{max} correspond to 100 % I_{max} (C022, C023) The actual armature current I_{act} (C054) is standardized, according to the controller: **I_{act} / X4/62, X4/63 / X8 / Type** 16A 4.4V 110kHz 4902 25A 4.7V 118kHz 4903 55A 4.8V 120kHz 4904 110A 4.9V 122kHz 4905 200A 6.4V 159kHz 4906 250A 4.4V 110kHz 4907 330A 5.2V 129kHz 4X08 500A 5.8V 144kHz 4X09 700A 5.8V 144kHz 4X11 1000A 5.8V 146kHz 4X12 1200A 7.0V 175kHz 4X13 With C111 = -5- the selection depends on the configuration set under C005. If C005 = -6X-, -72- the signal C111 = -5- outputs the corresponding input pulse current.

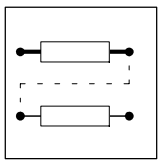
Code	Name	Possible settings		
		Lenze	Selection	Info
C112*□	Input selection: Freely assignable digital input	1	-1- digital input X2/E1 -2- digital input X2/E2 ... -5- digital input X2/E5	The digital inputs E1..E5 are freely assignable with the functions under C113. Each function can only be assigned to one input. Exceptions: ● C113 = -20- : max. 2 dig. inputs ● C113 = -1-, -2-, -40-: max. 4 dig. inputs (binary coded selection of max. 1, 3, 7 or 15 additional T_i times or setpoints). Assignment of functions: 1. Select input under C112. 2. Assign function under C113. 3. Determine polarity under C114. 4. Determine priority under C115.
[C113*]	Function for C112		-0- No function -1- Enable additional T_i times -2- Enable JOG setpoint (X4/E4, E5) -3- TRIP reset (X2/E2) -4- TRIP set (X2/E1) -6- Switch-off additional setpoint (X4/E3) -7- Switch-off I-component of the n-controller -9- Ramp function generator stop -10- Ramp function generator zero -16 Motor potentiometer deactivated -17 Motor potentiometer down -18 Motor potentiometer up -20 Select parameter set -21 Load parameter set -30- Deactivate process controller -31- Switch-off I-component of the process controller -32- Set the process controller to 0 -40- Enable fixed setpoint	
[C114*]	Polarity for C112	0	-0- Input HIGH active -1- Input LOW active	
[C115*]	Priority for C112		-0- Terminal function not active, if terminal control is switched-off under C001. (X2/E4, E5) -1- Terminal function remains active, if terminal control is switched-off under C001. (X2/E1, E2, E3)	
C116*□	Input selection: Freely assignable digital output	1	-1- FDO 1 -2- FDO 2 ... -12- FDO 12 -13- Relay output X3/K11, X3/K14	The digital outputs FDO1..FDO12 and the relay output X3/K11, X3/K14 are freely assignable with the functions under C117. Multiple assignment is possible. The outputs FDO1...FDO5 are assigned to the terminals X3/A1...X3/A5. FDO6...FDO12 can only be accessed via LECOM. Assignment of functions: 1. Select output under C116. 2. Assign function under C117. Only for FDO1...FDO5, relay output: 3. Determine polarity under C118. 4. Determine signal delay under C128.



Code	Name	Possible settings		
		Lenze	Selection	Info
[C117*]	Function for C116		-0- No function -1- n_{act} □ n_x C017 (FDO1) -2- Controller enabled (FDO10) -3- n-controller output = M_{max} (FDO2) -4- Ready for operation (RDY) (FDO11) -5- Pulse inhibit (IMP) (FDO12) -6- TRIP (relay) -7- Warning (FDO6) -8- Message (FDO7) -9- Ramp function generator on = off (FDO3) -10- n_{act}= n_{set} (FDO5) -11- n_{act} = 0 (FDO4) -12- I_A = 0 (FDO8) -13- I_A & n_{act} = 0 (FDO9) -14- ≤C046| or ≤C049| > n_x (threshold C243) -15- |I_A| > I_x (threshold C244) -16- I_F > I_x (threshold C245) -17- |n_{act}| > n_x (threshold C242) -18- Brake control -19- Comparator 1 -20- Comparator 2	
[C118]	Polarity for C116		-0- Output is HIGH active (FDO2, 3, 5) -1- Output is LOW active (FDO1, 4, relay)	
C119*□	Selection of monitoring function		-15- OC5 -16- OC6 -22- OUE -31- LU1 -32- LU -41- LF -42- OF -50- OH -61- CE0 -70- U15 -80- SP -81- Sd1 -82- Sd2 -83- Sd3 -84- Sd4 -85- Sd5 -91- EEr -93- dEr -94- ACI -96- FCI -153- P03 -163- P13 -69- CE9	I □t overload (controller protection) I^2 □t overload (motor protection) Mains overvoltage Phase fault Mains undervoltage Mains underfrequency f_{mains} < 47Hz Mains overfrequency f_{mains} > 63Hz Overtemperature heat sink Communication error (automation interface) □ 15V failure Wrong signal source polarity Tacho short-circuit/interruption Open circuit of resolver Encoder fault at X5 Encoder fault at X9 Defective setpoint encoder Ext. TRIP terminal Motor blocked Interruption of armature circuit Interruption of field circuit Following error Phase overflow Communication error (serial interface)
[C120*]	Change of monitoring function		-0- TRIP -1- Warning -2- Message with pulse inhibit -3- Message without pulse inhibit -4- Switched-off	The important monitoring functions are set according to the change of configuration under C005.

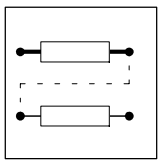


Code	Name	Possible settings				
		Lenze	Selection			Info
C123	Current threshold for blocking protection for C124	0.95 I_{rated}	0 A 100 A	{0.1A} {1 A}	100 A 3600 A	Rated current depends on the controller: 0 ... 87A (4902) 0 ... 135A (4903) 0 ... 270A (4904) 0 ... 450A (4905) 0 ... 720A (4906) 0 ... 900A (4907) 0 ... 1200A (4X08) 0 ... 1800A (4X09) 0 ... 2520A (4X11) 0 ... 3600A (4X12) 0 ... 4050A (4X13) See motor nameplate
C124*	Blocking time	60 s	1 s	{1 s}	100 s	Motor standstill time until TRIP is set
C125*□	Change of baud rate for interface	0	-0- 9600 baud -1- 4800 baud -2- 2400 baud -3- 1200 baud			
C126*	Delay (Monitoring ser. interface)	3000 s	0.2 s 10 s 100 s	{0.1 s} {1 s} {10 s}	10 s 100 s 3600 s	
C128*	Delay for C116	0.000 s	0.000 s	{0.001 s}	240.000 s	Signal delay times for FDO 1...5 and relay output.
C130*	Enable additional T_i times	0	-0- T_{ir} (C012) / T_{if} (C013) active -1- T_{ir1} / T_{if1} active ... -15- T_{ir15} / T_{if15} active			If the T_i times are enabled via terminal, C130 is for display only.
C131*□	Ramp function generator STOP	0	-0- Enable ramp function generator -1- Stop ramp function generator			If ramp function generator STOP (main setpoint) is enabled via terminal, C131 is for display only.
C132*□	Ramp function generator input = 0	0	-0- Enable mains setpoint at RFG input -1- Ramp function generator input = 0			
[C134*]	Ramp function generator characteristic	0	-0- linear characteristic -1- S-shaped characteristic			
C136*	FDI state		**Bit** **Free digital input** 0 FDI 1 ... 3 FDI 4 4 FDI 5			Only readable via LECOM. C136 indicates the states of the digital inputs as a decimal or binary value.The change of polarity under C114 is considered in C136.

