Lexium Controller

Keypad

User’s Manual

Retain for future use

VW3M1701

Schneider Electric

Contents

Important information

PLEASE NOTE

Please read these instructions carefully and examine the equipment in order to familiarize yourself with the device before installing, operating or carrying out any maintenance work on it.

The following special messages that you will come across in this document or on the device are designed to warn you about potential risks or draw your attention to information that will clarify or simplify a procedure.

The addition of this symbol to a "Danger" or "Warning" safety label indicates that there is an electrical risk that will result in injury if the instructions are not followed.

This is a safety warning symbol. It warns you of the potential risk of injury. You must comply with all safety messages that follow this symbol in order to avoid the risk of injury or death.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death, serious injury or equipment damage.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death, serious injury or equipment damage.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** injury or equipment damage.

PLEASE NOTE:

Only qualified staff are authorized to carry out maintenance work on electrical equipment. Schneider Electric accepts no responsibility for the consequences of using this device. This document does not constitute an instruction manual for inexperienced people.

Documentation structure

Installation Manual

This manual describes:
- How to install the controller
- How to connect the controller

Optional Keypad User's Manual

This manual describes:
- How to install the keypad
- How to connect the keypad
- How to configure the controller via the keypad

Easy Motion - Programming Manual

Supplied preinstalled in the Lexium Controller, the application model associated with Easy Motion mode is a user-friendly tool that can be used for:
- Rapid axis configuration
- Use of Manual/Automatic mode
- Creating positioning tasks
- Editing cam profiles
- Backup and recovery of the machine parameters
- Diagnostics of the motion controller and the various axes

This programming manual also contains a table of the parameters that can be accessed via the communication protocols.

Motion Pro - Programming Manual

The Motion Pro Programming Manual is included in the software online help.
This online help describes:
- The software interface
- IEC 1131 programming
- The function libraries (standard functions, motion control functions, application functions)
- The Lexium Controller configuration screens

Modbus, Ethernet, PROFIBUS DP, and DeviceNet manuals

These manuals describe:
- Connection to the bus or network
- Diagnostics
- Software setup
- The protocol communication services

Hardware setup

On receipt

- Check that the device reference marked on the label is the same as that on the delivery note corresponding to the purchase order.
- Open the packaging and check that the device has not been damaged in transit.
- Check that the device is complete. The packaging must contain:
  - The keypad
  - A angled connector

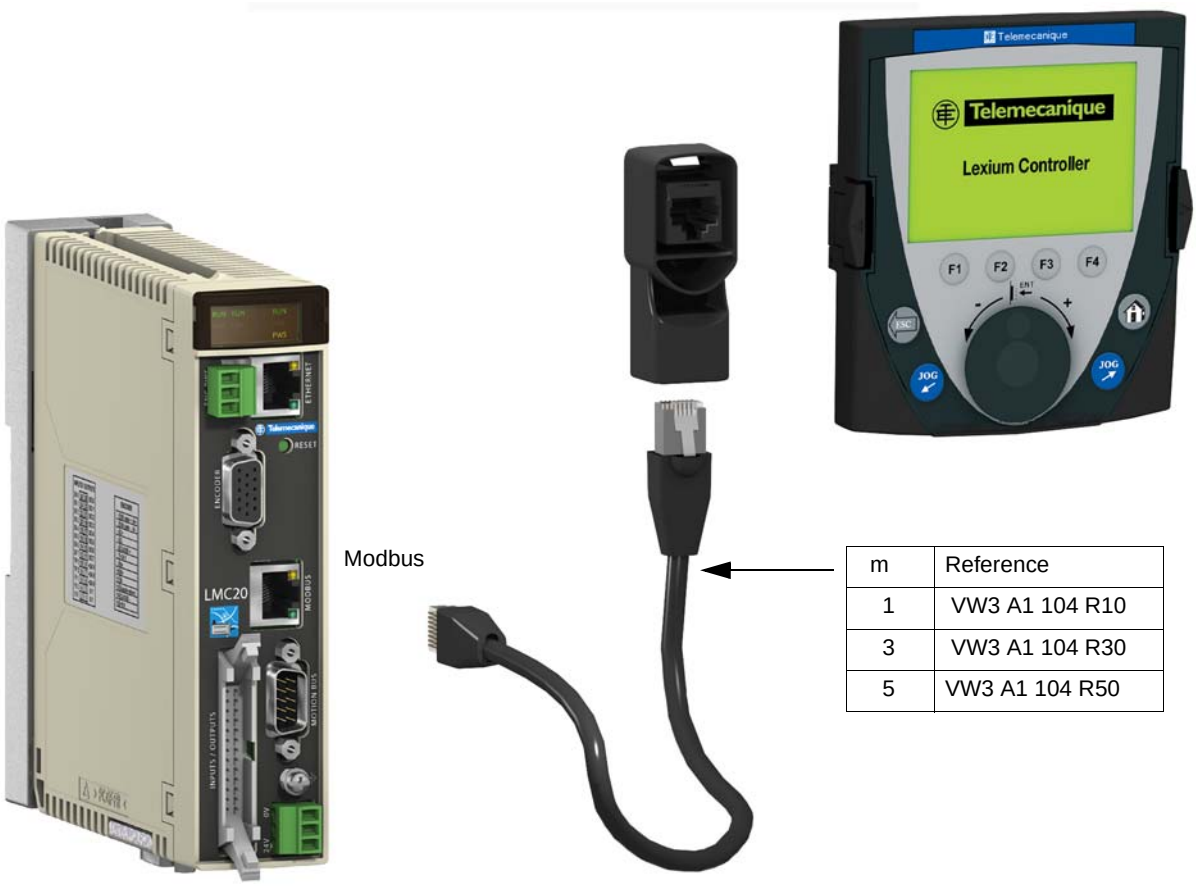
⚠ CAUTION
DAMAGED EQUIPMENT Do not install or operate any display terminal that appears damaged. **Failure to follow this instruction can result in equipment damage.**

Connecting to the Lexium Controller

The keypad is connected to the Lexium controller on the "MODBUS" RJ45 connector.
The keypad only operates when Modbus communication is configured in the following way:

- Data rate: 38400 bps
- 8 bits sent
- No parity
- 1 stop bit

Any other value will make communication with the keypad impossible.
Please refer to the "Modbus User's Manual" documentation for more detailed information.



m	Reference
1	VW3 A1 104 R10
3	VW3 A1 104 R30
5	VW3 A1 104 R50

Setup - Preliminary recommendations

The keypad can be used to configure the Lexium Controller and some of the servo drive (Lexium 05) parameters.

⚠ DANGER

UNINTENDED EQUIPMENT OPERATION

When using the keypad, check that ALL the other methods for controlling the Lexium Controller are inactive:
- Master PLC on Ethernet, Profibus or Devicenet
- Motion pro or Easy motion programming terminal on Ethernet

If the KeyPad is unplugged from the Lexium Controller, current mouvements (Jog included) are not interrupted.

Failure to follow these instructions can result in death or serious injury.

⚠ DANGER

UNINTENDED EQUIPMENT OPERATION

Current versions of Easy Motion, Application Template and Key Pad are not compatible with Lexium 15 and SD328.
Utilisation of Easy Motion, Application Template and Key Pad is limited to Lexium 05.

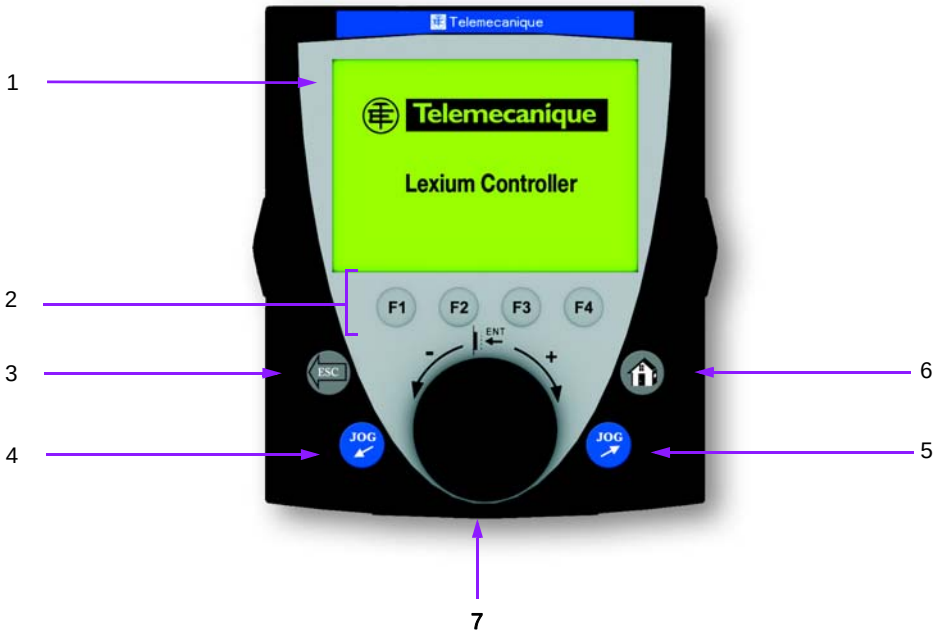
Failure to follow these instructions can result in death or serious injury.

☞ **Note:** The operation of the keypad is partly based on the Application Template.
When the application model is deleted from the Lexium Controller, only the following menus are operational:

2:4 [LC CONFIGURATION]
3 [KEYPAD]

Description of the keypad

The optional remote keypad, used with **Easy Motion** can be used to:
- Carry out diagnostics on the Lexium Controller or its servo drives
- Adjust the Lexium Controller or the servo drive parameters
- Perform debugging
- Back up and restore the application data



1. Graphic display

2. Function keys F1 to F4
- Direct access to the functions

3. ESC
- Aborts a value, a parameter or a menu to return to the previous selection

4. JOG ↘ :
- Starts a movement at constant velocity in the negative direction

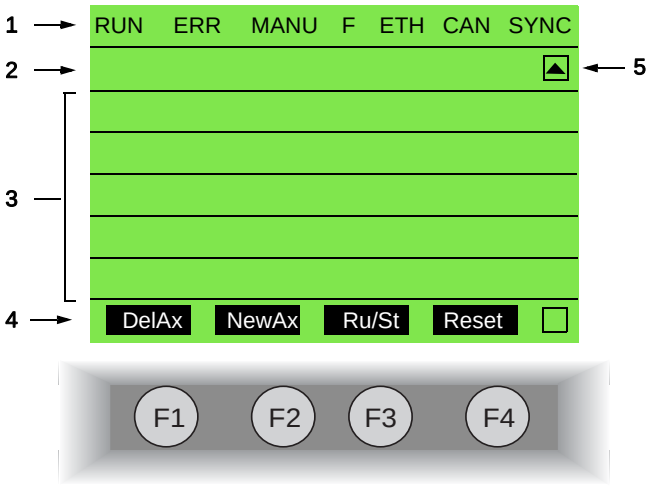
5. JOG ↗ :
- Starts a movement at constant velocity in the positive direction

6. HOME
- Returns to the main screen (see page 16).

7. Navigation button:
- Press (ENT):
  - To save the current value
  - To enter the selected menu or parameter
- Turn CW/CCW:
  - To increment or decrement a value
  - To go to the next or previous line

Note: The JOG keys are only active when the [MANUAL MODE] or [TEACHING] menus are active.

