Motion controller

Modicon LMC058

Catalogue
October **2012**

Schneider Electric

Contents

Modicon LMC058 Motion controller

Modicon LMC058 Motion controller

Applications		**General machine control with motion:** □ Packaging □ Conveying □ ...
		42 digital I/O

User memory	RAM	64 MB (program + data)
	Flash	128 MB
Typical Boolean instruction time		22 ns
User program size		128 program Kinstructions
Power supply		24 V ⎓
Channel connection		Via removable spring terminal blocks (supplied)
Inputs	Digital	26 x 24 V ⎓ inputs including 8 counter inputs (100 kHz)
	Analog	–
Digital outputs	Transistor	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
	USB-A port	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)
	SUB-D connector (9-way male) (CAN0)	CANopen bus master (63 slaves)
	SUB-D connector (9-way male) (CAN1)	CANmotion bus master (8 synchronized axis or 63 slaves)
	SUB-D connector (15-way female) (Encoder)	Encoder input (incremental or SSI)
	RJ45 port (Ethernet)	Ethernet TCP IP, Web Server, FTP, Ethernet Modbus TCP
Optional communication ports		–
Motion controller type		**LMC058 LF42**
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General machine control with motion:
□ Packaging
□ Conveying
□ Machine control with motion

42 digital I/O
+ 4 analog inputs

64 MB (program + data)
128 MB
22 ns
128 program Kinstructions
24 V ⎓
Via removable spring terminal blocks (supplied)
26 x 24 V ⎓ inputs including 8 counter inputs (100 kHz)
4 inputs + 10 V/- 10 V, 4-20 mA/0-20 mA 12-bit resolution
16 outputs (0.5 A) including 4 reflex outputs
–
Programming port for SoMachine V2.0 software
Connection of a USB memory stick for transferring programs, data files, firmware updates
RS232 serial link, RS485 serial link (supplies 250 mA, 5 V for HMI power supply) Protocols: Modbus ASCII/RTU Master/Slave, ASCII (character string)
CANopen bus master (63 slaves)
CANmotion bus master (8 synchronized axis or 63 slaves)
Encoder input (incremental or SSI)
Ethernet TCP IP Modbus slave, Web Server, FTP
2 PCI slots available on controller for optional communication modules TM5 PC●●● *(1)*: □ Modbus or ASCII serial link □ connection to Profibus DP bus (slave)
LMC058 LF424
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(1) To be ordered separately, see page 54.

Modicon LMC058 Motion controller

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 all 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.

See page 76.

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.

Modicon LMC058 Motion controller

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).
With an execution speed of **22 ns** for a Boolean instruction i.e. more than **45,000 Boolean instructions** per ms, the capacity to manage up to **2400 I/O**, a **64 MB** RAM that can store data and programs as well as a **128 MB** Flash memory for application and data backup, the Modicon LMC058 motion controller greatly enhances the machine's capabilities.
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 all its characteristics, the Modicon LMC058 motion controller has been developed to minimize the costs of assembly, cabling, commissioning and maintenance.
To this end:
- All the modules have removable terminals.
- All 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 all Modicon LMC058 motion controller s 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.

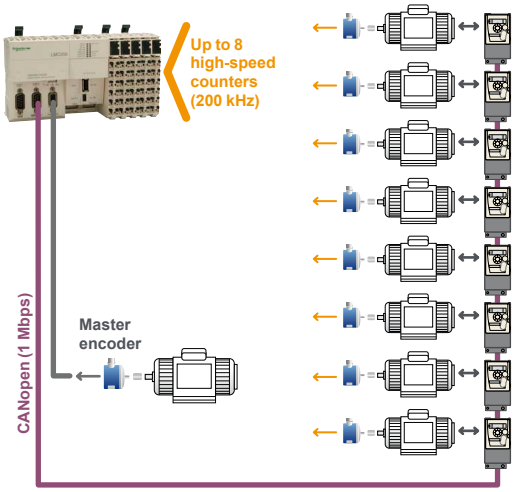
SoMachine software platform

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.

*Nota: AFB are available only on the type S motion controllers : **LMC058●●●S0** with SoMachine extension. See page 79.*



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

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.

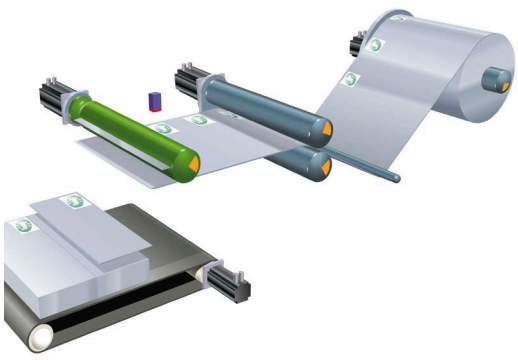
In order to minimize the number of machine product references, optimize assembly time and cut costs, the LMC058LF424 motion controller includes 4 voltage or current analog inputs with 12-bit resolution as standard.

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.

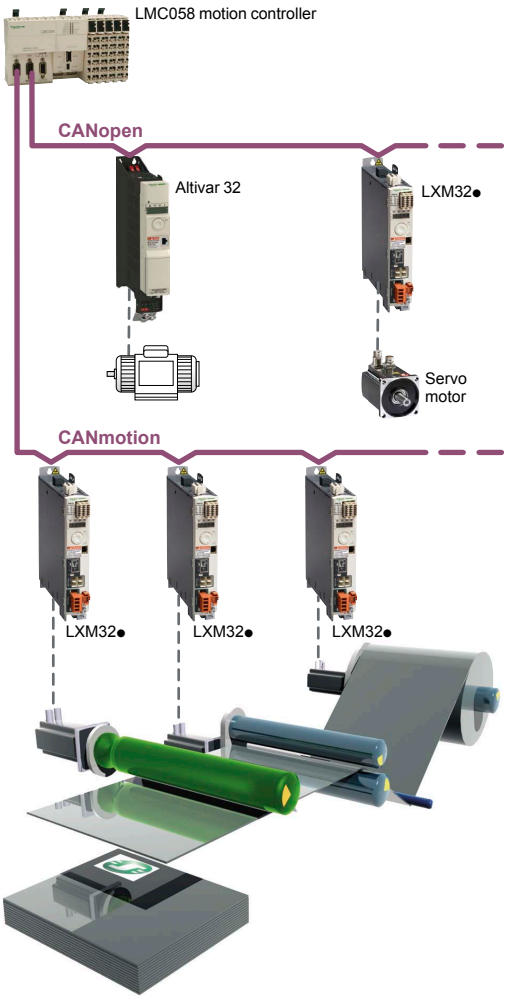


Lexium 32 servo drives: monitoring cutting to length

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 all LMC058 motion controllers (in this case the Motion tasks are independent and/or synchronized axis Motion tasks - cam profiles, electronic gearing, interpolation)

Modicon LMC058 Motion controller



Ethernet communication

All Modicon LMC058 motion controller references 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, all the LMC058 motion controllers have 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

All Modicon LMC058 motion controller references have 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

All Modicon LMC058 motion controller references have 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

All motion controllers Modicon LMC058 have a serial link as standard that can be configured as either RS232 or RS485 and incorporates the two most commonly used protocols on the market:

- Modbus ASCII/RTU Master or Slave
- 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.

Modicon LMC058 Motion controller

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

Presentation

Range

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

Functions

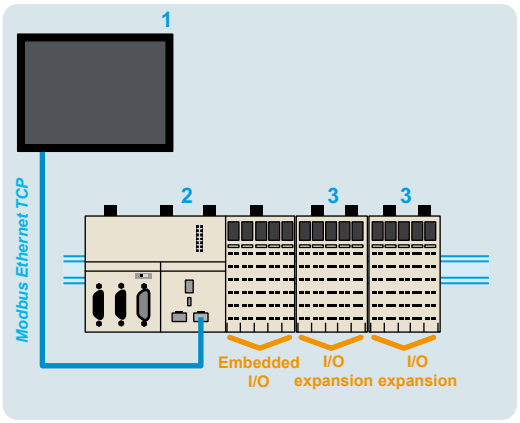
The main component in a system is the motion controller: two LMC058 motion controller models are offered to cover different control requirements (pressure, temperature, counting, velocity, positioning, motion, etc.).
LMC058 motion controllers and I/O modules are programmed using SoMachine software.

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

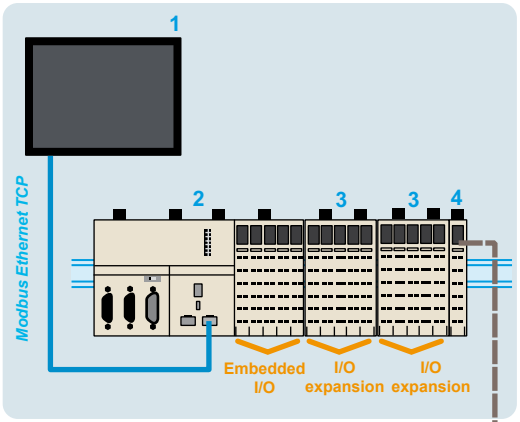
All LMC058 motion controllers have two groups of high-speed I/O with, for each group:
□ Four sink type high-speed inputs (up to 200 kHz), 2 standard inputs and 2 source type high-speed outputs (up to 100 kHz) dedicated to HSC or PWM functions
□ A high-speed input which can be used as an “Encoder capture 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).

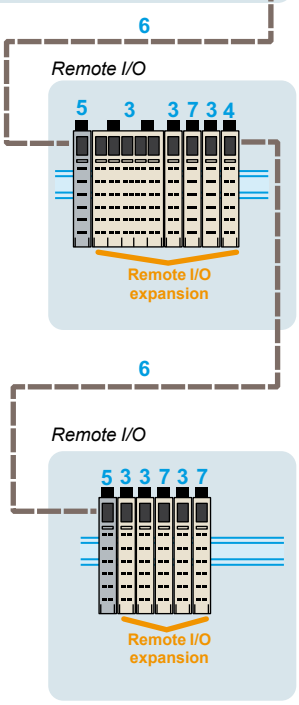
Conformity to standards

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



Local I/O





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). All the elements which make up the system are mounted on a symmetrical rail using the locking levers located on top of each 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: all connectors (RJ45, USB, mini-USB and SUB-D type) are accessible, as they are located on the motion controller front panels.

Local or remote architecture

Local I/O

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 XBTGT supervisory graphic touch screen terminal
2 LMC058 motion controller
3 Compact blocks or I/O modules

Remote I/O

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 all data acquisition**, since all the expansion modules are on the same backplane bus.

Remote I/O configuration

1 XBTGT 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

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

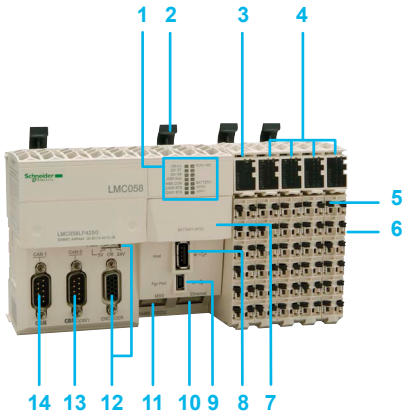
Embedded Ethernet

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
	Ethernet IP device	16
	FTP server	4
	Web server	10

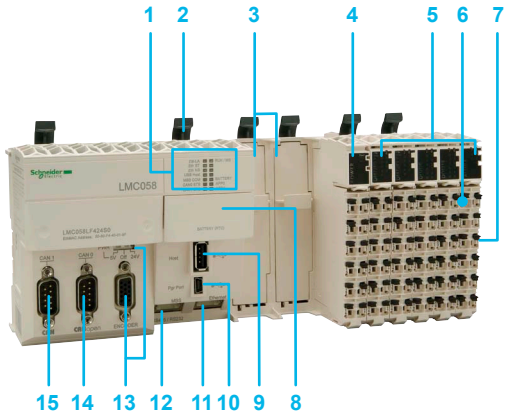


Description

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 XBTGT 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 XBTGT 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)
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
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

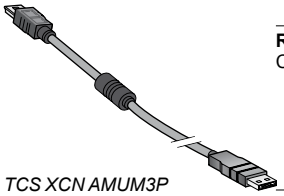
(1) The motion controllers Modicon LMC058 require a power supply with a nominal voltage of 24 V ⎓.
The 24 V ⎓ power supply must be rated Separated Extra Low Voltage (SELV-rated) according to IEC 61140.
The SELV-rating means that SELV isolation is provided between the electrical input and output of the power supply.
(2) To be ordered separately, see page 54.


TM5ACTLC100


TM5ACTCH100

TM5ACLITW1


TM5ACLT1


TCS XCN AMUM3P

References

Accessories

Designation	Used for	Colour	Sold in lots of	Unit reference	Weight kg
Plain text cover holder (label-holder)	Labelling the terminal blocks on the I/O channels	Transparent	100	**TM5ACTCH100**	0.002
Terminal block shield locking clip *(Order with plain text cover holder TM5ACTCH100)*	Locking plain text cover holder TM5ACTCH100	Transparent	100	**TM5ACTLC100**	0.001
Sheet of 92 precut paper labels	Plain text cover holder TM5ACTCH100	White	100	**TM5ACTLS100**	0.001
Coloured plastic markers	Labelling 16 connection channel terminals	White	1	**TM5ACLITW1**	0.015
		Red	1	**TM5ACLITR1**	0.015
		Blue	1	**TM5ACLITB1**	0.015
Metal tool	Inserting/removing TM5ACLIT●1 markers	Black	1	**TM5ACLT1**	0.030

Connection cables

Designation	Used from	to	Length	Reference	Weight kg
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 XBTGT graphic touch screen terminals	3 m	**TCSXCNAMUM3P**	0.065
RS485 serial link cables Modbus protocol	SUB-D port (25-way) on Small Panels: XBTN401, XBTN410, XBTR410, XBTR411, XBTGT2... GT7	RJ45 port on LMC058 motion controllers	1.8 m	**XBTZ938**	0.230
	RJ45 port on XBTGT graphic touch screen terminals	RJ45 port on LMC058 motion controllers	2.5 m	**XBT9980**	0.230
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
	SUB-D port (9-way female) on DCE *(2)*: GSM modem	RJ45 port on LMC058 motion controllers	3 m	**TCSMCN3M4M3S2**	0.150
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

Modicon LMC058 Motion controller
I/O expansion modules
Local and remote I/O expansion modules

Applications		**Local and/or remote I/O (IP 20)**				**Remote I/O expansion bus (IP 67)**	
Compatibility		■ Modicon M258 logic controller ■ Modicon LMC058 Motion controller					
I/O type		**Digital**	**Analog**	**Digital/analog**	**Expert**	**Digital**	**Analog**
Remote I/O configuration	Hardware	 *Modicon TM5 transmitter/receiver:* ***For use with remote I/O*** *(1)* +				 *Modicon TM5 transmitter/receiver:* ***Required*** *(1)* +	
	Bus type	*TM5 expansion bus*				*TM7 expansion bus*	
							
Inputs	Number (depending on model)	2 to 12 inputs	2 to 6 inputs	Digital: 12 to 14 inputs Analog: 4 inputs	1 or 2 channels with 2 inputs	8 to 16 inputs	2 to 4 inputs
	Type (depending on model)	24 V ⎓ 100/120 V ∿, 100/240 V ∿	Voltage, Current, Temperature	Digital: 24 V ⎓ Analog: Voltage, Current	5 V ⎓, 24 V ⎓ (from 50 kHz to 1 MHz)	24 V ⎓	Voltage, Current, Temperature Resistance
Outputs	Number (depending on model)	2 to 12 outputs	2 to 4 outputs	Digital: 6 to 18 outputs Analog: 2 outputs	–	8 to 16 outputs	2 to 4 outputs
	Type (depending on model)	24 V ⎓ 30/230 V ∿, 100/240 V ∿	- 10…+ 10 V, 0…20 mA	Digital: 24 V ⎓ Analog: Voltage/ Current	–	24 V ⎓ Transistor/Source	- 10…+ 10 V, 0…20 mA

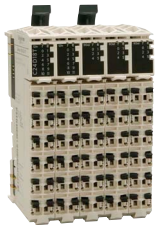
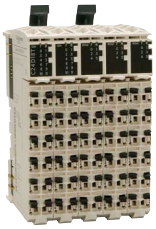
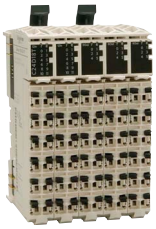
Type of expansion module	**Modicon TM5 digital module**	**Modicon TM5 analog module**	**Modicon TM5 compact block**	**Modicon TM5 expert module**	**Modicon TM7 digital block**	**Modicon TM7 analog block**
Page	20	28	16	32	40	40

(1) Modicon TM5 transmitter/receiver modules, see page 38.

