Lexium Controller

Keypad

VW3M1701

Telemecanique

Telemecanique

Lexium Controller

F1 F2 F3 F4

ENT

- +

ESC

JOG

JOG

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:

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

⚠ WARNING

LOSS OF CONTROL
- The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are EMERGENCY STOP, overtravel stop, power outage and restart.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or loss of link communication.
- Observe the accident prevention regulations and local safety guidelines.[1]
- Each implementation of the product must be individually and thoroughly tested for proper operation before being placed into service.

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

1. For additional information refer to NEMA ICS 1.1 (latest edition), Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control and NEMA ICS 7.1 (latest edition), Safety Standards for Construction and Guide for Selection, Installation for Construction and Operation of Adjustable-Speed Drive Systems.

Important information

The Lexium Motion Controller is usually associated with servo drives. These drives are supplied with line voltage and generate motor drive voltages that may also be hazardous. When disconected from the supply, servo drives carry residual voltage that may remain hazardous for 10 to 15 minutes. Servo motors may generate hazardous voltages when the shaft is rotating.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

Follow the following precautions before and after using the LMC KeyPad:
- Read and understand this manual and the manuals supplied with your machine before using the KeyPad. Troubleshooting, and maintenance must be performed by qualified personnel. Consult the supplier before accessing the LMC and connecting the Keypad. DO NOT proceed if you do not understand all relevant safety precautions.
- Ensure that the machine is in the STOP state, and that no movement can take place as instructed in the machine manual.
- Disconnect line voltage from any servo drives or line-powered equipment present in the LMC panel and follow lockout tagout procedures established for your facility. Using appropriate Personal Protective Equipment, remove or open safety barriers and covers to gain access to the LMC.
- DO NOT touch unshielded components or terminal strip screw connections with voltage present. Follow the instructions included with the servo motor controller for bus capacitor discharge.
- Carefully connect the LMC KeyPad using any personal Protective Equipment required..
- After completing operations with the LMC keypad, reinstall any safety barriers that have been removed, close all covers and inspect all parts of the machine before reapplying power or operating the machine.

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

Documentation structure

This manual is part of a series describing the Lexium Motion Controller (LMC). The following manuals may be downloaded at www.us.telemecanique.com

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

EasyMotion - Programming Manual (Not released in USA)

Supplied preinstalled in the Lexium Controller, the application model associated with EasyMotion 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.

MotionPro - Programming Manual

The MotionPro Programming Manual is included in the software online help.
This online help describes:
• The software interface
• IEC 1131- 3 programming languages
• 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.
- Verify that the package contains:
  - The keypad
  - An angled connector

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

Connecting to the Lexium Motion 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.