Description of the graphic screen



1. Status display line:
   From left to right:
   - Lexium Controller status:
     - [RUN]: Indicates that the Lexium Controller is executing the program
     - [STOP]: Indicates that the Lexium Controller is not executing the program
   - Error indicator:
     - [ERR]: Indicates that there is an error on the Lexium Controller or the axes
   - Mode:
     - [AUTO]: Automatic mode. The axes are controlled automatically by the motion task table
     - [MANU]: Manual mode. The axes can be controlled manually, using menu 1:3 ["AXIS": MANUAL MODE].
     - [CONF]: Configuration mode.
   - I/O status:
     - [F]: Indicates that the Lexium Controller inputs and/or outputs have been forced.
     - When no inputs or outputs have been forced, the box is empty.
   - Ethernet connection status:
     - [INIT]: Ethernet connection is initializing
     - [DHCP]: Initialization of the IP address by a DHCP server
     - [ETH]: Ethernet connection active
     - [ERR1]: Ethernet cable disconnected
     - [ERR2]: IP address conflict
   - Status of the CANopen bus dedicated to automation:
     - [CAN]: Communication active
     - [STOP]: Communication inactive
     - [ERR]: Communication error
   - Status of the CANopen bus dedicated to Motion Bus:
     - [SYNC]: Communication active
     - [STOP]: Communication inactive
     - [ERR]: Communication error

2. Menu line: Indicates the current menu or submenu

3. Menus, submenus, parameters, values, bar charts, etc., are displayed in drop-down window or icon format.
   The line or value selected using the navigation button is displayed in reverse video.

4. Section displaying the functions assigned to the F1 to F4 keys and aligned with them, for example:

   F1 : DelAx

   F2 : NewAx

   F3 : Ru/St

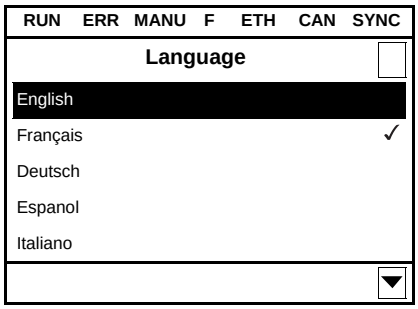
   F4 : Reset

The function keys are dynamic and contextual.

5. Scroll bar. Indicates that other parameters can be accessed using the navigation button.

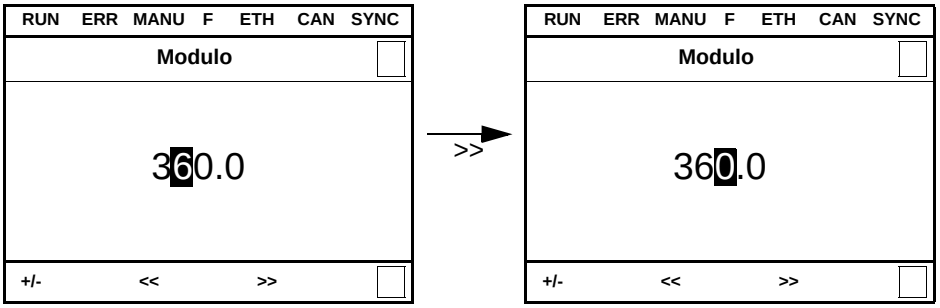
Example of configuration window

Multiple selection



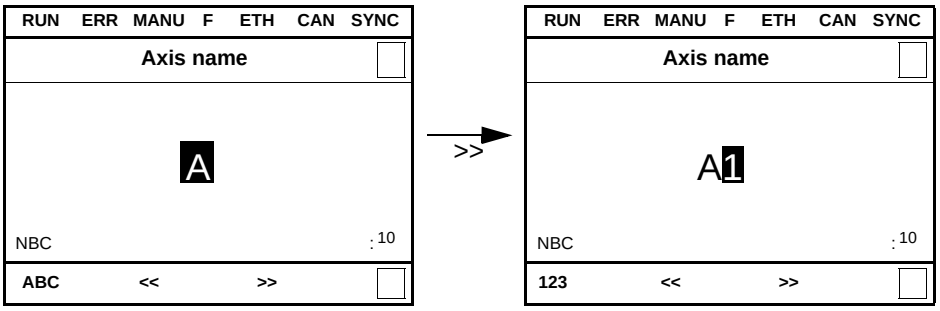
When only one selection is possible, the selection made is indicated by ✓.
E.g.: Only one language can be chosen.

Configuring a value:



The << and >> arrows (keys F2 and F3) are used to select the digit to be modified, and the navigation button is rotated to increase or decrease this number.
+/- (key F1) is used to change the sign of the parameter.

Configuring a character string:

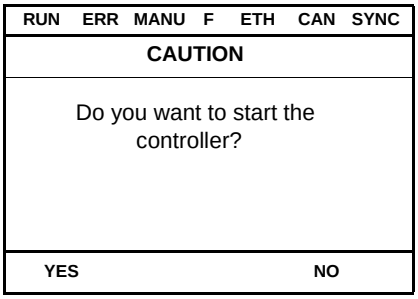


The << and >> arrows (keys F2 and F3) are used to add a character, and the navigation button is rotated to select the character.
[ABC] (key F1) is used to toggle the entry mode from lower case to upper case, digits or symbols.
[NBC] indicates the number of characters available.

Confirmation and warning messages

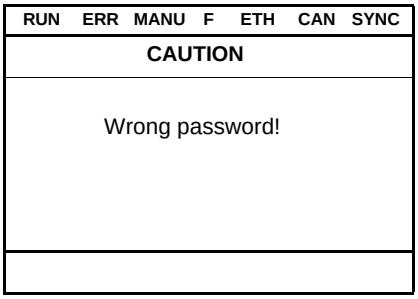
Some actions may require confirmation or are subject to warnings.

Example of a confirmation message:



Use the F1 or F4 keys to confirm or cancel the action.

Example of a warning:



Push ENT to continue.

Initial power-up

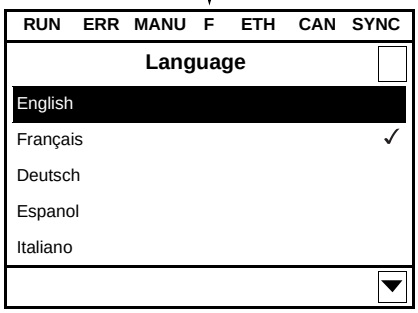
The first time the display terminal is powered up, the user will automatically be guided through the menus.

Initial screen

Displayed for 3 seconds following power-up

3 seconds

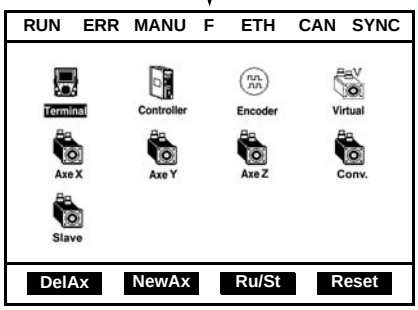
Language selection



Automatically switches to the [LANGUAGE] menu after 3 seconds.
Select the language and press ENT

Home

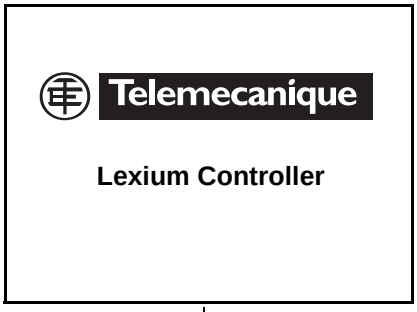
Return to main menu



Return to the main menu (see page 16).
If necessary, modify the parameters.

Subsequent power-ups

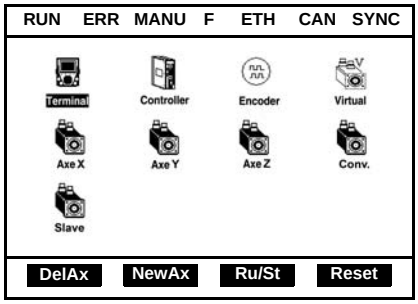
Initial screen



Displayed for 3 seconds following power-up

3 seconds

Main menu

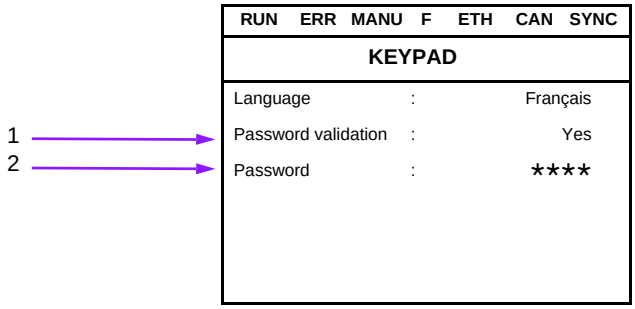


Automatically switches to the main menu after 3 seconds.

Password protection

The keypad has two operating levels:
- The first operating level offers full access to all the keypad's menus.

This operating mode can be protected by a password that can be configured in menu 3 [KEYPAD].
- The second level offers limited access to certain predetermined menus.



1. [Password validation]: Activates or deactivates password protection
2. [Password]: To enter the password

When the user toggles [Password validation] to [Yes], the value displayed in [Password] is configured as the password.
To return [Password validation] to [No], the password must be entered.

☞ **Note:** When [Password validation] = Yes, the value of [Password] is masked.

Password format:
- 4 digits

The default password is 0.