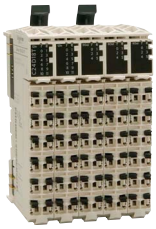
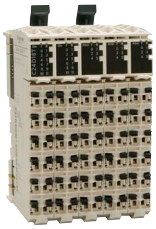
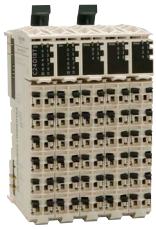
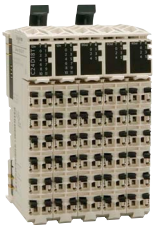
Modicon LMC058 Motion controller
I/O expansion modules
Distributed I/O expansion modules

Applications		**Performance distributed I/O (IP 20)**	**Performance distributed I/O (IP 67)**
Compatibility		■ Modicon M258 logic controller ■ Modicon LMC058 Motion controller	
			
Available buses and networks		■ CANopen bus	■ CANopen bus
Configuration with I/O expansion modules	Module type	**Modicon TM5 modules and/or Modicon TM7 blocks**: □ Digital I/O modules □ Analog I/O modules □ Common distribution modules (TM5 only)	**Modicon TM5 modules and/or Modicon TM7 blocks**: □ Digital I/O modules □ Analog I/O modules □ Common distribution modules (TM5 only)
	Capacity	For 1 Modicon TM5 interface module: 40 TM5/TM7 modules max. Including: □ Digital I/O modules: 240 inputs and 240 outputs max. □ Analog I/O modules: 20 inputs and 20 outputs Maximum distance from the expansion bus (TM5 or TM7): 2500 m. Maximum distance between 2 islands of TM5 modules: 100 m. Maximum distance between 2 TM7 blocks: 100 m. Maximum distance between 1 island of TM5 modules and 1 TM7 block: 100 m.	For 1 TM7 CANopen interface block: 40 TM5/TM7 modules max. Including: □ Digital I/O modules: 240 inputs and 240 outputs max. □ Analog I/O modules: 20 inputs and 20 outputs Maximum distance from the expansion bus (TM5 or TM7): 2500 m. Maximum distance between 2 islands of TM5 modules: 100 m. Maximum distance between 2 TM7 blocks: 100 m. Maximum distance between 1 island of TM5 modules and 1 TM7 block: 100 m.
Integrated I/O	Number and type (depending on model)	–	8 to 16 digital channels that can be configured as inputs (24 V ⎓) or outputs (24 V ⎓)
Type of distributed I/O expansion module		**Modicon TM5 CANopen interface module**	**Modicon TM7 CANopen interface blocks**
Page		58	62

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 compact blocks

Applications	Modicon TM5 compact block	**20 I/O**	**36 I/O**	**42 I/O**
	Compatibility	**Modicon M258 logic controller** **Modicon LMC058 Motion controller**		
				
Channel connection		With removable spring terminal blocks (supplied)		
Digital inputs	Number	**12**	**24**	**24**
	Nominal input voltage	24 V ⎓	24 V ⎓	24 V ⎓
	IEC/EN 61131-2 conformity	Type 1	Type 1	Type 1
	Type of signal *(1)*	Sink	Sink	Sink
	Type of wiring	3-wire	1-wire	1-wire
	Limit values	20.4... 28.8 V ⎓	20.4... 28.8 V ⎓	20.4... 28.8 V ⎓
	Nominal input current	3.75 mA	3.75 mA	3.75 mA
	Input impedance	6.4 kΩ	6.4 kΩ	6.4 kΩ
	State 0	5 V max. ⎓	5 V max. ⎓	5 V max. ⎓
	State 1	15 V min. ⎓	15 V min. ⎓	15 V min. ⎓
Digital outputs	Number	**8**, transistor	**12**, relays with NO contact	**18**, transistor
	Nominal output voltage	24 V ⎓	24 V ⎓	24 V ⎓
	Output current per channel	0.5 A	0.5 A	0.5 A
	Output current per group of channels	1 A max.	5 A max.	2 A max.
	Type of signal *(1)*	Source	Source	Source
	Type of wiring	3-wire	1-, 2- or 3-wire	2-wire
	Limit values	20.4...28.8 V ⎓	20.4...28.8 V ⎓	20.4...28.8 V ⎓
	Short-circuit and overload protection	Yes	Yes	Yes
Analog inputs	Number			
	Type			
	Range			
	Resolution			
	Sampling period without filtering			
	Sampling period with filtering			
Analog outputs	Number			
	Type			
	Range			
	Resolution			
	Response time			
Power supply				
Isolation	Channel-to-channel			
	Between channel groups			
	Channel-to-bus			
Type of Modicon TM5 compact block		**TM5 C12D8T**	**TM5 C24D12R**	**TM5 C24D18T**
Page		19	19	19

(1) Source output: PNP output. Sink output: NPN output.

24 I/O	16 I/O		
Modicon M258 logic controller **Modicon LMC058 Motion controller**			
			
With removable spring terminal blocks (supplied)			
12			
24 V ⎓			
Type 1			
Sink			
2-wire			
20.4... 28.8 V ⎓			
3.75 mA			
6.4 kΩ			
5 V max. ⎓			
15 V min. ⎓			
6, transistor			
24 V ⎓			
0.5 A			
2 A max.			
Source			
2-wire			
20.4...28.8 V ⎓			
Yes			
4	**8**	**8**	**8**
Voltage/current	Voltage	Current	**4** Voltage + **4** current
- 10…+ 10 Vdc 0…20 mA/4…20 mA	- 10…+ 10 Vdc	0….20 mA/4…20 mA	Voltage : - 10…+ 10 Vdc Current : 0…20 mA/4…20 mA
12 bits	11 bits + sign	12 bits	Voltage: 11 bits + sign Current: 12 bits
300 µs	–	–	–
1 ms	50 ms	50 ms	50 ms
2	**8**	**8**	**8**
Voltage/current	Voltage	Current	**4** Voltage + **4** current
- 10…+ 10 Vdc 0…20 mA	- 10…+ 10 Vdc	0…20 mA	Voltage : - 10…+ 10 Vdc Current : 0…20 mA
12 bits	11 bits + sign	12 bits	Voltage: 11 bits + sign Current: 12 bits
1 ms max.	20 ms max. 5 ms per channel	20 ms max. 5 ms per channel	20 ms max. 5 ms per channel
Internal	Internal	Internal	Internal
Non-isolated	Non-isolated	Non-isolated	Non-isolated
–	–	–	–
500 V ∼ RMS	500 V ∼ RMS	500 V ∼ RMS	500 V ∼ RMS
TM5 C12D6T6L	**TM5 CAI8O8VL**	**TM5 CAI8O8CL**	**TM5 CAI8O8CVL**
19	19	19	19

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 compact blocks

Presentation

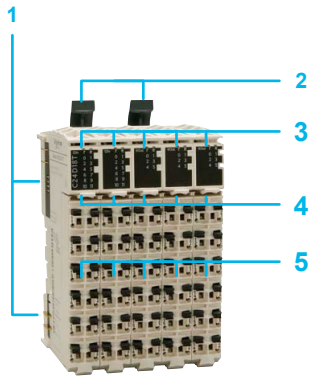
Modicon TM5 compact blocks offer a low-cost solution for expanding digital and/or analogue I/O control system configurations.
They consist of a block containing the circuit boards, the bus bases, and the TM5 ACTB12 removable terminal blocks.

They complement the embedded I/O in the various LMC058 motion controllers and represent a cost-effective way to create configurations requiring a large number of digital or analogue channels.

The TM5 C●●●●●●● I/O compact block offer consists of:
- A 24 V ⎓ digital I/O compact block, with 12 sink inputs and 8 transistor outputs
- A 24 V ⎓ digital I/O compact block, with 24 sink inputs and 12 relay outputs
- A 24 V ⎓ digital I/O compact block, with 24 sink inputs and 18 transistor outputs
- A 24 V ⎓ mixed I/O compact block, with 12 sink digital inputs and 4 analogue inputs, and 6 transistor digital outputs and 2 analogue outputs
- 3 x 24 V ⎓ analogue I/O compact block:
  - a block with 8 voltage I/O
  - a block with 8 current I/O
  - a block with 4 voltage I/O + 4 current I/O.

Regardless of which compact block is chosen, the format is the same and corresponds to five I/O expansion modules.
TM5 compact blocks are connected to the TM5 expansion bus on LMC058 motion controllers.

The advantage of these blocks is their compact size, ease of wiring and, depending on the reference, the option of combining different types of channel.



Description

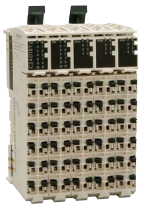
TM5 compact blocks comprise:
1. On each side of the base, a bus expansion connection for the link with the previous controller or block
2. Two mechanical locking clips for mounting/dismounting on a symmetrical rail
3. Five LED display blocks for the channels and compact block diagnostics
4. Five slots for the plain text cover holder (label-holder)
5. Five removable spring terminal blocks, each with locking clip and slots for coloured identifiers

Modicon LMC058 Motion controller

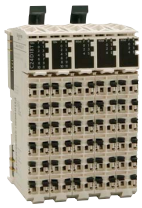
I/O expansion modules

Modicon TM5 compact blocks

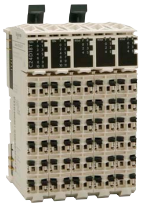
Device colour: white



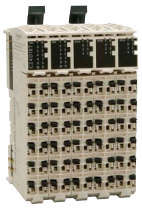
TM5C12D8T



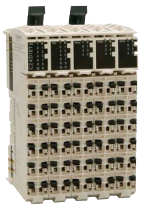
TM5C24D12R



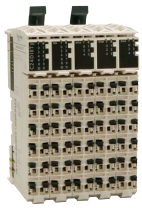
TM5C24D18T



TM5C12D6T6L



TM5CAI8O8VL



TM5CAI8O8CL

TM5CAI8O8CVL

TM5ACTB●●

TM5ACTLC100

TM5ACTCH100

TM5ACLT1

TM5ACLITW1

References

Number of I/O	Inputs	Outputs *(1)*	Reference	Weight kg lb
TM5 I/O digital compact blocks				
20 I/O	12 digital inputs, 24 V ⎓, Sink, 3-wire	8 transistor digital outputs, 3-wire, 24 V ⎓, Source, 0.5 A	**TM5C12D8T**	0.037 *0.082*
36 I/O	24 digital inputs, 24 V ⎓, Sink, 1-wire, 0.5 A max	12 digital outputs, 5 A relay, with NO contact, 30 V ⎓/230 V ∿	**TM5C24D12R**	0.037 *0.082*
42 I/O	24 digital inputs, 24 V ⎓, Sink, 1-wire	18 transistor digital outputs, 24 V ⎓, Source, 0.5 A, 2-wire	**TM5C24D18T**	0.037 *0.082*
TM5 I/O digital/analogue compact blocks				
24 I/O	12 digital inputs, 24 V ⎓, Sink, 2-wire 4 analogue inputs - 10…+ 10 V, 0…20 mA, 4…20 mA, resolution 12 bits	6 transistor digital outputs, 2-wire, 24 V ⎓, Source, 0.5 A 2 analogue outputs, - 10…+ 10 V, 0…20 mA, resolution 12 bits	**TM5C12D6T6L**	0.037 *0.082*
TM5 I/O analogue compact blocks				
16 I/O	8 analogue voltage inputs - 10…+ 10 Vdc Resolution 11 bits + sign	8 analogue voltage ouputs - 10…+ 10 Vdc Resolution 11 bits + sign	**TM5CAI8O8VL**	0.037 *0.082*
	8 analogue current inputs 0…20 mA/4…20 mA Resolution 12 bits	8 analogue current ouputs 0…20 mA Resolution 12 bits	**TM5CAI8O8CL**	0.037 *0.082*
	8 analogue inputs: □ 4 voltage inputs - 10…+ 10 Vdc □ 4 current inputs 0…20 mA/4…20 mA Resolution □ voltage: 11 bits + sign □ current : 12 bits	8 analogue outputs: □ 4 voltage outputs - 10…+ 10 Vdc □ + 4 current outputs 0…20 mA Resolution □ voltage: 11 bits + sign □ current : 12 bits	**TM5CAI8O8CVL**	0.037 *0.082*

Terminal blocks

Use	Description	Sold in lots of	Unit reference	Weight kg lb
For I/O compact blocks, 24 V ⎓ power supply	12 spring terminals	1	**TM5ACTB12**	0.020 *0.044*
		10	**TM5ACTB1210**	0.200 *0.441*

Accessories

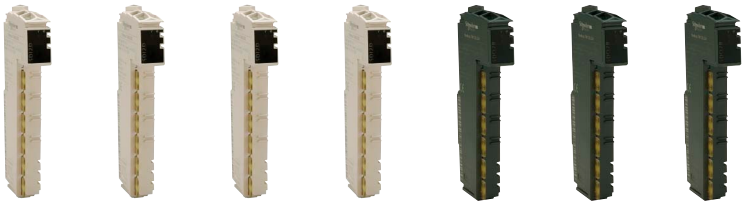
Description	Used for	Colour	Sold in lots of	Unit reference	Weight kg lb
Plain text cover holder (label-holder)	Marking the terminal blocks on the I/O channels	Transparent	100	**TM5ACTCH100**	0.200 *0.441*
Plain text cover holder locking clip *(Order with plain text cover holder TM5ACTCH100)*	Locking plain text cover holder TM5 ACTCH100	Transparent	100	**TM5ACTLC100**	0.100 *0.220*
Precut legend strips of paper	Plain text cover holder TM5 ACTCH100	White	100	**TM5ACTLS100**	0.100 *0.220*
Coloured plastic identifiers	Labelling 16 connection channel terminals	White	1	**TM5ACLITW1**	0.015 *0.033*
		Red	1	**TM5ACLITR1**	
		Blue	1	**TM5ACLITB1**	
Metal tool	Inserting/removing TM5 ACLIT●1 identifiers	Black	1	**TM5ACLT1**	0.030 *0.066*

(1) Source output: PNP output, sink output: NPN output.

Modicon LMC058 Motion controller

I/O expansion modules

Modicon TM5 Digital modules and Modicon TM5 Digital/ Analog module

Applications	Type of expansion module		**2 to 12 digital input channels**				
	Compatibility		**Modicon M258 logic controller, Modicon LMC058 motion controller**				
							
Channel connection			With removable spring terminal blocks (to be ordered separately)				
Digital inputs	Number		**2**	**4**	**6**	**12**	**2**	**4**	**6**
	Nominal input voltage		24 V ⎓				100/240 V ∿		
	IEC/EN 61131-2 conformity		Type 1				Type 1		
	Type of signal *(1)*		Sink				–		
	Type of wiring		1-, 2- or 3-wire		1 or 2-wire	1-wire	1-, 2- or 3-wire	1 or 2-wire	
	Limit values		⎓ 20.4... 28.8 V				∿ 100... 240 V		
	Nominal input current		3.75 mA				5 mA at ∿ 100 V 11 mA at ∿ 240 V		10 mA at ∿ 120 V
	Input impedance		6.4 kΩ				–		
	State 0		⎓ 5 V max.				–		
	State 1		⎓ 15 V min.				–		
Digital outputs	Number								
	Nominal output voltage								
	Output current per channel								
	Output current per group of channels								
	Type of signal *(1)*								
	Type of wiring								
	Limit values								
	Short-circuit and overload protection								
Analog inputs	Number								
	Type								
	Range								
	Resolution								
	Sampling period	without filtering							
		with filtering							
Analog outputs	Number								
	Type								
	Range								
	Resolution								
	Response time								
Type of electronic expansion module			**TM5 SDI2D**	**TM5 SDI4D**	**TM5 SDI6D**	**TM5 SDI12D**	**TM5 SDI2A**	**TM5 SDI4A**	**TM5 SDI6U**
Associated bus base *(2)*			**TM5 ACBM11, TM5 ACBM15**				**TM5 ACBM12**		
Associated terminal block *(2)*			**TM5 ACTB06, TM5 ACTB12**			**TM5ACTB12**	**TM5 ACTB32**		
Pages			23				25		

(1) Source output: PNP output, sink output: NPN output.
(2) to be ordered separately.

4 digital input channels and 1 analog input channel 2 digital output channels and 1 analog output channel	8 digital input channels 4 transistor output channels	2 to 12 transistor output channels						2 transistor output channels	2 to 4 relay output channels	
Modicon M258 logic controller, Modicon LMC058 motion controller										
										
With removable spring terminal blocks (to be ordered separately)										

4	8
24 V ⎓	24 V ⎓
Type 1	Type 1
Sink	Sink
1-wire	1-wire
⎓ 20.4...28.8 V	⎓ 20.4...28.8 V
3.3 mA	3.75 mA
7.2 kΩ	6.4 kΩ
⎓ 5 V max.	⎓ 5 V max.
⎓ 15 V min.	⎓ 15 V min.

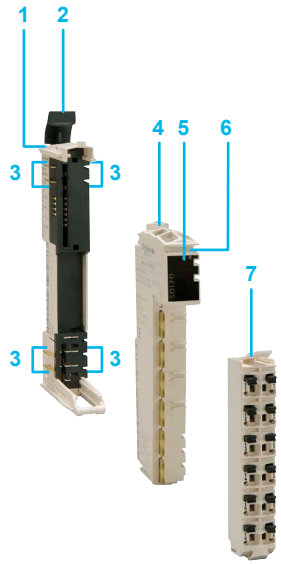
2	4	2	4	4	6	8	12	2	2	4
24 V ⎓	24 V ⎓	24 V ⎓						100/240 V ∿	⎓ 30/∿ 230 V	
0.5 A	0.5 A	0.5 A	0.5 A	2 A	0.5 A	2 A	0.5 A	1 A	5 A	
1 A max.	2 A max.	1 A max.	2 A max.	4 A max.	3 A max.	8 A max.	6 A max.	1 A	10 A max.	
Source	Source	Source						Solid state relay	Relay	
1-wire	1-wire	1-, 2- or 3-wire			1 or 2-wire	1-wire		3-wire	NO/NC contact	
⎓ 20,.4...28.8 V	⎓ 20.4...28.8 V	⎓ 20.4...28.8 V						∿ 80…264 V	⎓ 24...36 V ∿ 184...276 V	
Yes	Yes	Yes						Yes	No	

1
Voltage/current
- 10…+ 10 Vdc 0…20 mA/4…20 mA
12 bits + sign
400 ms
1 ms max.

1
Voltage/current
- 10…+ 10 Vdc 0…20 mA
12 bits
1 ms max.

TM5 SMM6D2L	TM5 SDM12DT	TM5 SDO2T	TM5 SDO4T	TM5 SDO4TA	TM5 SDO6T	TM5 SDO8TA	TM5 SDO12T	TM5 SDO2S	TM5 SDO2R	TM5 SDO4R TM5 SDO4R4
TM5 ACBM11, TM5 ACBM15								**TM5 ACBM12**		
TM5 ACTB12		**TM5 ACTB06, TM5 ACTB12**				**TM5 ACTB12**		**TM5 ACTB32**		
23								25		

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 Digital modules and Modicon TM5 Digital/Analog module



Presentation

The TM5 S●●●● digital module offer consists of:
■ Eleven input, mixed I/O and output electronic modules (sensor and preactuator 24 V ⎓ power supply): TM5 SD●●●
■ One Digital/Analog mixed I/O electronic module: **TM5 SMM6D2L**.

They complement the embedded I/O in the various LMC058 motion controllers. They are used to adapt to the application requirements as closely as possible to reduce the installation and wiring costs.
Each digital expansion module consists of three parts to be ordered separately *(1)*:
□ An I/O electronic module
□ A bus base
□ A terminal block

These modules can be mechanically assembled before mounting on a symmetrical rail.
These modules offer the following advantages:
□ Removable terminal
□ Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators in addition, the quality of the spring terminals avoids the need for periodic retightening
□ Hot swapping

The digital modules offer includes:
■ Four 24 V ⎓ digital input modules with 2, 4, 6 or 12 sink inputs
■ One 24 V ⎓ digital mixed I/O electronic module, with 8 sink inputs and 4 source transistor outputs
■ SIx digital output electronic modules with 2, 4, 6 or 12 source transistor outputs

The digital/analog module offer includes:
■ one mixed I/O electronic module with four 24 V ⎓ digital inputs and one voltage/current analog input, two 24 V digital outputs and one voltage/current analog output.

