Modicon LMC058

Motion controller

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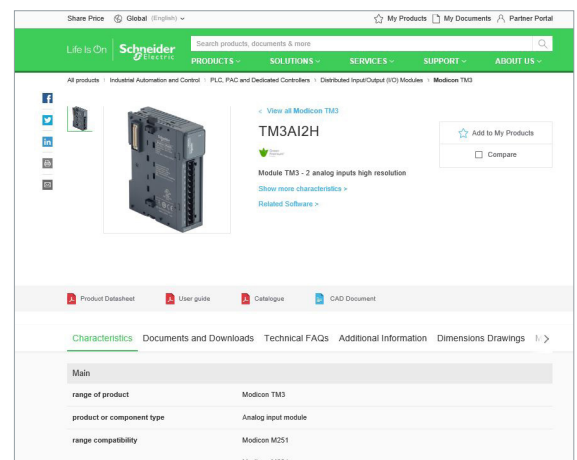- Modicon Power Supply
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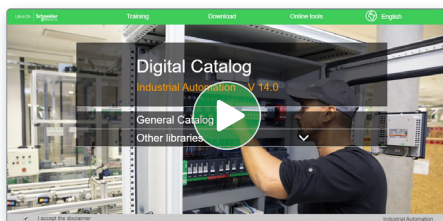
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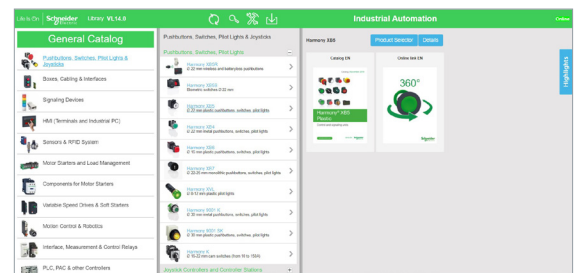
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General content

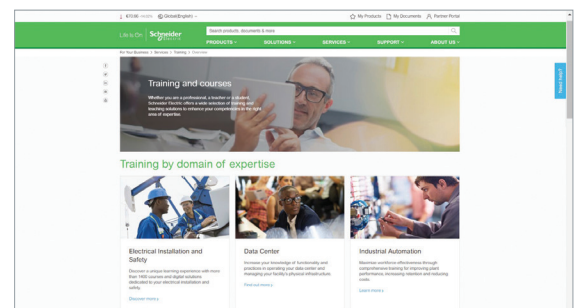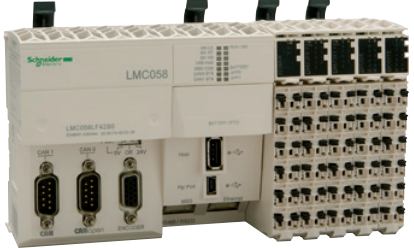| Applications		**General machine control with motion:** ☐ Packaging ☐ Conveying ☐ ...	**General machine control with motion:** ☐ Packaging ☐ Conveying ☐ Machine control with motion
		42 digital I/O	**42 digital I/O** **+ 4 analog inputs**
User memory	RAM	64 MB (program + data)	64 MB (program + data)
	Flash	128 MB	128 MB
User program size		128 program Kinstructions	128 program Kinstructions
Power supply		24 V ⎓	24 V ⎓
Channel connection		Via removable spring terminal blocks (supplied)	Via removable spring terminal blocks (supplied)
Inputs	Digital	26 x 24 V ⎓ inputs including 8 counter inputs (100 kHz)	26 x 24 V ⎓ inputs including 8 counter inputs (100 kHz)
	Analog	–	4 inputs + 10 V/- 10 V, 4-20 mA/0-20 mA 12-bit resolution
Digital outputs	Transistor	16 outputs (0.5 A) including 4 reflex outputs	16 outputs (0.5 A) including 4 reflex outputs
	Relay	–	–
Built-in communication ports	USB-B mini-port	Programming port for SoMachine V2.0 software	Programming port for SoMachine V2.0 software
	USB-A port	Connection of a USB memory stick for transferring programs, data files, firmware updates	Connection of a USB memory stick for transferring programs, data files, firmware updates
	RJ45 port (MBS)	RS232 serial link RS485 serial link (supplies 250 mA, 5 V for HMI power supply) Protocols: Modbus ASCII/RTU Master/Slave, ASCII (character string)	RS232 serial link, RS485 serial link (supplies 250 mA, 5 V for HMI power supply) Protocols: Modbus ASCII/RTU Master/Slave, ASCII (character string)
	SUB-D connector (9-way male) (CAN0)	CANopen bus master (63 slaves)	CANopen bus master (63 slaves)
	SUB-D connector (9-way male) (CAN1)	CANmotion bus master (8 synchronized axis or 63 slaves)	CANmotion bus master (8 synchronized axis or 63 slaves)
	SUB-D connector (15-way female) (Encoder)	Encoder input (incremental or SSI)	Encoder input (incremental or SSI)
	RJ45 port (Ethernet)	Ethernet TCP IP, Web Server, FTP, Ethernet Modbus TCP	Ethernet TCP IP Modbus slave, Web Server, FTP
Optional communication ports		–	2 PCI slots available on controller for optional communication modules TM5 PC●●● *(1)*: ☐ Modbus or ASCII serial link ☐ connection to Profibus DP bus (slave)
Software programming		With SoMachine software: please consult our catalog **SoMachine configuration software**	
Motion controller type		**LMC058LF42**	**LMC058LF424**
Page		12	12

(1) To be ordered separately, see .