When password protection is activated, the following menus cannot be accessed:

1:2 ["AXIS": CONFIGURATION]
1:3:1 ["AXIS": TEACHING]
1:4 ["AXIS": DRIVE CONFIGURATION]
1:6 ["AXIS": CONFIG. TRANSFER]

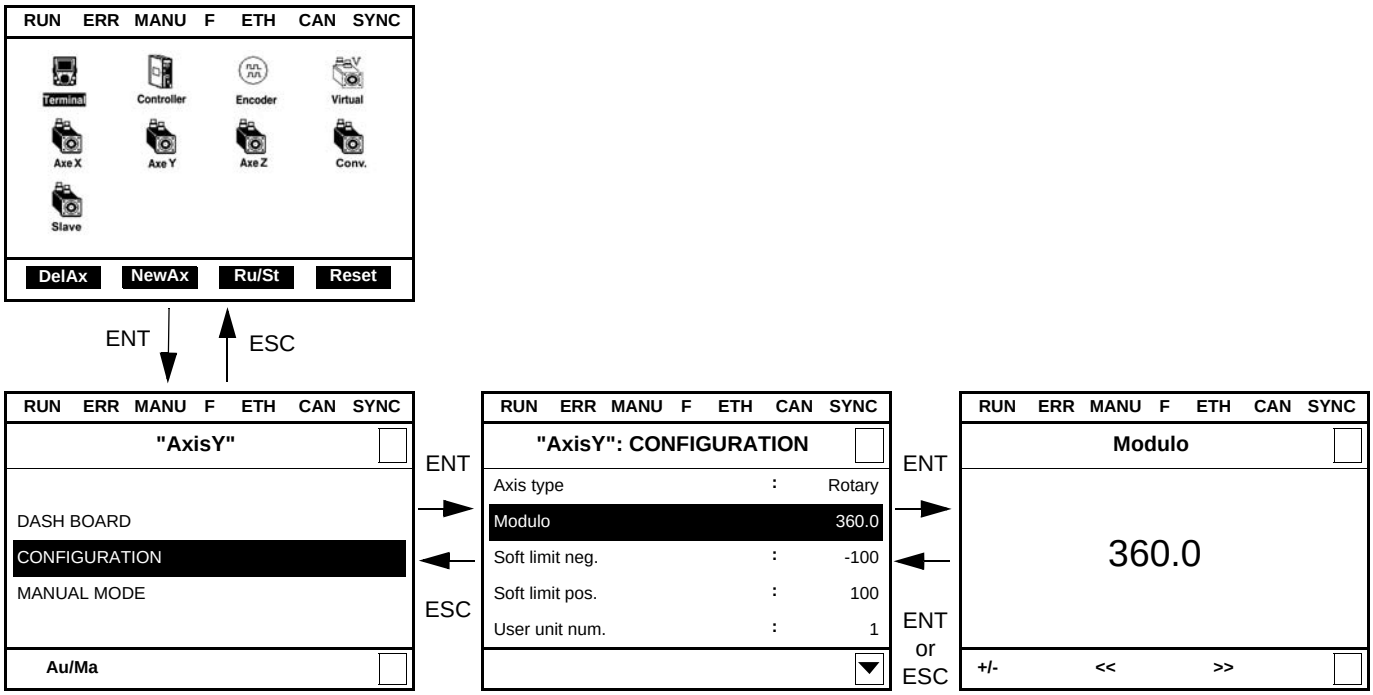
2:1 [MOTION TASKS]
2:3 [LC CONFIGURATION]
2:4 [LC IDENTIFICATION]

4:2 ["EXTERNAL ENCODER": CONFIGURATION]

5:2 ["VIRTUAL AXIS": CONFIGURATION]
5:3 ["VIRTUAL AXIS": MANUAL MODE]

Configuration: Example of accessing a parameter

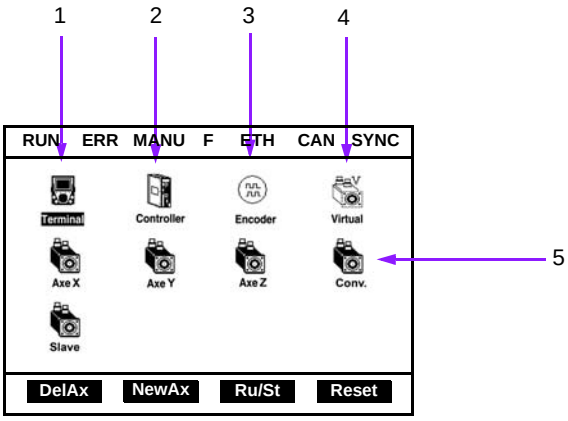
Access to setting the rollover



Note:

- To select a parameter:
  - Turn the navigation button to scroll vertically.
- To modify a parameter:
  - Use the << and >> keys (F2 and F3) to scroll horizontally and select the digit to be modified (the selected digit changes to white on a black background).
  - Turn the navigation button to modify the digit.
- To cancel the modification:
  - Press ESC.
- To save the modification:
  - Press the navigation button ENT.

Main Menu



The various items of equipment are represented by icons that can be used to access menus. Navigation is carried out by rotating the central button and the menus are accessed by pressing ENT:

1. [Keypad]: This menu provides access to the keypad configuration parameters (Menu 3 [KEYPAD]).
2. [Controller]: This menu provides access to the Lexium Controller parameters (Menu 2 [LEXIUM CONTROLLER]).
3. ["Encoder"]: This menu is used to configure an external encoder (1 maximum) (Menu 4 ["EXTERNAL ENCODER"]).
4. ["Virtual"]: This menu is used to configure a virtual axis (1 maximum) (Menu 5 ["VIRTUAL AXIS"]).
5. ["Axis"]: This menu is used to configure the real axes (8 maximum) (Menu 1 ["AXIS"]).

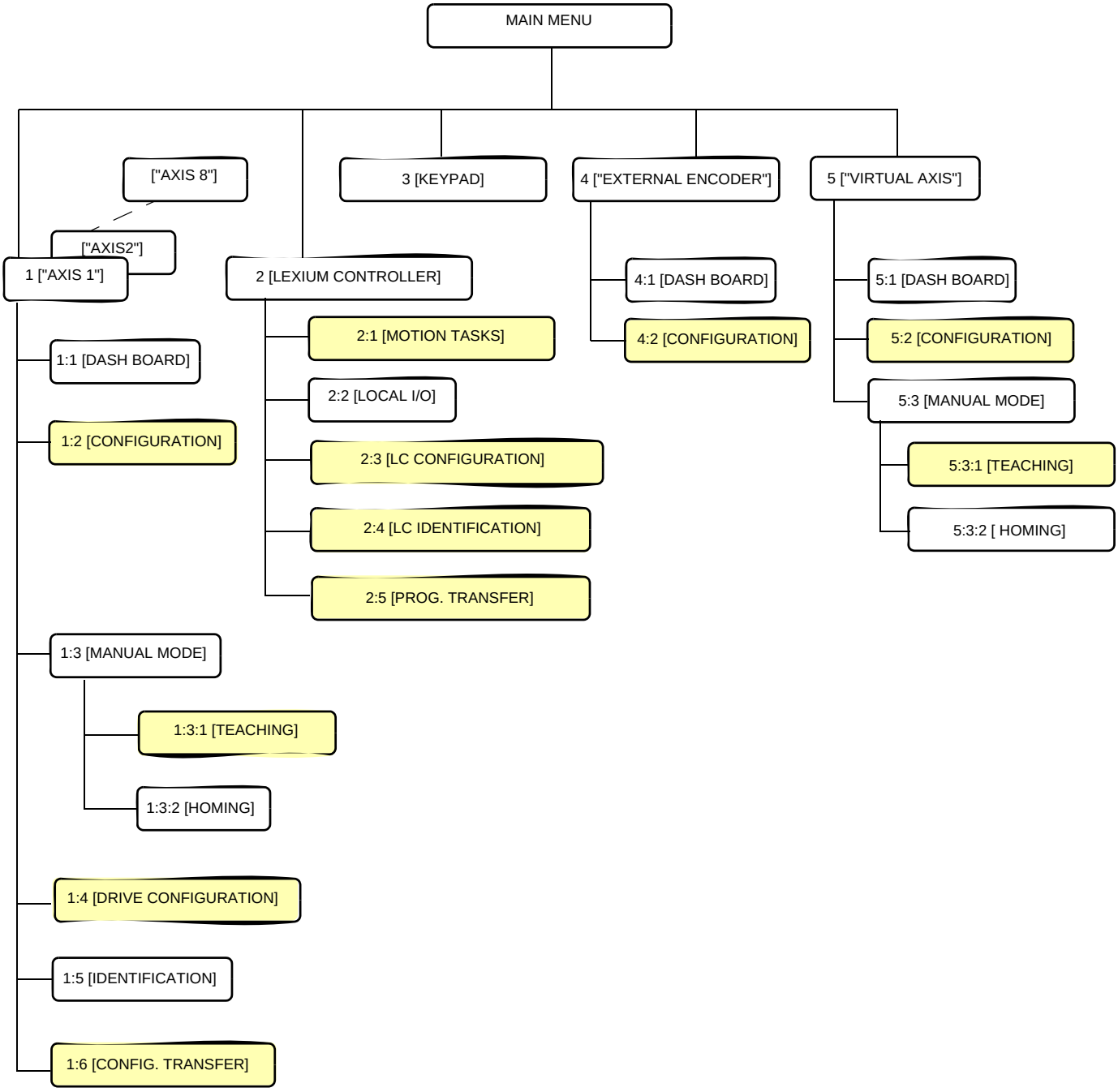
☞ **Note 1:** The name of an axis can be configured and can contain up to 10 characters. However, only the first four characters are displayed.

☞ **Note 2:** The icons of the real axes only appear if the axes have been created.

Description of the function keys

- [DelAx] F1 : Delete a real axis.
  ☞ **Note 1:** [DelAx] deletes the last real axis that was created, taking no account of which axis is selected.
  ☞ **Note 2:** It is not possible to delete the encoder (Encoder) or the virtual axis (Virtual).
- [NewAx] F2 : Create a new real axis.
  ☞ **Note:** [NewAx] is used to add an axis at the end of the list of real axes.
- [Ru/St] F3 : Start/stop execution of the program in the Lexium Controller.
- [Reset] F4 : Initialize the Lexium Controller

Menu mapping



When password protection is active, these menus are locked (see page 14).