Description

TM5 SD●●●● digital modules and digital/analog **TM5 SMM6D2L** module comprise:
1 A bus base
2 A mechanical locking lever for mounting/dismounting on a symmetrical rail
3 On each side of the base, a bus expansion connection for the link with the previous controller or module
4 A digital input, I/O or output electronic module
5 A channel and module diagnostics LED display block
6 A slot for labelling (label-holder)
7 A removable spring terminal block with locking lever and slots for coloured identifiers

(1) Also sold in kits, see page 23

Modicon LMC058 Motion controller

I/O expansion modules

Modicon TM5 Digital modules and Modicon TM5 Digital/Analog module

Device colour: White

TM5 SD●●●

TM5 SMM6D2L

TM5 ACBM●●

TM5 ACTB●●

TM5 ACTLC100

TM5 ACTCH100

TM5 ACLPL10

TM5 ACLPR10

TM5 SD●12DK

References

Digital input electronic modules

Voltage	Number and type of channels (1)		Reference	Weight kg
24 V ⎓ inputs	2 sink inputs		**TM5 SDI2D**	0.025
	4 sink inputs		**TM5 SDI4D**	0.025
	6 sink inputs		**TM5 SDI6D**	0.025
	12 sink inputs		**TM5 SDI12D**	0.025

Digital mixed inputs/outputs electronic modules

24 V ⎓ inputs/outputs	8 sink inputs, 4 source transistor outputs		**TM5 SDM12DT**	0.025

Digital output electronic modules

24 V ⎓ outputs	2 source transistor outputs	0.5 A per channel	**TM5 SDO2T**	0.025
	4 source transistor outputs	0.5 A per channel	**TM5 SDO4T**	0.025
	4 source transistor outputs	2 A per channel, 4 A per module	**TM5 SDO4TA**	0.025
	6 source transistor outputs	0.5 A per channel	**TM5 SDO6T**	0.025
	8 source transistor outputs	2 A per channel	**TM5 SDO8TA**	0.025
	12 source transistor outputs	0.5 A per channel	**TM5 SDO12T**	0.025

Digital/Analog mixed inputs/outputs electronic module

24 V ⎓ inputs/outputs	4 sink digital inputs	–	**TM5 SMM6D2L**	0,025
	1 analog input	- 10...+ 10Vdc, 0…20 mA/4…20 mA		
	2 source transistor outputs	0.5 A per channel		
	1 analog output	0…20 mA		

Bus bases

Power supply	Characteristics	Sold in lots of	Unit reference	Weight kg
24 V ⎓	–	1	**TM5 ACBM11**	0.020
		10	**TM5 ACBM1110**	0.020
	Address setting	1	**TM5 ACBM15**	0.020
		10	**TM5 ACBM1510**	0.020

Terminal blocks

Use	Description	Sold in lots of	Unit reference	Weight kg
For electronic modules, 24 V ⎓ power supply	6 contacts	1	**TM5 ACTB06**	0.016
		10	**TM5 ACTB0610**	0.016
	12 contacts	1	**TM5 ACTB12**	0.020
		10	**TM5 ACTB1210**	0.020

Accessories

Description	Used for	Colour	Sold in lots of	Unit reference	Weight kg
Plain text cover holder (label-holder)	Marking the terminal blocks on the I/O channels	Transparent	100	**TM5 ACTCH100**	0.002
Plain text cover holder locking clip *(Order with plain text cover holder TM5 ACTCH100)*	Locking plain text cover holder TM5 ACTCH100	Transparent	100	**TM5 ACTLC100**	0.001
Precut legend strips of paper	Plain text cover holder TM5 ACTCH100	White	100	**TM5 ACTLS100**	0.001
Coloured plastic identifiers	Labelling 16 connection channel terminals	White	1	**TM5 ACLITW1**	0.015
		Red	1	**TM5 ACLITR1**	0.015
		Blue	1	**TM5 ACLITB1**	0.015
Metal tool	Inserting/removing TM5 ACLIT●1 identifiers	Black	1	**TM5 ACLT1**	0.030
Retaining plates for bus bases	Held on the left side	White	10	**TM5 ACLPL10**	0.004
	Held on the right side	White	10	**TM5 ACLPR10**	0.004
Locking clips	For modules	Black	100	**TM5 ACADL100**	0.001

Digital I/O expansion module kits

Description	Composition	Reference	Weight kg
Kit including a digital input or output electronic module, a bus base and a terminal block	TM5 SDI12D + TM5 ACBM11 + TM5 ACTB12	**TM5 SDI12DK**	0.065
	TM5 SDO12T + TM5 ACBM11 + TM5 ACTB12	**TM5 SDO12TK**	0.065

(1) Source output: PNP output, sink output: NPN output.

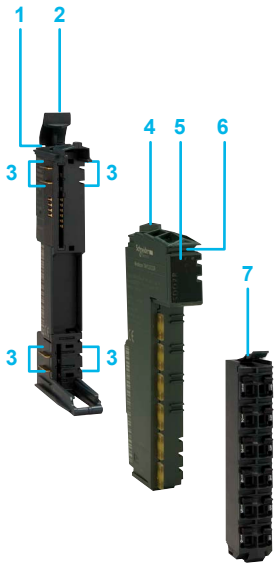
Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 Digital modules

Presentation

The **TM5 SD●●●** digital module offer consists of six input and output electronic modules (sensor and preactuator 100/240 V ∿ power supply).
They complement the embedded I/O in the various LMC058 motion controllers. They are used to adapt to the application requirements as closely as possible to reduce the installation and wiring costs.
Each digital module consists of three parts to be ordered separately *(1)*:
- An I/O electronic module
- A bus base
- A terminal block

These modules can be mechanically assembled before mounting on a symmetrical rail.
These modules offer the following advantages:
- Removable terminal
- Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators in addition, the quality of the spring terminals avoids the need for periodic retightening
- Hot swapping

The digital modules offer includes:
- Two 100/240 V ∿ digital input electronic modules, with 2 or 4 inputs
- A 100/120 V ∿ digital input electronic module, with 6 inputs
- A 100/240 V ∿ digital output electronic modules, with 2 outputs
- Two 30 V ⎓/230 V ∿ digital output electronic modules, with 2 or 4 relay outputs



Description

TM5 SD●●● digital modules comprise:
1. A bus base
2. A mechanical locking lever for mounting/dismounting on a symmetrical rail
3. On each side of the base, a bus expansion connection for the link with the previous controller or module
4. A digital input or output electronic module
5. A channel and module diagnostics LED display block
6. A slot for labelling (label-holder)
7. A removable spring terminal block with locking lever and slots for coloured identifiers

(1) Also sold in kit, see page 23

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 Digital modules

Device colour: black


TM5 SDI●●


TM5 SDO●●


TM5 ACBM●●


TM5 ACTB●●


TM5 ACTLC100


TM5 ACTCH100


TM5 ACLPL10


TM5 ACLPR10


TM5 SDO4RK

References

Multivoltage digital input electronic modules

Voltage	Number and type of channels (1)	Sold in lots of	Unit reference	Weight kg
100/240 V ∼ inputs	2 inputs	1	**TM5 SDI2A**	0.025
	4 inputs	1	**TM5 SDI4A**	0.025
100/120 V ∼ inputs	6 inputs	1	**TM5 SDI6U**	0.025

Digital output electronic modules

100/240 V ∼ outputs	2 x 1 A transistor outputs	1	**TM5 SDO2S**	0.025
30 V ⎓/230 V ∼ outputs	2 x 5 A relay outputs, NO/NC contact	1	**TM5 SDO2R**	0.025
	4 x 5 A relay outputs, NO/NC contact	1	**TM5 SDO4R**	0.025
		4	**TM5 SDO4R4**	0.100

Bus bases

Power supply	Characteristics	Sold in lots of	Unit reference	Weight kg
∼ 240 V	–	1	**TM5 ACBM12**	0.020
		10	**TM5 ACBM1210**	0.020

Terminal blocks

Use	Description	Sold in lots of	Unit reference	Weight kg
For digital I/O electronic module, 240 V ∼ power supply	12 contacts	1	**TM5 ACTB32**	0.025
		10	**TM5 ACTB3210**	0.025

Accessories

Description	Used for	Colour	Sold in lots of	Unit reference	Weight kg
Plain text cover holder (label-holder)	Marking the terminal blocks on the I/O channels	Transparent	100	**TM5 ACTCH100**	0.002
Plain text cover holder locking clip *(Order with plain text cover holder TM5 ACTCH100)*	Locking plain text cover holder TM5 ACTCH100	Transparent	100	**TM5 ACTLC100**	0.001
Precut legend strips of paper	Plain text cover holder TM5 ACTCH100	White	100	**TM5 ACTLS100**	0.001
Coloured plastic identifiers	Labelling 16 connection channel terminals	White	1	**TM5 ACLITW1**	0.015
		Red	1	**TM5 ACLITR1**	0.015
		Blue	1	**TM5 ACLITB1**	0.015
Metal tool	Inserting/removing TM5 ACLIT●1 identifiers	Black	1	**TM5 ACLT1**	0.030
Retaining plates for bus bases	Held on the left side	White	10	**TM5 ACLPL10**	0.004
	Held on the right side	White	10	**TM5 ACLPR10**	0.004
Locking clips	For modules	Black	100	**TM5 ACADL100**	0.001

Digital I/O expansion module kit

Description	Composition	Reference	Weight kg
Kit including a digital output electronic module, a bus base and a terminal block	TM5 SDO4R + TM5 ACBM12 + TM5 ACTB32	**TM5 SDO4RK**	0.070

(1) Source output: PNP output, sink output: NPN output.

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 common distribution modules

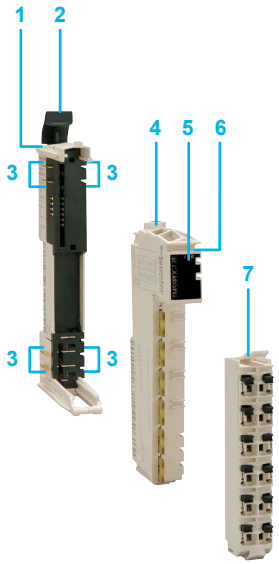
Presentation

TM5 SP●●● common distribution modules make cabling more flexible by “branching” the various voltages needed to power the I/O expansion modules used.
Each common distribution module consists of three parts to be ordered separately:
- A common distribution electronic module
- A bus base
- A terminal block to be chosen according to the number of terminals

These modules can be mechanically assembled before mounting on a symmetrical rail.
These modules offer the following advantages:
- Removable terminal
- Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators in addition, the quality of the spring terminals avoids the need for periodic retightening
- Hot swapping

The power supply common modules offer includes four common distribution electronic modules which have a removable fuse.

This offer is completed by a non-functioning dummy module TM5 SD000 which can be used to:
- Increase the flexibility in managing the various options for an installation: machine with or without temperature sensors for example.
- Reserve a physical slot and a logical address on the backplane bus, for adding a functioning module at a later date: application-specific I/O expansion for example.



Description

Common distribution modules comprise:
1. A bus base
2. A mechanical locking lever for mounting/dismounting on a symmetrical rail
3. On each side of the base, a bus expansion connection for the link with the previous controller or module
4. A common distribution electronic module
5. A channel and module diagnostics LED display block
6. A slot for labelling (label-holder)
7. A removable spring terminal block with locking lever and slots for coloured identifiers

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 common distribution modules

Device colour: white

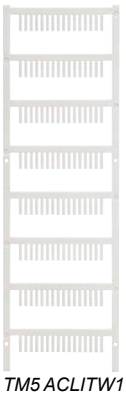
TM5 SPDG●●●

TM5 ACBM●●

TM5 ACTB●●

TM5 ACTLC100

TM5 ACTCH100



TM5 ACLITW1

TM5 ACLT1

TM5 ACLPL10

TM5 ACLPR10

References

Common distribution electronic modules *(1)*

Power supply type	Characteristics	Reference	Weight kg
24 V ⎓	12 common x 0 Vdc with 1 fuse	**TM5 SPDG12F**	0.025
	12 common x 24 Vdc with 1 fuse	**TM5 SPDD12F**	0.025
	5 common x 0 Vdc 5 common x 24 Vdc with 1 fuse	**TM5 SPDG5D4F**	0.025
	6 common x 0 Vdc 6 common x 24 Vdc with 1 fuse	**TM5 SPDG6D6F**	0.025

Dummy electronic module

Characteristics	Used for	Reference	Weight kg
Non-functioning	Reservation of slots and logical address	**TM5 SD000**	0.015

Bus bases

Power supply	Characteristics	Sold in lots of	Unit reference	Weight kg
24 V ⎓	–	1	**TM5 ACBM11**	0.020
		10	**TM5 ACBM1110**	0.020
	Address setting	1	**TM5 ACBM15**	0.020
		10	**TM5 ACBM1510**	0.020

Terminal blocks

Use	Description	Sold in lots of	Unit reference	Weight kg
For common distribution electronic module, 24 V ⎓ power supply	6 contacts	1	**TM5 ACTB06**	0.016
		10	**TM5 ACTB0610**	0.016
	12 contacts	1	**TM5 ACTB12**	0.020
		10	**TM5 ACTB1210**	0.020

Accessories

Description	Used for	Colour	Sold in lots of	Unit reference	Weight kg
Plain text cover holder (label-holder)	Marking the terminal blocks on the I/O channels	Transparent	100	**TM5 ACTCH100**	0.002
Plain text cover holder locking clip *(Order with plain text cover holder TM5 ACTCH100)*	Locking plain text cover holder TM5 ACTCH100	Transparent	100	**TM5 ACTLC100**	0.001
Precut legend strips of paper	Plain text cover holder TM5 ACTCH100	White	100	**TM5 ACTLS100**	0.001
Coloured plastic identifiers	Labelling 16 connection channel terminals	White	1	**TM5 ACLITW1**	0.015
		Red	1	**TM5 ACLITR1**	0.015
		Blue	1	**TM5 ACLITB1**	0.015
Metal tool	Inserting/removing TM5 ACLIT●1 identifiers	Black	1	**TM5 ACLT1**	0.030
Retaining plates for bus bases	Held on the left side	White	10	**TM5 ACLPL10**	0.004
	Held on the right side	White	10	**TM5 ACLPR10**	0.004
Locking clips	For modules	Black	100	**TM5 ACADL100**	0.001

(1) Equipped with 5 x 20 internal fuse, slow-blow 6.3 A

Modicon LMC058 Motion controller

I/O expansion modules

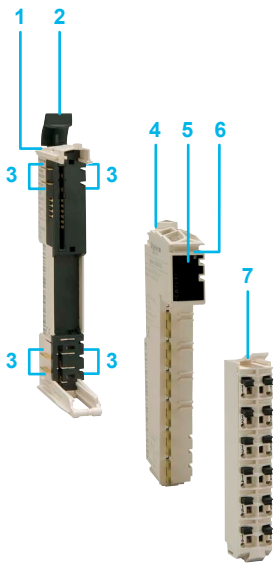
Modicon TM5 Analog modules and Modicon TM5 Digital/Analog module

Applications	Type of expansion module		**1 to 6 analog input channels**				
	Compatibility		**Modicon M258 logic controller, Modicon LMC058 motion controller**				
							
Channel connection			With removable spring terminal blocks (to be ordered separately)				
Analog inputs	Number		**2**	**2**	**4**	**4**	**2**	**4**
	Type		Voltage/current				Pt100/Pt1000 temperature probe	
	Range		- 10…+ 10 Vdc 0…20 mA/ 4…20 mA	- 10…+ 10 Vdc 0…20 mA	- 10…+ 10 Vdc 0…20 mA/ 4…20 mA	- 10…+ 10 Vdc 0…20 mA	- 200…+ 850°C	
	Resolution		12 bits + sign	15 bits + sign	12 bits + sign	15 bits + sign	16 bits	
	Sampling period	without filtering	300 µs	–	400 µs	–	–	
		with filtering	1 ms	50 µs	1 ms	50 µs	–	
Analog outputs	Number							
	Type							
	Range							
	Resolution							
	Response time							
Digital inputs	Number							
	Nominal input voltage							
	IEC/EN 61131-2 conformity							
	Type of signal *(1)*							
	Type of wiring							
	Limit values							
	Nominal input current							
	Input impedance							
	State 0							
	State 1							
Digital outputs	Number							
	Nominal output voltage							
	Output current per channel							
	Output current per group of channels							
	Type of signal *(1)*							
	Type of wiring							
	Limit values							
	Short-circuit and overload protection							
Power supply			Internal					
Isolation	Channel-to-channel		Non-isolated					
	Between channel groups		–					
	Channel-to-bus		∼ 500 V RMS					
Type of electronic module			**TM5 SAI2L**	**TM5 SAI2H**	**TM5 SAI4L**	**TM5 SAI4H**	**TM5 SAI2PH**	**TM5 SAI4PH**
Associated bus base *(2)*			**TM5 ACBM11, TM5 ACBM15**					
Associated terminal block *(2)*			**TM5 ACTB06, TM5 ACTB12**		**TM5 ACTB12**		**TM5 ACTB06, TM5 ACTB12**	**TM5 ACTB12**
Page			31					

(1) Source output: PNP output, sink output: NPN output.
(2) to be ordered separately.

