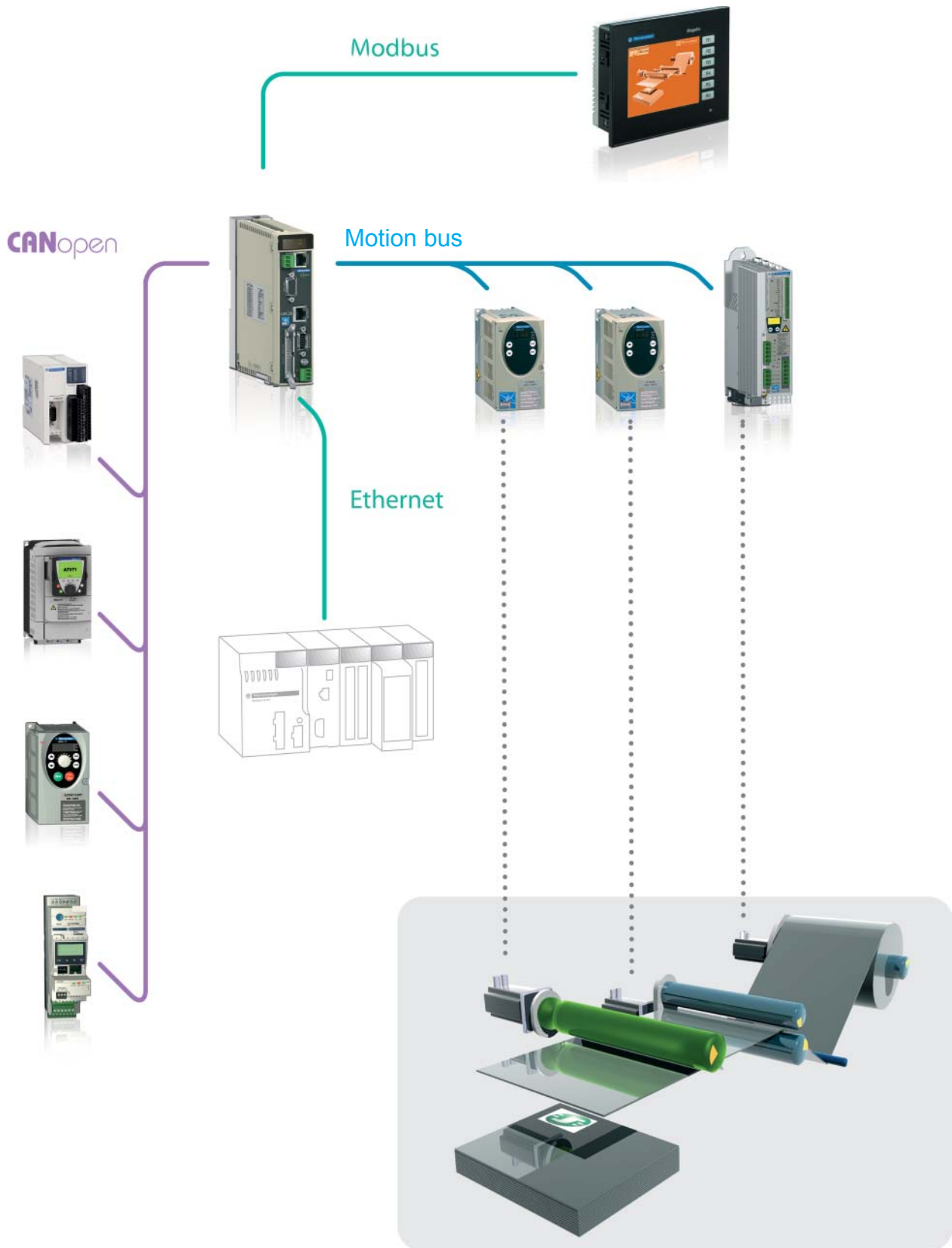


# Lexium Controller motion controllers



536411



LMC 10, LMC 20 and LMC 20A130 ● Lexium Controllers

## Presentation

The Lexium Controller range delivers optimized solutions for axis control and positioning, including automation functions. It meets the needs of a wide range of applications in all sectors of industry.

With Lexium Controller motion controllers, Lexium 05 and Lexium 15 servo drives and BSH et BDH servo motors, Schneider Electric offers a complete, high-performance and economical solution, namely Lexium PAC.

The Lexium PAC solution can be adapted and integrated on most automation platforms - Schneider Electric or third party.