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Modicon LMC058 motion controller

The Modicon LMC058 motion controller is the optimum solution for axis control and positioning, including automation functions. It forms a part of Flexible Machine Control approach, a key component of MachineStruxure™, which brings you maximum flexibility and ensures the most optimised control solution
The Modicon LMC058 motion controller meets the needs of a wide range of applications in several business sectors.

This motion controller is designed for machine manufacturers (OEMs) who require synchronized axes, focusing on applications such as packaging, conveying and storage machines, metal and wood working machines, etc. and offers high-performance solutions for velocity control, counting, axis control and communication functions.
To this end, the LMC058 master motion controller includes as standard:
■ A CANopen master
■ A CANmotion master dedicated to control of up to 8 synchronized axes, with a performance of 2 ms for 4 axes
With Motion controllers Modicon LMC058, Lexium 32 and Lexium SD3 drives, and BSH and BDH servo motors, Schneider Electric offers a complete, high-performance and cost-effective solution.

Applications

The Modicon LMC058 motion controller performs axis synchronization and coordination, via a fieldbus, for applications requiring control of up to 8 synchronized axes.

It integrates the standard motion control functions:
■ Velocity control and torque control
■ Relative or absolute positioning
■ Cam profiles for slave axes and control of programmable cam switches
■ Virtual axes
■ Electronic gearing function for velocity and position, linear and circular interpolations (2½D)
■ Master axis using an external encoder
■ Distance measurement and position capture on high-speed (30 µs) digital input

This is specifically designed for applications such as:
■ Material handling machines (conveyors, palletizers, storage and retrieval systems, etc.) and transfer machines (cranes, etc.)
■ Assembly machines (tool fixing, clamping, etc.)
■ Inspection and quality control machines
■ Packaging machines working "on the fly" (flying shear, printing, marking, etc.)
■ Wood and metal working machines

Performance

In terms of performance, the Modicon LMC058 motion controller has a Dual-Core processor:
■ Core 1 is dedicated exclusively to managing program tasks and offers the maximum resources for real-time execution of synchronized axis control and the application code.
■ Core 2 is dedicated to executing communication tasks, which then have no further impact on the application execution performance.

Execution of the Motion task is synchronized with the CANmotion bus cycle time. This task calculates the position of the synchronized axes and is programmed with SoMachine software, which is used to program Modicon LMC058 motion controller using:
■ IEC 61131-3 programming languages: Instruction List (IL), Ladder Diagram (LD), Function Block Diagram (FBD), Sequential Function Chart/Grafcet (SFC) and Structured Text (ST)
■ CFC (Continuous Function Chart) language.

The ease of use of PLCopen function blocks significantly reduces the time taken to program motion control and control independent and synchronized axes on machines.
The ability to combine motion functions with standard automation functions offers both maximum flexibility and a high level of performance. The LMC058 master motion controller is able to control synchronization of real, remote and virtual axes.

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Performance (continued)

To improve the performance and reliability of your machines, the LMC058 motion controller has a 15-way SUB-D connection for a master encoder (incremental or SSI).

The Modicon LMC058 motion controller expands the machine's capabilities with its ability to manage up to **2400 I/O**, **64 MB** RAM for data and program storage, and **128 MB** Flash memory for application and data backup.

In developing the Modicon LMC058 motion controller , the cost aspect was taken into account, and the CPUs are equipped as standard with:
■ 42 digital I/O
■ Embedded serial link and Ethernet port
■ 4 analog inputs (reference LMC058LF424)
■ A CANopen master
■ A CANmotion master

Development and technology

In its characteristics, the Modicon LMC058 motion controller has been developed to minimize the costs of assembly, cabling, commissioning and maintenance.
To this end:
■ Each module have removable terminals.
■ The electrical connections are made on spring terminals, speeding up the wiring process and also avoiding the need for periodic retightening. In addition, each terminal has a test point for a voltage sensing device.
■ The embedded serial link and Ethernet port on the Modicon LMC058 motion controller have an RJ45 connection at 45° for quick visible connection of the communication channels.
■ The modularity of the various bases and expansion modules has been optimized in order to significantly reduce the number of references to be ordered and assembled, while ensuring the minimum investment in your configuration is necessary, thanks to a capacity of between 2 and 42 channels per expansion module.
■ Mechanical assembly of the various parts has been designed to save a considerable amount of time during assembly.

Software configuration

Configuration and programming of each Modicon LMC058 motion controller and equipment in Schneider Electric's "Flexible Machine Control" concept are both designed to cut costs and optimize machine performance, using SoMachine.

To reduce the configuration time of device, a selection of function blocks is available in the "Motion Library":
■ Library for ATV on CANopen
■ Lexium library for Lexium 32 and Lexium SD3 on CANopen and CANmotion
■ Lexium library for the whole ILx range on CANopen

This PLCopen-compliant library consists of administrative function blocks (read/write parameters, states, etc.) and single-axis and multi-axis function blocks.
The main functions are as follows:
■ Power On, stop, reset
■ Relative, absolute or additional positioning
■ Continuous positioning (reaching a position at a predefined speed)
■ Velocity control
■ Velocity profile
■ Position profile
■ Cam profile
■ Electronic gearing
■ Phasing
■ Programmable cam switch
■ Linear or circular interpolation

User library
With SoMachine software, it is very easy to create your own function blocks (user library) to reduce programming times. Creating a user library simplifies the standardization and reuse of programs and also allows the user to protect proprietary information.
Please consult our catalog **SoMachine configuration software**.