			1 analog input channel and 4 digital input channels 1 analog input channel and 2 digital output channels	**2 to 4 analog output channels**				
								
With removable spring terminal blocks (to be ordered separately)								
2	**6**	**1**	**1**					
J, K, S, N thermocouple		Full bridge Strain Gauge	Voltage/current					
Type J: - 210…+ 1200°C Type K: - 270…+ 1372°C Type S: - 50…+ 1768°C Type N: - 270…+ 1300°C		Differential: 85…5000 Ω	- 10...+ 10 Vdc 0…20 mA/4…20 mA					
16 bits		24 bits	12 bits + sign					
–		–	400 ms					
–		–	1 ms max.					
			1	**2**	**2**	**4**	**4**	
			Voltage/current	Voltage/current				
			- 10…+ 10 Vdc 0…20 mA	- 10…+ 10 Vdc 0…20 mA				
			12 bits	12 bits + sign				
			1 ms maxi	1 ms max.				
			4					
			24 V ⎓					
			Type 1					
			Sink					
			1-wire					
			⎓ 20.4... 28.8 V					
			3.3 mA					
			7.2 kΩ					
			⎓ 5 V max.					
			⎓ 15 V min.					
			2					
			24 V ⎓					
			0.5 A					
			1 A max.					
			Source					
			1-wire					
			⎓ 20.4...28.8 V					
			Yes					
Internal		Internal	Internal	Internal				
Non-isolated		Non-isolated	Non-isolated	Non-isolated				
–		–	–	–				
∿ 500 V RMS		∿ 500 V RMS	∿ 500 V RMS	∿ 500 V RMS				
TM5 SAI2TH	**TM5 SAI6TH**	**TM5 SEAISG**	**TM5 SMM6D2L**	**TM5 SAO2L**	**TM5 SAO2H**	**TM5 SAO4L**	**TM5 SAO4H**	
TM5 ACBM11, TM5 ACBM15								
TM5 ACTB06, TM5 ACTB12		**TM5 ACTB12**		**TM5 ACTB06, TM5 ACTB12**		**TM5 ACTB12**		
31			23	31				

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 Analog modules



Presentation

TM5 SAI●● and TM5 SEIAISG analog modules are used to acquire various analog values encountered in industrial applications.
TM5 SAO●●● Analog output modules are used to control preactuators in physical units, such as variable speed drives or valves and applications where process control is required. The output current or voltage is proportional to the numerical value defined by the user program.
On a controller “stop”, the outputs can be configured with fallback (set to the bottom scale value or held at their value). This function, with holding the value, is used when debugging the application or on a fault so as not to disturb the controlled process.

Each analog module consists of three parts to be ordered separately *(1)*:
- An I/O electronic module
- A bus base
- A terminal block

These modules can be mechanically assembled before mounting on a symmetrical rail.
These modules offer the following advantages:
- Removable terminal
- Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators in addition, the quality of the spring terminals avoids the need for periodic retightening
- Hot swapping

The offer of 13 analog modules:
- Four electronic modules with 2 or 4 voltage/current inputs
- Two electronic modules with 2 or 4 Pt100/Pt1000 temperature probes
- Two electronic modules with 2 or 6 J, K, S and N thermocouple inputs
- One electronic module with 1 Full-bridge strain gauge input
- Four electronic modules with 2 or 4 voltage/current outputs

Depending on the application requirements, these electronic modules are available in 12, 16 or 24 bit-resolution.

It is advisable to use the TM2XMTGB earthing plate which simplifies connection of the analog sensor and actuator cable shielding. This shielding must be connected to the device's functional earth.

Description

Analog modules comprise:
1. A bus base
2. A mechanical locking lever for mounting/dismounting on a symmetrical rail
3. On each side of the base, a bus expansion connection for the link with the previous controller or module
4. An analog input or output electronic module
5. A channel and module diagnostics LED display block
6. A slot for labelling (label-holder)
7. A removable spring terminal block with locking lever and slots for coloured identifiers

(1) Also sold in kits, see page 31

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 Analog modules

Device colour: white

TM5 SAI●● TM5 SAO●● TM5 SAO●●

TM5 ACBM●●

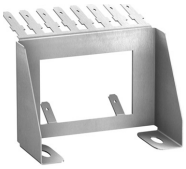
TM5 ACTB●●

TM5 ACTLC100

TM5 ACTCH100

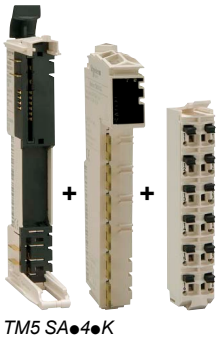
TM5 ACLPL10

TM5 ACLPR10



TM2 XMTGB

TM200 RSRCEMC



TM5 SA●4●K

References

Analog input electronic modules

Number and type of inputs	Input range	Resolution	Reference	Weight kg
2 voltage/current inputs	- 10…+ 10 V DC, 0…20 mA/4…20 mA	12 bits + sign	**TM5 SAI2L**	0.025
	- 10…+ 10 V DC, 0…20 mA	15 bits + sign	**TM5 SAI2H**	0.025
4 voltage/current inputs	- 10…+ 10 Vdc, 0…20 mA/ 4…20 mA	12 bits + sign	**TM5 SAI4L**	0.025
	- 10…+ 10 V DC, 0…20 mA	15 bits + sign	**TM5 SAI4H**	0.025
2 Pt100/Pt1000 temperature probe inputs	- 200…+ 850°C	16 bits	**TM5 SAI2PH**	0.025
4 Pt100/Pt1000 temperature probe inputs		16 bits	**TM5 SAI4PH**	0.025
2 J, K, S, N thermocouple inputs	Type J: - 210…+ 1200°C Type K: - 270…+ 1372°C Type S: - 50…+ 1768°C Type N: - 270…+ 1300°C	16 bits	**TM5 SAI2TH**	0.025
6 J, K, S, N thermocouple inputs		16 bits	**TM5 SAI6TH**	0.025
1 Full bridge strain gauge input	Differential: 85…5000 Ω	24 bits	**TM5 SEAISG**	0.025

Analog output electronic modules

Nber and type of O	Output range	Resolution	Reference	Weight kg
2 voltage/current outputs	- 10…+ 10 V DC, 0…20 mA	12 bits + sign	**TM5 SAO2L**	0.025
		15 bits + sign	**TM5 SAO2H**	0.025
4 voltage/current outputs	- 10…+ 10 V DC, 0…20 mA	12 bits + sign	**TM5 SAO4L**	0.025
		15 bits + sign	**TM5 SAO4H**	0.025

Bus bases

Power supply	Characteristics	Sold in lots of	Unit reference	Weight kg
24 V ⎓	–	1	**TM5 ACBM11**	0.020
		10	**TM5 ACBM1110**	0.020
	Address setting	1	**TM5 ACBM15**	0.020
		10	**TM5 ACBM1510**	0.020

Terminal blocks

Use	Type	Sold in lots of	Unit reference	Weight kg
For analog I/O electronic module, 24 V ⎓ power supply	6 contacts	1	**TM5 ACTB06**	0.016
		10	**TM5 ACTB0610**	0.016
	12 contacts	1	**TM5 ACTB12**	0.020
		10	**TM5 ACTB1210**	0.020

Accessories

Designation	Used for	Colour	Sold in lots of	Unit reference	Weight kg
Plain text cover holder (label-holder)	Marking the terminal blocks on the I/O channels	Transparent	100	**TM5 ACTCH100**	0.002
Plain text cover holder locking clip *(Order with plain text cover holder TM5 ACTCH100)*	Locking plain text cover holder TM5 ACTCH100	Transparent	100	**TM5 ACTLC100**	0.001
Precut legend strips of paper	Plain text cover holder TM5 ACTCH100	White	100	**TM5 ACTLS100**	0.001
Coloured plastic identifiers	Labelling 16 connection channel terminals	White	1	**TM5 ACLITW1**	0.015
		Red	1	**TM5 ACLITR1**	0.015
		Blue	1	**TM5 ACLITB1**	0.015
Metal tool	Inserting/removing TM5 ACLIT●1 identifiers	Black	1	**TM5 ACLT1**	0.030
Retaining plates for bus bases	Held on the left side	White	10	**TM5 ACLPL10**	0.004
	Held on the right side	White	10	**TM5 ACLPR10**	0.004
Locking clips	For modules	Black	100	**TM5 ACADL100**	0.001

Separate parts

Designation	Description	Unit reference	Weight kg
Earthing plate	Support equipped with 10 male Faston connectors for connecting the cable shielding (via 6.35 mm connectors, not supplied) and the functional earths (FE)	**TM2 XMTGB**	0.045
Shielding connection clamps Sold in lots of 25	Attachment and earthing of the cable shielding. Pack of 25 clamps including 20 for Ø 4.8 mm cable and 5 for Ø 7.9 mm cable	**TM200 RSRCEMC**	–
Mounting kit (Sold in lots of 5)	For mounting the analog modules on a plate or panel	**TWD XMT 5**	0.065

Analog I/O expansion module kits

Designation	Description	Reference	Weight kg
Kits including an analog input or output electronic module, a bus base and a terminal block	TM5 SAI4L + TM5 ACBM11 + TM5 ACTB12	**TM5 SAI4LK**	0.075
	TM5 SAI4H + TM5 ACBM11 + TM5 ACTB12	**TM5 SAI4HK**	0.075
	TM5 SAO4L + TM5 ACBM11 + TM5 ACTB12	**TM5 SAO4LK**	0.075

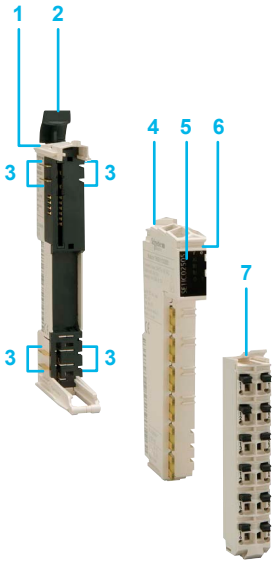
Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 Expert modules

Applications	**Upcounting, downcounting, period measurement, frequency meter, frequency gene rator, axis following with encoder**	
Compatibility	**Modicon M258 logic controller, Modicon LMC058 motion controller**	
		
Channel connection	With removable spring terminal blocks (to be ordered separately)	
Number of counter channels	2	1
IEC/EN 61131-2 conformity	Type 1	Incremental
Type of signal *(1)*	Sink	Sink
Type of input	1-, 2- or 3-wire	–
Nominal input voltage	24 V ⎓	24 V ⎓ asymmetrical
Voltage limit values	20.4... 28.8 V ⎓	–
Frequency per channel	50 kHz	100 kHz
Resolution	–	16/32 bits
Functions	Event counting Interval measurement	2 x 24 V ⎓ auxiliary inputs 24 V ⎓ encoder power supply
Types of counter module	**TM5 SDI2DF**	**TM5 SE1IC01024**
Compatible bus base *(2)*	**TM5 ACBM11, TM5 ACBM15**	
Compatible terminal block *(2)*	**TM5 ACTB12**	
Page	35	

(1) Source output: PNP output, sink output: NPN output.
(2) To be ordered separately.

Upcounting, downcounting, period measurement, frequency meter, frequency generator, axis following with encoder		
Modicon M258 logic controller, Modicon LMC058 motion controller		
		
With removable spring terminal blocks (to be ordered separately)		
2	1	1
Incremental	Incremental	SSI absolute
Sink	RS422, Sink	Sink
–	–	–
24 V ⎓ asymmetrical	5 V ⎓ symetrical	5 V ⎓ symetrical
–	20.4... 28.8 V ⎓	20.4... 28.8 V ⎓
100 kHz	250 kHz	1 MHz
16/32 bits	16/32 bits	32 bits
2 x 24 V ⎓ auxiliary inputs 24 V ⎓ encoder power supply	2 x 24 V ⎓ auxiliary inputs	2 x 24 V ⎓ auxiliary inputs
TM5 SE2IC01024	**TM5 SE1IC02505**	**TM5SE1SC10005**
TM5 ACBM11, TM5 ACBM15		
TM5 ACTB12		
35		

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 Expert modules



Presentation

TM5 SDI12DF and **TM5 SE●●●●●●●** Expert modules for Modicon LMC058 motion controllers are used to count the pulses generated by a sensor or to process the signals from an incremental encoder, depending on the reference chosen.
The extent of the high-speed counter module offer makes it possible to adapt the configuration to the machine's precise requirements: the five counter modules differ in their frequency and their functions.

Expert electronic modules	No. of channels	Max. frequency	Integrated functions	Signal
TM5 SDI12DF	2	50 kHz	Event counting, interval measurement	Sink
TM5 SE1IC01024	1	100 kHz	2 x 24 V ⎓ auxiliary inputs 24 V ⎓ encoder power supply	Sink
TM5 SE2IC01024	2	100 kHz	2 x 24 V ⎓ auxiliary inputs 24 V ⎓ encoder power supply	Sink
TM5 SE1IC02505	1	250 kHz	2 x 24 V ⎓ auxiliary inputs ⎓ 5 V encoder power supply	Sink
TM5 SE1SC10005	1	1 MHz	2 x 24 V ⎓ auxiliary inputs ⎓ 5 V SSI encoder power supply	Sink

The function parameters are set by configuration using SoMachine software.

Each Expert module consists of three parts to be ordered separately:
- An electronic counter module
- A bus base
- A terminal block

These modules can be mechanically assembled before mounting on a symmetrical rail.
These modules offer the following advantages:
- Removable terminal
- Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators in addition, the quality of the spring terminals avoids the need for periodic retightening
- Hot swapping

Description

TM5 Expert modules comprise:
1. A bus base
2. A mechanical locking lever for mounting/dismounting on a symmetrical rail
3. On each side of the base, a bus expansion connection for the link with the previous controller or module
4. An electronic counter module
5. A channel and module diagnostics LED display block
6. A slot for labelling (label-holder)
7. A removable spring terminal block with locking lever and slots for coloured identifiers

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 Expert modules

Device colour: white


TM5 SDI2DF


TM5 SE●●●●●●●


TM5 ACBM●●


TM5 ACTB●●


TM5 ACTLC100


TM5 ACTCH100

TM5 ACLITW1


TM5 ACLT1


TM5 ACLPL10


TM5 ACLPR10


TM5 ACADL100

References

Expert electronic modules

Counting frequency	Number of channels	Function	Reference	Weight kg
50 kHz	2	Event counting, interval measurement	**TM5 SDI2DF**	0.025
100 kHz	1	2 x 24 V ⎓ auxiliary inputs 24 V ⎓ encoder power supply	**TM5 SE1IC01024**	0.025
	2	2 x 24 V ⎓ auxiliary inputs 24 V ⎓ encoder power supply	**TM5 SE2IC01024**	0.025
250 kHz	1	2 x 24 V ⎓ auxiliary inputs	**TM5 SE1IC02505**	0,025
1 MHz	1	2 x 24 V ⎓ auxiliary inputs	**TM5SE1SC10005**	0,025

Bus bases

Power supply	Characteristics	Sold in lots of	Unit reference	Weight kg
24 V ⎓	–	**1**	**TM5 ACBM11**	0.020
		10	**TM5 ACBM1110**	0.020
	Address setting	**1**	**TM5 ACBM15**	0.020
		10	**TM5 ACBM1510**	0.020

Terminal blocks

Use	Description	Sold in lots of	Unit reference	Weight kg
For electronic counter module powered with 24 V ⎓	12 contacts	**1**	**TM5 ACTB12**	0.020
		10	**TM5 ACTB1210**	0.020

Accessories

Designation	Used for	Colour	Sold in lots of	Unit reference	Weight kg
Plain text cover holder (label-holder)	Marking the terminal blocks on the I/O channels	Transparent	**100**	**TM5 ACTCH100**	0.002
Plain text cover holder locking clip *(Order with plain text cover holder TM5 ACTCH100)*	Locking plain text cover holder TM5 ACTCH100	Transparent	**100**	**TM5 ACTLC100**	0.001
Precut legend strips of paper	Plain text cover holder TM5 ACTCH100	White	**100**	**TM5 ACTLS100**	0.001
Coloured plastic identifiers	Labelling 16 connection channel terminals	White	**1**	**TM5 ACLITW1**	0.015
		Red	**1**	**TM5 ACLITR1**	0.015
		Blue	**1**	**TM5 ACLITB1**	0.015
Metal tool	Inserting/removing TM5 ACLIT●1 identifiers	Black	**1**	**TM5 ACLT1**	0.030
Retaining plates for bus bases	Held on the left side	White	**10**	**TM5 ACLPL10**	0.004
	Held on the right side	White	**10**	**TM5 ACLPR10**	0.004
Locking clips	For modules	Black	**100**	**TM5 ACADL100**	0.001

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 power distribution modules

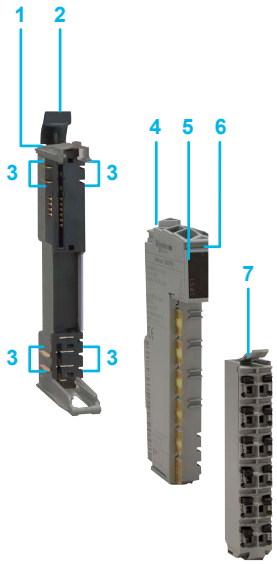
Presentation

TM5 SP●● power distribution modules are intended to supply power to the I/O modules and/or the TM5 bus.