The software solution provided by Lexium Controller motion controllers offers very quick and easy start-up of the machine, thanks to the application template and function block library.

Lexium Controller motion controllers are particularly suited to small machines, thanks to:

- Their compact dimensions
- The limited number of models and the integration of function blocks
- Their ease of installation
- The fact that the application can be put into operation immediately thanks to the application template and remote graphic display terminal
- Reduced installation and start-up costs

Furthermore, they satisfy the performance requirements of specialized and modular machines thanks to:

- Their expansion capability (input/output etc.)
- Their modular software functions
- Their ease of integration into standard automation systems thanks to the possibility of connection to buses and networks available on the market such as CANopen, Modbus, Profibus DP, DeviceNet and Ethernet TCP/IP.

## Applications

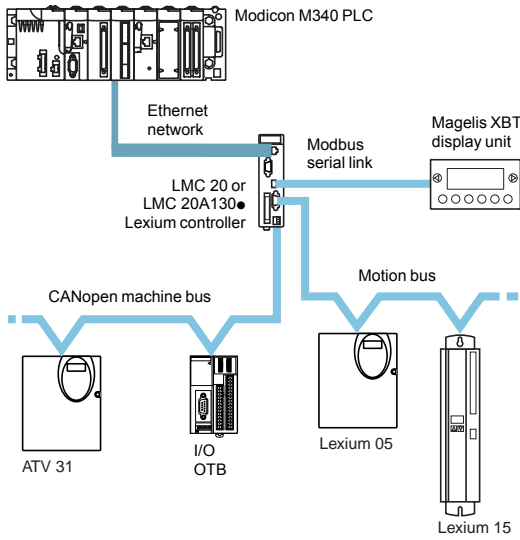
The Lexium Controller motion controller guarantees coordination and synchronization of axes, via a fieldbus, for applications requiring control of up to 8 synchronized axes.

It includes standard motion control functions:

- Speed and torque control
- Relative or absolute positioning
- Cam profiles for slave axes and programmable cam switch control
- Electronic gearing function for speed and position
- Linear and circular interpolations (2½ dimensions)
- Master axis via external encoder
- Distance measurement and position capture at high-speed (30µs) discrete input
- Position movement control with a preset end speed (blending)

It is dedicated to the following types of application:

- Handling equipment (conveyors, palletizers, storage and retrieval systems) and transfer machines (gantry cranes etc.)
- Assembly machines (shrink fitting, clamping)
- Inspection and quality control machines
- Machines for working "on the fly" (flying shear, printing, marking etc.)



Example of integration of Lexium Controller in an automation platform

### Integration in automation platforms

Lexium Controller motion controllers can easily be integrated into the standard automation architectures available on the market.

It can be connected directly via the communication ports on the front panel to the following buses and networks: Modbus, Profibus DP, DeviceNet and Ethernet TCP/IP.

In this way, the Lexium Controller motion controller makes all the axis data which it controls accessible to PLCs, Magelis HMI terminals or any other client.

### CANopen machine bus

A CANopen machine bus is used with the Lexium Controller motion controllers LMC 20 and LMC 20A130.

This machine bus is now very widely used in industry because of its high performance. In accordance with international standard ISO 11898 promoted by the "CAN in Automation" association of users and manufacturers, it guarantees a high level of openness and interoperability thanks to its standardized communication and equipment profiles.

The CANopen machine bus is directly accessible via two integrated communication ports conforming to standard CiA DSP 301 V4.0:

- One port dedicated to the Motion bus for coordination and synchronization of the servo drives (conforming to standard CiA DSP 402, "Device Profile Drives & Motion Control")
  - One port intended for expansion of the automation capabilities, such as I/O, servo drives, encoders etc.
- (See characteristics page 61721/5).

### Remote graphic display terminal

The optional remote diagnostic and debugging terminal, used in conjunction with the Easy Motion application template, allows to:

- Carry out diagnostics on the Lexium Controller motion controller or its servo drives
- Adjust the Lexium Controller motion controller or the servo drive parameters
- Perform debugging
- Back up and restore the application data

The user is closer to the machine, resulting in better performance and higher efficiency.

Ergonomically designed, the navigation button gives direct access to drop-down menus.

This graphic terminal offers two configurable levels of access:

- Maintenance (limited access)
- Development (allowing access to configurable data)



Remote graphic display terminal

## Software solution

The Lexium Controller range offers two application development modes depending on the requirements:

- Easy Motion mode which relies on an application template and integrated graphic interface to configure the motion control functions
- Motion Pro mode to configure and program motion control and automation functions using a language conforming to standard IEC 31161.