SoMachine software platform

Application function blocks (AFB)

This is a library of functions developed specifically by Schneider Electric. It contains application functions currently encountered in applications in the fields of assembly, material handling and cutt to length applications. Each function block has a large number of mechanical and application variants.
The use of function blocks:
■ Saves programming time
■ Saves setup time
■ Simplifies reading
The function blocks available in the library are:
■ Flying shear
■ Rotary knife
■ Grouping/ungrouping
■ Clamping with torque control
■ Etc.

Functions

Analog functions

For machines that require functions to process data issued by analog sensors/ actuators (voltage or current), temperature sensors or PID control sensors, a complete range of expansion modules as well as advanced programming functions are included in the Modicon LMC058 motion controller offer.

In order to minimize the number of machine product references, optimize assembly time and cut costs, the LMC058LF424 motion controller includes 4 voltage or current analog inputs with 12-bit resolution as standard.

The different expansion modules are available in 2, 4 or 6-channel versions and with either 12 or 16-bit resolution.
The powerful performance of the LMC058 motion controller enables up to 200 analog I/O and/or temperature modules to be connected, thus extending the limits of machine requirements.

High-speed counter function (HSC)

In order to meet requirements for machine productivity, the LMC058 motion controller has 8 embedded high-speed counters with a counting frequency of 200 kHz for each channel and 4 reflex outputs.
These embedded counters, together with the CANopen master link, make it quick and easy to create cost-effective, high-performance multi-axis functions to suit the machines' limitations.
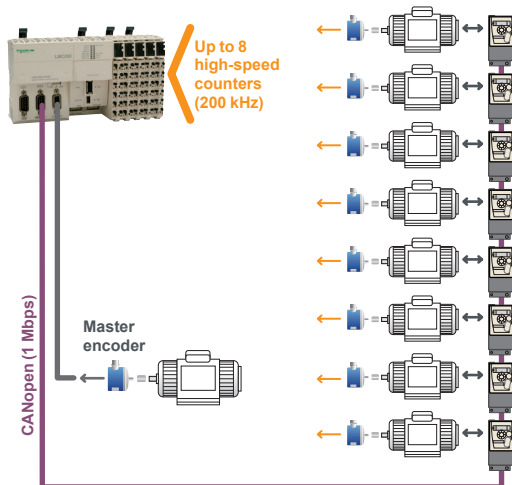
With the availability of PLCopen function blocks specific to the motion control functions in the SoMachine software, you can be sure that developing your applications will be quick and reliable.
Moreover, a complete range of high-speed counter modules is available so you can adapt your configuration to your machine's specific requirements.

High-speed counter function (one-phase or two-phase)

Position control function

Several options are offered in terms of position control:
□ Creating a sequence in Lexium 32 servo drives, with communication with the LMC058 motion controller achieved by the use of digital I/O
□ Creating an application in the LMC058 motion controller and controlling Lexium 32 drives and servo drives and/or Lexium SD3 stepper drives via the integrated CANopen master link available on LMC058 motion controllers (in this case the Motion tasks are independent axis Motion tasks)
□ Creating an application in the LMC058 motion controller and controlling the Lexium 32 drives and servo drives and/or Lexium SD3 stepper drives via the integrated CANmotion master link available on each LMC058 motion controller (in this case the Motion tasks are independent and/or synchronized axis Motion tasks - cam profiles, electronic gearing, interpolation)

Lexium 32 servo drives: monitoring cutting to length

Schneider Electric

LMC058 motion controller

CANopen

Altivar 32

LXM32●

Servo motor

CANmotion

LXM32●   LXM32●   LXM32●

Ethernet communication

Each Modicon LMC058 motion controller reference have an embedded RJ45 Ethernet port (10/100 Mbps, MDI/MDIX) with Ethernet TCP Modbus, Ethernet IP Device, SoMachine on Ethernet, UDP, TCP and SNMP protocols.

In addition, each LMC058 motion controller has an embedded Web Server and FTP Server. As well as the default address based on the MAC address, it is possible to assign a motion controller IP address via a DHCP server or BOOTP server.

CANmotion/CANopen communication

The CANopen 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 offers a high level of openness and interoperability thanks to its standardized communication and equipment profiles.
CANmotion and CANopen buses use a double shielded twisted pair. Each end of the bus must be equipped with a line terminator.
A staged CANmotion and CANopen connectivity solution reduces costs and optimizes your architecture, thanks to:
■ Reduced cabling time
■ Greater reliability of the cabling
■ Flexibility should you need to add or remove a device

CANmotion

Each Modicon LMC058 motion controller reference has an embedded CANmotion master.
This bus is dedicated to synchronizing the drives (conforming to standard CiA DSP 402, the Device Profile for Drives & Motion Control).
This CANmotion link can be configured between 250 kbps and 1 Mbps, and offers the option of configuring and controlling up to 8 Lexium 32 servo drives and/or Lexium SD3 stepper drives.
The CANmotion bus cycle time ensures that the axis positions will be refreshed.
To ensure maximum performance on the motion bus, we recommend using a daisy chain cabling architecture.

CANopen

Each Modicon LMC058 motion controller references has an embedded CANopen master.
This bus is dedicated to expansion of the automation capabilities, such as the I/O, drives, encoders, etc.
The link can be configured between 125 kbps and 1 Mbps and supports up to 63 slaves. Architectures based on CANopen can be used to distribute I/O modules as close to the sensors and actuators as possible, thus reducing wiring costs and times, and to communicate with different devices such as variable speed drives, servo drives, etc.
The CANopen configurator is integrated in the SoMachine software and can also be used to import standard description files in EDS format.