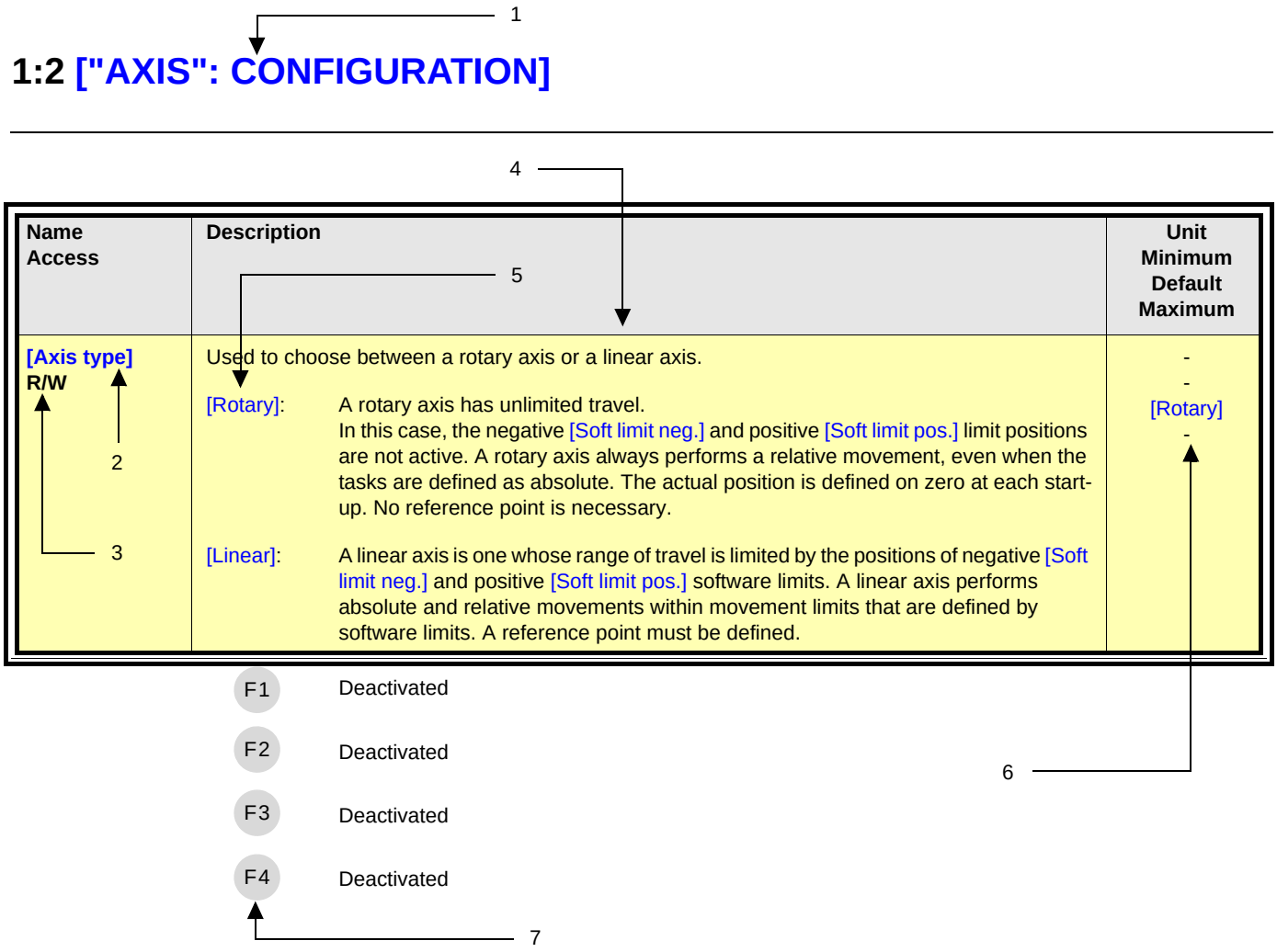
Menu map

Description of the menus:

1 ["AXIS"]	Used to access the menus relating to the axes
1:1 [DASH BOARD]	Used to display the axis parameters
1:2 [CONFIGURATION]	Used to configure the axes
1:3 [MANUAL MODE]	Used to control the axes manually
1:3:1 [TEACHING]	Used to create a position table via the teach function
1:3:2 [HOMING]	Used to perform a homing movement
1:4 [DRIVE CONFIGURATION]	Used to configure the servo drive associated with "AXIS"
1:5 [IDENTIFICATION]	Used to display the ID of the servo drive associated with "AXIS"
1:6 [CONFIG. TRANSFER]	Used to save or restore the complete configuration of a servo drive
2 [LEXIUM CONTROLLER]	Used to access the menus relating to the Lexium Controller
2:1 [MOTION TASKS]	Used to display or force a motion task
2:2 [LOCAL I/O]	Used to display and force the state of the local I/O
2:3 [LC CONFIGURATION]	Used to configure the Lexium Controller
2:4 [LC IDENTIFICATION]	Used to display data on the Lexium Controller
2:5 [PROG. TRANSFER]	Used to transfer a program from the Lexium Controller to the keypad or from the keypad to the Lexium Controller.
3 [KEYPAD]	Used to configure the keypad
4 ["EXTERNAL ENCODER"]	Used to access the menus relating to the external encoder
4:1 [DASH BOARD]	Used to display the parameters of the external encoder
4:2 [CONFIGURATION]	Used to configure the external encoder
5 ["VIRTUAL AXIS"]	Used to access the menus relating to the virtual axis
5:1 [DASH BOARD]	Used to display the parameters of the virtual axis
5:2 [CONFIGURATION]	Used to configure the virtual axis
5:3 [MANUAL MODE]	Used for manual control of the virtual axis
5:3:1 [TEACHING]	Used to create a position table via the teach function
5:3:2 [HOMING]	Used to perform a homing movement

Structure of the parameter tables

The menus and submenus of the keypad are described using tables listing the parameters it contains. The tables are structured in the following way:



1 Name of menu on keypad

Note: "AXIS" designates the name given to an axis by the user using the [Axis name] parameter in menu 1:2 ["AXIS" : CONFIGURATION].
This name appears in the main menu and in certain submenus. Only the first four characters are displayed.

2 Name of the parameter on the keypad

3 Access: Parameters that can be accessed in read and write modes are indicated by R/W.

Parameters that can only be accessed in read mode are indicated by R/-.

4 Description of the parameter and warning.

5 Description of the possible values of the parameter.

6 Unit

Minimum value

Default value

Maximum value

Note:
Some parameters are directly associated with servo drives. Their minimum, maximum and default values therefore depend on the type of servo drive used.
Please refer to the servo drive user's manual for more information.

7 Description of the function keys.

1 ["AXIS"]

Name Access	Description	Unit Minimum value Default value Maximum value
[Status] **R/-**	Indicates the status of the motion task according to the PLCopen status diagram. [standstill] [homing] [discrete] [continuous] [synchronized] [stopping] [power_off] [errorstop] A servo drive motion task is at all times in one of the states in the diagram on page 21. Execution of a block or the occurrence of an error can trigger a change of status.	- - - -
[DASH BOARD]	Link to menu 1:1	- - - -
[CONFIGURATION]	Link to menu 1:2	- - - -
[MANUAL MODE]	Link to menu 1:3	- - - -
[DRIVE CONFIGURATION]	Link to menu 1:4	- - - -
[IDENTIFICATION]	Link to menu 1:5	- - - -
[CONFIG. TRANSFER]	Link to menu 1:6	- - - -

F1 [Au/Ma]: Toggle from Manual mode to Automatic mode.

Note: The switch from one mode to the other must be carried out while stopped.

F2 [Power]: Enable/Disable the axis power.

Note: Activated only in manual mode

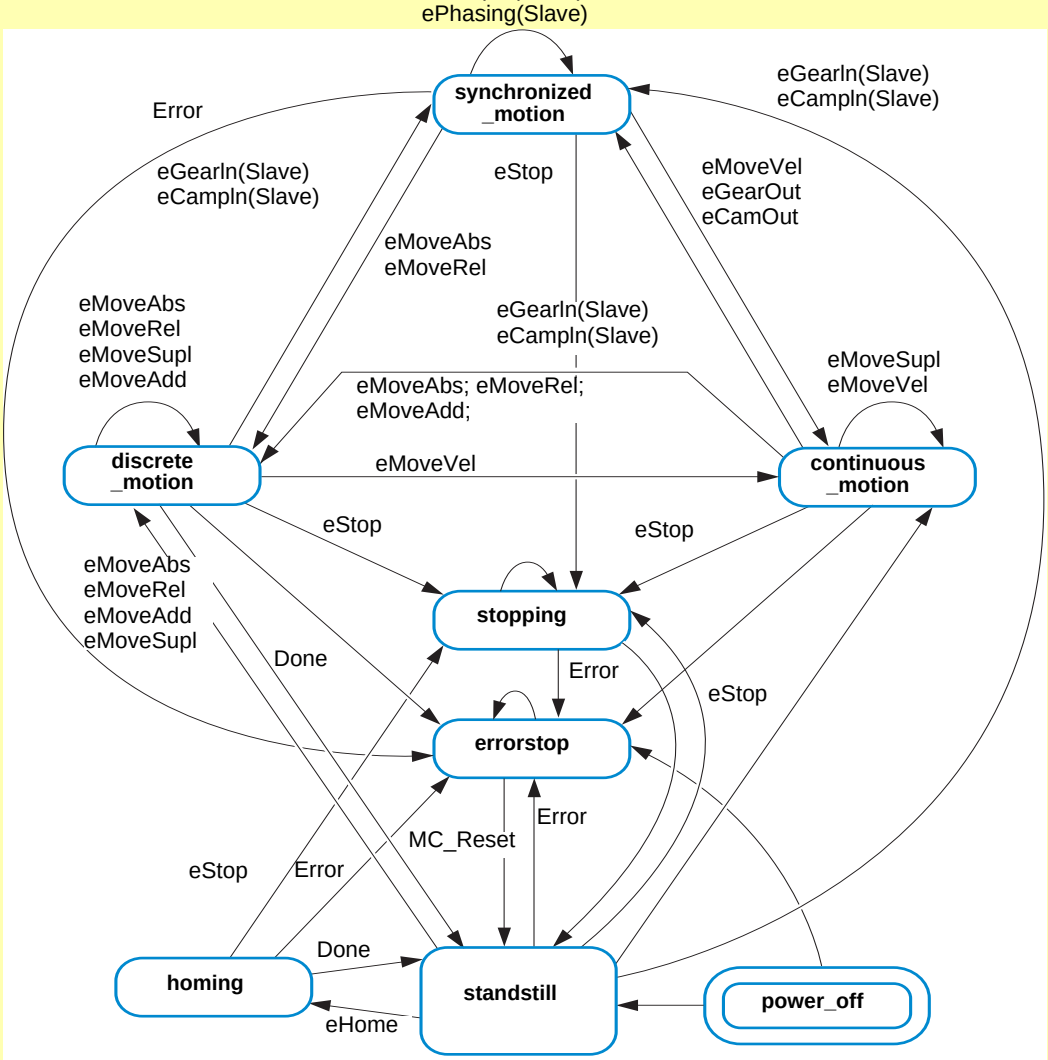
F3 Deactivated

F4 [AckEr]: Acknowledge errors.