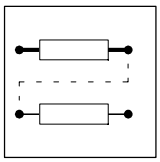


Code	Name	Possible settings		
		Lenze	Selection	Info
C145*□	Input selection: Analog signal	1	-1- Input terminals X1/1, X1/2 -2- Input terminals X1/3, X1/4 -3- Input terminal X1/6 -4- Input terminal X1/8 -5- Digital frequency input X5 -6- Digital frequency input X9 -7- Resolver -8- Motor potentiometer output -9- Output process controller -10- Output arithmetic block 2 output 1 -11- Fixed setpoint output -12- Output arithmetic block 2 output 2 -13- Output dead band element output 1 -14- Output dead band element output 2 -15 Output DT1 element output 1 -16 Output DT1 element output 2 -17- Output absolute value generator output 1 -18- Output absolute value generator output 2 -19- Output limiting element 1 output 1 -20- Output limiting element 1 output 2 -21- Output PT1 element output 1 -22- Output PT1 element output 2 -23- Output arithmetic block 3 output 1 -24- Output arithmetic block 3 output 2 -25- Output addition block 1 output 1 -26- Output addition block 1 output 2 -27- Output addition block 2 output 1 -28- Output addition block 2 output 2 -29- n_{act} from C382 -30- n_{set} from C050 -31- Deviation at n-controller (xw) -32- Deviation at process controller (xw) -33- Ramp function generator output -34- n-controller output -35- Square-wave generator -36- Deviation at angle controller -37- RFG output of process controller setpoint conditioning -38- RFG output of process controller evaluation -39- AIF process controller setpoint -40- Output limiting element 2 output 1 -41- Output limiting element 2 output 2 -42- Output comparator 1 -43- Output comparator 2	The functions set under C146 can be assigned to the input sources under C145. Double assignment is not possible. The function selected last is always assigned to the input. C145 = -1-, -2-, -3-, -4-, -5-, -6-: Determine the priority for these inputs under C147. If C005 (configuration) is changed: The freely selected assignments are overwritten with a configuration-dependent basic assignment. If necessary, reassign functions.

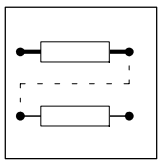
Code	Name	Possible settings		
		Lenze	Selection	Info
[C146*]	Function for C145		-0- No function -1- Main setpoint of C046 -2- Input for torque selection -3- Additional setpoint of C049 -4- V_{pn} of the speed controller -5- Field current setpoint -6- Process controller: setpoint (C330) -7- Process controller: actual value -8- Process controller: evaluation (C331) -9- Process controller: ext. V_p setting -10- C027 of X5 -11- C027 of X9 -12- Gearbox factor (C032) -13- Angle trimming of C256 -14- Speed trimming of C257 -15- Arithmetic block 2 - input 1 (C338) -16- Arithmetic block 2 - input 2 (C339) -17- Fixed setpoint block input -18- Analog / digital conversion 1 (C270) -19- Analog / digital conversion 2 (C271) -20- Dead band element input (C622) -21- DT1 element input (C652) -22- Absolute value generator input (C660) -23- Limiting element input (C632) -24- PT1 element input (C641) -25- Arithmetic block 3 - input 1 (C601) -26- Arithmetic block 3 - input 2 (C602) -27- Addition block 1 - input 1 (C610) -28- Addition block 1 - input 2 (C611) -29- Addition block 1 - input 3 (C612) -30- Addition block 2 - input 1 (C614) -31- Addition block 2 - input 2 (C615) -32- Addition block 2 - input 3 (C616) -33- Additional torque setpoint 1 (C148) -34- Additional torque setpoint 2 (C149) -35- FAI input of the S&H module -36- AIF process controller: act. value -37- Limiting element 2 input (C637) -38- Comparator 1 input 1 (C580) -39- Comparator 1 input 2 (C581) -40- Comparator 2 input 1 (C590) -41- Comparator 2 input 2 (C591) -42- Input for ext. excitation characteristic -43- n_{act} of C051 (for tacho feedback) -44- n_{act} of C051 (for resolver or incremental encoder feedback) -46- Digital frequency setpoint	C146 = -4- V_{pn} of the n-controller corresponds to 0% at the input V_{p2} under C320 and □100% at the input V_{pn} under C070. C146 = -5- field current setpoint correspond to □100% at the input of the rated current under C083. The minimum adjustable value is determined under C231. C146 = -43-, -44-, -46- are for display only (according to the configuration). They cannot be assigned.
[C147*]	Priority for C145		-0- Terminal function not active, if terminal control is switched-off under C001. -1- Terminal function remains active, if terminal control is switched-off under C001.	



Code	Name	Possible settings				
		Lenze	Selection			Info
C148	Additional torque value 1	0	-100.0 % M_{max} -200 % M_{max}	{0.1%} {1%}	+100.0 % M_{max} +200 % M_{max}	Display only with terminal control. If the terminal control is deactivated, the actual terminal value will be accepted for opera tion. Armature setting range: 100 % M_{max} correspond to 100 % I_{max} (C022, C023)
C149	Additional torque value 2	0	-100.0 % M_{max} -200 % M_{max}	{0.1%} {1%}	+100.0 % M_{max} +200 % M_{max}	Display only with terminal control. If the terminal control is deactivated, the actual terminal value will be accepted for opera tion. Armature setting range: 100 % M_{max} correspond to 100 % I_{max} (C022/C023)
C151*	FDO Status		**Bit** **Free digital output** 0 FDO 1 ... 11 FDO 12 12 Relay output			C151 indicates the states of the digital outputs as decimal or binary values. The polarity reversal under C118 is not considered.
[C180*]	4Q/2Q operation		-0- 4Q operation (49XX) -1- 2Q operation (48XX)			Important for controller type 48XX: Controllers must only be operated with C180 = -1-! Fault PR sets C180 = -0-. It is absolutely necessary to set C180 = -1- before commissioning.
C182*	T_i time of the S-shape ramp function generators	20.0 s	0.01 s 1s 10s	{0.01s} {0.1s} {1s}	1 s 10s 50s	T_i time for the S-shape ramp function generator of the main setpoint
C183	Origin of controller inhibit		**Display** **Origin of ctrl inhibit** Terminal or term. Terminal Keypad or kp Keypad (STP key) LECOM1 or L1 LECOM1 interface Aut.int. (AIF) Automation / fieldbus interface (module, InterBus, PROFIBUS, ...) oth. src. Other source or o.s. Release: TRIP or message Information: C065, C067			Display: Source which has inhibited the controller
C185	Motor power		-500.0 kW	{0.1 kW}	500.0 kW	Display: actual motor power
C186	Motor torque		-999 Nm	{1 Nm}	999 Nm	Display: actual motor torque
C187	Field current setpoint		0.00 A	{0.01 A}	50.0 A	Display: actual field current setpoint
C188	Actual field current		0.00 A	{0.01 A}	50.0 A	Display: actual field current value
C189	Mains frequency		0.0 Hz	{0.1 Hz}	100.0 Hz	Display: actual mains frequency
C190*□	Arithmetic block 1	1	-0- Output = C046 -1- Output = C046 + C049 -2- Output = C046 - C049 -3- Output = C046 □ C049 -4- Output = C046 / |C049| -5- Output = C046 / (100% - C049)			
C191*□	Arithmetic block 2	1	-0- Output = C338 -1- Output = C338 + C339 -2- Output = C338 - C339 -3- Output = C338 □ C339 -4- Output = C338 / |C339| -5- Output = C338 / (100% - C339)			