Modbus communication

Each Modicon LMC058 motion controller has a serial link as standard that can be configured as either RS232 or RS485 and incorporates the two of the most commonly used protocols on the market:
□ Modbus ASCII/RTU Client or Server
□ Character string (ASCII)

Profibus DP (Decentralized Peripherals)

The Modicon LMC 058LF424 motion controller equipped with the **TM5PCDPS** communication module can be connected to Profibus bus for controlling decentralized sensors, actuators or PLCs via a central master controller.

Integration in the Schneider Electric product offer

Combined with other products dedicated to machine manufacturers in the Schneider Electric offer, such as ATV variable speed drives, Lexium servo drives, Magelis HMI terminals, TeSys motor starters and contactors, the Modicon LMC058 motion controller is now a must-have element in machine architectures, with hitherto unrivalled ease and speed of installation.

LMC058LF42 motion controller

LMC058LF424 motion controller

TM5PC●● communication modules

TM5C compact block

TM5SD digital module

TM5SMM6D2L digital/analog module

TM5SA analog module

TM5SE Expert module

TM5SPD Common Distribution module

TM5SPS Power Distribution modules

TM5SBET1 transmitter module

TM5SBER2 receiver module

Range presentation

The LMC058 motion controller range is divided into two sizes:
□ The LMC058LF42 motion controller is 177 mm wide.
□ The LMC058LF424 motion controller is 237.5 mm wide as it has two free PCI slots for optional Modicon TM5 communication modules (Modbus or ASCII serial link, connection to Profibus DP bus).

This range is completed by an extensive expansion module offer:
□ Modicon TM5 Compact blocks
□ Modicon TM5 Digital modules
□ Modicon TM5 Digital/Analog module
□ Modicon TM5 Analog modules
□ Modicon TM5 Expert modules
□ Modicon TM5 Common Distribution modules
□ Modicon TM5 Power Distribution modules
□ Modicon TM5 Transmitter and receiver modules
Please consult our catalog **Modicon TM5 High-Performance and Safe IP20 Modular I/O System.**

Functions

The main component in a system is the motion controller: two LMC058 motion controller models are offered to cover different control requirements (pressure, temperature, counting, velocity, positioning, motion, etc.).
LMC058 motion controllers and I/O modules are programmed using SoMachine software.
Please consult our catalog **SoMachine configuration software**.

Reference	Embedded functions
LMC058LF42	■ 42 digital I/O including 8 high-speed counters (200 kHz) ■ CANopen master ■ CANmotion master
LMC058LF424	■ 42 digital I/O including 8 high-speed counters (200 kHz) ■ 4 voltage/current analog inputs ■ CANopen master ■ CANmotion master

The Modicon LMC058 motion controllers have two groups of high-speed I/O with, for each group:
□ Four sink type high-speed inputs (up to 200 kHz), 2 standard inputs and 2 source type high-speed outputs (up to 100 kHz) dedicated to HSC or PWM functions
□ A high-speed input which can be used as an "Encoder capture input"
□ Two commons for the inputs
□ One common for the outputs
□ A power supply (24 V ⎓) consisting of 3 units:
- One for the CPU
- One for the high-speed I/O modules
- One for other modules (internal I/O Bus).

Conformity to standards

Type		Performance
Surge immunity 24 VDC circuit	EN/IEC 61000-4-5	1 kV in common mode
		0.5 kV in differential mode
Surge immunity 230 VAC circuit	EN/IEC 61000-4-5	2 kV in common mode
		1 kV in differential mode
Induced electromagnetic field	EN/IEC 61000-4-6	10 Veff (0.15...80 MHz)
Conducted emission	EN 55011 (IEC/CISPR11)	150...500 kHz, quasi peak 79 dBμV
		500 kHz...30 MHz, quasi peak 73 dBμV
Radiated emission	EN 55011 (IEC/CISPR11)	30...230 MHz, 10 m @ 40 dBμV/m
		230 MHz...1 GHz, 10 m @ 47 dBμV/m

Assembly and mounting

The components of this system have been designed for simple interlocking mechanical assembly.

An 8-way expansion bus connection (2 for the power supply, 2 for the bus and 4 for the data) is used to distribute data and the power supply when assembling the components: the LMC058 motion controller with compact blocks and modules (Digital, analog, Expert, Common Distribution, Power Distribution, bus expansion). Each element which make up the system is mounted on a symmetrical rail using the locking levers located on top of the device.

Wiring and maintenance of devices is simplified by the use of removable spring terminals. The spring terminals are undone by pressing a locking tab.

The system is integrated into communication networks: the connectors (RJ45, USB, mini-USB and SUB-D type) are accessible, as they are located on the motion controller front panels.

Local I/O

Local or remote architecture

Local I/O *(1)*

A PLC configuration can be local or remote. It consists of an LMC058 motion controller with its embedded input and output channels, used in conjunction with compact blocks and/or expansion modules which are used to increase the number of channels and/or application-specific functions.

■ Compact blocks represent a way of adding a large number of I/O with a single component, and thus only a single product reference.
■ I/O modules (combination of a bus base, an electronic module and a terminal block) complete this configuration and, being modular with between 2 and 12 channels, make it possible to adjust the number of channels to exactly that required. The addition of digital or analog modules, temperature or high-speed counter modules increases the processing capabilities of applications.