1:1 ["AXIS": DASH BOARD]

Name Access	Description	Unit Minimum Default Maximum
[Motion task] **R/-**	Indicates the current motion task on ["AXIS"]. **Note:** Please refer to the "Easy Motion - Programming Manual" documentation for more detailed information.	- - - -

Name Access	Description	Unit Minimum Default Maximum
[Status] R/-	Indicates the status of the motion task according to the PLCopen status diagram. [standstill] [homing] [discrete] [continuous] [synchronized] [stopping] [power_off] [errorstop] A servo drive motion task is at all times in one of the states in the diagram below. Execution of a block or the occurrence of an error can trigger a change of status.	- - - -



1:1 ["AXIS": DASH BOARD]

Name Access	Description	Unit Minimum Default Maximum
[Velocity] **R/-**	Indicates the current velocity of the axis.	User (1) - - -
[Position] **R/-**	Indicates the current position of the axis.	User (1) - - -
[Error Msg.] **R/-**	If the Lexium Controller or the axes are in fault mode, an error message is displayed. Otherwise, displays [No Error]. ☞ **Note:** See page 53 for a table describing the faults.	- - - -
[MANUAL MODE]	Link to menu 1:3	- - - -
[DRIVE CONFIGURATION]	Link to menu 1:4	- - - -
[IDENTIFICATION]	Link to menu 1:5	- - - -
[CONFIG. TRANSFER]	Link to menu 1:6	- - - -

F1 [Au/Ma]: Toggle from Manual mode to Automatic mode.
☞ **Note:** The switch from one mode to the other must be carried out while stopped. The axis is stopped automatically if this is done while running.

F2 [Power]: Enable/Disable the axis power.
☞ **Note:** Activated only in manual mode

F3 [Stop]: Interrupt the motion tasks, stops the movement of the axis.

F4 [AckEr]: Acknowledge errors.

(1) The user units depend on the scaling performed with the parameters [User unit num.] and [User unit denom.] in menu 1:2 ["AXIS": CONFIGURATION].

1:2 ["AXIS": CONFIGURATION]

Note: When password protection is active, this menu is locked.

Name Access	Description	Unit Minimum Default Maximum
[Axis name] **R/W**	Used to name an axis. This field is free format, maximum 10 characters. The first four characters of the name entered appear in the main menu. **Note:** "AXIS" designates the name given to an axis.	- - - -
[Axis type] **R/W**	Used to choose between a rotary axis or a linear axis. [Rotary]: A rotary axis has unlimited travel. The negative [Soft limit neg.] and positive [Soft limit pos.] limit positions are not active in this case. A rotary axis always performs a relative movement, even when the tasks are defined as absolute. The actual position is defined on zero at each start-up. No reference point is necessary. [Linear]: A linear axis is one whose range of travel is limited by the positions of the negative [Soft limit neg.] and positive [Soft limit pos.] software limits. A linear axis performs absolute and relative movements within movement limits that are defined by software limits. A reference point must be defined.	- - [Rotary] -
[Modulo] **R/W**	Used to set the rollover parameters of an axis. When a value other than zero is entered, the axis becomes a rollover axis. A rollover axis is one that has a limited range of movement. The [Modulo] parameter is used to define the movement interval. This type of axis requires a referencing movement. **Note:** This parameter is only active when [Axis type] = [rotary].	User (1) - 360 -
[Soft limit enable] **R/W**	Used to activate or deactivate the software limit that defines a minimum or maximum limit position. When [Axis type] = [linear] and [Soft limit enable] = [true] the range of travel of the axis is limited by the negative [Soft limit neg.] and positive [Soft limit pos.] software limit positions.	- - [False] -
[Soft limit neg.] **R/W**	Used to define a minimum software limit position for a linear axis. When [Axis type] = [linear] and [Soft limit enable] = [true] the range of travel of the axis is limited by the negative [Soft limit neg.] and positive [Soft limit pos.] software limit positions. **Note:** This parameter is only active when [Axis type] = [linear] and [Soft limit enable] = [true].	User (1) - 0 -

F1 Deactivated

F2 [Write] : Write parameters.

F3 Deactivated

F4 Deactivated

(1) The user units depend on the scaling performed with the parameters [User unit num.] and [User unit denom.] in menu 1:2 ["AXIS": CONFIGURATION].

1:2 ["AXIS": CONFIGURATION]

Note: When password protection is active, this menu is locked.

Name Access	Description	Unit Minimum Default Maximum
[Soft limit pos.] **R/W**	Used to define a maximum limit position for a linear axis. When [Axis type] = [linear] and [Soft limit enable] = [true] the range of travel of the axis is limited by the negative [Soft limit neg.] and positive [Soft limit pos.] software limit positions. **Note:** This parameter is only active when [Axis type] = [linear].	User (1) - 0 -
[User unit num.] **R/W**	This parameter is used to configure the numerator of the scaling factor for the position, velocity and acceleration values. An explanation of how this scaling works is given on page 55.	- -32768 45 32768
[User unit denom.] **R/W**	This parameter is used to configure the denominator of the scaling factor for the position, velocity and acceleration values. An explanation of how this scaling works is given on page 55.	- 1 16384 2147483647
[Ramp type] **R/W**	[Trapez.]: The drive is subject to constant linear acceleration/deceleration until the target velocity is reached. [Sinus²]: To reduce jolts, the drive is accelerated/decelerated during the acceleration time along a continuous acceleration ramp. The resulting velocity characteristic corresponds to a sinusoidal² curve.	- - [Trapez.] -

F1	Deactivated
F2	[Write] : Write parameters.
F3	Deactivated
F4	Deactivated

(1) The user units depend on the scaling performed with the parameters [User unit num.] and [User unit denom.] in menu 1:2 ["AXIS": CONFIGURATION].

1:3 ["AXIS": MANUAL MODE]

Note: This menu can only be accessed when the Lexium Controller is in Manual mode and Status] = [standstill].

Name Access	Description	Unit Minimum Default Maximum
[Velocity] **R/-**	Indicates the current velocity of the axis.	User (1) - - -
[Position] **R/-**	Indicates the current position of the axis.	User (1) - - -
[Target velocity] **R/W**	Entry of the velocity reference.	User (1) - 100 -
[Target position] **R/W**	Entry of the position reference.	User (1) - 100 -
[Direction] **R/W**	Entry of the direction of movement. [-1]: Negative [0]: Current [1]: Positive [2]: Fastest [3]: Shortest	- -1 1 3
[Acceleration] **R/W**	Entry of the acceleration reference.	User (1) - 1000 -
[Deceleration] **R/W**	Entry of the deceleration reference.	User (1) - 1000 -

Note: In this mode, the JOG buttons are active.

(1) The user units depend on the scaling performed with the parameters [User unit num.] and [User unit denom.] in menu 1:2 ["AXIS" CONFIGURATION].

1:3 ["AXIS": MANUAL MODE]

Name Access	Description	Unit Minimum Default Maximum
[TEACHING] Link - -	Link to menu 1:3:1	- - - -
[HOMING] Link - -	Link to menu 1:3:2	- - - -

F1 [Stop]: Stop movement of the axis.

F2 [Mrel]: Execute the eMoveRel function which starts a relative positioning movement.
The axis moves the relative distance entered in the [Target position] parameter, using the values of the [Direction], [Target velocity], [Acceleration] and [Deceleration] parameters.

F3 [Mabs]: Execute the eMoveAbs function which starts an absolute positioning movement to the position entered in the [Target position] parameter.
The axis moves using the values of the [Direction], [Target velocity], [Acceleration] and [Deceleration] parameters.

F4 [Mvel]: Execute the eMoveVel function which starts an endless movement at the velocity entered in the [Target velocity] parameter.
The axis moves using the values of the [Direction], [Acceleration] and [Deceleration] parameters.

☞ **Note:** In this mode, the JOG buttons are active.

1:3:1 ["AXIS" TEACHING]

Note: When password protection is active, this menu is locked.

Name Access	Description	Unit Minimum Default Maximum
[Position] **R/-**	Indicates the current position of the axis.	User (1) - - -
[Index] **R/W**	Used for navigating in the teach function table by selecting an index. When the [Teach] key is pressed, [Position] is saved to the teach function table at the index entered.	- - - -
[Teached position] **R/-**	When navigating in the teach function table, indicates the position saved to [Index].	- - - -
[Comment] **R/W**	Used to enter a comment associated with an index in the teach function table. This field is free format (maximum 10 characters).	- - [Axis name] -

F1	[Teach]: Saves the current position to the teach function table at the index entered in the [Index] parameter.
F2	Deactivated
F3	Deactivated
F4	[ResTa]: Used to reset the entire teach function table and the indexes.

Note: In this mode, the JOG buttons are active and are used to move "AXIS" (indicated in the name of the menu).

(1) The user units depend on the scaling performed with the parameters [User unit num.] and [User unit denom.] in menu 1:2 ["AXIS" CONFIGURATION].

1:3:2 ["AXIS": HOMING]

Name Access	Description	Unit Minimum Default Maximum
[Target position] **R/W**	Entry of the position reference for the [SetPos] function.	User (1) - 0 -

F1	[Home] : Starts a homing movement. The type of homing performed depends on [Homing type] in menu 1:4 ["AXIS": DRIVE CONFIGURATION]. Whether or not [Target position] is used depends on the type of homing.
F2	Deactivated
F3	Deactivated
F4	[SPos]: Changes the current position of the axis to the position value entered in the [Target position] parameter.