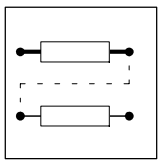


Code	Name	Possible settings				
		Lenze	Selection			Info
C192*□	Input selection: Fixed setpoint	1	-1- -2- ... -15-	Selection fixed setpoint 1 Selection fixed setpoint 2 Selection fixed setpoint 15		It is possible to set up to 15 setpoints with freely selectable references: 1. Select fixed setpoint under C192. 2. Assign value under C193. 3. Enable via the digital inputs or C194.
C193*	Setpoint for C192		-100.0 % 100.0% 75.0% 50.0% 25.0% 0.0% ... 0.0%	{0.1 %} Fixed setpoint 1 Fixed setpoint 2 Fixed setpoint 3 Fixed setpoint 4 Fixed setpoint 5 Fixed setpoint 15	+100.0 %	
C194*□	Enable fixed setpoint	0	-0- -1- ... -15-	Free input is active Fixed setpoint 1 is active Fixed setpoint 15 is active		
C195*	Delay between 'engage brake' and controller inhibit	9999 s	0.00s 1s 10s	{0.01 s} {0.1s} {1s}	1s 10s 250s 9999 s	Delay between signal 'engage brake' and automatic controller inhibit 9999 s: Unlimited delay, controller will not be inhibited.
C196*	Delay between 'setpoint integrator free' and quick stop	0.00s	0.00 s 1s 10s 100s	{0.01 s} {0.1s} {1s} {10s}	1 s 10s 100s 250s	Delay between reset of the quick stop function and enable of the main setpoint integrator
[C197*]	Sign of the torque selection	0	-0- -1- -2-	Sign is determined by the torque setpoint positive sign negative sign		Sign of the torque selection between reset of QSP and enable of the setpoint integrators
[C198*]	Enable actual speed filter	0	-0- -1-	Filter not active Filter active		
C199*	Time constant act. speed filter	10ms	8ms	{1ms}	100ms	
C200*	Software identification		String format: "33S4902M_61000"			Display of the software version only via interface.
C220*	Acceleration time T_{ir} of the additional setpoint	0.00 s	0.00 s 1 s 10 s 100 s	{0.01 s} {0.1 s} {1 s} {10 s}	1 s 10 s 100 s 990 s	
C221*	Deceleration time T_{if} of the additional setpoint	0.00 s	0.00 s 1 s 10 s 100 s	{0.01 s} {0.1 s} {1 s} {10 s}	1 s 10 s 100 s 990 s	
C222*	V_p process controller	1	0.1 10	{0.1} {1.0}	10 500	Gain of the process controller
[C223*]	T_n process controller	400 ms	20 ms	{1ms}	20000 ms 9999 ms	T_n = 9999 ms: I-component switched-off (only when controller is inhibited)
C224*	K_d process controller	0.0	0.0 □ V_{pn}	{0.1 □ V_{pn}}	5.0 □ V_{pn}	Differential component of the process controller
[C230*]	Control mode for the override field control	0	-0- -1-	Limitation of the armature voltage Control of the armature voltage		Field weakening must be permitted under C231.



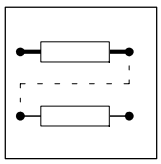
Code	Name	Possible settings				
		Lenze	Selection			Info
C231*	Min. field current	100%	10 % I_{Frated}	{1% I_{Frated}}	100% I_{Frated}	Reference: I_{Frated} (C083), observe min. value under C083!
C232*	IR compensation	0.0%	0.0 % V_{rated}	{0.1% V_{rated} }	+30 % V_{rated}	Reference: V_{rated} (C090)
C233*	V_p-V_{ab} controller	1.0	0.1 10	{0.1} {1.0}	10 50	Gain of the V_{ab} controller
[C234*]	T_n-V_{ab} controller	400 ms	20 ms	{10 ms}	2000 ms 9999 ms	T_n = 9999 ms: I-component switched-off (only when controller is inhibited)
[C235*]	Excitation characteristic	0	-0- internal excitation characteristic active -1- internal excitation characteristic not active			With C253= -1-, the control process is based on operation with rated excitation
[C237*]	Synchronisation mode	0	-0- dyn. IMP, 20 ms correction -1- no dyn. IMP, 20 ms correction -2- dyn. IMP, 400 ms correction -3- no dyn. IMP, 400 ms correction			
C240*	Window $n_{act} = n_{set}$	1%	0 % n_{max}	{0.1% n_{max}}	+100% n_{max}	Threshold for $n_{act}= n_{set}$, reference: n_{max}
C241	Window RFG on = RFG off	1%	0 % n_{max}	{0.1% n_{max}}	+100% n_{max}	Threshold ramp function generator input = ramp function generator output, reference: n_{max}
C242*	Threshold $\|n_{act}\| \geq n_x$	1000 rpm	100 rpm	{1 rpm}	5000rpm	
C243*	Threshold $n_{set} > n_x$	1%	0 % n_{max}	{0.1 % n_{max}}	+100 % n_{max}	Threshold for $\leq$ C046| or $\leq$ C049| > n_x, reference: n_{max}
C244*	Threshold $\leq I_A\| > I_x$	10%	0 % I_{Amax}	{0.1% I_{Amax}}	+100 % I_{Amax}	$\leq I_A\| > I_x$ Reference, rated controller current (armature)
C245*	Threshold $\|I_F > I_x$	10%	0 % I_{Fmax}	{0.1% I_{Fmax}}	+100% I_{Fmax}	$I_F > I_x$, Reference, rated controller current (field)
C249*	LECOM1 code bank	1	0	{1}	7	Fixed address offset: LECOM1 interface (protocol LECOM A/B) can address codes >255.
C252*	Angle offset	0 inc	-245760000 inc	{1 inc}	245760000 inc	Fixed angle offset with digital frequency configurations (C005 = -5X-, -6X-, -72-) Format for LECOM: 0.022 (LECOM) correspond to 220 incr.
C253*	Angle offset	0 inc	-8190 inc	{1}	8190 inc	Speed-dependent angle offset Format for LECOM: 0.022 (LECOM) correspond to 220 incr.
C254*	V_p angle controller	0.33	0.00	{0.01}	1.00	Gain of the angle controller
C255*	Following error limit	220 inc	10 inc	{1 inc}	536750000 inc	Only active if C254 > 0! Format for LECOM: 0.022 (LECOM) correspond to 220 incr.
C256*	Angle trimming	0 inc	-32768 inc	{1 inc}	32767 inc	Angle offset with digital frequency configurations (C005 = -5X-, -6X- and -72-) Format for LECOM: 0.022 (LECOM) correspond to 220 incr. If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.

Code	Name	Possible settings				
		Lenze	Selection			Info
C257*	Speed trimming	0 rpm	-5000 rpm	{1}	+5000 rpm	Fixed speed offset with digital frequency configurations (C005 = -5X-, -6X- and -72-). If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.
C260*	Upper motor potentiometer limit	100%	-100.0 %	{0.1 %}	+100.0 %	C260 must be higher than C261!
C261*	Lower motor potentiometer limit	0 %	-100.0 %	{0.1%}	+100.0 %	C261 must be smaller than C260!
C262*	Motor pot. acceleration time	10 s	1 s	{1 s}	5000 s	C262 is activated if the motor potentiometer terminal is set to "UP" Reference: Change of 0...□100%
C263*	Motor pot. deceleration time	10 s	1 s	{1 s}	5000 s	C263 is activated if the motor potentiometer terminal is set to "DOWN" Reference: Change of 0...□100%
C264*□	Motor potentiometer deactivation function	0	-0- No function, motor potentiometer is not changed. -1- Down to 0%, motor potentiometer output runs with the corresponding acceleration or deceleration time to 0%. -2- Down to lowest limit, motor potentiometer output runs with the corresponding acceleration or deceleration time to the value under C261. -3- Jump to 0%, motor potentiometer output immediately changes to 0%. -4- Jump to the lowest level, motor potentiometer immediately changes to the value indicated under C261. -5- Up to the highest level, motor potentiometer output runs with the corresponding acceleration or deceleration to the value indicated under C260.			Function which is executed when deactivating the motor potentiometer (terminal DEACTIVE is set).
C265*□	Initialisation function Sample & Hold	0	-0- Acceptance of the saved value S&H output accepts the value which was set before switching the mains. -1- Lower limit, S&H output accepts the value of C261.			Function which is executed when switching on the mains.
C266*	Motor pot.: Operation via keypad		100.0 %	{0.1 %}	+100.0 %	Under C266, the motor potentiometer can also be operated with ▲ and ▼. Display: Output value of the motor potentiometer in % and exact value of control program.
C267*□	Sample and Hold function	0	-0- S&H for motor potentiometer output -1- S&H for FAI signal			
C270*	Analog/ digital conversion 1		-16384	{1}	16384	Display: Value assigned and digitized via C145 / C146 Output only via interfaces
C271*	Analog/ digital conversion 2		-16384	{1}	16384	Display: Value assigned and digitized via C145 / C146 Output only via interfaces
C272*	Digital/ analog conversion 1		-16384	{1}	16384	Input: Value for the conversion into an analog signal is to be entered via the monitor outputs X4/62, X4/63 or digital frequency output X8. Input only via interfaces.