Each power distribution module consists of three parts to be ordered separately:
- A power distribution electronic module
- A bus base
- A terminal block

These modules can be mechanically assembled before mounting on a symmetrical rail.
These modules offer the following advantages:
- Removable terminal
- Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators in addition, the quality of the spring terminals avoids the need for periodic retightening

Four power distribution modules are available



Description

Power distribution modules comprise:
1. A bus base
2. A mechanical locking lever for mounting/dismounting on a symmetrical rail
3. On each side of the base, a bus expansion connection for the link with the previous controller or module
4. A power distribution electronic module
5. A channel and module diagnostics LED display block
6. A slot for labelling (label-holder)
7. A removable spring terminal block with locking lever and slots for coloured identifiers

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 power distribution modules

Device colour: grey


TM5 SP●●


TM5 ACBM●●


TM5 ACTB●●


TM5 ACTLC100


TM5 ACTCH100

TM5 ACLITW1


TM5 ACLT1


TM5 ACLPL10


TM5 ACLPR10


TM5 ACADL100

References

Power distribution electronic modules

Input power supply	Used for	Fuse	Reference	Weight kg
24 V ⎓	Supplying power to the I/O modules in 24 V ⎓ Total I max: 10 A	–	**TM5 SPS1**	0.030
		6.3 A internal fuse	**TM5 SPS1F**	0.030
	Supplying power □ to the I/O modules in 24 V ⎓ □ and the TM5 bus (Bus power supply: 7 W)	–	**TM5 SPS2**	0.030
		6.3 A internal fuse	**TM5 SPS2F**	0.030

Bus bases

Power supply	Characteristics	Sold in lots of	Unit reference	Weight kg
24 V ⎓	Isolated on the left on the power supply to the I/O modules in 24 V ⎓	1	**TM5 ACBM01R**	0.020
		10	**TM5 ACBM01R10**	0.020
	Isolated on the left on the power supply to the I/O modules in 24 V ⎓ Address setting	1	**TM5 ACBM05R**	0.020
		10	**TM5 ACBM05R10**	0.020

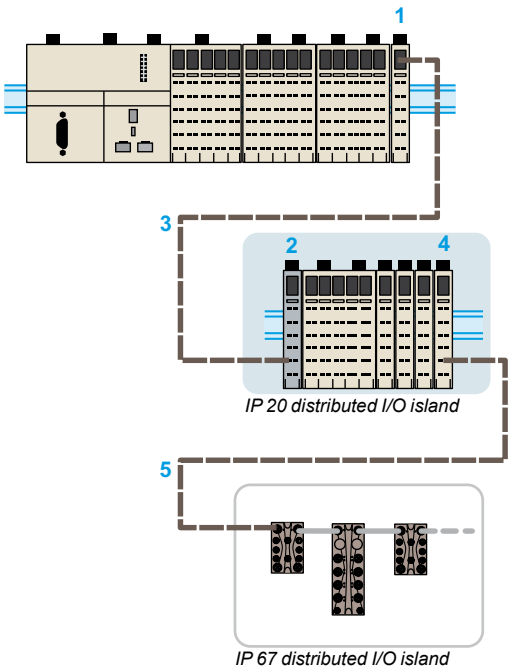
Terminal block

Use	Characteristics	Reference	Weight kg
For power distribution electronic module 24 V ⎓	12 contacts	**TM5 ACTB12PS**	0.020

Accessories

Description	Used for	Colour	Sold in lots of	Unit reference	Weight kg
Plain text cover holder (label-holder)	Marking the terminal blocks on the I/O channels	Transparent	100	**TM5 ACTCH100**	0.002
Plain text cover holder locking clip *(Order with plain text cover holder TM5 ACTCH100)*	Locking plain text cover holder TM5 ACTCH100	Transparent	100	**TM5 ACTLC100**	0.001
Precut legend strips of paper	Plain text cover holder TM5 ACTCH100	White	100	**TM5 ACTLS100**	0.001
Coloured plastic identifiers	Labelling 16 connection channel terminals	White	1	**TM5 ACLITW1**	0.015
		Red	1	**TM5 ACLITR1**	0.015
		Blue	1	**TM5 ACLITB1**	0.015
Metal tool	Inserting/removing TM5 ACLIT●1 identifiers	Black	1	**TM5 ACLT1**	0.030
Retaining plates for bus bases	Held on the left side	White	10	**TM5 ACLPL10**	0.004
	Held on the right side	White	10	**TM5 ACLPR10**	0.004
Locking clips	For modules	Black	100	**TM5 ACADL100**	0.001

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 Transmitter and Receiver modules



IP 20 distributed I/O island

IP 67 distributed I/O island

Presentation

LMC058 motion controllers offer the possibility of creating IP 20 islands of distributed I/O via the TM5 expansion bus.
This makes it possible to:
- Adapt the architecture as closely as possible to the machine topology
- Reduce the wiring costs by minimizing the distance between the modules and the sensors/preactuators
- Take full advantage of the TM5 expansion bus exchange performance
- Save the cost of a fieldbus connection

In addition, irrespective of the expansion module local or remote slot, the modules remain synchronized due to use of the same expansion bus. Modicon TM5 Remote modules are needed to:
- Increase the number of remote I/O on LMC058 motion controller beyond 100 m
- Exchange incoming and outgoing data produced by the I/O expansion modules
- Guarantee the performance of data exchanges

Three remote modules are available:
- The **TM5 SBET1** electronic module: transmitter (1), white, for data transmission between IP 20 islands
- The **TM5 SBET7** electronic module: transmitter (4), white, for data transmission from an IP 20 island to an IP 67 island *(1)* via a TM7 expansion bus (5)
- **TM5 SBER2** electronic modules: receiver (2), grey like all the power distribution modules

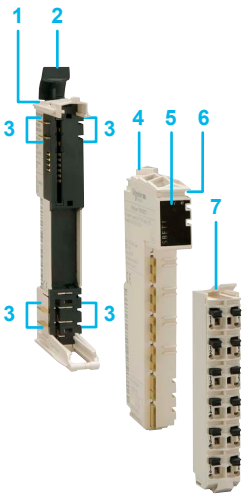
The transmitter (1) and receiver (2) modules are physically linked by the remote connection cable (3) **TCS XCNNXNX100**.
The maximum distance between islands is 100 m and it is possible to connect up to 25 remote islands.
Each remote module consists of three parts to be ordered separately:
- An electronic module, either transmitter or receiver
- A bus base
- A connection block

These modules can be mechanically assembled before mounting on a symmetrical rail.
These modules offer the following advantages:
- Removable connector
- Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators. In addition, the quality of the spring terminals avoids the need for periodic retightening

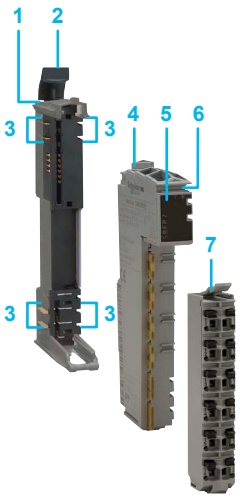
Description

Transmitter and receiver modules comprise:
1. A bus base
2. A mechanical locking lever for mounting/dismounting on a symmetrical rail
3. On each side of the base, a bus expansion connection for the link with the previous controller or module
4. A remote I/O electronic module, either transmitter or receiver
5. A channel and module diagnostics LED display block
6. A slot for labelling (label-holder)
7. A removable spring terminal block with locking lever and slots for coloured identifiers

(1) IP 67 islands. Composition: TM7 blocks and TM7 expansion bus. See page 40.



Transmitter module



Receiver module

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM5 Transmitter and Receiver modules



TM5 SBET1 TM5 SBET7


TM5 SBER2


TM5 ACBM1●


TM5 ACBM0●R


TM5 ACTB●●


TM5 ACTB12PS


TM5 ACTLC100


TM5 ACTCH100

TM5 ACLITW1


TM5 ACLT1


TM5 ACLPL10


TM5 ACLPR10


TM5 ACADL100

References

Remote I/O electronic modules

Description	Characteristics	Reference	Weight kg
Transmitter module	Electronic module for data transmission between IP 20 I/O islands *(1)* Module colour: white	**TM5 SBET1**	0.025
	Electronic module for data transmission between IP 20 I/O island and IP 67 I/O island *(2)* Module colour: white Includes the power supply for the TM7 expansion modules *(2)*	**TM5 SBET7**	0.025
Receiver module	Data reception electronic module Power distribution module for electronic modules and the TM5 bus, 24 V ⎓ power supply Module colour: grey	**TM5 SBER2**	0.025

Expansion bus

Description	Usage	Length	Reference	Weight kg
Remote connection cable	Bus extension by linking transmitter and receiver modules	100 m	**TCS XCNNXNX100**	8.800

Bus bases

Power supply	For use with	Sold in lots of	Unit reference	Weight kg
–	TM5 SBET1 and TM5 SBET7 transmitter modules	1	**TM5 ACBM11**	0.020
		10	**TM5 ACBM1110**	0.020
	TM5 SBET1 and TM5 SBET7 transmitter modules with address setting	1	**TM5 ACBM15**	0.020
		10	**TM5 ACBM1510**	0.020
24 V ⎓	TM5 SBER2 receiver module	1	**TM5 ACBM01R**	0.020
		10	**TM5 ACBM01R10**	0.020
	TM5 SBER2 receiver module, with address setting	1	**TM5 ACBM05R**	0.020
		10	**TM5 ACBM05R10**	0.020

Terminal blocks

For use with	Characteristics	Sold in lots of	Unit reference	Weight kg
Transmitter module TM5 SBET1	6 contacts	1	**TM5 ACTB06**	0.016
		10	**TM5 ACTB0610**	0.016
Transmitter modules TM5 SBET1 and TM5 SBET7	12 contacts	1	**TM5 ACTB12**	0.020
		10	**TM5 ACTB1210**	0.020
Receiver module TM5 SBER2	12 contacts	1	**TM5 ACTB12PS**	0.020

Accessories

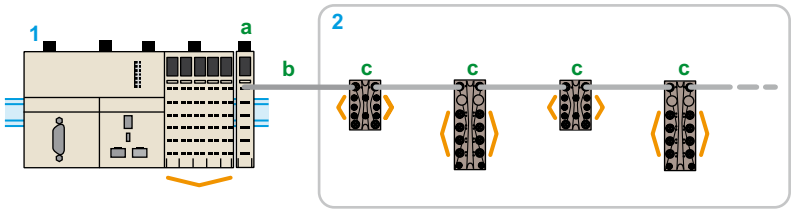
Description	Used for	Colour	Sold in lots of	Unit reference	Weight kg
Plain text cover holder (label-holder)	Marking the connection blocks on the I/O channels	Transparent	100	**TM5 ACTCH100**	0.002
Plain text cover holder locking clip *(Order with plain text cover holder TM5 ACTCH100)*	Locking plain text cover holder TM5 ACTCH100	Transparent	100	**TM5 ACTLC100**	0.001
Precut legend strips of paper	Plain text cover holder TM5 ACTCH100	White	100	**TM5 ACTLS100**	0.001
Coloured plastic identifiers	Marking the 16 connection channel terminals	White	1	**TM5 ACLITW1**	0.015
		Red	1	**TM5 ACLITR1**	0.015
		Blue	1	**TM5 ACLITB1**	0.015
Metal tool	Inserting/removing TM5 ACLIT●1 identifiers	Black	1	**TM5 ACLT1**	0.030
Retaining plates for bus bases	Held on the left side	White	10	**TM5 ACLPL10**	0.004
	Held on the right side	White	10	**TM5 ACLPR10**	0.004
Locking clips	For modules	Black	100	**TM5 ACADL100**	0.001

(1) IP 20 I/O islands, see page 58.
(2) IP 67 I/O islands, see page 40.

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM7 blocks

Presentation

To enhance its “Flexible machine Control” concept, Schneider Electric offers Modicon TM7 IP 67 blocks for mounting outside electrical cabinets, directly on the installation.
The IP 67 protection of these blocks enables them to be used within processes or machines in harsh environments (splashing water, oil, dust, etc.).
They have the following characteristics:
- Dust and damp proof
- Robust and compact
- Rapid wiring, economical to use



1 Modicon LMC058 motion controller: CANopen bus masters + transmitter module TM5SBET7 (a) *(1)*.
2 IP 67 distributed I/O islands. Composition: TM7 expansion bus cable (b) + TM7 digital/analog I/O expansion blocks (c).

Digital I/O expansion block

Analog I/O expansion block

Power distribution block

Modicon TM7 block offer

Modicon TM7 IP 67 blocks are available in various compositions and for different functions.

Digital blocks

The offer comprises:
- Three input blocks
- Three configurable I/O blocks
- One output block

Analog blocks

The offer comprises:
- Two expansion blocks with 4 inputs for connecting 4 sensors
- Two expansion blocks with 4 outputs for connecting 4 actuators
- Two mixed expansion blocks with 2 inputs and 2 outputs
- Two expansion blocks with 4 resistive temperature probe or thermocouple temperature measurement channels

Power distribution block

A power distribution block is available as an option to supply I/O expansion blocks on the TM7 expansion bus.
This power distribution block is necessary to avoid voltage drops in the following situations:
- With a TM7 NCOM08B CANopen interface block followed by 4 *(2)* TM7 I/O expansion blocks
- With a TM5SBET7 transmitter module *(1)* followed by 6 *(2)* TM7 I/O expansion blocks (mounted vertically)
- With a TM7 NCOM16A/16B CANopen interface block followed by 18 *(2)* TM7 I/O expansion blocks

Note: These limits must be weighted according to the cable lengths.
Consult the SPIG (System Planning and Installation Guide) for the Modicon TM7 IP 67 block offer on www.schneider-electric.com

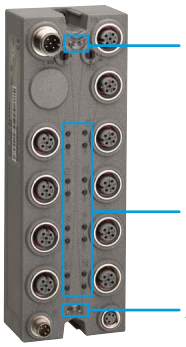
Connection accessories

A range of cables and connectors is available for connecting the:
- CAN bus
- TM7 expansion bus
- I/O
- 24 V ⎓ power supplies on TM7 expansion blocks

CANopen interface blocks with digital I/O (see page 62)

The interface I/O block offer comprises IP 67 blocks that connect to a CANopen bus and have digital channels that can be configured as inputs or outputs, including:
- A CANopen interface block with 8 configurable I/O for connection via M8 connector
- Two CANopen interface blocks with 16 configurable I/O

(1) TM5 transmitter (see page 38).
(2) Minimum number.



Diagnostics functions

The diagnostic monitoring of faults is indicated by LEDs on CANopen interface I/O blocks, expansion blocks and power distribution blocks and informs the control system (LMC058 Motion controller, or M340 or Premium automation platforms) via the TM7 bus.
Each Modicon TM7 block has LEDs
- To display the status of the TM7 bus, the channel and the power supply
- For quick, precise location of a fault

There are several levels of diagnostics:
- Diagnostics per channel:
  - State of inputs
  - State of outputs
- Diagnostics per expansion block:
  - Sensor/actuator power supply present
  - Undervoltage fault on the I/O power supply
  - Analog input diagnostics
  - Short-circuit or overload on one or more digital outputs
- Communication bus diagnostics:
  - On CAN bus (CANopen interface I/O block)
  - On TM7 expansion bus (CANopen interface I/O block and I/O expansion blocks)
- Diagnostics of the power supply via the TM7 bus (expansion block only)

Specifications

Conformity with standards		IEC 61131-2
Product certifications		CE, cURus, GOST-R and c-Tick, ATEX (II 3g EEx nA II T5, IP 67, Ta = 0…60°C)
Temperature	Operation	- 10…+ 60°C (14...140°F)
	Storage	- 25…+ 85°C (- 13...185°F)
Relative humidity		5…95% (without condensation)
Degree of pollution conforming to IEC 60664		2
Degree of protection conforming to IEC 61131-2		IP 67
Altitude	Operation	0...2000 m (0...6560 ft.) *(1)*
	Storage	0...3000 m (0...9842 ft.)
Vibration resistance conforming to IEC 60721-3-5 Class 5M3	DIN rail mounted	7.5 mm (0.295 in.) 2...8 Hz fixed amplitude 20 m/s² (2 gn) 8...200 Hz fixed acceleration 40 m/s² (4 gn) 200...500 Hz fixed acceleration
Shock resistance conforming to IEC 60721-3-5 Class 5M3		300 m/s² (30 gn) for 11 ms, 1/2 sine wave, type 1 shock
Connectors	Type	M8 and/or M12
	Number of operations	50 min.

Electromagnetic compatibility

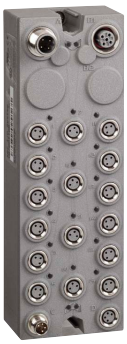
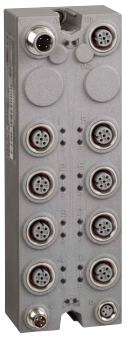
Electrostatic discharges conforming to IEC/EN 61000-4-2	± 8 kV, criterion B (air discharge) ± 4 kV, criterion B (direct discharge)
Electromagnetic fields conforming to IEC/EN 61000-4-3	10 V/m, amplitude modulation 80% at 1 kHz (80 MHz...2 GHz) 1 V/m (2...2.7 GHz)
Fast transients conforming to IEC/EN 61000-4-4	Supply: 2 kV, criterion B I/O: 1 kV, criterion B Shielded cable: 1 kV, criterion B Repetition frequency: 5 and 100 kHz
Immunity to overvoltages, 24 V ⎓ circuit conforming to IEC/EN 61000-4-5	Supply: - 1 kV (12 Ω), criterion B in common mode - 0.5 kV (2 Ω), criterion B in differential mode Unshielded links: - 1 kV (42 Ω), criterion B in common mode - 0.5 kV (42 Ω), criterion B in differential mode Shielded links: - 1 kV (12 Ω), criterion B in common mode - 0.5 kV (2 Ω), criterion B in differential mode
Induced magnetic fields conforming to IEC/EN 61000-4-6	Line supply, I/O signal connections > 10 m (32.8 ft.) Functional earth connection: 10 Vrms, criterion A, amplitude modulation 80% at 1 kHz (150...80 MHz)
Conducted emissions conforming to EN 55011 (IEC/CISPR11)	150...500 kHz, peak 79 dB µV 500 kHz...30 MHz, peak 73 dB µV
Radiated emissions conforming to EN 55011 (IEC/CISPR11)	30...230 MHz, 10 m (32.8 ft) at 40 dB (µV/m) 230 MHz...1 GHz, 10 m (32.8 ft) at 47 dB (µV/m)

(1) Temperature reduction of 0.5°C (32.9°F) for every additional 100 m (328 ft.) altitude above 2000 m (6560 ft.).
Refer to the instruction sheet for each product, downloadable from www.schneider-electric.com

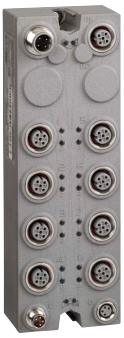
Modicon LMC058 Motion controller

I/O expansion modules

Modicon TM7 blocks: Digital blocks

Applications			Digital I/O expansion blocks		
					
Degree of protection			IP 67	IP 67	IP 67
Type of housing			Plastic	Plastic	Plastic
Modularity (number of channels)	Max. number of digital channels		8	16	16
	Digital inputs		8	16	16
	Digital outputs		–	–	–
Digital inputs	Voltage/current		24 V ⎓/7 mA	24 V ⎓/7 mA	24 V ⎓/7 mA
	Type		Sink *(1)*	Sink *(1)*	Sink *(1)*
	IEC 61131-2 conformity		Type 1	Type 1	Type 1
Digital outputs	Voltage		–	–	–
	Type		–	–	–
	Current per output		–	–	–
	Current per expansion block		–	–	–
Sensor/actuator power supply	Voltage		24 ➞ ⎓	24 V ⎓	24 V ⎓
	Max. current		500 mA for all channels	500 mA for all channels	500 mA for all channels
	Protection against		Overloads, short-circuits and reverse polarity	Overloads, short-circuits and reverse polarity	Overloads, short-circuits and reverse polarity
Connection	TM7 expansion bus	Bus input connector	B-coded 4-way male M12	B-coded 4-way male M12	B-coded 4-way male M12
		Bus output connector	B-coded 4-way female M12	B-coded 4-way female M12	B-coded 4-way female M12
	Digital I/O channels	Sensor connector	3-way female M8, 1 channel per connector	3-way female M8, 1 channel per connector	A-coded 5-way female M12, 2 channels per connector
		Actuator connector	–	–	–
	Expansion block power supply	Input connector	4-way male M8	4-way male M8	4-way male M8
		Output connector	4-way female M8	4-way female M8	4-way female M8
Diagnostics	By expansion block		Yes	Yes	Yes
	By channel		Yes	Yes	Yes
	By communication on TM7 bus		Yes	Yes	Yes
Type of expansion block			**TM7 BDI8B**	**TM7 BDI16B**	**TM7 BDI16A**
Pages			45	45	45