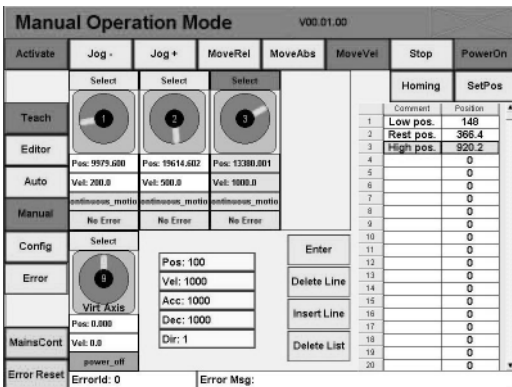
The Lexium Controller range also offers a function block library so that you can start to use your application immediately.

## Easy Motion mode

The Lexium Controller motion controller is supplied with an application template pre-installed. It allows immediate start-up of the whole Lexium PAC system (motion controller, servo drive and motor) and automatic execution of the configured function.

The following services are available:

- Configuration of axes
- Adjustment and diagnostics of servo drives
- Adjustment and diagnostics of motion controller
- Creation of position registers via teach function
- Management of axis operating modes (Auto-Man.)
- Manual axis control
- Configuration of positioning tasks (Motion Tasks)
- Editing of cam profiles (8 profiles of 16 points of type XYVA)
- Backup and recovery of the application



Example of application template screen



EasyMotion See page 61725/2.

## Motion Pro mode

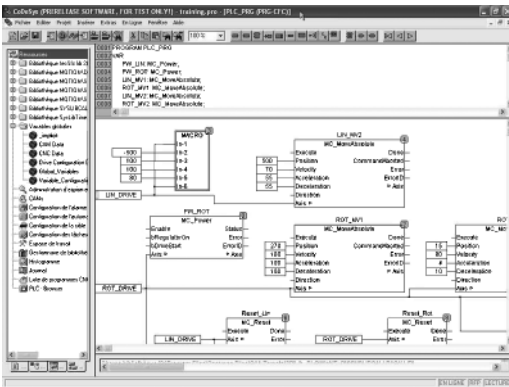
Motion Pro mode gives the user complete freedom to develop the application.

While retaining the benefits offered by Easy Motion mode for motion control, it allows you to add automation functions using the integrated programming editor.

The entire application, motion control functions and automation functions can be realized with this editor.



MotionPro See page 61725/4.



Example of IEC 61131 compliant programming editor

## Application function block library

To simplify application programming and improve machine performance, the Easy Motion and Motion Pro modes have an application function block library.

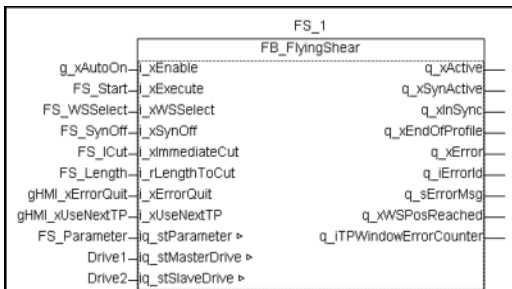
These functions considerably reduce the time taken to program and debug the whole installation.

The available function blocks are very widely used in the industrial world:

- Flying shear
- Rotary knife
- Grouping/ungrouping
- Clamping with torque control

With its ergonomic, PLCopen design, this library has been developed so as to accommodate many different mechanical variants and application types.

See page 61725/8.



Example of application function block

# Lexium Controller motion controllers

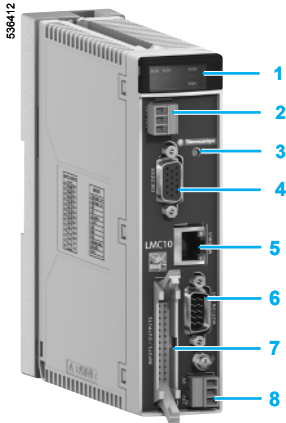
## Description

The Lexium Controller range offers three levels of integration in automation systems depending on the available references:

- **LMC 10:** This is an economical product with a dedicated Motion bus
- **LMC 20:** In addition to the characteristics of the LMC 10, it offers a connection to the Ethernet TCP/IP network for integration in automation architectures; its CANopen connection extends its capabilities in terms of I/O and the control of other devices.
- **LMC 20A130:** In addition to the characteristics of the LMC 20, it offers a connection to the Profibus DP and DeviceNet fieldbuses.