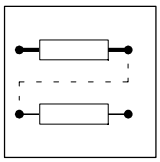


Code	Name	Possible settings				
		Lenze	Selection			Info
C273*	Digital/ analog conversion 2		-16384	{1}	16384	Input: Value for the conversion into an analog signal is to be entered via the monitor outputs X4/62, X4/63 or digital frequency output X8. Input only via interfaces.
C280*□	Additional setpoint on/off	0	-0- Additional setpoint is on -1- Additional setpoint is off			
C282*□	Function for C047	0	-0- Function C047 = 100% - [input source] -1- Function C047 = [input source]			
C285*	Limitation of rate of rise	40	1	{1}	1000	Limitation of rate of rise at the armature current controller input. Time: $-I_{Amax}$ to $+I_{Amax}$ = C285 · $t_{15°electr.}$
C286*	Upper limit of the speed setpoint	180%	-100.0 % -180 %	{0.1 %} {1 %}	+100.0 % +180 %	Upper limit of the speed setpoint for C050 C286 must be higher than C287!
C287*	Lower limit of the speed setpoint	-180%	-100.0 % -180 %	{0.1 %} {1 %}	+100.0 % +180 %	Upper limit of the speed setpoint for C050 C287 must be smaller than C286!
C310*	Speed dependent current limitation Limit value 1	100%	0.0 %	{0.1 %}	+100.0 %	Valid for speed under C313 C310 must be higher than C311!
C311*	Speed dependent current limitation Limit value 2	100%	0.0 %	{0.1 %}	+100.0 %	Valid for speed under C314 C311 must be smaller than C310!
C312*	n_0 Speed dependent current limitation	3000 rpm	0 rpm	{1 rpm}	5000 rpm	Act. speed threshold (current limitation), condition: $n_1 > n_0$
C313*	n_1 Speed dependent current limitation	4000 rpm	0 rpm	{1 rpm}	5000 rpm	Act. speed threshold for limit value 1 condition: $n_2 > n_1 > n_0$
C314*	n_2 Speed dependent current limitation	5000 rpm	0 rpm	{1 rpm}	5000 rpm	Act. speed threshold for limit value 2 condition: $n_2 > n_1 > n_0$
C316*	Reduced field current	20 %	0 % I_{Frated}	{1 % I_{Frated}}	100 % I_{Frated}	Reference: I_{Frated} (C083) With 0%, the pulses of the field controller are inhibited.
C317*	Time delay for the reduced field current	60 s	0.0 s 10 s 100 s	{0.1 s} {1 s} {10 s}	10 s 100 s 3600 s	Time which is required to activate the reduced field current after inhibiting the controller.
C318*□	Activate field current reduction	0	-0- Field current reduction function is off -1- Field current reduction function is on			
C319*	Actual V_p of the n- controller		1	{1}	1000	Display: Actual gain factor of the n-controller (important for n-controller adaption)

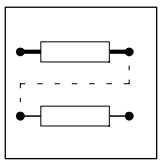
Code	Name	Possible settings				
		Lenze	Selection			Info
C320*	V_{p2} of the n-controller adaption	8	1	{1}	1000	Second gain factor for speed controller adaption
C321*	V_{p3} of the n-controller adaption	8	1	{1}	1000	Third gain factor for speed controller adaption
C322*	n_1 of the n-controller adaption	3000 rpm	0 rpm	{1 rpm}	5000 rpm	Speed setpoint threshold of speed controller adaption, condition: $n_1 > n_0$
C323*	n_0 of the n-controller adaption	50 rpm	0 rpm	{1 rpm}	5000 rpm	Speed setpoint threshold of speed controller adaption, condition: $n_1 > n_0$
C324*□	n-controller adaption on/off	0	-0- n-controller adaption is off -1- n-controller adaption is on			
C325*	V_{p2} of the process controller adaption	1	0.1 10	{0.1} {1}	10 500	Second gain factor for process controller adaption
C326*	V_{p3} of the process controller adaption	1	0.1 10	{0.1} {1}	10 500	Third gain factor for process controller adaption
C327*	set2 of the process controller adaption	100 %	0.0 %	{0.1 %}	100.0 %	Setpoint speed threshold of the process controller adaption, condition: set2 > set1
C328*	set1 of the process controller adaption	0%	0.0 %	{0.1 %}	100.0 %	Setpoint speed threshold of the process controller adaption, condition: set2 > set1
C329*□	Process controller adaption on/off	0	-0- Process controller adaption is off -1- Process controller adaption is on			
C330*	Setpoint of the process controller	0%	-100.0 %	{0.1 %}	100.0 %	If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.
C331*	Evaluation of the process ctrl. output	100 %	-100.0 %	{0.1%}	100.0 %	If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.
C332*	Acceleration time T_{ir} of the process controller setpoint	0.00 s	0.00 s 1.0 s 10 s 100 s	{0.01 s} {0.1 s} {1 s} {10 s}	1.00 s 10.0 s 100 s 990 s	
C333*	Deceleration time T_{if} of the process ctrl. setpoint	0.00 s	0.00 s 1.0 s 10 s 100 s	{0.01 s} {0.1 s} {1 s} {10 s}	1.00 s 10.0 s 100 s 990 s	
C334*	Acceleration time T_{ir} of the process ctrl. evaluation	0.00 s	0.00 s 1.0 s 10 s 100 s	{0.01 s} {0.1 s} {1 s} {10 s}	1.00 s 10.0 s 100 s 990 s	
C335*	Deceleration time T_{if} of the process ctrl. evaluation	0.00 s	0.00 s 1.0 s 10 s 100 s	{0.01 s} {0.1 s} {1 s} {10 s}	1.00 s 10.0 s 100 s 990 s	