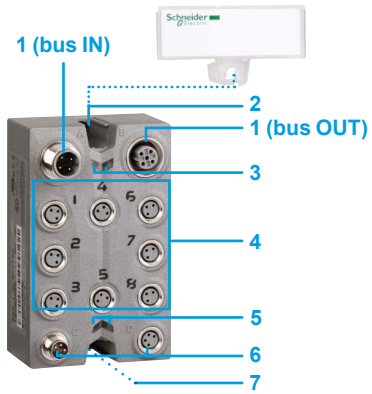
(1) Sink inputs: positive logic
(2) Source outputs: positive logic

			
IP 67	IP 67	IP 67	IP 67
Plastic	Plastic	Plastic	Plastic
8	8	16	16
–	0…8 software-configurable	0…16 software-configurable	0…16 software-configurable
8	0…8 software-configurable	0…16 software-configurable	0…16 software-configurable
–	24 V ⎓/4.4 mA	24 V ⎓/4.4 mA	24 V ⎓/4.4 A max.
–	Sink *(1)*	Sink *(1)*	Sink *(1)*
–	Type 1	Type 1	Type 1
24 V ⎓	24 V ⎓	24 V ⎓	24 V ⎓
Transistor/Source *(2)*	Transistor/Source *(2)*	Transistor/Source *(2)*	Transistor/Source *(2)*
2 A max.	0.5 A max.	0.5 A max.	0.5 A max.
8 A max.	4 A max.	8 A max.	8 A max.
24 V ⎓	24 V ⎓	24 V ⎓	24 V ⎓
500 mA for all channels	500 mA for all channels	500 mA for all channels	500 mA for all channels
Overloads, short-circuits and reverse polarity	Overloads, short-circuits and reverse polarity	Overloads, short-circuits and reverse polarity	Overloads, short-circuits and reverse polarity
B-coded 4-way male M12	B-coded 4-way male M12	B-coded 4-way male M12	B-coded 4-way male M12
B-coded 4-way female M12	B-coded 4-way female M12	B-coded 4-way female M12	B-coded 4-way female M12
–	3-way female M8, 1 channel per connector	A-coded 5-way female M12, 2 channels per connector	3-way female M8, 1 channel per connector
3-way female M8, 1 channel per connector	3-way female M8, 1 channel per connector	5-way female M12, 2 channels per connector	3-way female M8, 1 channel per connector
4-way male M8	4-way male M8	4-way male M8	4-way male M8
4-way female M8	4-way female M8	4-way female M8	4-way female M8
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
TM7 BDO8TAB	**TM7 BDM8B**	**TM7 BDM16A**	**TM7 BDM16B**
45	45	45	45

Modicon LMC058 Motion controller

I/O expansion modules

Modicon TM7 blocks: Digital blocks

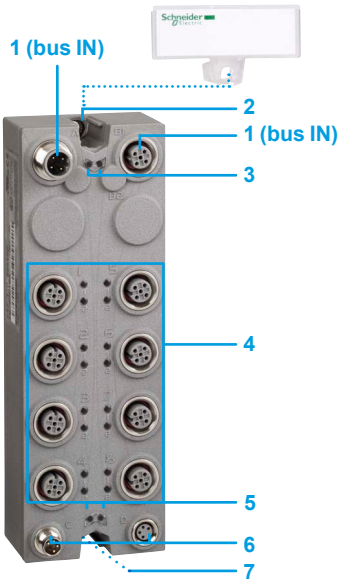


Description

Digital I/O expansion blocks

8-channel digital I/O expansion blocks have the following on the front panel:

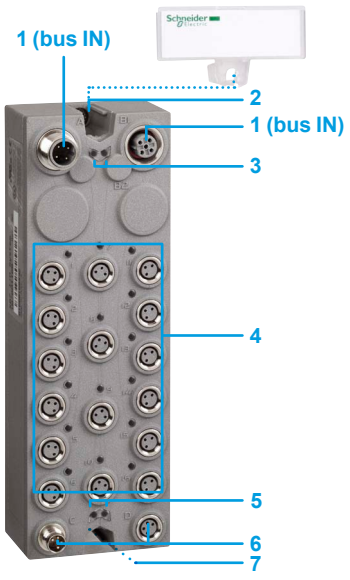
1. A male M12 connector (bus IN) and a female M12 connector (bus OUT) for connecting the TM7 expansion bus
2. A slot for the expansion block label *(1)*
3. Two bus diagnostic LEDs
4. Eight female M8 connectors for connecting sensors and actuators with LEDs for indicating channel status
5. Two LEDs indicating the status of the sensor and actuator 24 V ⎓ power supplies
6. Two M8 connectors for connecting the 24 V ⎓ sensor and actuator power supplies: male for PWR IN, female for PWR OUT
7. Fixing using two Ø 4 screws (not supplied) and connection of the functional earth when fixing the block on a metal support



16-channel digital I/O expansion blocks have the following on the front panel:

1. A male M12 connector (bus IN) and a female M12 connector (bus OUT) for connecting the TM7 expansion bus
2. A slot for the expansion block label *(1)*
3. Two bus diagnostic LEDs
4. Eight M12 connectors (2 channels per connector) or sixteen M8 connectors for connecting sensors and actuators with LEDs for indicating channel status
5. Two LEDs indicating the status of the sensor and actuator 24 V ⎓ power supplies
6. Two M8 connectors for connecting the 24 V ⎓ sensor and actuator power supplies: male for PWR IN, female for PWR OUT
7. Fixing using two Ø 4 screws (not supplied) and connection of the functional earth when fixing the block on a metal support

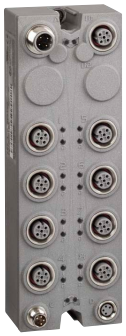
(1) Label-holder supplied with IP 67 block.



Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM7 blocks: Digital blocks

TM7 BDI8B, TM7 BDO8TAB, TM7 BDM8B

TM7 BDM16B, TM7 BDI16B



TM7 BDI16A, TM7 BDM16A

Digital I/O expansion blocks

Max. no. of channels	Number, type of inputs *(1)*	Number, type of outputs *(2)*	Sensor and actuator connection	Communication bus	Reference	Weight kg
8 input	8, sink *(3)*	–	8 x female M8 connectors	TM7 bus	**TM7 BDI8B**	0.180
16 input	16, sink *(3)*	–	16 x female M8 connectors	TM7 bus	**TM7 BDI16B**	0.320
	16, sink *(3)*	–	8 x female M12 connectors	TM7 bus	**TM7 BDI16A**	0.320
8 output	–	8, transistor/ source *(4)*, 2 A max.	8 x female M8 connectors	TM7 bus	**TM7 BDO8TAB**	0.185
8 configurable I/O	0...8, sink *(3)*	0...8, transistor/ source *(4)*, 0.5 A max.	8 x female M8 connectors	TM7 bus	**TM7 BDM8B**	0.190
16 configurable I/O	0...16, sink *(3)*	0...16, transistor/ source *(4)*, 0.5 A max.	8 x female M12 connectors	TM7 bus	**TM7 BDM16A**	0.320
			16 x female M8 connectors	TM7 bus	**TM7 BDM16B**	0.320

(1) 24 V ⎓ IEC type 1
(2) 24 V ⎓
(3) Sink inputs: positive logic
(4) Source outputs: positive logic

Architecture, Connecting cables
See page 68

Connection accessories
See page 70

Separate parts
See page 71

Configuration software
- SoMachine software, see page 76
- Performance distributed I/O configuration software, please consult our site www.schneider-electric.com

Modicon LMC058 Motion controller

I/O expansion modules

Modicon TM7 blocks: Analog blocks

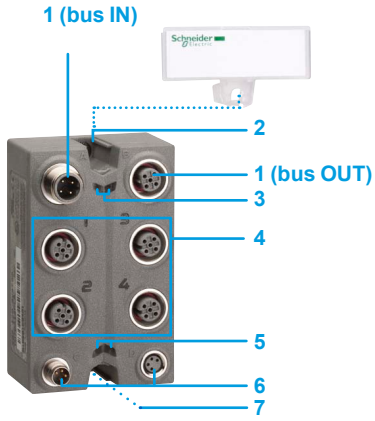
Applications			Analog I/O expansion blocks		
					
Degree of protection			IP 67	IP 67	IP 67
Type of housing			Plastic	Plastic	Plastic
Modularity (number of channels)	Max. number of analog channels		4	4	4
	Analog inputs		4	4	–
	Temperature inputs		–	–	4
	Analog outputs		–	–	–
Inputs	Type		Voltage - 10…+ 10 V ⎓	Current 0…20 mA	Pt 100 temperature probe, Pt 1000 temperature probe, KTY 10 silicon temperature probe, KTY 84 silicon temperature probe, Resistance 0...3276 Ohm
	Resolution		11 bits + sign	12 bits	16 bits
Analog outputs	Type		–	–	–
	Resolution		–	–	–
	Current per expansion block		–	–	–
Sensor/actuator power supply	Voltage		24 V ⎓	24 V ⎓	–
	Max. current		500 mA for all channels	500 mA for all channels	–
	Protection against		Overloads, short-circuits and reverse polarity	Overloads, short-circuits and reverse polarity	–
Connection	TM7 expansion bus	Bus input connector	4-way male M12 B-coded	4-way male M12 B-coded	4-way male M12 B-coded
		Bus output connector	4-way female M12 B-coded	4-way female M12 B-coded	4-way female M12 B-coded
	Analog I/O channels	Sensor connector	5-way female M12 A-coded	5-way female M12 A-coded	5-way female M12 A-coded
		Actuator connector	–	–	–
	Expansion block power supply	Input connector	4-way male M8	4-way male M8	4-way male M8
		Output connector	4-way female M8	4-way female M8	4-way female M8
Diagnostics	By expansion block		Yes	Yes	Yes
	By channel		Yes	Yes	Yes
	By communication on TM7 bus		Yes	Yes	Yes
Type of expansion block			**TM7 BAI4VLA**	**TM7 BAI4CLA**	**TM7 BAI4TLA**
Pages			48		





IP 67	IP 67	IP 67	IP 67	IP 67
Plastic	Plastic	Plastic	Plastic	Plastic
4	4	4	4	4
–	–	–	2	2
4	–	–	–	–
–	4	4	2	2
J, K, S thermocouple Voltage 0...65536 µV	–	–	Voltage - 10…+ 10 V ⎓	Current 0…20 mA
16 bits	–	–	11 bits + sign	12 bits
–	Voltage - 10…+ 10 V ⎓	Current 0…20 mA	Voltage - 10…+ 10 V ⎓	Current 0…20 mA
–	11 bits + sign	12 bits	11 bits + sign	12 bits
–	–	–	–	–
–	24 V ⎓	24 V ⎓	24 V ⎓	24 V ⎓
–	500 mA for all channels	500 mA for all channels	500 mA for all channels	500 mA for all channels
–	Overloads, short-circuits and reverse polarity	Overloads, short-circuits and reverse polarity	Overloads, short-circuits and reverse polarity	Overloads, short-circuits and reverse polarity
4-way male M12 B-coded	4-way male M12 B-coded	4-way male M12 B-coded	4-way male M12 B-coded	4-way male M12 B-coded
4-way female M12 B-coded	4-way female M12 B-coded	4-way female M12 B-coded	4-way female M12 B-coded	4-way female M12 B-coded
A-coded 5-way female M12	–	–	A-coded 5-way female M12	A-coded 5-way female M12
–	A-coded 5-way female M12	A-coded 5-way female M12	A-coded 5-way female M12	A-coded 5-way female M12
4-way male M8	4-way male M8	4-way male M8	4-way male M8	4-way male M8
4-way female M8	4-way female M8	4-way female M8	4-way female M8	4-way female M8
Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes
TM7 BAI4PLA	**TM7 BAO4VLA**	**TM7 BAO4CLA**	**TM7 BAM4VLA**	**TM7 BAM4CLA**
48				

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM7 blocks: Analog blocks



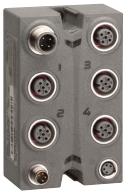
Description

Analog I/O expansion blocks

Analog I/O expansion blocks have the following on the front panel:

1 A male M12 connector (bus IN) and a female M12 connector (bus OUT) for connecting the TM7 expansion bus
2 A slot for the expansion block label *(1)*
3 Two bus diagnostic LEDs
4 Four female M12 connectors for connecting sensors and/or actuators with LEDs for indicating channel status
5 Two LEDs indicating the status of the sensor and actuator 24 V ⎓ power supplies
6 Two M8 connectors for connecting the 24 V ⎓ sensor and actuator power supplies: male for PWR IN, female for PWR OUT
7 Fixing using two Ø 4 screws (not supplied) and connection of the functional earth when fixing the block on a metal support

(1) Label-holder supplied with IP 67 block.



TM7 BAI4●LA, TM7 BAO4●LA, TM7 BAM4●LA

Analog I/O expansion blocks

Max. no. of channels	Input range	Output range	Resolution	Sensor and actuator connection	Communication bus	Reference	Weight kg
4 input	Voltage	–	11 bits + sign	4 female M12 connectors	TM7 bus	**TM7 BAI4VLA**	0.200
	Current 0…20 mA	–	12 bits	4 female M12 connectors	TM7 bus	**TM7 BAI4CLA**	0.200
	Pt 100, Pt 1000 temperature probe KTY 10, KTY 84 silicon temperature probe Resistance 0...3276 Ω	–	16 bits	4 female M12 connectors	TM7 bus	**TM7 BAI4TLA**	0.200
	J, K, S thermocouple Voltage 0...65536 µV	–	16 bits	4 female M12 connectors	TM7 bus	**TM7 BAI4PLA**	0.200
4 output	–	Voltage - 10…+ 10 V ⎓	11 bits + sign	4 female M12 connectors	TM7 bus	**TM7 BAO4VLA**	0.200
	–	Current 0…20 mA	12 bits	4 female M12 connectors	TM7 bus	**TM7 BAO4CLA**	0.200
2 input + 2 output	Voltage - 10…+ 10 V ⎓	Voltage - 10…+ 10 V ⎓	11 bits + sign	4 female M12 connectors	TM7 bus	**TM7 BAM4VLA**	0.200
	Current 0…20 mA	Current 0…20 mA	12 bits	4 female M12 connectors	TM7 bus	**TM7 BAM4CLA**	0.200

Architecture, Connecting cables

See page 68

Connection accessories

See page 70

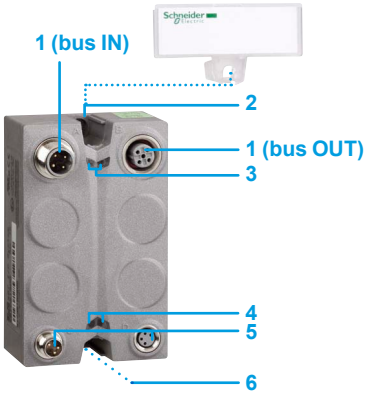
Separate parts

See page 71

Configuration software

- SoMachine software, see page 76
- Performance distributed I/O configuration software, please consult our site www.schneider-electric.com

Modicon LMC058 Motion controller
I/O expansion modules
Modicon TM7 blocks: Power distribution block



Description

Power distribution block

The power distribution block has the following on the front panel:

1 A male M12 connector (bus IN) and a female M12 connector (bus OUT) for connecting the TM7 expansion bus
2 A slot for the power distribution block label *(1)*
3 Two TM7 bus diagnostic LEDs
4 Two LEDs indicating the status of the sensor and actuator 24 V ⎓ power supplies
5 Two M8 connectors for connecting the 24 V ⎓ sensor and actuator power supplies: male for PWR IN, female for PWR OUT
6 Fixing using two Ø 4 screws (not supplied) and connection of the functional earth when fixing the block on a metal support

(1) Label-holder supplied with IP 67 block.

TM7 SPS1A

Power distribution block

Function	Connection	Communication bus	Reference	Weight kg
24 V ⎓/15 W power supply for I/O expansion blocks on the TM7 expansion bus	Supply: 2xM8 connectors, 1 male and 1 female TM7 bus: 2xM12 connectors, 1 male and 1 female	TM7 bus	**TM7 SPS1A**	0.190

Architecture, Connecting cables

See page 66

Connection accessories

See page 70

Separate parts

See page 71

Configuration software

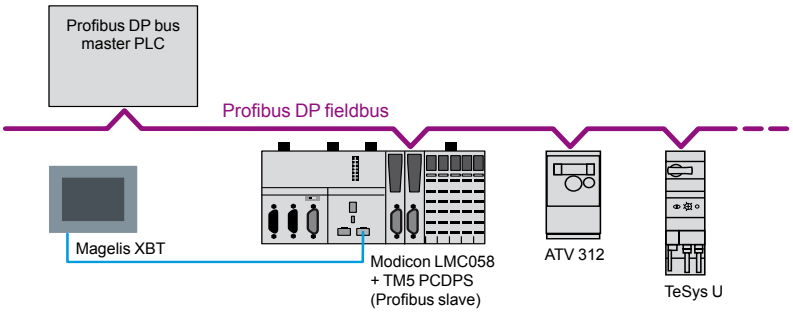
- SoMachine software, see page 76
- Performance distributed I/O configuration software, please consult our site www.schneider-electric.com

Modicon LMC058 Motion controller
Communication
Modicon TM5 communication module for connection to the Profibus DP fieldbus

Presentation

Profibus DP (Decentralized Peripherals)

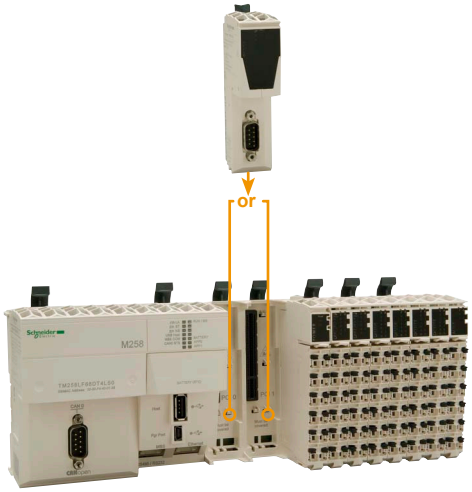
Profibus (Process Field Bus) is a fieldbus for controlling decentralized sensors, actuators or PLCs via a central master controller.