Modbus

m/ft	Reference
1/3.28	VW3 A1 104 R10
3/9.84	VW3 A1 104 R30
5/16.4	VW3 A1 104 R50
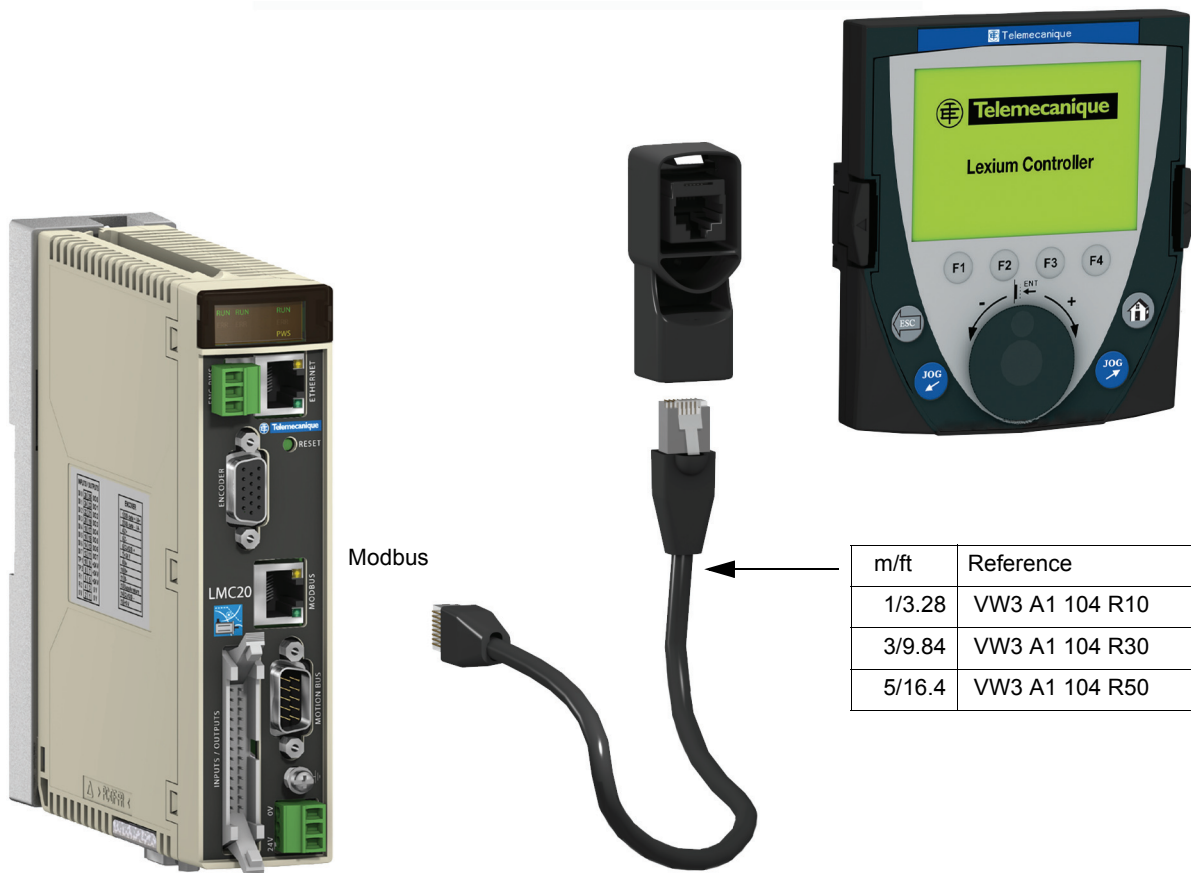
Setup - Preliminary recommendations

☞ **Note:** Use KeyPad only with Lexium 05. The current version of the KeyPad is not compatible with other equipment
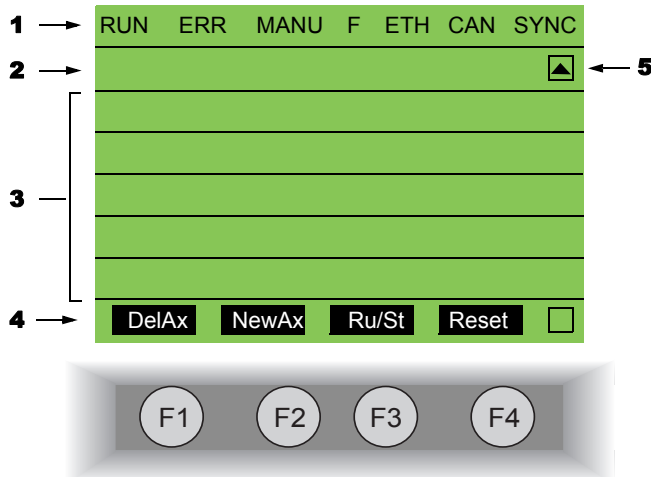
Description of the keypad
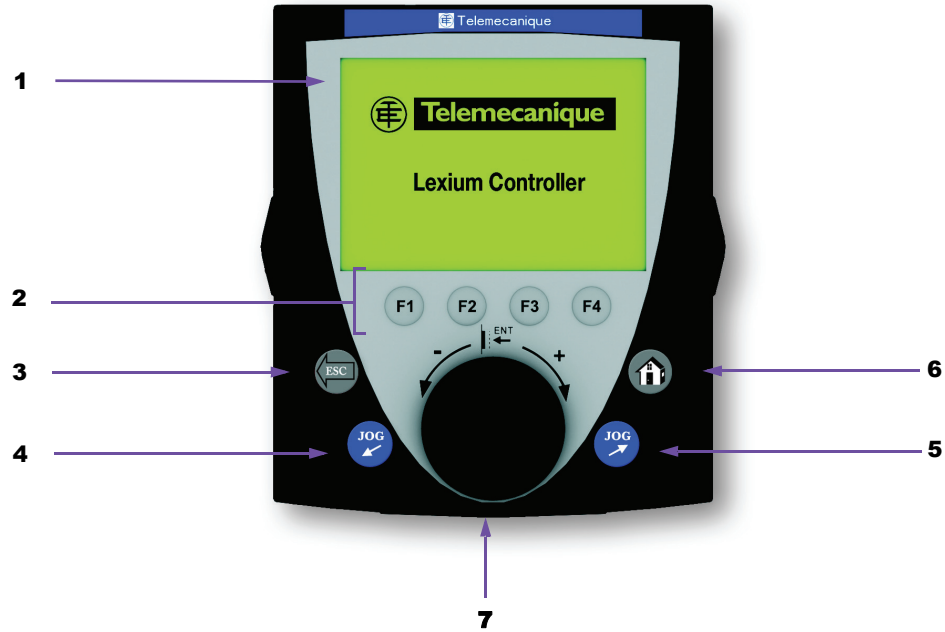
1. Graphic display