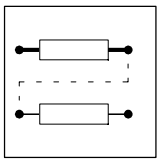
Code	Name	Possible settings				
		Lenze	Selection			Info
C336*	Actual V_p of the process controller		0.1	{0.1}	500.0	Display: Actual gain factor of the process controller (important for process controller adaption)
C338*	Input 1, arithmetic block 2	0%	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.
C339*	Input 2, arithmetic block 2	0%	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.
C370*□	Enable automation interface		-0- No communication via automation interface -1- Communication via automation interface enabled			
C380*	n_{set} speed		-16384	{1}	16384	High precision main setpoint selection: 16384 □ 100% under C046 Input only via interface.
C381*	n_{set} at n-controller		-32767	{1}	32767	High precision setpoint display: Input of the speed controller, 16384 □ 100% under C050. Input only via interface.
C382*	Actual speed		-32767	{1}	32767	High precision display: Act. speed value 16384 □ n_{max} under C011. Input only via interface.
C387*	Torque limit		-16384	{1}	16384	High precision torque setpoint selection: 16384 □ 100% under C047. Input only via interface.
C388*	Torque setpoint		-16384	{1}	16384	High precision torque setpoint display: 16384 □ 100% under C056. Input only via interface.
C391*	Actual angle		0	{1}	65535	High precision display of the actual angle if resolver or incremental encoder operate as feedback system: 16384 □ 360□ □1 revolution. Input only via interface.
C392*	Field current setpoint		0	{1}	16384	High precision display of the field current setpoint: 16384 □ I_{FN} under C083. Input only via interface.
C393*	Additional setpoint		-16384	{1}	16384	High precision additional setpoint display: 16384 □ 100% under C049. Input only via interface.
C580*	Input 1, comparator 1	0 %	-100.0 % -200 %	{0.1 %} {1 %}	+100.0 % +200 %	If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.
C581*	Input 2, limit value for comparator 1	0 %	-100.0 % -200 %	{0.1 %} {1 %}	+100.0 % +200 %	If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.
C582*	Hysteresis for lower threshold comparator 1	0 %	0.0 %	{0.1 %}	+100.0 %	Lower threshold = C581 - C582, reference: C581
C583*	Memory function comparator 1		-0- Memory function not active when resetting the output, the value falls below the lower threshold (C581 - C582) -1- Memory function active The output remains set after inital switching on.			
C584*□	Reset function comparator 1		-0- Reset function not active -1- Reset function active			The activation resets the output.



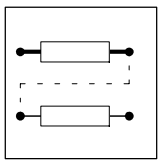
Code	Name	Possible settings				
		Lenze	Selection			Info
C590*	Input 1, comparator 2	0 %	-100.0 % -200 %	{0.1 %} {1 %}	+100.0 % +200 %	If an analog signal source (C145/C146) is assigned, only the parameter will be displayed.
C591*	Input 2, limit value for comparator 2	0 %	-100.0 % -200 %	{0.1 %} {1 %}	+100.0 % +200 %	If an analog signal source (C145/C146) is assigned, only the parameter will be displayed.
C592*	Hysteresis for lower threshold comparator 2	0 %	0.0 %	{0.1 %}	+100.0 %	Lower threshold = C591 - C592, reference: C591
C593*□	Memory function comparator 2		-0- Memory function not active when resetting the output, the value falls below the lower threshold (C591 - C592) -1- Memory function active The output remains set after inital switching on.			
C594*□	Reset function comparator 2		-0- Reset function not active -1- Reset function active			The activation resets the output.
C600*□	Arithmetic block 3	1	-0- Output = C601 -1- Output = C601 + C602 -2- Output = C601 - C602 -3- Output = C601 □ C602 -4- Output = C601 / |C602| -5- Output = C601 / (100% - C602)			
C601*	Input 1, arithmetic block 3	0%	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.
C602*	Input 2, arithmetic block 3	0%	-100.0 % -200 %	{0.1 %} {1%}	100.0 % +200 %	If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.



Code	Name	Possible settings				
		Lenze	Selection			Info
C610*	Input 1, addition block 1	0%	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.
C611*	Input 2, addition block 1	0%	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.
C612*	Input 3, addition block 1	0%	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.
C614*	Input 1, addition block 2	0%	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.
C615*	Input 2, addition block 2	0%	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.
C616*	Input 3, addition block 2	0%	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	If an analog signal source (C145/C146) is assigned, the parameter will be displayed only.
C620*	Gain dead band element	1.00	-10.00	{0.01}	+10.00	
C621*	Dead band, dead band element	1.0 %	0.0 %	{0.1 %}	100.0 %	
C622*	Input, dead band element	0%	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	Display parameter only
C630*	Limiting element 1 upper limit	100 %	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	C630 must be higher than C631!
C631*	Limiting element 1 lower limit	-100 %	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	C631 must be lower than C630!
C632*	Input, limiting element 1	0 %	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	Display parameter only
C635*	Limiting element 2 upper limit	100 %	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	C635 must be higher than C636!
C636*	Limiting element 2 lower limit	-100 %	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	C636 must be lower than C635!
C637*	Input, limiting element 2	0 %	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	Display parameter only
C640*	PT1 element Time constant	20ms	0.01 s 1 s 10 s	{0.01 s} {0.1 s} {1 s}	1 s 10 s 50 s	



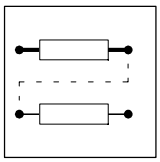
Code	Name	Possible settings				
		Lenze	Selection			Info
C641*	Input, PT1 element	0 %	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	Display parameter only
C650*	Gain DT1 element	1.00	-10.00	{0.01}	+10.00	
C651*	DT1 element Time constant	1.0 s	0.01 s 1.0 s	{0.01 s} {0.1 s}	1.00 s 5.0 s	
C652*	Input, DT1 element	0 %	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	Display parameter only
C653*	Input sensitivity, DT1 element		-1- 15 bit evaluation -2- 14 bit evaluation -3- 13 bit evaluation -4- 12 bit evaluation -5- 11 bit evaluation -6- 10 bit evaluation -7- 9 bit evaluation			
C660*	Input, absolute value generator	0 %	-100.0 % -200 %	{0.1 %} {1 %}	100.0 % +200 %	Display parameter only
C670*	Square generator upper limit	0 %	-100.0 %	{0.1 %}	+100.0 %	C670 must be higher than C671!
C671*	Square generator lower limit	0 %	-100.0 %	{0.1%}	+100.0 %	C671 must be smaller than C670!
C672*	Switch-over time of the square generator	0.1 s	0.1 s 10 s 100 s	{0.1 s} {1 s} {10 s}	10.0 s 100 s 3000 s	



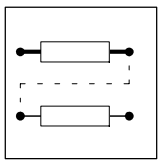
7.10 Table of attributes

The information given in this attribute table is required for generating a programmme. It contains all information about the communication to the controller via parameters:

Column		Meaning	Entry	
Code		Name of the Lenze codes	Cxxxx	
Index	dec	Index, under which the parameter is defined.	24575 – Lenze code number	Is only required for control via InterBus or PROFIBUS.
	hex	The subindex of array variables corresponds to the Lenze subcode number.	5FFh – Lenze code number	
Data	DS	Data structure	E	Simple variable (one parameter value)
			A	Array variable (several parameter elements can be selected through the code for input selection or via LECOM subcode)
			I	Image variable (several parameter elements can be selected through the code for input selection).
	DA	Number of array elements (Subcodes)	xx	
	DT	Data type	B8	1 byte bit coded
			B16	2 byte bit coded
			FIX32	32 bit value with sign; decimal with four decimal codes Example: 1.2 $\triangleq 12000_{FIX32\text{-}dec}$ $\triangleq$ 00002EE0$_{FIX32\text{-}hex}$ -10.45 $\triangleq -104500_{FIX32\text{-}dec}$ $\triangleq$ FFFE67CC$_{FIX32\text{-}hex}$
			I16	2 byte with sign ($-32768 \leq X \leq 32767$)
			I32	4 byte with sign ($-2147483648 \leq X \leq 2147483647$)
			N16	16 bit value with sign 0% $\triangleq$ 0; 100% $\triangleq 2^{14}$ Example: 100% $\triangleq 16384_{N16\text{-}dec}$ $\triangleq 4000_{N16\text{-}hex}$ -50% $\triangleq -8192_{N16\text{-}dec}$ $\triangleq$ E000$_{N16\text{-}hex}$
			U16	2 byte without sign ($0 \leq X \leq 65535$)
			VS	ASCII string
	format	LECOM format (see Operating Instructions for fieldbus modules)	VD	ASCII decimal format
			VH	ASCII hexadecimal format
			VS	String format
	DL	Data length in byte		
Access	P/S	Parameter setting / control (according to C001)	P	Parameter setting
			S	Control
	LCM-R/W	Access authorization for LECOM	Ra	Reading is always permitted
			Wa	Writing is always permitted
			W	Writing depends on condition
	AIF	Proceß datum in automation interface Mapping to LECOM2 process data channel possible	PZD	Process datum