Connectable devices

The following Schneider Electric devices can be connected to this bus:
- Modicon LMC 058LF42 and LMC 058LF424 motion controllers equipped with the **TM5 PCDPS** 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.



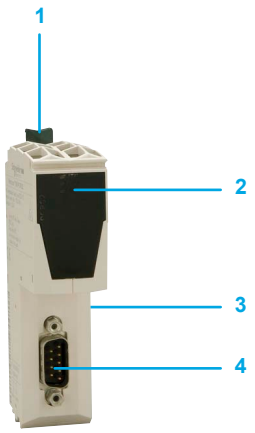
TM5 PCDPS communication module: For mounting on one of the two free PCI slots on an LMC058 Motion controller

Profibus communication module

The **TM5 PCDPS** communication module is designed for **LMC 058LF424●** motion controllers and is installed in one of the two free PCI slots.

The **TM5 PCDPS** 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 page 54) with a single **TM5 PCDPS** Profibus DP slave communication module.*



Description

The **TM5 PCDPS** 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

Modicon LMC058 Motion controller
Communication
Modicon TM5 communication module for connection to the Profibus DP fieldbus

TM5 PCDPS

References

Modicon TM5 communication module

Description	For use with	Profile	Built-in port	Reference	Weight kg
Communication module for Profibus DP (244 I/O data bits)	Motion controllers: □ LMC 058LF42 □ LMC 058LF424	V1 slave	SUB-D connector (male 9-way)	**TM5 PCDPS**	0.064

Profibus DP fieldbus connection components

Description	Length	Item no.	Reference	Weight kg
Profibus DP connection cables	100 m	1	**TSX PBS CA 100**	–
	400 m	1	**TSX PBS CA 400**	–

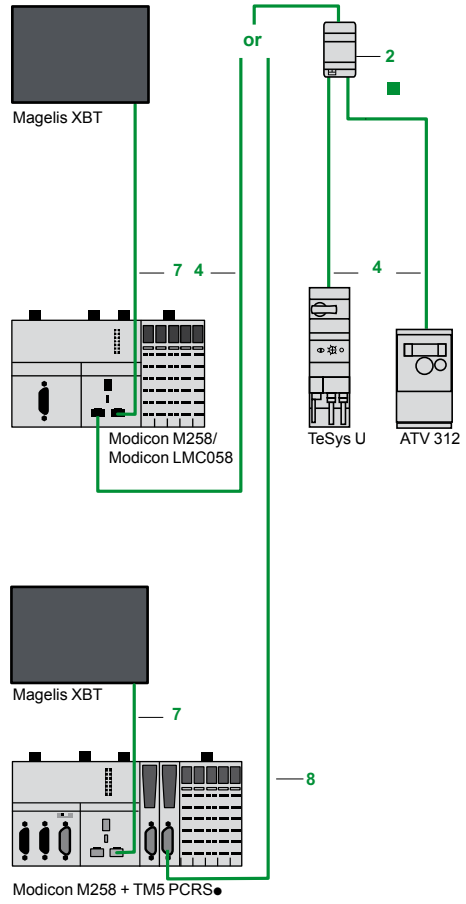
490 NAD 911 03

Description	Type	Item no.	Reference	Weight kg
Remote I/O on Profibus DP fieldbus	Modicon STB network interface module	–	**STB NDP 2112**	0.140
Connectors for remote I/O communication module	Line terminator	–	**490 NAD 911 03**	–
	In-line connector	–	**490 NAD 911 04**	–
	In-line connector and terminal port	–	**490 NAD 911 05**	–

Modicon LMC058 Motion controller
Communication
Modbus and Character mode serial link

Modbus cabling system

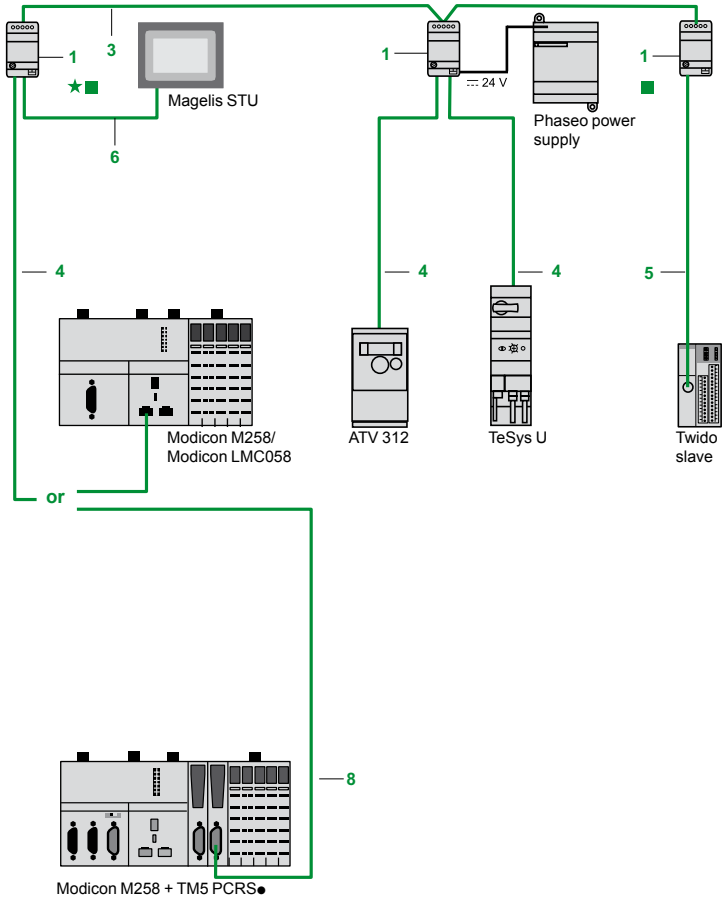
Non-isolated link
(Modicon M258, LMC058 master)



- *Length of cables between Modicon M258 and Altivar: ⩽ 30 m max.*

★ *Line polarization active*
■ *Line termination*

Isolated link
(Modicon M258, LMC058 master)



- *Total length of cables between isolation boxes* **1**: ⩽ *1000 m*
- *Length of tap cables* **4**, **5** *or* **6**: ⩽ *10 m*

Modicon LMC058 Motion controller
Communication
Modbus and Character mode serial link


TWD XCA ISO


TWD XCA T3RJ


LU9 GC3


TSX SCA 50


XGS Z24

References

Extension and adaptation elements, cables and cordsets for RS 485 serial link

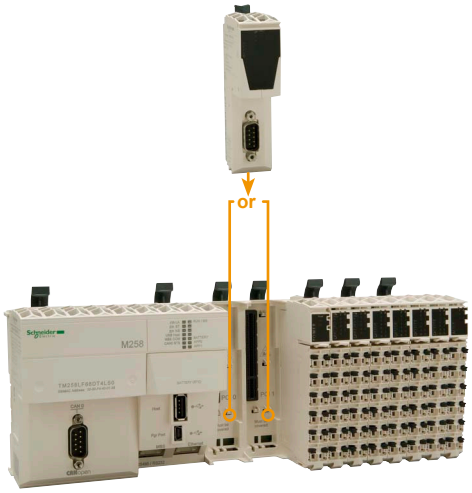
Designation	Description	No.	Length	Unit reference	Weight kg
Isolation box Screw terminal block for trunk cable 2 x RJ45 connectors for tap-off	- Isolation of the RS485 link *(1)* - Line termination (RC 120 Ω, 1 nF) - Line pre-polarization (2 R 620 Ω), Power supply 24 V [DC symbol] (screw terminal block) or 5 V [DC symbol] (via RJ45), Mounting on 35 mm ⊔	1	–	**TWD XCA ISO**	0.100
Junction box 1 RJ45 for trunk cable 2 x RJ45 for tap-off	- Line termination (RC 120 Ω, 1 nF) - Line pre-polarization (2 R 620 Ω), Mounting on 35 mm 5	2		**TWD XCA T3RJ**	0.080
Modbus splitter box Screw terminal block for trunk cable 10 x RJ45 for tap-off	Mounting on 35 mm ⊔ on plate or panel (2 x Ø 4 mm screws)	–	–	**LU9 GC3**	0.500
T-junction boxes 2 x RJ45 for trunk cable	1 integrated cable with RJ45 connector for tap-off dedicated to Altivar variable speed drive	–	0.3 m	**VW3 A8 306 TF03**	–
			1 m	**VW3 A8 306 TF10**	–
Passive T-junction box	- 1-channel line extension and tap-off on screw terminal block - Line termination	–	–	**TSX SCA 50**	0.520
RS 232C/RS 485 line converter	- Max. data rate 19.2 Kbps - No modem signals 24 V ⎓/20 mA power supply, Mounting on 35 mm ⊔	–	–	**XGS Z24**	0.100
RS 485 double shielded twisted pair trunk cables	Modbus serial link, supplied without connector	3	100 m	**TSX CSA 100**	5.680
			200 m	**TSX CSA 200**	10.920
			500 m	**TSX CSA 500**	30.000
Modbus RS 485 cordsets	2 x RJ45 connectors	4	0.3 m	**VW3 A8 306 R03**	0.030
			1 m	**VW3 A8 306 R10**	0.050
			3 m	**VW3 A8 306 R30**	0.150
	1 x RJ45 connector and 1 end with flying leads	–	1 m	**TWD XCA FJ010**	0.060
			3 m	**VW3 A8 306 D30**	0.150
	1 x mini-DIN connector for Twido controller and 1 x RJ45 connector	–	0.3 m	**TWD XCA RJ003**	0.040
			1 m	**TWD XCA RJ010**	0.090
			3 m	**TWD XCA RJ030**	0.160
	1 x mini-DIN connector for Twido controller and 1 x RJ45 connector *(2) (3)*	5	0.3 m	**TWD XCA RJP03**	0.027
	1 x mini-DIN connector for Twido controller and 1 x RJ45 connector Dedicated to Programming protocol *(3) (4)*	–	0.3 m	**TWD XCA RJP03P**	0.027
	1 mini-DIN connector for Twido controller and 1 end with flying leads	–	1 m	**TWD XCA FD010**	0.062
			10 m	**TSX CX 100**	0.517
Cordsets Modicon M258 (SL1, SL2) **to Magelis display unit and terminal**	2 x RJ45 connectors — XBT N200/R400 XBT RT500/511 XBT GT11●●/1335	7	2.5 m	**XBT Z9980**	0.150
	1 x RJ45 connector and 1 x 25-way SUB-D connector — Small Panel XBT N401/410 XBT R410/411	6, 7	2.5 m	**XBT Z938**	0.210
	1 x RJ45 connector and 1 x 9-way SUB-D connector — Advanced Panel XBT GT2●●0…7340 XBT GK●●●0	7	2.5 m	**XBT Z9008**	0.150
Cordset for Magelis Small Panel display unit and terminal	2 x RJ45 connectors — Small Panel XBT N200/ R400 XBT RT500/511	6	3 m	**VW3 A8 306 R30**	0.150
Line terminator	For RJ45 connector R = 120 Ω, C = 1 nf Sold in lots of 2	–	–	**VW3 A8 306 RC**	0.200

Cordsets for RS 232 serial link

Designation	Description	No.	Length	Reference	Weight kg
Cordset for DTE terminal (printer) *(5)*	Serial link for DTE equipment (2) 1 x RJ45 connector and 1 x 9-way female SUB-D connector	8	3 m	**TCS MCN 3M4F3C2**	0.150
Cordset for DCE terminal (modem, converter)	Serial link for DCE 1 x RJ45 connector and 1 x 9-way male SUB-D connector	8	3 m	**TCS MCN 3M4M3S2**	0.150

(1) Line isolation recommended for line distances > 10 m.
(2) Forces configuration of the Twido controller built-in RS 485 port with the TwidoSuite programming protocol parameters.
(3) Carries the 5 V ⎓ voltage (supplied by the Twido controller built-in RS 485 port) required by the **TWD XCA ISO isolation box,** *thus avoiding the need for a 24 V ⎓ external power supply.*
(4) Allows the Twido controller built-in RS 485 port to be used with the parameters described in the configuration.
(5) If the terminal is equipped with a 25-way SUB-D connector, you will also need to order the 25-way female/9-way male SUB-D adaptor **TSX CTC 07**.

Modicon LMC058 Motion controller
Communication
Modicon TM5 communication modules for Modbus serial link



TM5 PCRS● communication module: for mounting the two free PCI slots in the LMC058 Motion controller

Presentation

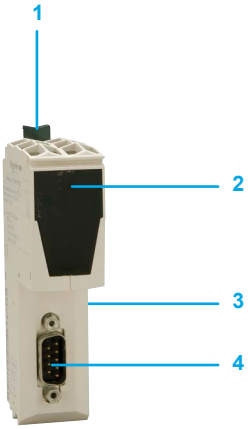
TM5 PCRS● communication modules are designed for **LMC 058LF42** and **LMC 058LF424** motion controllers, and are installed in one of the two free PCI slots in.

TM5 PC●●● 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: see page 52.



Description

TM5 PCRS● 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 TM258 PCRS2 □ RS485 with TM258 PCRS4
TXD	Yellow	Transmission on interface: □ RS232 with TM258 PCRS2 □ RS485 with TM258 PCRS4

Modicon LMC058 Motion controller

Communication

Modicon TM5 communication modules for Modbus serial link

TM5 PCRS●

References

Description	Used for	Physical layer/ protocols	Built-in port	Reference	Weight kg
Modbus serial link communication modules	Motion controllers: □ LMC 058LF42, □ LMC 058LF424	RS232/ Modbus/ASCII, SoMachine	SUB-D connector (male 9-way)	**TM5 PCRS2**	0.064
		RS485 / Modbus/ASCII, SoMachine	SUB-D connector (male 9-way)	**TM5 PCRS4**	0.064

Modicon LMC058 Motion controller
Communication
CANopen Performance architecture with Modicon TM5/ TM7

Presentation

Schneider Electric has selected CANopen for its machines and installations because of its wealth of functions and its resulting benefits in the automation world. This decision was based on the general acceptance of CANopen, and the fact that CANopen products are increasingly used in control system architectures.
CANopen is an open network supported by more than 400 companies worldwide, and promoted by CAN in Automation (CiA). CANopen conforms to standards EN 50325-4 and ISO 15745-2.

CANmotion and CANopen characteristics

CANmotion and CANopen buses are multi-master buses ensuring reliable, deterministic access to real-time data in control system equipment. The CSMA/CA protocol is based on broadcast exchanges, sent cyclically or on an event, to ensure optimum use of the bandwidth.
A message handling channel can also be used to define slave parameters.

TeSys U + communication module LUL C08

ModiconTM5 Transmitter/ Receiver module

Modicon TM7 CANopen interface Blocks

Preventa XPS MC

Altivar 71

Altivar 32

LEX 32A

Lexium ILA1B

CANmotion and CANopen buses are a set of profiles on CAN systems with the following characteristics:
- Open bus system
- Data exchanges in real time without overloading the protocol
- Modular design allowing modification of size
- Interconnection and interchangeability of devices
- Standardized network configuration
- Access to all device parameters
- Synchronization and circulation of cyclical and/or event-controlled process data (short system response time)

Connectable Schneider Electric devices

The following Schneider Electric devices can be connected to the CANopen bus:
□ Ø 58 mm OsiSense XCC multi-turn absolute encoders: **XCC 3510P, XCC 3515CS84CB**
□ TeSys U starter-controllers with communication module: **LUL C08**
□ TeSys T motor management system with controller: **LTM R●●C●●**
□ Modicon **TM5** Transmitter/Receiver modules (IP 20)
□ Modicon **TM7** I/CANopen interface blocks (IP 67)
□ Preventa safety configurable controllers **XPS MC16ZC, XPS MC32ZC**.
□ Altivar 61/71 variable speed drives for asynchronous motors (0.75…630 kW): **ATV 61H /71H ●●●●●**
□ Altivar 32 variable speed drives for asynchronous motors (0,18…15Kw): **ATV 32H●●●●**
□ Lexium 32 servo drives (0.15…7 kW) for BSH/BSM servo motors: **LXM 32A●D●●●●**
□ Lexium **SD3** stepper drives
□ Lexium integrated drives: **ILA1B**, **ILE1B** and **ILS1B**

CANopen Performance architecture

Wiring system, see page 72.

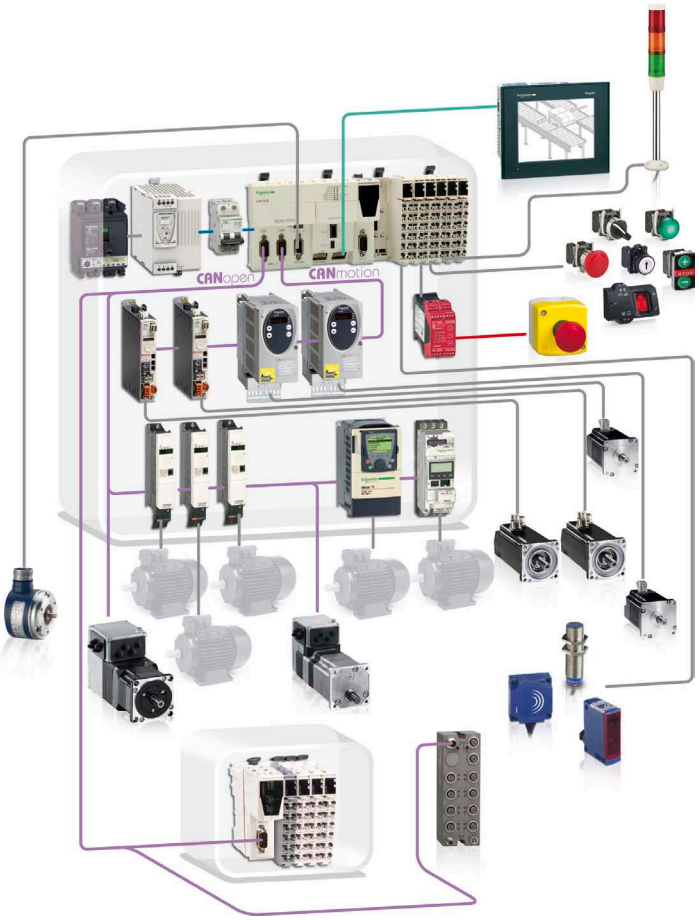
Modicon LMC058 Motion controller

Communication

Integrated CANopen bus in Modicon LMC058 Motion controller

Tested Validated Documented Architectures

Modicon LMC058 motion controller



CANopen port LMC058 motion controller

Modicon LMC058 motion controllers include a 9-way male SUB-D CANopen port and act as the CANopen master.
The bus consists of a master station, M238 logic controller or LMC058 motion controller and slave stations. The master is in charge of configuration, exchanges and diagnostics to the slaves.
The CANopen bus is a communication bus and is used to manage a variety of slaves, such as:

- Digital slaves
- Analog slaves
- Variable speed drives
- Motor starters
- Etc.