Local I/O configuration
1 XBTGC supervisory graphic touch screen terminal
2 LMC058 motion controller
3 Compact blocks or I/O modules
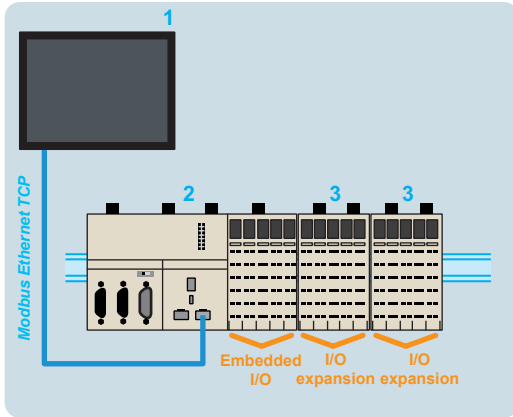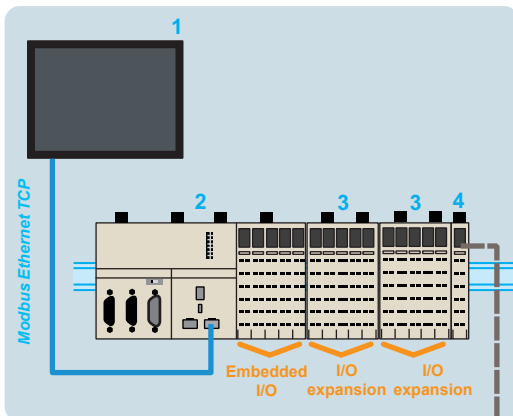
Remote I/O

Remote I/O *(1)*

Because of its backplane bus management, the TM5 system can be used to control I/O remotely.

The same modules can be used in either a local and/or remote configuration, linked together with bus expansion cables.

The maximum distance between two remote islands is 100 m and the maximum number of islands is 25, i.e. a total distance of up to 2500 m.

This function ensures a high level of flexibility, while retaining **synchronization of data acquisition**, since the expansion modules are on the same backplane bus.

Remote I/O configuration
1 XBTGC supervisory graphic touch screen terminal
2 LMC058 motion controller
3 Compact blocks or I/O modules
4 Transmitter modules
5 Receiver modules
6 TM5 expansion bus cables
7 Common distribution modules

(1) Please consult our catalog Modicon TM5 High-Performance and Safe IP20 Modular I/O System.

Remote I/O
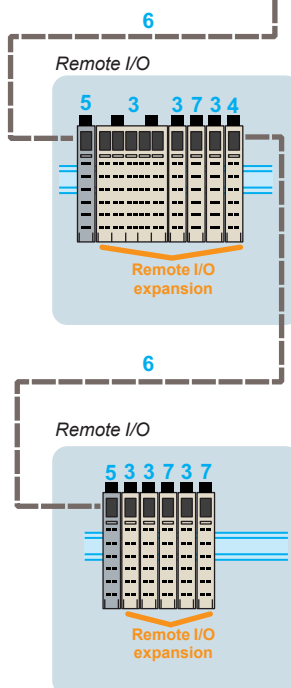
Communication

LMC058 motion controllers have the following built-in communication ports:

References	Communication ports	Use
LMC058LF42	RJ45 Configurable as RS232 or RS485	ASCII or RTU exchange with Modbus communication protocol
	1 x RJ45 (MDI/MDIX port)	□ FTP server □ Web server □ Modbus TCP server □ Modbus TCP client □ SoMachine Manager □ SNMP □ Ethernet IP device □ Modbus device
	1 x USB-A	Connection of a USB memory stick for transferring (uploading/ downloading) programs, data and/or firmware
	1 x mini-USB	Programming port (480 Mbps)
	1 x 9-way male SUB-D	CANopen master connection
	1 x 9-way male SUB-D	CANmotion master connection
	1 x 15-way female SUB-D	Master encoder
LMC058LF424	1 x RJ45 Configurable as RS232 or RS485	ASCII or RTU exchange with Modbus communication protocol
	1 x RJ45 (MDI/MDIX port)	□ FTP server □ Web server □ Modbus TCP server □ Modbus TCP client □ SoMachine Manager □ SNMP □ Ethernet IP device □ Modbus device
	1 x USB-A	Connection of a USB memory stick for transferring (uploading/ downloading) programs, data and/or firmware
	1 x mini-USB	Programming port (480 Mbps)
	1 x 9-way male SUB-D	CANopen master connection
	1 x 9-way male SUB-D	CANmotion master connection
	1 x 15-way female SUB-D	Master encoder
	2 PCI slots for communication modules = 2 x 9-way male SUB-D	Addition of optional communication modules for a serial link and a connection on the bus Profibus DP

Embedded Ethernet

LMC058 motion controllers have an embedded Ethernet link via a direct connection to their RJ45 port.
□ Speed: "10 BaseT" and "100 BaseTX" with auto-negotiation
□ RJ45 port (MDI/MDIX): automatic adaptation to a straight or crossed cable

References	Protocols	Number of connections
LMC058LF42	Modbus server	8
LMC058LF424	Modbus device	2
	SoMachine	3 *(1)*
	Ethernet IP device	16
	FTP server	4
	Web server	10

(1) The Oscilloscope function uses one connection.