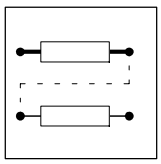


Code	Index		Data					Access		
	dec	hex	DS	DA	DT	Format	DL	S/P	LCM-R/W	AIF-PZD
C000	24575	5FFFh	E	1	FIX32	VD	4	P	Ra	-
C001	24574	5FFEh	E	1	FIX32	VD	4	-	Ra/Wa	-
C002	24573	5FFDh	E	1	FIX32	VD	4	P	Ra/W	-
C003	24572	5FFCh	E	1	FIX32	VD	4	P	Ra/W	-
C004	24571	5FFBh	E	1	FIX32	VD	4	P	Ra/W	-
C005	24570	5FFAh	E	1	FIX32	VD	4	P	Ra/W	-
C009	24566	5FF6h	E	1	FIX32	VD	4	P	Ra/W	-
C011	24564	5FF4h	E	1	FIX32	VD	4	P	Ra/W	-
C012	24563	5FF3h	E	1	FIX32	VD	4	P	Ra/W	-
C013	24562	5FF2h	E	1	FIX32	VD	4	P	Ra/W	-
C017	24558	5FEEh	E	1	FIX32	VD	4	P	Ra/W	-
C019	24556	5FECh	E	1	FIX32	VD	4	P	Ra/W	-
C022	24553	5FE9h	E	1	FIX32	VD	4	P	Ra/W	-
C023	24552	5FE8h	E	1	FIX32	VD	4	P	Ra/W	-
C025	24550	5FE6h	E	1	FIX32	VD	4	P	Ra/W	-
C026	24549	5FE5h	I	1	FIX32	VD	4	P	Ra/W	-
C027	24548	5FE4h	I	1	FIX32	VD	4	P	Ra/W	-
C028	24547	5FE3h	I	1	FIX32	VD	4	P	Ra/W	-
C029	24546	5FE2h	I	1	FIX32	VD	4	P	Ra/W	-
C030	24545	5FE1h	E	1	FIX32	VD	4	P	Ra/W	-
C032	24543	5FDFh	E	1	FIX32	VD	4	P	Ra/W	-
C033	24542	5FDEh	E	1	FIX32	VD	4	P	Ra/W	-
C034	24541	5FDDh	E	1	FIX32	VD	4	P	Ra/W	-
C038	24537	5FD9h	E	1	FIX32	VD	4	P	Ra/W	-
C039	24536	5FD8h	A	15	FIX32	VD	4	P	Ra/W	-
C040	24535	5FD7h	E	1	FIX32	VD	4	S	Ra/W	-
C041	24534	5FD6h	E	1	FIX32	VD	4	S	Ra/W	-
C042	24533	5FD5h	E	1	FIX32	VD	4	S	Ra/W	-
C043	24532	5FD4h	E	1	FIX32	VD	4	P	Ra/W	-
C045	24530	5FD2h	E	1	FIX32	VD	4	S	Ra/W	-
C046	24529	5FD1h	E	1	FIX32	VD	4	S	Ra/W	-
C047	24528	5FD0h	E	1	FIX32	VD	4	S	Ra/W	-
C049	24526	5FCEh	E	1	FIX32	VD	4	S	Ra	-
C050	24525	5FCDh	E	1	FIX32	VD	4	S	Ra	-
C051	24524	5FCCh	E	1	FIX32	VD	4	S	Ra	-
C052	24523	5FCBh	E	1	FIX32	VD	4	S	Ra	-
C054	24521	5FC9h	E	1	FIX32	VD	4	S	Ra	-
C056	24519	5FC7h	E	1	FIX32	VD	4	S	Ra	-
C060	24515	5FC3h	E	1	FIX32	VD	4	S	Ra	-
C061	24514	5FC2h	E	1	FIX32	VD	4	S	Ra	-
C063	24512	5FC0h	E	1	FIX32	VD	4	S	Ra/W	-
C065	24510	5FBEh	E	1	FIX32	VD	4	P	Ra	-
C066	24509	5FBDh	E	1	FIX32	VD	4	P	Ra	-
C067	24508	5FBCh	E	1	FIX32	VD	4	P	Ra	-
C068	24507	5FBBh	E	1	B16	VH	2	S	Ra	-
C069	24506	5FBAh	E	1	B8	VH	1	S	Ra	-
C070	24505	5FB9h	E	1	FIX32	VD	4	P	Ra/W	-
C071	24504	5FB8h	E	1	FIX32	VD	4	P	Ra/W	-
C072	24503	5FB7h	E	1	FIX32	VD	4	P	Ra/W	-
C075	24500	5FB4h	E	1	FIX32	VD	4	P	Ra/W	-
C076	24499	5FB3h	E	1	FIX32	VD	4	P	Ra/W	-
C077	24498	5FB2h	E	1	FIX32	VD	4	P	Ra/W	-
C078	24497	5FB1h	E	1	FIX32	VD	4	P	Ra/W	-
C079	24496	5FB0h	E	1	FIX32	VD	4	P	Ra/W	-
C081	24494	5FAEh	E	1	FIX32	VD	4	P	Ra/W	-
C082	24493	5FADh	E	1	FIX32	VD	4	P	Ra/W	-
C083	24492	5FACh	E	1	FIX32	VD	4	P	Ra/W	-
C084	24491	5FABh	E	1	FIX32	VD	4	P	Ra/W	-