(1) The user units depend on the scaling performed with the parameters [User unit num.] and [User unit denom.] in menu 1:2 ["AXIS" CONFIGURATION].

1:4 ["AXIS": DRIVE CONFIGURATION]

☞ **Note:** When password protection is active, this menu is locked.

Name Access	Description	Unit Minimum Default Maximum		
		Lexium 05		
[Homing type] **R/W**		- 1 18 35		
	Definition of the type of homing to be performed. The default value depends on the servo drive used: Lexium 05 range: [Positive limit]. ☞ **Note:** Please refer to the servo drive documentation for more detailed information.			
[KPn] **R/W**		A/(1/min) 1 - 12700		
	Adjustment of the servo drive velocity loop proportional gain. Lexium 5 parameter: KPn ☞ **Note:** Please refer to the servo drive documentation for more detailed information.			
[TNn] **R/W**		ms 1 - 32767		
	Adjustment of the servo drive velocity loop integral time. Lexium 5 parameter: TNn ☞ **Note:** Please refer to the servo drive documentation for more detailed information.			
[KPp] **R/W**		1/s 20 - 4950		
	Adjustment of the servo drive position loop proportional gain. Lexium 5 parameter: KPp ☞ **Note:** Please refer to the servo drive documentation for more detailed information.			
[VelFeedFor] **R/W**		% 0 - 1100		
	Determines the position controller predictive control factor. Predictive control is used to reduce the task of the servo drive position controller. Better adjustment of this factor also makes for easier use of the dynamic range of the servo drive position controller. The most favorable setting (in general 1.0) depends on factors external to the drive such as friction, dynamic resistance and rigidity. Lexium 5 parameter: CTRL_KFPp ☞ **Note:** Please refer to the servo drive documentation for more detailed information.			

1:4 ["AXIS": DRIVE CONFIGURATION]

Note: When password protection is active, this menu is locked.

Name Access	Description	Unit Minimum Default Maximum		
		Lexium 05		
[Homing velocity] **R/W**		min^{-1} 1 60 13200		
	Defines the homing velocity. Lexium 5 parameter: HMn. **Note:** Please refer to the servo drive documentation for more detailed information.			

F1 [Read]: Read the parameter values on the servo drives.

F2 [Write] : Write parameters in the volatile memory of the servo drives.

F3 Deactivated

F4 [Save]: Permanently save all the parameters in the menu to the servo drive non-volatile memory.

Note: Parameters not saved to the non-volatile memory will be lost when the servo drive is switched off.

1:5 ["AXIS": IDENTIFICATION]

Name Access	Description	Unit Minimum Default Maximum
[Drive type] R/-	Type of servo drive associated with "AXIS".	- - - -
[Drive version] R/-	Version of the servo drive associated with "AXIS".	- - - -

F1	Deactivated
F2	Deactivated
F3	Deactivated
F4	Deactivated

1:6 ["AXIS": CONFIG. TRANSFER]

Note: When password protection is active, this menu is locked.

Name Type R/W Locking	Description	Unit Minimum Default Maximum

F1	[Uload]: Used to read each of the configuration parameters of the drives connected to the Lexium Controller on the Can Motion bus. These parameters are then saved to the Controller's non-volatile memory. This function is used to save a given configuration.
F2	Deactivated
F3	Deactivated
F4	[Dload]: Used to restore a configuration saved to the servo drives connected to the Lexium Controller on the Can Motion bus. This function is used for the immediate transfer of the configuration parameters from the servo drives, necessary during a maintenance operation or duplication of a machine.

Note: With [Dload], parameters are stored on the volatile memory of the servo drive. To save parameters in non-volatile memory, use [Save] command of menu 1:4 [CONFIGURATION DRIVE].

2 [LEXIUM CONTROLLER]

Name Access	Description	Unit Minimum Default Maximum
[MOTION TASKS]	Link to menu 2:1	- - - -
[LOCAL I/O]	Link to menu 2:2	- - - -
[LC CONFIGURATION]	Link to menu 2:3	- - - -
[LC IDENTIFICATION]	Link to menu 2:4	- - - -

F1 [Au/Ma]: Toggle from Manual mode to Automatic mode.

☞ **Note:** The switch from one mode to the other must be carried out while stopped. The axis is stopped automatically if this is done while running.

F2 Deactivated

F3 [Ru/St]: Start/stop execution of a program in the Lexium Controller.

F4 [AckEr]: Acknowledge errors.

2:1 [MOTION TASKS]

Note: When password protection is active, this menu is locked.

Name Access	Description	Unit Minimum Default Maximum
[MT step] **R/W**	Used to select a motion task that will be forced when the [Start] key is pressed.	- - - -
[Current MT step] **R/-**	Indicates the current step in the motion task table.	- - - -
[Axis name] **R/-**	Indicates the name of the axis concerned by the current motion task.	- - - -
[Error Msg.] **R/-**	If the **Lexium Controller** is in fault mode, an error message is displayed. Otherwise displays [No Error]. The Lexium Controller faults correspond to those in the appendix. See page 53 for a table describing the faults.	- - - -

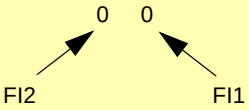
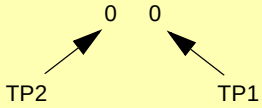
F1 [Step]: Step by step execution of the motion table.

F2 [Stop]: Suspend execution of the motion table.
Note: [Stop] suspends execution of the motion task table but does not suspend the tasks that are in progress.

F3 [AckEr]: Acknowledge errors.

F4 [Start]: Starts execution of the motion table at the step entered in [MT step].

2:2 [LOCAL I/O]

Name Access	Description	Unit Minimum Default Maximum
[Inputs] **R/W**	Used to select an input.	- - - -
[Outputs] **R/W**	Used to select an output.	- - - -
[Event interrupts] **R/-**	Used to display the state of the 2 event-triggered inputs.  **Note:** Please refer to the Motion Pro/CoDeSys online help for more detailed information on event-triggered inputs.	- - - -
[Touch Probes] **R/-**	Used to display the state of the 2 Touch Probe inputs.  **Note:** Please refer to the Motion Pro/CoDeSys online help for more detailed information on Touch Probe inputs.	- - - -

F1 **[Unfor]**: Unforce the I/O.

F2 Deactivated

F3 **[Fto1]**: Force the selected input or output to 1.

F4 **[Fto0]**: Force the selected input or output to 0.

Note: When inputs or outputs are forced, they have the following appearance:

F1 Output forced to 1

F0 Output forced to 0

2:3 [LC CONFIGURATION]

Note: When password protection is active, this menu is locked.

Name Access	Description	Unit Minimum Default Maximum
[IP address] **R/W**	Configuration of the IP address. **Note:** The new IP address is only enabled after the Lexium Controller has been restarted. **Note:** Please refer to the Ethernet Manual for more detailed information.	- - - -
[IP mask] **R/W**	Configuration of the IP mask. **Note:** Please refer to the Ethernet Manual for more detailed information.	- - - -
[Modbus address] **R/W**	Configuration of the Modbus address. **Note:** Please refer to the Modbus Manual for more detailed information.	- 1 - 247
[Modbus baudrate] **R/W**	Configuration of the Modbus communication speed. **Note:** Please refer to the Modbus Manual for more detailed information.	- - 38400 -
[Clock setting] **R/W**	Sets the date of the Lexium Controller.	- - - -

F1	Deactivated
F2	Deactivated
F3	Deactivated
F4	Deactivated

2:4 [LC IDENTIFICATION]

Note: When password protection is active, this menu is locked.

Name Access	Description	Unit Minimum Default Maximum
[Fieldbus address] **R/-**	Reads the fieldbus address.	- - - -
[Firmware] **R/-**	Firmware version associated with the Lexium Controller.	- - - -
[Program name] **R/-**	Name of the user program.	- - - -
[Program version] **R/-**	Version of the user program.	- - - -

F1	Deactivated
F2	Deactivated
F3	Deactivated
F4	Deactivated

2:5 [PROG. TRANSFER]

Note: When password protection is active, this menu is locked.

Name Access	Description	Unit Minimum Default Maximum
[LEX➔KEY]	Transfer of the program from the Lexium Controller to the keypad. Baudrate : around 100 ko / minute. **Note:** Transfer is done from the non volatile memory of the Lexium Controller. A boot project is compulsory.	- - - -
[KEY➔LEX]	Transfer of the program from the keypad to the Lexium Controller. Baudrate : around 100 ko / minute.	- - - -

F1 Deactivated

F2 Deactivated

F3 Deactivated

F4 Deactivated

Name Access	Description	Unit Minimum Default Maximum
[Language] **R/W**	Sets the language. [English] [Français] [Deutsh] [Italiano] [Espanol] [Chinese]	- - - - - - - -
[Password validation] **R/W**	Used to activate/deactivate password protection. See page 14 for instructions on how to configure password protection.	- - - - - - - -
[Password] **R/W**	Used for entering the password. See page 14 for instructions on how to configure password protection.	- - - - - - - -

F1	Deactivated
F2	Deactivated
F3	Deactivated
F4	Deactivated

4 ["EXTERNAL ENCODER"]

Name Access	Description	Unit Minimum Default Maximum
[DASH BOARD]	Link to menu 4:1	- - - -
[CONFIGURATION]	Link to menu 4:1	- - - -

F1 [Au/Ma]: Toggle from Manual mode to Automatic mode.

☞ **Note:** The switch from one mode to the other must be carried out while stopped. The axis is stopped automatically if this is done while running.

F2 Deactivated

F3 Deactivated

F4 [AckEr]: Acknowledge errors.

4 :1 ["EXTERNAL ENCODER": DASH BOARD]

Name Access	Description	Unit Minimum Default Maximum
[Velocity] **R/-**	Indicates the current velocity of the axis.	User (1) - - -
[Position] **R/-**	Indicates the current position of the axis.	User (1) - - -
[Target position] **R/W**	Entry of the position reference for the [SetPos] function.	User (1) - 0 -
[Error Msg.] **R/-**	If the Lexium Controller is in fault mode, an error message is displayed Otherwise displays [No Error]. See page 53 for a table describing the faults.	- - - -

F1	[SPos]: Define the current position of the axis at the position value entered in the [Target position] parameter.
F2	Deactivated
F3	Deactivated
F4	[AckEr]: Acknowledge errors.