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Modicon LMC058 motion controller
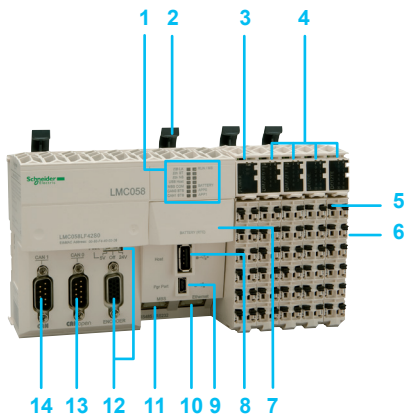
Description

The LMC058LF42 motion controller comprises:

1 A display block with:
- 4 motion controller status LEDs (RUN/MS, BATTERY, APP0 and APP1)
- 7 built-in communication port status LEDs (*Eth* LA, *Eth* ST, *Eth* NS, USB Host, MBS COM, CAN 0 STS, CAN 1 STS)

2 Locking lever for mounting/dismounting on ⌐ symmetrical rail

3 A 24 V ⎓ power supply module with removable terminal block and locking lever, display block and slot for a label

4 I/O modules, each one with a removable terminal block with locking lever, a display block showing the I/O states and a slot for a label-holder

5 Removable terminal block with locking lever for locking/unlocking

6 On the side, an expansion bus connector for connecting to the next module

7 A slot for the RTC (Real Time Clock) battery

8 A USB-A connector (marked Host) for connecting a USB memory stick for transferring programs, data or firmware updates

9 A USB-B mini-connector (marked Pgr Port) for connecting to the programming PC

10 An RJ45 connector (marked Ethernet) for connecting to the Ethernet network and/or Magelis XBTGC graphic terminal

11 An RJ45 connector (marked MBS) for the RS232 or RS485 serial link

12 A 15-way female SUB-D connector, marked ENCODER, for connecting the master encoder and a selector switch for the 3 encoder supply voltage states (5 V, Off, 24 V)

13 A 9-way male SUB-D connector, marked CAN0, for connecting to the CANopen bus

14 A 9-way male SUB-D connector, marked CAN1, for connecting to the CANmotion bus
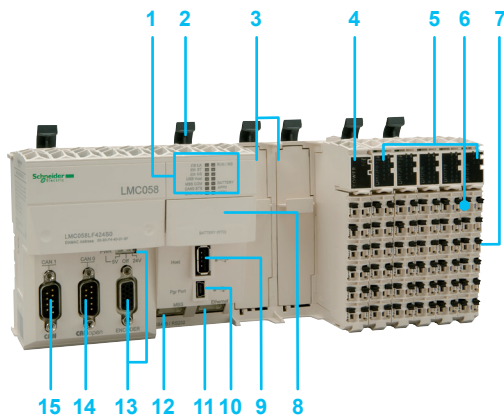
The LMC058LF424 motion controller comprises:

1 A display block with:
- 4 motion controller status LEDs (RUN/MS, BATTERY, APP0 and APP1)
- 7 built-in communication port status LEDs (*Eth* LA, *Eth* ST, *Eth* NS, USB Host, MBS COM, CAN 0 STS, CAN 1 STS)

2 Locking lever for mounting/dismounting on ⌐ symmetrical rail

3 Two free PCI slots for the communication modules

4 A 24 V ⎓ power supply module with removable terminal block and locking lever, display block and slot for a label

5 I/O modules, each one with a removable terminal block with locking lever, a display block showing the I/O states and a slot for a label-holder

6 Removable terminal block with locking lever for locking/unlocking

7 On the side, an expansion bus connection for the link with the next module

8 A slot for the RTC (Real Time Clock) battery

9 A USB-A connector (marked Host) for connecting a USB memory stick for transferring programs, data or firmware updates

10 A USB-B mini-connector (marked Pgr Port) for connecting to the programming PC

11 An RJ45 connector (marked Ethernet) for connecting to the Ethernet network and/or Magelis XBTGC graphic terminal

12 An RJ45 connector (marked MBS) for the RS232 or RS485 serial link

13 A 15-way female SUB-D connector, marked ENCODER, for connecting the master encoder and a selector switch for the 3 encoder supply voltage states (5 V, Off, 24 V)

14 A 9-way male SUB-D connector, marked CAN0, for connecting to the CANopen bus

15 A 9-way male SUB-D connector, marked CAN1, for connecting to the CANmotion bus

LMC058LF42

LMC058LF424

References					
LMC058 motion controllers, 24 V ⎓ power supply *(1)*					
No. of I/O	**Inputs**	**Outputs**	**Built-in communication ports**	**Reference**	**Weight kg** *lb*
42 I/O	■ 26 x 24 V ⎓ digital inputs including 8 counter inputs (200 kHz)	■ 16 digital transistor outputs (0.5 A) including 4 reflex outputs	□ 1 RJ45 port: Ethernet □ 1 SUB-D port (9-way male): CANopen master □ 1 SUB-D port (9-way male): CANmotion master □ 1 SUB-D port (15-way female): master encoder □ 1 USB-A port: program transfer □ 1 USB-B mini-port: software programming □ 1 RJ45 port: RS232/RS485 serial link	**LMC058LF42**	0.550 *1.213*
42 + 4 I/O	■ 26 x 24 V ⎓ digital inputs including 8 counter inputs (200 kHz) ■ 4 analog inputs 10 V/- 10 V, 4-20 mA/ 0-20 mA, 12-bit resolution	■ 16 digital transistor outputs (0.5 A) including 4 reflex outputs	□ 1 RJ45 port: Ethernet □ 1 SUB-D port (9-way male): CANopen master □ 1 SUB-D port (9-way male): CANmotion master □ 1 SUB-D port (15-way female): master encoder □ 1 USB-A port: program transfer □ 1 USB-B mini-port: software programming □ 1 RJ45 port: RS232/RS485 serial link □ + 2 free PCI slots for optional communication modules *(2)*: RS232/ RS485 serial link and Profibus DP bus	**LMC058LF424**	0.770 *1.698*

(1) The motion controllers Modicon LMC058 require a power supply with a nominal voltage of 24 V ⎓.
The 24 V ⎓ power supply must be rated Separated Extra Low Voltage (SELV-rated) according to IEC 61140.
The SELV-rating means that SELV isolation is provided between the electrical input and output of the power supply.
(2) To be ordered separately, see .