Code	Index		Data					Access		
	dec	hex	DS	DA	DT	Format	DL	S/P	LCM-R/W	AIF-PZD
C085	24490	5FAAh	E	1	FIX32	VD	4	P	Ra/W	-
C087	24488	5FA8h	E	1	FIX32	VD	4	P	Ra/W	-
C088	24487	5FA7h	E	1	FIX32	VD	4	P	Ra/W	-
C090	24485	5FA5h	E	1	FIX32	VD	4	P	Ra/W	-
C093	24482	5FA2h	E	1	FIX32	VD	4	P	Ra	-
C094	24481	5FA1h	E	1	FIX32	VD	4	P	Ra/W	-
C096	24479	5F9Fh	E	1	FIX32	VD	4	P	Ra/W	-
C097	24478	5F9Eh	E	1	FIX32	VD	4	P	Ra/W	-
C098	24477	5F9Dh	E	1	FIX32	VD	4	P	Ra/W	-
C099	24476	5F9Ch	E	1	VS	VS	6	P	Ra	-
C100	24475	5F9Bh	E	1	FIX32	VD	4	P	Ra/W	-
C101	24474	5F9Ah	A	15	FIX32	VD	4	P	Ra/W	-
C103	24472	5F98h	A	15	FIX32	VD	4	P	Ra/W	-
C105	24470	5F96h	E	1	FIX32	VD	4	P	Ra/W	-
C108	24467	5F93h	A	3	FIX32	VD	4	P	Ra/W	-
C109	24466	5F92h	A	2	FIX32	VD	4	P	Ra/W	-
C110	24465	5F91h	E	1	FIX32	VD	4	P	Ra/W	-
C111	24464	5F90h	A	3	FIX32	VD	4	P	Ra/W	-
C112	24463	5F8Fh	E	1	FIX32	VD	4	P	Ra/W	-
C113	24462	5F8Eh	A	5	FIX32	VD	4	P	Ra/W	-
C114	24461	5F8Dh	A	5	FIX32	VD	4	P	Ra/W	-
C115	24460	5F8Ch	A	5	FIX32	VD	4	P	Ra/W	-
C116	24459	5F8Bh	E	1	FIX32	VD	4	P	Ra/W	-
C117	24458	5F8Ah	A	13	FIX32	VD	4	P	Ra/W	-
C118	24457	5F89h	A	13	FIX32	VD	4	P	Ra/W	-
C119	24456	5F88h	E	1	FIX32	VD	4	P	Ra/W	-
C120	24455	5F87h	A	23	FIX32	VD	4	P	Ra/W	-
C123	24452	5F84h	E	1	FIX32	VD	4	P	Ra/W	-
C124	24451	5F83h	E	1	FIX32	VD	4	P	Ra/W	-
C125	24450	5F82h	E	1	FIX32	VD	4	P	Ra/W	-
C126	24449	5F81h	E	1	FIX32	VD	4	P	Ra/W	-
C128	24447	5F7Fh	A	13	FIX32	VD	4	P	Ra/W	-
C130	24445	5F7Dh	E	1	FIX32	VD	4	P	Ra/W	-
C131	24444	5F7Ch	E	1	FIX32	VD	4	P	Ra/W	-
C132	24443	5F7Bh	E	1	FIX32	VD	4	P	Ra/W	-
C134	24441	5F79h	E	1	FIX32	VD	4	P	Ra/W	-
C136	24439	5F77h	E	1	B16	VH	2	S	Ra	PZD
C145	24430	5F6Eh	E	1	FIX32	VD	4	P	Ra/W	-
C146	24429	5F6Dh	A	43	FIX32	VD	4	P	Ra/W	-
C147	24428	5F6Ch	A	7	FIX32	VD	4	P	Ra/W	-
C148	24427	5F6Bh	E	1	FIX32	VD	4	S	Ra/W	-
C149	24426	5F6Ah	E	1	FIX32	VD	4	S	Ra/W	-
C151	24424	5F68h	E	1	B16	VH	2	S	Ra	PZD
C161	24414	5F5Eh	E	1	FIX32	VD	4	S	Ra	-
C162	24413	5F5Dh	E	1	FIX32	VD	4	S	Ra	-
C163	24412	5F5Ch	E	1	FIX32	VD	4	S	Ra	-
C164	24411	5F5Bh	E	1	FIX32	VD	4	S	Ra	-
C165	24410	5F5Ah	E	1	FIX32	VD	4	S	Ra	-
C166	24409	5F59h	E	1	FIX32	VD	4	S	Ra	-
C167	24408	5F58h	E	1	FIX32	VD	4	S	Ra	-
C168	24407	5F57h	E	1	FIX32	VD	4	S	Ra	-
C180	24395	5F4Bh	E	1	FIX32	VD	4	P	Ra/W	-
C182	24393	5F49h	E	1	FIX32	VD	4	P	Ra/W	-
C183	24392	5F48h	E	1	VS	VS	16	S	Ra	-
C185	24390	5F46h	E	1	FIX32	VD	4	S	Ra	-
C186	24389	5F45h	E	1	FIX32	VD	4	S	Ra	-
C187	24388	5F44h	E	1	FIX32	VD	4	S	Ra/W	-
C188	24387	5F43h	E	1	FIX32	VD	4	S	Ra/W	-

Code	Index		Data					Access		
	dec	hex	DS	DA	DT	Format	DL	S/P	LCM-R/W	AIF-PZD
C189	24386	5F42h	E	1	FIX32	VD	4	S	Ra	-
C190	24385	5F41h	E	1	FIX32	VD	4	P	Ra/W	-
C191	24384	5F40h	E	1	FIX32	VD	4	P	Ra/W	-
C192	24383	5F3Fh	E	1	FIX32	VD	4	P	Ra/W	-
C193	24382	5F3Eh	A	15	FIX32	VD	4	P	Ra/W	-
C194	24381	5F3Dh	E	1	FIX32	VD	4	P	Ra/W	-
C195	24380	5F3Ch	E	1	FIX32	VD	4	P	Ra/W	-
C196	24379	5F3Bh	E	1	FIX32	VD	4	P	Ra/W	-
C197	24378	5F3Ah	E	1	FIX32	VD	4	P	Ra/W	-
C198	24377	5F39h	E	1	FIX32	VD	4	P	Ra/W	-
C199	24376	5F38h	E	1	FIX32	VD	4	P	Ra/W	-
C200	24375	5F37h	E	1	VS	VS	14	P	Ra	-
C201	24374	5F36h	E	1	VS	VS	20	P	Ra	-
C220	24355	5F23h	E	1	FIX32	VD	4	P	Ra/W	-
C221	24354	5F22h	E	1	FIX32	VD	4	P	Ra/W	-
C222	24353	5F21h	E	1	FIX32	VD	4	P	Ra/W	-
C223	24352	5F20h	E	1	FIX32	VD	4	P	Ra/W	-
C224	24351	5F1Fh	E	1	FIX32	VD	4	P	Ra/W	-
C230	24345	5F19h	E	1	FIX32	VD	4	P	Ra/W	-
C231	24344	5F18h	E	1	FIX32	VD	4	P	Ra/W	-
C232	24343	5F17h	E	1	FIX32	VD	4	P	Ra/W	-
C233	24342	5F16h	E	1	FIX32	VD	4	P	Ra/W	-
C234	24341	5F15h	E	1	FIX32	VD	4	P	Ra/W	-
C235	24340	5F14h	E	1	FIX32	VD	4	P	Ra/W	-
C237	24338	5F12h	E	1	FIX32	VD	4	P	Ra/W	-
C240	24335	5F0Fh	E	1	FIX32	VD	4	P	Ra/W	-
C241	24334	5F0Eh	E	1	FIX32	VD	4	P	Ra/W	-
C242	24333	5F0Dh	E	1	FIX32	VD	4	P	Ra/W	-
C243	24332	5F0Ch	E	1	FIX32	VD	4	P	Ra/W	-
C244	24331	5F0Bh	E	1	FIX32	VD	4	P	Ra/W	-
C245	24330	5F0Ah	E	1	FIX32	VD	4	P	Ra/W	-
C249	24326	5F06h	E	1	FIX32	VD	4	P	Ra/W	-
C252	24323	5F03h	E	1	FIX32	VD	4	P	Ra/W	-
C253	24322	5F02h	E	1	FIX32	VD	4	P	Ra/W	-
C254	24321	5F01h	E	1	FIX32	VD	4	P	Ra/W	-
C255	24320	5F00h	E	1	FIX32	VD	4	P	Ra/W	-
C256	24319	5EFFh	E	1	FIX32	VD	4	P	Ra/W	-
C257	24318	5EFEh	E	1	FIX32	VD	4	P	Ra/W	-
C260	24315	5EFBh	E	1	FIX32	VD	4	P	Ra/W	-
C261	24314	5EFAh	E	1	FIX32	VD	4	P	Ra/W	-
C262	24313	5EF9h	E	1	FIX32	VD	4	P	Ra/W	-
C263	24312	5EF8h	E	1	FIX32	VD	4	P	Ra/W	-
C264	24311	5EF7h	E	1	FIX32	VD	4	P	Ra/W	-
C265	24310	5EF6h	E	1	FIX32	VD	4	P	Ra/W	-
C266	24309	5EF5h	E	1	FIX32	VD	4	S	Ra	-
C267	24308	5EF4h	E	1	FIX32	VD	4	P	Ra/W	-
C270	24305	5EF1h	E	1	I16	VH	2	S	Ra	-
C271	24304	5EF0h	E	1	I16	VH	2	S	Ra	-
C272	24303	5EEFh	E	1	I32	VH	4	P	Ra/W	-
C273	24302	5EEEh	E	1	I32	VH	4	P	Ra/W	-
C280	24295	5EE7h	E	1	FIX32	VD	4	P	Ra/W	-
C281	24294	5EE6h	E	1	VS	VS	16	P	Ra	-
C282	24293	5EE5h	E	1	FIX32	VD	4	P	Ra/W	-
C285	24290	5EE2h	E	1	FIX32	VD	4	P	Ra/W	-
C286	24289	5EE1h	E	1	FIX32	VD	4	P	Ra/W	-
C287	24288	5EE0h	E	1	FIX32	VD	4	P	Ra/W	-
C300	24275	5ED3h	E	1	FIX32	VD	4	S	Ra	-
C310	24265	5EC9h	E	1	FIX32	VD	4	P	Ra/W	-