(1) The user units depend on the scaling performed with the parameters [User unit num.] and [User unit denom.] in menu 4:2 ["EXTERNAL ENCODER": CONFIGURATION].

4:2 ["EXTERNAL ENCODER": CONFIGURATION]

Note: When password protection is active, this menu is locked**.**

Name Access	Description	Unit Minimum Default Maximum
[Axis name] **R/W**	Used to name the external encoder. This field is free format, maximum 10 characters. The first four characters of the name entered appear in the main menu. **Note:** "EXTERNAL ENCODER" designates the name given to the external encoder.	- - MasterEnc -
[Axis type] **R/W**	Used to choose between a rotary axis or a linear axis. [Rotary]: A rotary axis has unlimited travel. In this case, the negative [Soft limit neg.] and positive [Soft limit pos.] limit positions are not active. A rotary axis always performs a relative movement, even when the tasks are defined as absolute. The actual position is defined on zero at each start-up. No reference point is necessary. [Linear]: A linear axis is one whose range of travel is limited by the positions of negative [Soft limit neg.] and positive [Soft limit pos.] software limits. A linear axis performs absolute and relative movements within movement limits that are defined by software limits. A reference point must be defined.	- - [Rotary] -
[Modulo] **R/W**	Used to set the rollover parameters of an axis. When a value other than zero is entered, the axis becomes a rollover axis. A rollover axis is one that has a limited range of movement. The [Modulo] parameter is used to define the movement interval. This type of axis requires a referencing movement. **Note:** This parameter is only active when [Axis type] = [rotary].	User (1) - 360 -
[Soft limit enable] **R/W**	Used to activate or deactivate the software limit that defines a minimum or maximum limit position. When [Axis type] = [linear] and [Soft limit enable] = [true] the range of travel of the axis is limited by the negative [Soft limit neg.] and positive [Soft limit pos.] software limit positions.	- - [False] -
[Soft limit neg.] **R/W**	Used to define a minimum software limit position for a linear axis. When [Axis type] = [linear] and [Soft limit enable] = [true] the range of travel of the axis is limited by the negative [Soft limit neg.] and positive [Soft limit pos.] software limit positions. **Note:** This parameter is only active when [Axis type] = [linear] and [Soft limit enable] = [true].	User (1) - 0 -

(1) The user units depend on the scaling performed with the parameters [User unit num.] and [User unit denom.] in menu 4:2 ["EXTERNAL ENCODER": CONFIGURATION].

4:2 ["EXTERNAL ENCODER": CONFIGURATION]

☞ **Note:** When password protection is active, this menu is locked**.**

Name Access	Description	Unit Minimum Default Maximum
[Soft limit pos.] **R/W**	Used to define a maximum limit position for a linear axis. When [Axis type] = [linear] and [Soft limit enable] = [true] the range of travel of the axis is limited by the negative [Soft limit neg.] and positive [Soft limit pos.] software limit positions. ☞ **Note:** This parameter is only active when [Axis type] = [linear].	User (1) - 0 -
[User unit num.] **R/W**	This parameter is used to configure the numerator of the scaling factor for the position, velocity and acceleration values. An explanation of how this scaling works is given on page (55).	- -32768 - 32768
[User unit denom.] **R/W**	This parameter is used to configure the denominator of the scaling factor for the position, velocity and acceleration values. An explanation of how this scaling works is given on page (55).	- 1 - 2147483647

F1	Deactivated
F2	Deactivated
F3	Deactivated
F4	Deactivated

(1) The user units depend on the scaling performed with the parameters [User unit num.] and [User unit denom.] in menu 4:2 ["EXTERNAL ENCODER": CONFIGURATION].

5 ["VIRTUAL AXIS"]

Name Access	Description	Unit Minimum Default Maximum
[Status] **R/-**	Indicates the status of the motion task according to the PLCopen status diagram. [standstill] [homing] [discrete] [continuous] [synchronized] [stopping] [power_off] [errorstop] A servo drive motion task is at all times in one of the states in the diagram on page 21. Execution of a block or the occurrence of an error can trigger a change of status.	- - - -
[DASH BOARD]	Link to menu 5:1	- - - -
[CONFIGURATION]	Link to menu 5:2	- - - -
[MANUAL MODE]	Link to menu 5:3	- - - -

F1 [Au/Ma]: Toggle from Manual mode to Automatic mode.

☞ **Note:** The switch from one mode to the other must be carried out while stopped. The axis is stopped automatically if this is done while running.

F2 [Power]: Enable/Disable the axis power.

☞ **Note:** Activated only in manual mode.

F3 Deactivated

F4 [AckEr]: Acknowledge errors.

5 :1 ["VIRTUAL AXIS": DASH BOARD]

Nom Access	Description	Unit Minimum Default Maximum
[Motion task] **R/-**	Indicates the current motion task on the virtual axis. **Note:** Please refer to the "Easy Motion - Programming Manual" documentation for more detailed information.	- - -
[Status] **R/-**	Indicates the status of the motion task according to the PLCopen status diagram. [standstill] [homing] [discrete] [continuous] [synchronized] [stopping] [power_off] [errorstop] A servo drive motion task is at all times in one of the states in the diagram on page 21. Execution of a block or the occurrence of an error can trigger a change of status.	- - - - - - - - - -
[Velocity] **R/-**	Indicates the current velocity of the axis.	User (1) - - -
[Position] **R/-**	Indicates the current position of the axis.	User (1) - - -
[Error Msg.] **R/-**	If the servo drive is in fault mode, an error message is displayed. Otherwise displays [No Error]. **Note:** See page 53 for a table describing the faults.	-- - - -
[MANUAL MODE]	Link to menu 5:3	- - - -

F1 [Au/Ma]: Toggle from Manual mode to Automatic mode.
Note: The switch from one mode to the other must be carried out while stopped. The axis is stopped automatically if this is done while running.

F2 [Power]: Enable/Disable the axis power.
Note: Activated only in manual mode.

F3 [Stop]: Interrupt the motion tasks, stops the movement of the axis.

F4 [AckEr]: Acknowledge errors.

(1) The user units depend on the scaling performed with the parameters [User unit num.] and [User unit denom.] in menu 5:2 ["VIRTUAL AXIS": CONFIGURATION].

5:2 ["VIRTUAL AXIS": CONFIGURATION]

Note: When password protection is active, this menu is locked.

Name Access	Description	Unit Minimum Default Maximum
[Axis name] **R/W**	Used to name the virtual axis. This field is free format, maximum 10 characters. The first four characters of the name entered appear in the main menu. **Note:** "VIRTUAL AXIS" designates the name given to an axis.	- - - -
[Axis type] **R/W**	Used to choose between a rotary axis or a linear axis. [Rotary]: A rotary axis has unlimited travel. In this case, the negative [Soft limit neg.] and positive [Soft limit pos.] limit positions are not active. A rotary axis always performs a relative movement, even when the tasks are defined as absolute. The actual position is defined on zero at each start-up. No reference point is necessary. [Linear]: A linear axis is one whose range of travel is limited by the positions of negative [Soft limit neg.] and positive [Soft limit pos.] software limits. A linear axis performs absolute and relative movements within movement limits that are defined by software limits. A reference point must be defined.	- - [Rotary] -
[Modulo] **R/W**	Used to set the rollover parameters of an axis. When a value other than zero is entered, the axis becomes a rollover axis. A rollover axis is one that has a limited range of movement. The [Modulo] parameter is used to define the movement interval. This type of axis requires a referencing movement. **Note:** This parameter is only active when [Axis type] = [rotary].	User (1) - 360 -
[Soft limit enable] **R/W**	Used to activate or deactivate the software limit that defines a minimum or maximum limit position. When [Axis type] = [linear] and [Soft limit enable] = [true] the range of travel of the axis is limited by the negative [Soft limit neg.] and positive [Soft limit pos.] software limit positions.	- - [False] -
[Soft limit neg.] **R/W**	Used to define a minimum software limit position for a linear axis. When [Axis type] = [linear] and [Soft limit enable] = [true] the range of travel of the axis is limited by the negative [Soft limit neg.] and positive [Soft limit pos.] software limit positions. **Note:** This parameter is only active when [Axis type] = [linear] and [Soft limit enable] = [true].	User (1) - 0 -
[Soft limit pos.] **R/W**	Used to define a maximum limit position for a linear axis. When [Axis type] = [linear] and [Soft limit enable] = [true] the range of travel of the axis is limited by the negative [Soft limit neg.] and positive [Soft limit pos.] software limit positions. **Note:** This parameter is only active when [Axis type] = [linear].	User (1) - 0 -
[User unit num.] **R/W**	This parameter is used to configure the numerator of the scaling factor for the position, velocity and acceleration values. An explanation of how this scaling works is given on page (55).	- -32768 45 32768

(1) The user units depend on the scaling performed with the parameters [User unit num.] and [User unit denom.] in menu 5:2 ["VIRTUAL AXIS": CONFIGURATION].

5:2 ["VIRTUAL AXIS": CONFIGURATION]

☞ **Note:** When password protection is active, this menu is locked.

Name Access	Description		Unit Minimum Default Maximum
[User unit denom.] **R/W**	This parameter is used to configure the denominator of the scaling factor for the position, velocity and acceleration values. An explanation of how this scaling works is given on page (55).		- 1 16384 2147483647
[Ramp type] **R/W**	[Trapez.]: [Sinus²]:	The axis is subject to constant linear acceleration/deceleration until the target velocity is reached. The axis is accelerated/decelerated during the acceleration time along a continuous acceleration ramp. The resulting velocity characteristic corresponds to a sinusoidal² curve.	- - [Trapez.] -

F1	Deactivated
F2	[Write] : Write parameters.
F3	Deactivated
F4	Deactivated

5:3 ["VIRTUAL AXIS": MANUAL MODE]

Note: This menu can only be accessed when the Lexium Controller is in Manual mode and [Status] = [standstill].

Name Access	Description	Unit Minimum Default Maximum
[Velocity] **R/-**	Indicates the current velocity of the axis.	User (1) - - -
[Position] **R/-**	Indicates the current position of the axis.	User (1) - - -
[Target velocity] **R/W**	Entry of the velocity reference.	User (1) - 100 -
[Target position] **R/W**	Entry of the position reference.	User (1) - 100 -
[Direction] **R/W**	Entry of the direction of movement. [-1]: Negative [0]: Current [1]: Positive [2]: Fastest [3]: Shortest	- -1 1 3
[Acceleration] **R/W**	Entry of the acceleration reference.	User (1) - 1000 -
[Deceleration] **R/W**	Entry of the deceleration reference.	User (1) - 1000 -

Note: In this mode, the JOG buttons are active.