TM5ACTLC100

TM5ACTCH100

TCS XCN AMUM3P

References					
Accessories					
Designation	**Used for**	**Colour**	**Sold in lots of**	**Unit reference**	**Weight kg** *lb*
Plain text cover holder (label-holder)	Labelling the terminal blocks on the I/O channels	Transparent	**100**	**TM5ACTCH100**	0.002 *0.004*
Terminal block shield locking clip *(Order with plain text cover holder TM5ACTCH100)*	Locking plain text cover holder TM5ACTCH100	Transparent	**100**	**TM5ACTLC100**	0.001 *0.002*
Sheet of 92 precut paper labels	Plain text cover holder TM5ACTCH100	White	**100**	**TM5ACTLS100**	0.001 *0.002*

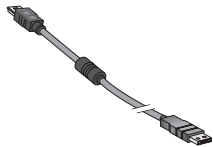| Connection cables					
Designation	**Used from**	**to**	**Length**	**Reference**	**Weight kg** *lb*
Software programming cable Baud rate: 480 Mbps max. Protocol: Modbus, HTTP, FTP, Codesys or virtual, non-isolated	PC USB port	USB mini-port on LMC058 motion controllers, the ATV-IMC card or XBTGC graphic touch screen terminals	3 m	**TCSXCNAMUM3P**	0.065 0.143
RS485 serial link cables Modbus protocol	RJ45 port on XBTGC graphic touch screen terminals	RJ45 port on LMC058 motion controllers	2.5 m	**XBTZ9980**	0.230 *0.507*
RS232 serial link cables Character mode	SUB-D port (9-way female) on DTE *(1)*: printer, hand-held bar code reader, etc.	RJ45 port on LMC058 motion controllers	3 m	**TCSMCN3M4F3C2**	0.150 *0.331*
	SUB-D port (9-way female) on DCE *(2)*: GSM modem	RJ45 port on LMC058 motion controllers	3 m	**TCSMCN3M4M3S2**	0.150 *0.331*
Cable for master encoder input	Incremental encoders or SSI serial absolute encoders (1 stripped end)	15-way female SUB-D port on LMC058 motion controllers (1 High Density 15-way male SUB-D connector)	1 m	**VW3M4701**	–

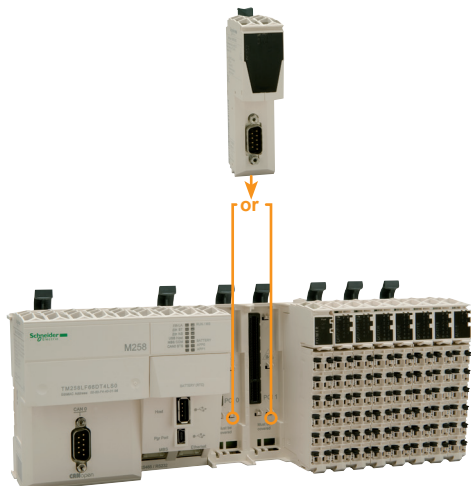*(1) DTE: Data Terminal Equipment*
(2) DCE: Data Communication Equipment

TM5PCRS● communication module: for mounting the two free PCI slots in the Modicon M258 logic controller or Modicon LMC058 motion controller


Presentation

TM5PCRS● communication modules are designed for **TM258LD42DT4L**, **TM258LF42DT4L**, **TM258LF42DR**, **TM258LF66DT4L** logic controllers, **LMC058LF42** and **LMC058LF424** motion controllers and are installed in one of the two free PCI slots in.

TM5PCRS● communication modules can be used to configure one or two additional Modbus or ASCII serial links as RS232 or RS485.

Nota: the maximum number of communication modules is 2.

Modbus and Character mode serial links

Cabling system: Please consult our catalog Modbus for machines
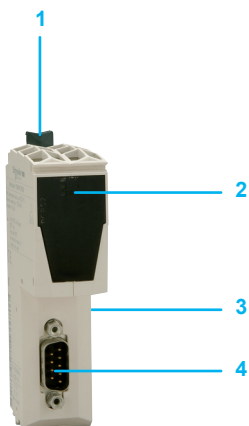
Description

TM5PCRS● communication modules comprise:
1 A locking clip for mounting/dismounting on the controller
2 A channel and module diagnostics LED display block
3 A connector for linking to the controller
4 A SUB-D connector (male 9-way) for connection to the serial link

| Serial link		
LED	**Colour**	**Status: on**
Status	Green	Operation in progress
	Red	Controller starting
RXD	Yellow	Reception on interface: □ RS232 with TM258PCRS2 □ RS485 with TM258PCRS4
TXD	Yellow	Transmission on interface: □ RS232 with TM258PCRS2 □ RS485 with TM258PCRS4

Schneider
Electric

TM5PCRS●

References					
Description	**Used for**	**Physical layer/ protocols**	**Built-in port**	**Reference**	**Weight kg/*lb***
Modbus serial link communication modules	Logic controllers: □ TM258LD42DT4L, □ TM258LF42DT4L, □ TM258LF42DR, □ TM258LF66DT4L Motion controllers: □ LMC058LF42, □ LMC058LF424	RS232/ Modbus/ASCII, SoMachine	SUB-D connector (male 9-way)	**TM5PCRS2**	0.064/ *0.14*
		RS485 / Modbus/ASCII, SoMachine	SUB-D connector (male 9-way)	**TM5PCRS4**	0.064/ *0.14*