## Lexium Controller LMC 10

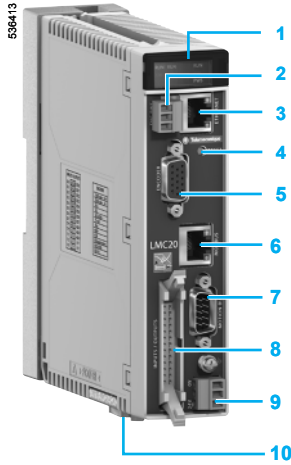
- 1 Front display unit with status LED:
  - Indication of status of the Lexium Controller
  - Indication of communication status of the CANopen machine bus and of the dedicated Motion bus
- 2 3-pin connector for power supply of master encoder
- 3 Lexium Controller reinitialize button
- 4 High-density 15-way female SUB-D connector for connection of incremental encoder or SSI serial absolute encoder
- 5 RJ45 connector for connection of Modbus or RS 485 serial link, with status LED
- 6 9-way male SUB-D connector for connection to the Motion bus
- 7 HE 10 connector (26-way) for connection of I/O via Telefast® connection bases or via a supplied female connector
- 8 24 V  $\overline{\text{---}}$  power supply of the Lexium Controller via 3-pin connector



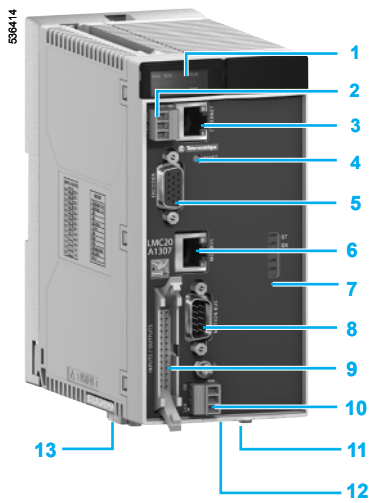
LMC 10

## Lexium Controller LMC 20

- 1 Front display unit with status LED:
  - Indication of status of the Lexium Controller
  - Indication of communication status of the CANopen machine bus and of the dedicated Motion bus
- 2 3-pin connector for power supply of master encoder
- 3 RJ45 connector for connection to the Ethernet TCP/IP network
- 4 Lexium Controller reinitialize button
- 5 High-density 15-way female SUB-D connector for connection of incremental encoder or SSI serial absolute encoder
- 6 RJ45 connector for connection of Modbus or RS 485 serial link, with status LED
- 7 9-way male SUB-D connector for connection to the Motion bus
- 8 HE 10 connector (26-way) for connection of I/O via Telefast® connection bases or via a supplied female connector
- 9 24 V  $\overline{\text{---}}$  power supply of the Lexium Controller via 3-pin connector.
- 10 CANopen 9-way male SUB-D communication port for extending the configuration (discrete or analogue I/O, servo drives, encoders, other equipment).



LMC 20



LMC 20A130●

**Lexium Controller LMC 20A1307 and LCM 20A1309**

- 1 Front display unit with status LED:
  - Indication of status of the Lexium Controller
  - Indication of communication status of the CANopen machine bus and of the dedicated Motion bus
- 2 3-pin connector for power supply of master encoder
- 3 RJ45 connector for connection to the Ethernet TCP/IP network
- 4 Lexium Controller reinitialize button
- 5 High-density 15-way female SUB-D connector for connection of incremental encoder or SSI serial absolute encoder
- 6 RJ45 connector for connection of Modbus or RS 485 serial link, with status LED
- 7 Diagnostic LEDs for the Profibus DP or DeviceNet communication card
- 8 9-way male SUB-D connector for connection to the Motion bus
- 9 HE 10 connector (26-way) for connection of I/O via Telefast® connection bases or via a supplied female connector
- 10 24 V  $\overline{\text{---}}$  power supply of the Lexium Controller via 3-pin connector
- 11 9-way male SUB-D connector for connection of Profibus DP bus or removable 5-way screw terminal for connection to the DeviceNet bus
- 12 Terminal with 8 microswitches for configuration of slave address on the Profibus DP or DeviceNet bus
- 13 CANopen 9-way male SUB-D communication port for extending the configuration (discrete or analogue I/O, servo drives, encoders, other equipment)