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 ↘ : **(Not available in USA)**
• Starts a movement at constant velocity in the negative direction

5. JOG ↗ : **(Not available in USA)**
• Starts a movement at constant velocity in the positive direction

6. HOME **(Not available in USA)**
• Returns to the main screen

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

Description of the graphic screen

☞ **Note:** Not all the features listed below are available in USA.

```
1 →   RUN   ERR   MANU   F   ETH   CAN   SYNC
2 →                                      ▲    ← 5
3 —
4 →   DelAx   NewAx   Ru/St   Reset   ☐
```

```
F1   F2   F3   F4
```

1. Status display line:
   From left to right:
   Lexium Controller status:
      [RUN]: Indicates that the Lexium Motion Controller is executing the program
      [STOP]: Indicates that the Lexium Motion Controller is not executing the program
   Detected Error indicator:
      [ERR]: Indicates an error has been detected on the Lexium Motion 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 ["AXIS": MANUAL MODE].
      [CONF]: Configuration mode.
   I/O status:
      [F]: Indicates that the Lexium Motion 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 loss
   Status of the CANopen bus dedicated to MotionBus:
      [SYNC]: Communication active
      [STOP]: Communication inactive
      [ERR]: Communication loss

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

RUN	ERR	MANU	F	ETH	CAN	SYNC

Language ☐

English

Français ✓

Deutsch

Espanol

Italiano

▼

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

Configuring IP Address:

RUN	ERR	MANU	F	ETH	CAN	SYNC

CONFIG. IP ☐

3**6**0.0

+/-   <<   >>   ☐

>>

RUN	ERR	MANU	F	ETH	CAN	SYNC

CONFIG. IP ☐

36**0**.0

+/-   <<   >>   ☐

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.

Confirmation and alert messages

Some actions may require confirmation or are subject to alerts.

Example of a confirmation message:

RUN	ERR	MANU	F	ETH	CAN	SYNC

Do you want to start the
controller?

YES		NO

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

Example of an alert message:

RUN	ERR	MANU	F	ETH	CAN	SYNC

Wrong password!