*Presentation,
description*

Modicon LMC058 motion controller
Communication modules for connection to the
Profibus DP fieldbus

Presentation

Profibus DP (Decentralized Peripherals)

Profibus (Process Field Bus) is a fieldbus for controlling decentralized sensors, actuators or PLCs via a central master controller.
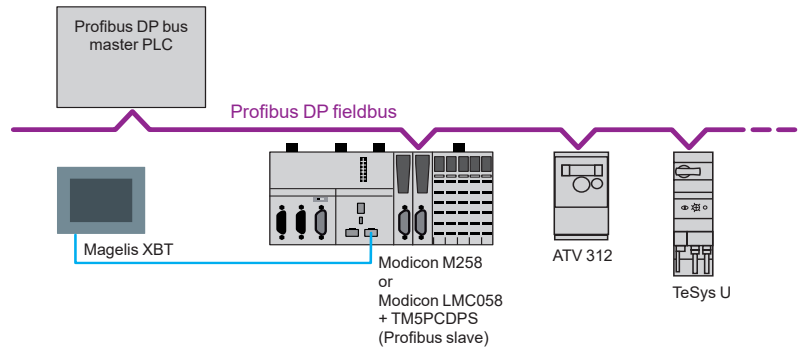
Connectable devices

The following Schneider Electric devices can be connected to this bus:
■ Modicon TM258LD42DT4L, TM258LF42DT4L, TM258LF42DR and TM258LF66DT4L logic controllers equipped with the **TM5PCDPS** communication module
■ Modicon LMC058LF42 and LMC058LF424 motion controllers equipped with the **TM5PCDPS** communication module
■ TeSys U and TeSys T starter-controllers
■ Momentum and Modicon STB distributed I/O
■ Altivar 312/61/71 variable speed drives for asynchronous motors
■ Lexium 05 and 15 servo drives for brushless motors
■ Altistart ATS 48 soft start-soft stop units
And any third-party device compatible with Profibus DP standard profiles.
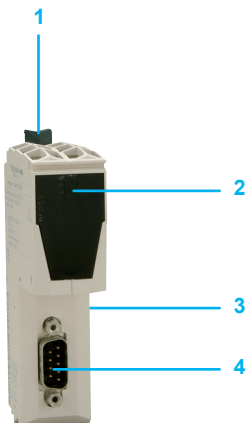
Profibus communication module

The **TM5PCDPS** communication module is designed for **TM258LD42DT4L**, **TM258LF42DT4L**, **TM258LF42DR** and **TM258LF66DT4L** logic controllers and **LMC058LF424●** motion controllers and is installed in one of the two free PCI slots.

The **TM5PCDPS** communication module is used to configure the connection as a slave on the Profibus DP fieldbus.

***Note**: The maximum number of communication modules is two (see) with a single **TM5PCDPS** Profibus DP slave communication module.*
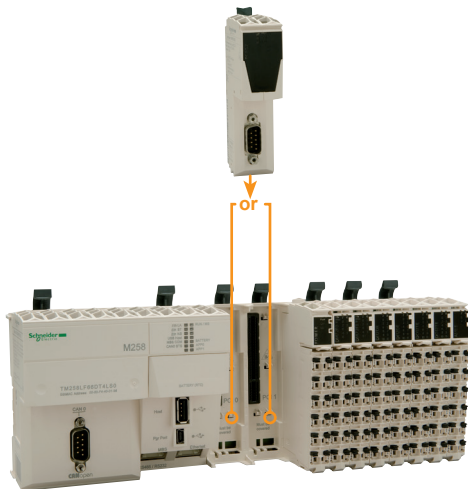
TM5PCDPS communication module: For mounting on one of the two free PCI slots on a Modicon M258 controller or Modicon LMC058 motion controller

Description

The **TM5PCDPS** communication module features:
1 A locking clip for mounting/removing the module onto/from the logic controller or motion controller
2 A LED display block for the module channels and diagnostics
3 A connector for linking the logic controller or motion controller
4 A SUB-D connector (male 9-way) for connection to the Profibus fieldbus

References

Modicon LMC058 motion controller
Communication modules for connection to the
Profibus DP fieldbus

TM5 PCDPS

490NAD91103

References					
Modicon TM5 communication module					
Description	**For use with**	**Profile**	**Built-in port**	**Reference**	**Weight kg/ lb**
Communication module for Profibus DP (244 I/O data bits)	Logic controllers: □ TM258 LD42DT4L □ TM258 LF42DT4L □ TM258 LF42DR □ TM258 LF66DT4L Motion controllers: □ LMC058LF42 □ LMC058LF424	V1 slave	SUB-D connector (male 9-way)	**TM5PCDPS**	0.064/ *0.14*

Profibus DP fieldbus connection components			
Description	**Length** m/*in.*	**Reference**	**Weight kg**
Profibus DP connection cables	100 / *328.08*	**TSXPBSCA100**	–
	400 / *1312.33*	**TSXPBSCA400**	–

Description	**Type**	**Reference**	**Weight kg/ lb**
Remote I/O on Profibus DP fieldbus	Modicon STB network interface module	**STBNDP2212**	0.140/ *0.308*
Connectors for remote I/O communication module	Line terminator	**490NAD91103**	–
	In-line connector	**490NAD91104**	–
	In-line connector and terminal port	**490NAD91105**	–

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