(1) The user units depend on the scaling performed with the parameters [User unit num.] and [User unit denom.] in menu 5:2 ["VIRTUAL AXIS" CONFIGURATION].

5:3 ["VIRTUAL AXIS": MANUAL MODE]

Note: This menu can only be accessed when the Lexium Controller is in Manuel mode and [Power] = [On].

Name Access	Description	Unit Minimum Default Maximum
[HOMING] **Link** **-** **-**	Link to menu 5:3:2	- - - -

F1 [Stop]: Stop movement of the axis.

F2 [Mrel]: Execute the eMoveRel function which starts a relative positioning movement.
The axis moves the relative distance entered in the [Target position] parameter, using the values of the [Direction], [Target velocity], [Acceleration] and [Deceleration] parameters.

F3 [Mabs]: Execute the eMoveAbs function which starts an absolute positioning movement to the position entered in the [Target position] parameter.
The axis moves using the values of the [Direction], [Target velocity], [Acceleration] and [Deceleration] parameters.

F4 [Mvel]: Execute the eMoveVel function which starts an endless movement at the velocity entered in the [Target velocity] parameter.
The axis moves using the values of the [Direction], [Acceleration] and [Deceleration] parameters.

Note: In this mode, the JOG buttons are active.

5:3:1 ["VIRTUAL AXIS": TEACHING]

Note: When password protection is active, this menu is locked.

Name Access	Description	Unit Minimum Default Maximum
[Position] **R/-**	Indicates the current position of the axis.	User (1) - - -
[Index] **R/W**	Used for navigating in the teach function table by selecting an index. When the [Teach] key is pressed, [Position] is saved to the teach function table at the index entered.	- - - -
[Teached position] **R/-**	When navigating in the teach function table, indicates the position saved to [Index].	- - - -
[Comment] **R/W**	Used to enter a comment associated with an index in the teach function table. This field is free format (maximum 10 characters).	- - [Axis name] -

F1	[Teach]: Saves the current position to the teach function table at the index entered in the [Index] parameter.
F2	Deactivated
F3	Deactivated
F4	[ResTa]: Used to reset the entire teach function table and the indexes.

Note: In this mode, the JOG buttons are active and are used to move "AXIS" (indicated in the name of the menu).

(1) The user units depend on the scaling performed with the parameters [User unit num.] and [User unit denom.] in menu 5:2 ["VIRTUAL AXIS" CONFIGURATION].

5 :3:2 ["VIRTUAL AXIS": HOMING]

Name Access	Description	Unit Minimum Default Maximum
[Target position] **R/W**	Entry of the position reference.	User (1) - 0 -

F1	[Home]: Starts a homing movement.
F2	Deactivated
F3	Deactivated
F4	[SPos]: Changes the current position of the axis to the position value entered in the [Target position] parameter.

(1) The user units depend on the scaling performed with the parameters [User unit num.] and [User unit denom.] in menu 1:2 ["VIRTUAL AXIS" CONFIGURATION].

Error management

When *gMB_xErrorHandlerEnable* = 1, faults are routinely saved in 2 lists:

- *Active Error list*: accessible in the **Easy Motion** *Error List* menu.
  This list details the active errors and is deleted after an *Error Reset*.
  It is limited to 16 inputs. If more than 16 errors are active, only the first 16 errors are listed.

- *Logger List*: accessible in the **Easy Motion** *Logg List* menu.

This list contains the error history. It lists all errors, even after they have been acknowledged.
It is deleted after a *Del Logger*.
It is limited to 32 inputs and operates on the FIFO principle (First In, First Out).

If the error is still active, after an *Error Reset* it is automatically rewritten to *Active Error List* and it appears twice in *Logger List*.

On the graphic display terminal, only the most recent error is displayed.

There are 2 types of error:
· Errors specific to **Codesys - Soft Motion**. For more information about these errors, please refer to the *Codesys - Soft Motion* documentation.
· Errors specific to the **Application Template** with a type 40xx ID.

Description of the errors specific to the **Application Template**:

There are 3 classes of fault, each causing a different reaction:

Reaction 1 (R1): Faults causing stopping and disabling (PowerOff) of all axes and resetting of the mains contactor.
Reaction 2 (R2): Faults causing stopping and disabling (PowerOff) of all axes.
Reaction 3 (R3): Faults causing stopping without disabling of all axes.

ID	Reaction	Error message	Meaning	Corrective action
4001	1	Emergency Stop active	The emergency stop bit has been activated	Change the *gMB_xEmergencyStop* bit to FALSE This bit can only be controlled via the *Application Template parameter table.* Please refer to the *Easy Motion - Programming Manual - Application Template parameter table* documentation for more information.
4002	1	Mains Control Error	Error affecting the mains contactor function or a Reaction 1 (R1) type error is active	Check the mains contactor mechanism If no physical mains contactor mechanism has been fitted, set the *MainsWatch Mode* parameter to 0. This parameter can be accessed in the **Easy Motion** *Config/ LMC Par* menu Please refer to the *Easy Motion - Programming Manual - Mains Contactor operation* documentation for more information about how the mains contactor works
4003	3	Drive Number out of range	The axis number is invalid	The axis number must be between 1 and 10 Please refer to the *Easy Motion - Programming Manual - Application Template parameter table* documentation for more information
4004	3	MTI Parameter Error	The parameters entered in the motion sequence are not correct	Please refer to the *Easy Motion - Programming Manual - Application Template parameter table* documentation for more information about the parameter value ranges
4005	3	MTI Unknown Command	Command not recognized in the motion sequence	Please refer to the *Easy Motion - Programming Manual - Application Template parameter table* documentation for more information about the motion sequence commands
4006	3	MTI Timeout Error	A timeout can be configured in each motion task. This error is triggered when this timeout has elapsed.	Modify the programming in the motion sequence
4007	3	MTI Repeat Error	The number of repeats (eRepeat) is more than 8	Modify the programming in the motion sequence
4008	3	Teach List Index Error	The teach function table index is invalid	The index must be an integer between 1 and 32

ID	Reaction	Error message	Meaning	Corrective action
4009	3	Invalid User Cam	The number of the selected Cam profile, the number of points or the value of certain parameters are invalid	Please refer to the *Easy Motion - Programming Manual - Application Template parameter table* documentation for more information about the Cam profile value ranges
4010	3	Axis Parameter Error	The axis parameters are inconsistent with those saved during the last session	**This error always appears the first time Easy Motion is used.** Use the *Read Par* command in the **Easy Motion** *Config* menu to update the axis parameters
4011	1	Error during startup	Problem during servo drive initialization	Check communication with the servo drives (numbers of the nodes and baudrate) This error appears if the number of axes configured is higher than the number of axes that are actually connected In this case, correct the number of axis and reset the Lexium Controller
4015	3	Axis Name: Unknown CMD	An invalid command has been sent to the axis.	Please refer to the *Easy Motion - Programming Manual - Application Template parameter table* documentation for more information about valid axis commands
4016	2	Axis Name: Axis in Error Stop	A motion command has been sent to an axis in ErrorStop mode (PLCopen state)	Please refer to the PLCopen state chart in the *Easy Motion - Programming Manual* documentation for more information
4017	3	Axis Name: Axis in wrong State	A motion command has been sent to an axis in PowerOff mode (PLCopen state)	Please refer to the PLCopen state chart in the *Easy Motion - Programming Manual* documentation for more information
4018	3	Axis Name: CMD not allowed	An eMoveSupI command has been sent to a stopped axis	The eMoveSupI command must be sent to a moving axis Please refer to the PLCopen state chart in the *Easy Motion - Programming Manual* documentation for more information
4019	3	Axis Name: Invalid Axis Number	The axis number is invalid	The axis number must be between 1 and 10 Please refer to the *Easy Motion - Programming Manual - Application Template parameter table* documentation for more information
4020	3	Axis Name: Buffer size exceeded	The number of movements stored in memory is more than 8	Modify the programming in the motion sequence
4026	3	Read Drive Parameter Error	Error when reading the parameters on a servo drive	Check communication with the servo drives
4027	3	Write Drive Parameter Error	Error when writing the parameters to a servo drive	Check communication with the servo drives
4028	3	Save Drive Parameter Error	Error when saving the parameters to non-volatile memory on a servo drive	Check communication with the servo drives
4029	3	Upload Drive Parameter Error	Error when uploading a configuration from a servo drive	Check communication with the servo drives
4030	3	Download Drive Parameter Error	Error when downloading a configuration to a servo drive	Check communication with the servo drives

Scaling

For the user to be able to program his distances, positions (degrees, µm, etc) as well as the velocities, accelerations and decelerations using units that are consistent with those used in mechanical engineering, a scaling coefficient has to be defined for each axis.

This coefficient takes the form of a ratio of 2 parameters (integers):
- User Unit Numerator (N)
- User Unit Denominator (D)

There are two possible ways to determine the ratio of N/D

a)Whether it is possible to measure or find out precisely the distance traveled by the axis for one motor revolution.

$$\frac{N}{D} = \mathbf{X} \times \frac{1}{\mathbf{INC}}$$

X is the distance traveled for one motor revolution. This distance must be expressed in the unit that the user wishes to use.

b)If various devices such as a gearbox, ball screw, and cog wheels make up the drive chain, I can determine my N/D ratio using the ratios of these devices.

$$\frac{N}{D} = \mathbf{Y} \times \frac{\mathbf{OUT}}{\mathbf{IN}} \times \frac{1}{\mathbf{INC}}$$

Y is the distance traveled for one revolution of the ball screw or cog wheel. This distance must be expressed in the unit that the user wishes to use.

OUT: Is the number of revolutions at the gearbox output for IN input revolutions.

INC: Is the number of increments per motor revolution.
In the case of the LEX05 with BSH motor **INC** = 131,072
With a BSH, **INC** = 131,072.
With other types of motor, the maximum value of **INC** can vary (Max = 1,054,478)

The speed should always be expressed in Units/sec
The acceleration and deceleration should always be expressed in units/sec2

Important note:

For users of Motion Pro/CoDeSys, who also use the Application Template, it is preferable to use the Application Template configuration screens or the graphic display terminal to set these parameters.
In this case, the Motion Pro/CoDeSys configuration screens must not be used.