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.
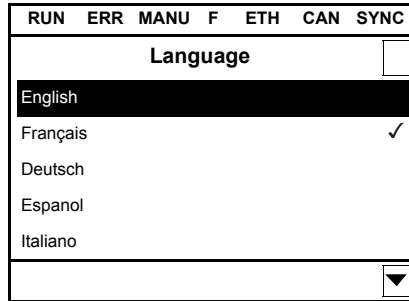
Initial screen

Telemecanique

Lexium Controller

Displayed for 3 seconds following power-up

3 seconds

RUN	ERR	MANU	F	ETH	CAN	SYNC

Language

English

Français ✓

Deutsch

Espanol

Italiano

▼
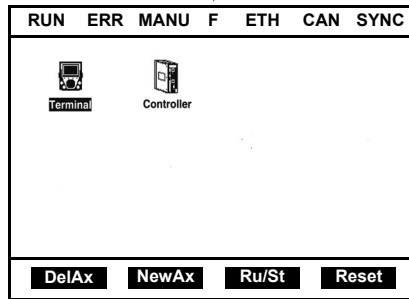
Language selection

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

Home

RUN	ERR	MANU	F	ETH	CAN	SYNC

Terminal   Controller

Return to main menu

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

DelAx	NewAx	Ru/St	Reset

Subsequent power-ups

Initial screen

Displayed for 3 seconds following power-up

⊕ **Telemecanique**	
Lexium Controller	

3 seconds

RUN	ERR	MANU	F	ETH	CAN	SYNC

Terminal   Controller

DelAx	NewAx	Ru/St	Reset

Main menu

Automatically switches to the main menu after 3 seconds.

Password protection

The keypad has two operating levels:
• The first operating level offers access to all the keypad's menus.
This operating mode can be protected by a password that can be configured in menu 2 [KEYPAD].
• The second level offers limited access to certain predetermined menus.

RUN	ERR	MANU	F	ETH	CAN	SYNC
			KEYPAD			
Language		:		Français		
Password validation		:		Yes		
Password		:		★★★★		

1 → Password validation

2 → Password

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.
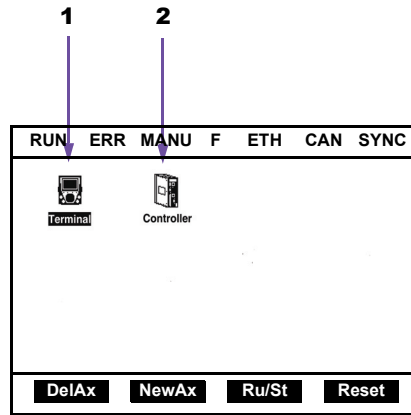
Password format:
• 4 digits

The default password is 0.

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

1:2 [LC CONFIGURATION]
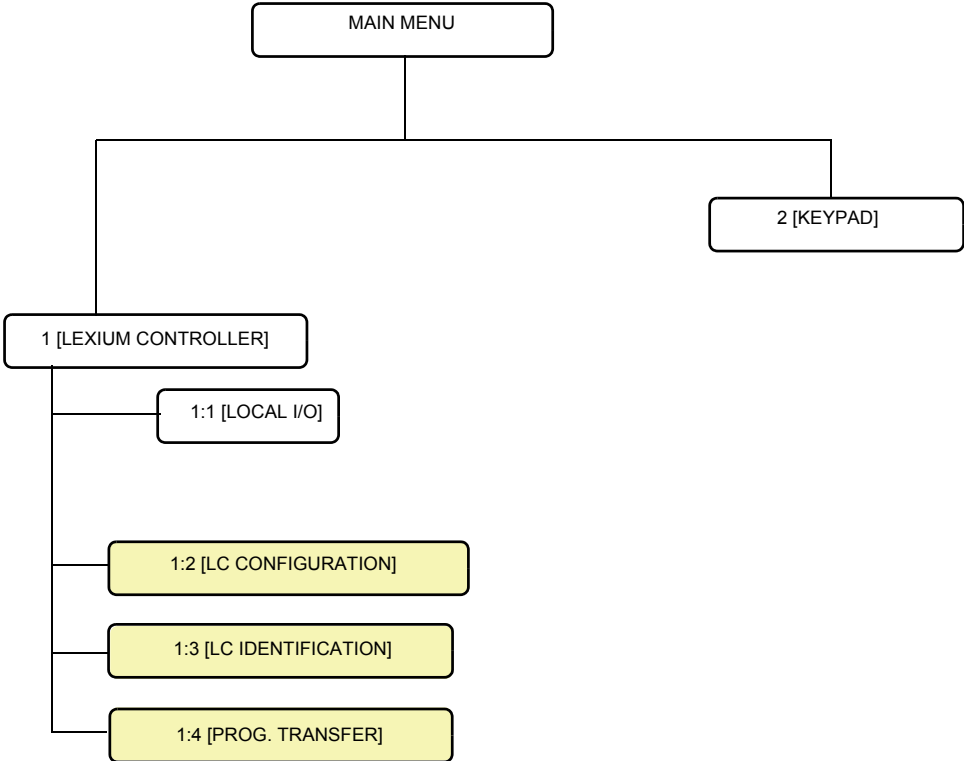1:3 [LC IDENTIFICATION]