Code	Index		Data					Access		
	dec	hex	DS	DA	DT	Format	DL	S/P	LCM-R/W	AIF-PZD
C311	24264	5EC8h	E	1	FIX32	VD	4	P	Ra/W	-
C312	24263	5EC7h	E	1	FIX32	VD	4	P	Ra/W	-
C313	24262	5EC6h	E	1	FIX32	VD	4	P	Ra/W	-
C314	24261	5EC5h	E	1	FIX32	VD	4	P	Ra/W	-
C316	24259	5EC3h	E	1	FIX32	VD	4	P	Ra/W	-
C317	24258	5EC2h	E	1	FIX32	VD	4	P	Ra/W	-
C318	24257	5EC1h	E	1	FIX32	VD	4	P	Ra/W	-
C319	24256	5EC0h	E	1	FIX32	VD	4	S	Ra	-
C320	24255	5EBFh	E	1	FIX32	VD	4	P	Ra/W	-
C321	24254	5EBEh	E	1	FIX32	VD	4	P	Ra/W	-
C322	24253	5EBDh	E	1	FIX32	VD	4	P	Ra/W	-
C323	24252	5EBCh	E	1	FIX32	VD	4	P	Ra/W	-
C324	24251	5EBBh	E	1	FIX32	VD	4	P	Ra/W	-
C325	24250	5EBAh	E	1	FIX32	VD	4	P	Ra/W	-
C326	24249	5EB9h	E	1	FIX32	VD	4	P	Ra/W	-
C327	24248	5EB8h	E	1	FIX32	VD	4	P	Ra/W	-
C328	24247	5EB7h	E	1	FIX32	VD	4	P	Ra/W	-
C329	24246	5EB6h	E	1	FIX32	VD	4	P	Ra/W	-
C330	24245	5EB5h	E	1	FIX32	VD	4	P	Ra/W	-
C331	24244	5EB4h	E	1	FIX32	VD	4	P	Ra/W	-
C332	24243	5EB3h	E	1	FIX32	VD	4	P	Ra/W	-
C333	24242	5EB2h	E	1	FIX32	VD	4	P	Ra/W	-
C334	24241	5EB1h	E	1	FIX32	VD	4	P	Ra/W	-
C335	24240	5EB0h	E	1	FIX32	VD	4	P	Ra/W	-
C336	24239	5EAFh	E	1	FIX32	VD	4	S	Ra	-
C338	24237	5EADh	E	1	FIX32	VD	4	P	Ra/W	-
C339	24236	5EACh	E	1	FIX32	VD	4	P	Ra/W	-
C370	24205	5E8Dh	E	1	FIX32	VD	4	P	Ra/W	-
C380	24195	5E83h	E	1	N16	VH	2	P	Ra/W	PZD
C381	24194	5E82h	E	1	I16	VH	2	P	Ra	-
C382	24193	5E81h	E	1	I16	VH	2	P	Ra	PZD
C387	24188	5E7Ch	E	1	I16	VH	2	P	Ra/W	PZD
C388	24187	5E7Bh	E	1	I16	VH	2	P	Ra	PZD
C391	24184	5E78h	E	1	U16	VH	2	P	Ra	PZD
C392	24183	5E77h	E	1	N16	VH	2	P	Ra	PZD
C393	24182	5E76h	E	1	N16	VH	2	P	Ra	PZD
C580	23995	5DBBh	E	1	FIX32	VD	4	P	Ra/W	-
C581	23994	5DBAh	E	1	FIX32	VD	4	P	Ra/W	-
C582	23993	5DB9h	E	1	FIX32	VD	4	P	Ra/W	-
C583	23992	5DB8h	E	1	FIX32	VD	4	P	Ra/W	-
C584	23991	5DB7h	E	1	FIX32	VD	4	P	Ra/W	-
C590	23985	5DB1h	E	1	FIX32	VD	4	P	Ra/W	-
C591	23984	5DB0h	E	1	FIX32	VD	4	P	Ra/W	-
C592	23983	5DAFh	E	1	FIX32	VD	4	P	Ra/W	-
C593	23982	5DAEh	E	1	FIX32	VD	4	P	Ra/W	-
C594	23981	5DADh	E	1	FIX32	VD	4	P	Ra/W	-
C600	23975	5DA7h	E	1	FIX32	VD	4	P	Ra/W	-
C601	23974	5DA6h	E	1	FIX32	VD	4	P	Ra/W	-
C602	23973	5DA5h	E	1	FIX32	VD	4	P	Ra/W	-
C610	23965	5D9Dh	E	1	FIX32	VD	4	P	Ra/W	-
C611	23964	5D9Ch	E	1	FIX32	VD	4	P	Ra/W	-
C612	23963	5D9Bh	E	1	FIX32	VD	4	P	Ra/W	-
C614	23961	5D99h	E	1	FIX32	VD	4	P	Ra/W	-
C615	23960	5D98h	E	1	FIX32	VD	4	P	Ra/W	-
C616	23959	5D97h	E	1	FIX32	VD	4	P	Ra/W	-
C620	23955	5D93h	E	1	FIX32	VD	4	P	Ra/W	-
C621	23954	5D92h	E	1	FIX32	VD	4	P	Ra/W	-
C622	23953	5D91h	E	1	FIX32	VD	4	S	Ra	-

Code	Index		Data					Access		
	dec	hex	DS	DA	DT	Format	DL	S/P	LCM-R/W	AIF-PZD
C630	23945	5D89h	E	1	FIX32	VD	4	P	Ra/W	-
C631	23944	5D88h	E	1	FIX32	VD	4	P	Ra/W	-
C632	23943	5D87h	E	1	FIX32	VD	4	S	Ra	-
C635	23940	5D84h	E	1	FIX32	VD	4	P	Ra/W	-
C636	23939	5D83h	E	1	FIX32	VD	4	P	Ra/W	-
C637	23938	5D82h	E	1	FIX32	VD	4	S	Ra	-
C640	23935	5D7Fh	E	1	FIX32	VD	4	P	Ra/W	-
C641	23934	5D7Eh	E	1	FIX32	VD	4	S	Ra	-
C650	23925	5D75h	E	1	FIX32	VD	4	P	Ra/W	-
C651	23924	5D74h	E	1	FIX32	VD	4	P	Ra/W	-
C652	23923	5D73h	E	1	FIX32	VD	4	S	Ra	-
C653	23922	5D72h	E	1	FIX32	VD	4	P	Ra/W	-
C660	23915	5D6Bh	E	1	FIX32	VD	4	S	Ra	-
C670	23905	5D61h	E	1	FIX32	VD	4	P	Ra/W	-
C671	23904	5D60h	E	1	FIX32	VD	4	P	Ra/W	-
C672	23903	5D5Fh	E	1	FIX32	VD	4	P	Ra/W	-