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 2 [KEYPAD]).

2. [Controller]: This menu provides access to the Lexium Controller parameters (Menu 1 [LEXIUM CONTROLLER]).

Menu mapping

```
                        ┌─────────────────────┐
                        │     MAIN MENU       │
                        └─────────────────────┘
                                  │
          ┌───────────────────────┴───────────────────────┐
          │                                                │
          │                                    ┌─────────────────────┐
          │                                    │    2 [KEYPAD]       │
          │                                    └─────────────────────┘
  ┌─────────────────────────┐
  │ 1 [LEXIUM CONTROLLER]   │
  └─────────────────────────┘
          │
          │        ┌─────────────────────┐
          ├────────│  1:1 [LOCAL I/O]    │
          │        └─────────────────────┘
          │
          │        ┌─────────────────────────┐
          ├────────│ 1:2 [LC CONFIGURATION]  │
          │        └─────────────────────────┘
          │
          │        ┌─────────────────────────┐
          ├────────│ 1:3 [LC IDENTIFICATION] │
          │        └─────────────────────────┘
          │        ┌─────────────────────────┐
          └────────│ 1:4 [PROG. TRANSFER]    │
                   └─────────────────────────┘
```

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

Menu map

Description of the menus:

1 [LEXIUM CONTROLLER]	Used to access the menus relating to the Lexium Controller
1:1 [LOCAL I/O]	Used to display and force the state of the local I/O
1:2 [LC CONFIGURATION]	Used to configure the Lexium Controller
1:3 [LC IDENTIFICATION]	Used to display data on the Lexium Controller
1:4 [PROG. TRANSFER]	Used to transfer a program from the Lexium Controller to the keypad or from the keypad to the Lexium Controller.
2 [KEYPAD]	Used to configure the keypad

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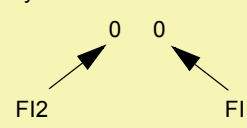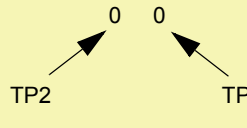
The menus and submenus of the KeyPad are described using listing the parameters it contains. The tables are structured in the following way:

1 [LEXIUM CONTROLLER]

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

1:1 [LOCAL I/O]

☞ **Note:** Not all the features listed below are available in USA.

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.
	
	     0 0
	
	   FI2 FI1
	
	☞ **Note:** Please refer to the MotionPro/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.
	
	     0 0
	
	   TP2 TP1
	
	☞ **Note:** Please refer to the MotionPro/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. **(View only)**

F4   **[Fto0]**: Force the selected input or output to 0. **(View only)**

☞ **Note:** When inputs or outputs are forced, they have the following appearance **(Not available in USA)**:

F1   Output forced to 1

F0   Output forced to 0

1:2 [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

1:3 [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

1:4 [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 re-boot of the project is required.	- - - -
[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

2 [KEYPAD]

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 15 for instructions on how to configure password protection.	- - - -
[Password] **R/W**	Used for entering the password. See page 15 for instructions on how to configure password protection.	- - - -

F1   Deactivated

F2   Deactivated

F3   Deactivated

F4   Deactivated