CANopen port

Standards		DS 301 V4.02, DR 303-1							
Class		Conformity class M10, limited to 63 slaves							
Data rate	Max. length (m)	**20**	**40**	**100**	**250**	**500**	**1000**	**2500**	**5000**
	Data rate (kbps)	1000	800	500	250	125	50	20	10
Number of slaves		63 max. with max. limit of: 64 TDPOs/64 RPDOs							
Connection		On 9-way male SUB-D port							

CANmotion port on LMC058 motion controllers

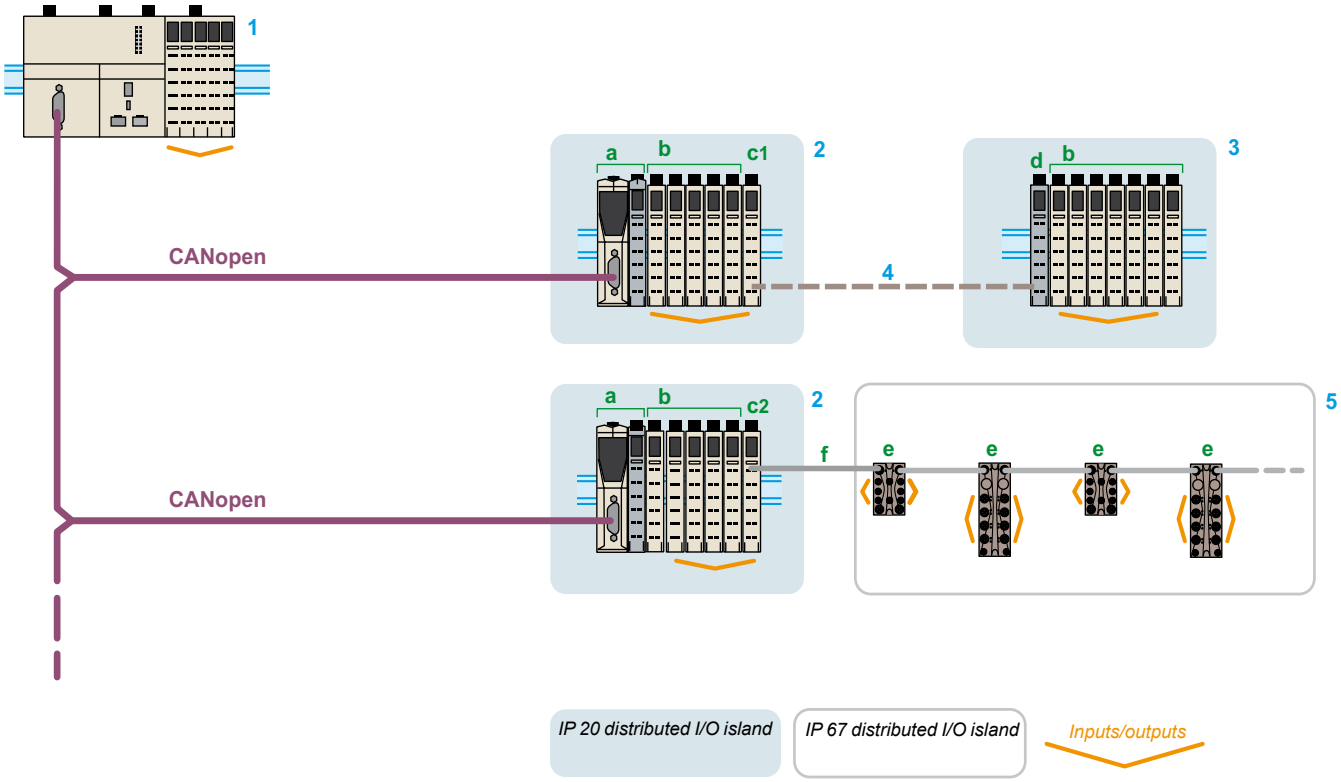
LMC058 motion controllers include a 9-way male SUB-D CANmotion port and act as the CANmotion master.
This CANmotion connection offers the option of configuring and controlling up to 8 Lexium 32 drives and/or Lexium SD3 stepper drives.
The CANmotion bus cycle time ensures that the axis positions will be refreshed.

Modicon LMC058 Motion controller
Communication
Distributed I/O on CANopen bus with Modicon TM5 (IP 20) interface module

Presentation

To enhance its “Flexible machine Control” concept, a key component of MachineStruxure™, and the Modicon LMC058 Motion controller offers, Schneider Electric offers a Modicon TM5 CANopen interface module providing CANopen access to distributed I/O.

■ LMC058 Motion controllers offer the possibility of creating distributed I/O islands via the TM5 expansion bus, which enables the architecture to be adapted to match the topology of the machine as closely as possible and reduces wiring costs.
■ The Modicon TM5 CANopen interface module allows the connection of distributed I/O islands (sensors and actuators) that are distributed over machines via the CANopen fieldbus. These islands communicate on the CANopen bus.



1 Modicon LMC058 Motion controller: CANopen bus masters.
2 IP 20 distributed I/O islands. Composition: TM5 CANopen interface module (slave) (**a**) + TM5 compact block *(1)* or I/O modules (**b**) *(2)* + transmitter modules TM5 SBET1 (**c1**)/TM5 SBET7 (**c2**) *(3)*.
3 IP 20 distributed I/O island. Composition: receiver module TM5 SBER2 (**d**) + TM5 compact block *(1)* or TM5 I/O modules (**b**) *(2)*.
4 TM5 expansion bus. Composition: remote I/O connection cable TCS XCNNXNX100.
5 IP 67 distributed I/O island. Composition: TM7 IP 67 I/O blocks (digital or analog) (**e**) *(4)* + expansion bus cable TM7 TCS XCN●●●E *(5)* (**f**).

(1) Modicon TM5 Compact block: see page 18.
(2) Modicon TM5 Digital modules: see page 22 ; Modicon TM5 analog modules: see page 30.
(3) Modicon TM5 Transmitter modules and TM5 expansion bus: see page 38.
(4) Modicon TM7 I/O blocks: see page 40.
(5) TM7 expansion bus cables: see page 68.

Modicon LMC058 Motion controller

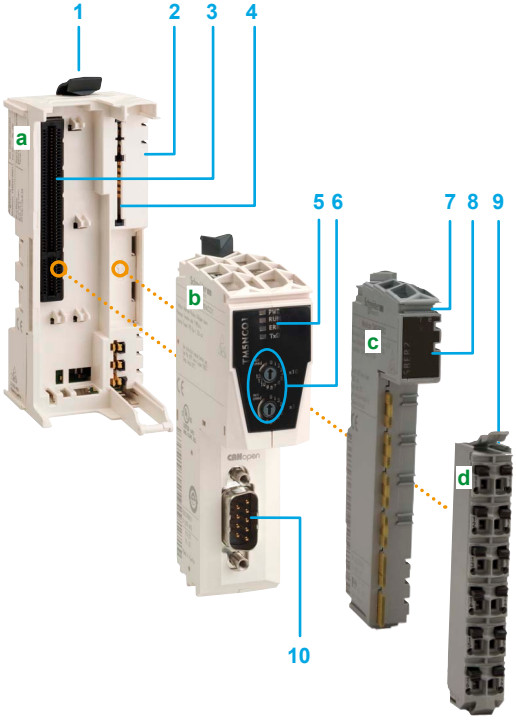
Communication

Distributed I/O on CANopen bus with Modicon TM5 (IP 20) interface module

Presentation

The TM5 CANopen interface module offer consists of 4 parts to be ordered separately *(1)*:
- A bus base, TM5 ACBN1 *(2)*
- A CANopen electronic interface module, TM5 NCO1
- A power distribution electronic module, TM5 SPS3
- A removable terminal block, TM5 ACTB12PS

The modules can be mechanically assembled on the bus base before mounting on a symmetrical rail.
These modules offer the following advantages:
- Removable terminal block
- Spring terminals for connecting the power supply of the interface module and the I/O expansion modules quickly, with no tools required. In addition, the quality of the spring terminals avoids the need for periodic retightening



Description

The CANopen interface module is a combination of 4 products: A TM5 ACBN1 bus base (**a**) + a TM5 NCO1 CANopen electronic interface module (**b**) + a TM5 SPS3 power distribution electronic module (**c**) (1) + a TM5 ACTB12PS removable terminal block (**d**).

This assembly comprises:

1. A mechanical locking lever for mounting/dismounting on a symmetrical rail
2. On the side of the base, an expansion bus connection for the link with the next module
3. A slot for the CANopen interface module with connector
4. A slot for the power distribution module with connector
5. A channel and interface module diagnostics LED display block
6. Two rotary selector switches for addresses on the bus
7. A slot for labelling (label-holder)
8. A channel and power distribution module diagnostics LED display block
9. A removable spring terminal block with locking clip and slots for coloured identifiers
10. A 9-way male SUB-D connector for connecting to the CANopen bus

(1) Also sold in kit, see page 61.
(2) Supplied with 2 protective plates, TM5 ACPL10 and TM5 ACPR10.

Modicon LMC058 Motion controller
Communication
Distributed I/O on CANopen bus with Modicon TM5 (IP 20) interface module

Specifications

Conformity with standards		IEC 61131-2
Product certifications		CE, UL, CSA, GOST-R and c-Tick
Temperature	Operation	Horizontal mounting: - 10…+ 60°C *(1)* Vertical mounting: - 10…+ 50°C
	Storage	- 40…+ 70°C
Relative humidity		95% max. without condensation
Degree of protection		IP 20 conforming to IEC 61131-2
Degree of pollution		≤ 2 conforming to IEC 60664
Altitude	Operation	0…2000 m
	Storage	0…3000 m
Vibration resistance (mounting on rail)		5…8.4 Hz (3.5 mm fixed amplitude) 8.4…150 Hz (9.8 m/s^2 fixed acceleration)
Shock resistance		147 m/s^2 (15 gn) for 11 ms
Connector	Type	Removable spring terminals
	Number of operations	50 min.

Electromagnetic compatibility

Electrostatic discharges conforming to EN/IEC 61000-4-2	8 kV: air discharge 4 kV: direct contact
Electromagnetic fields conforming to EN/IEC 61000-4-3	10 V/m (80 MHz...2 GHz) 1 V/m (2…2.7 GHz)
Fast transients conforming to EN/IEC 61000-4-4	Supply: 2 kV I/O: 1 kV Shielded cable: 1 kV (repetition frequency 5 and 100 kHz)
Immunity to overvoltages, 24 V⎓ circuit conforming to EN/IEC 61000-4-5	1 kV in common mode
	0.5 kV in differential mode
Induced magnetic fields conforming to EN/IEC 61000-4-6	10 Vrms (0.15...80 MHz)
Conducted emissions conforming to EN/IEC 55011/CISPR11	150...500 kHz, quasi-peak at 79 dBµV
	500 kHz...30 MHz, quasi-peak at 73 dBµV
Radiated emissions conforming to EN/IEC 55011/CISPR11	30...230 MHz, 10 m @ 40 dBµV/m
	230 MHz...1 GHz, 10 m @ 47 dBµV/m

(1) Some devices have an operating temperature which requires a weighting factor between 55° and 60°C and may be subject to other restrictions. Refer to the user guide, which can be downloaded from www.schneider-electric.com

Modicon LMC058 Motion controller
Communication
Distributed I/O on CANopen bus with Modicon TM5 (IP 20) interface module


TM5 NCO1


TM5 SPS3


TM5 ACBN1


TM5 ACTB12PS


TM5 ACTLC100


TM5 ACTCH100


TM5 ACLPL10


TM5 ACLPR10


TM5 NCO1K

References

CANopen electronic interface module

Description	Characteristics	Reference	Weight kg
CANopen electronic interface module	CAN bus communication module with CANopen protocol Module colour: white	**TM5 NCO1**	0.025

Power distribution electronic module

Input power supply	Characteristics	Reference	Weight kg
24 V ⎓	Power supply for the CANopen bus interface and I/O expansion modules Module colour: grey	**TM5 SPS3**	0.025

Bus base

Power supply	Characteristics	Unit reference	Weight kg
24 V ⎓	Use for TM5 NCO1 and TM5 SPS3 electronic modules Supplied with 2 protective plates TM5 ACPL10 and TM5 ACPR10 Colour of the base: white	**TM5 ACBN1**	0.020

Terminal block

Used for	Characteristics	Unit reference	Weight kg
Power distribution electronic module TM5 SPS3	12 spring terminals Terminal block colour: grey	**TM5 ACTB12PS**	0.016

Accessories

Description	Use for	Colour	Sold in lots of	Unit reference	Weight kg
Plain text cover holder (label-holder)	Labelling the I/O channel terminal blocks	Transparent	100	**TM5 ACTCH100**	0.200
Terminal block shield locking clip (Order with plain text cover holder TM5 ACTCH100)	Locking plain text cover holder TM5 ACTCH100	Transparent	100	**TM5 ACTLC100**	0.100
Precut sheet of paper labels	Plain text cover holder TM5 ACTCH100	White	100	**TM5 ACTLS100**	0.100
Coloured plastic identifiers	Labelling 16 connection channel terminals	White	1	**TM5 ACLITW1**	0.015
		Red	1	**TM5 ACLITR1**	0.015
		Blue	1	**TM5 ACLITB1**	0.015
Metal tool	Inserting/removing TM5 ACLIT●1 identifiers	Black	1	**TM5 ACLT1**	0.030
Retaining plates for bus bases	Held on the left side	White	10	**TM5 ACLPL10**	0.004
	Held on the right side	White	10	**TM5 ACLPR10**	0.004
Locking clips	For electronic modules	Black	100	**TM5 ACADL100**	0.001

Interface module kit

Description	Composition	Reference	Weight kg
Kit including a CANopen electronic interface module, a power distribution electronic module, a bus base and a terminal block	TM5 NCO1 + TM5 SPS3 + TM5 ACBN1 +TM5 ACTB12PS	**TM5 NCO1K**	0.076

Configuration software

- SoMachine software, see page 76.
- Performance distributed I/O configuration software, please consult our site www.schneider-electric.com

(1) Modicon TM5 Transmitter/Receiver modules (see page 38).

Modicon LMC058 Motion controller

Communication

Distributed I/O on CANopen bus with Modicon TM7 interface blocks IP 67

Applications			CANopen bus interface with digital I/O	
				
Degree of protection			IP 67	IP 67
Type of housing			Plastic	Plastic
Modularity (number of channels)	Max. number of digital channels		8 channels configurable as inputs or outputs	16 channels configurable as inputs or outputs
	Digital inputs		0...8 according to software configuration	0...16 according to software configuration
	Digital outputs		0...8 according to software configuration	0...16 according to software configuration
Digital inputs	Voltage/current		24 V ⎓/4.4 mA	24 V ⎓/4.4 mA
	Type		Sink *(1)*	Sink *(1)*
	IEC 61131-2 conformity		Type 1	Type 1
Digital outputs	Voltage		24 V ⎓	24 V ⎓
	Type		Transistor/Source *(2)*	Transistor/Source *(2)*
	Current per output		0.5 A max.	0.5 A max.
	Current per interface I/O block		4 A max.	4 A max.
Sensor/actuator power supply	Voltage		24 V ⎓	24 V ⎓
	Max. current		500 mA for all channels	500 mA for all channels
	Protection against		Overloads, short-circuits and reverse polarity	Overloads, short-circuits and reverse polarity
Connection	CANopen bus	Bus input connector	A-coded 5-way male M12	A-coded 5-way male M12
		Bus output connector	–	A-coded 5-way female M12
	TM7 expansion bus	Bus input connector	–	–
		Bus output connector	B-coded 4-way female M12	B-coded 4-way female M12
	Digital I/O channels	Sensor connector	3-way female M8, 1 channel per connector	3-way female M8, 1 channel per connector
		Actuator connector	3-way female M8, 1 channel per connector	3-way female M8, 1 channel per connector
	Interface I/O block power supply	Input connector	4-way male M8	4-way male M8
		Output connector	4-way female M8	4-way female M8
Diagnostics	By interface I/O block		Yes	Yes
	By channel		Yes	Yes
	By communication	On CANopen bus	Yes	Yes
		On TM7 bus	Yes	Yes
Type of CANopen interface I/O block			**TM7 NCOM08B**	**TM7 NCOM16B**
Pages			67	67

(1) Sink inputs: positive logic
(2) Source outputs: positive logic

IP 67
Plastic
16 channels configurable as inputs or outputs
0...16 according to software configuration
0...16 according to software configuration
24 V ⎓/4.4 mA
Sink *(1)*
Type 1
24 V ⎓
Transistor/Source *(2)*
0.5 A max.
4 A max.
24 V ⎓
500 mA for all channels
Overloads, short-circuits and reverse polarity
A-coded 5-way male M12
A-coded 5-way female M12
–
B-coded 4-way female M12
A-coded 5-way female M12, 2 channels per connector
A-coded 5-way female M12, 2 channels per connector
4-way male M8
4-way female M8
Yes
Yes
Yes
Yes

TM7 NCOM16A

67

Modicon LMC058 Motion controller
Communication
Distributed I/O on CANopen bus with Modicon TM7 interface blocks IP 67

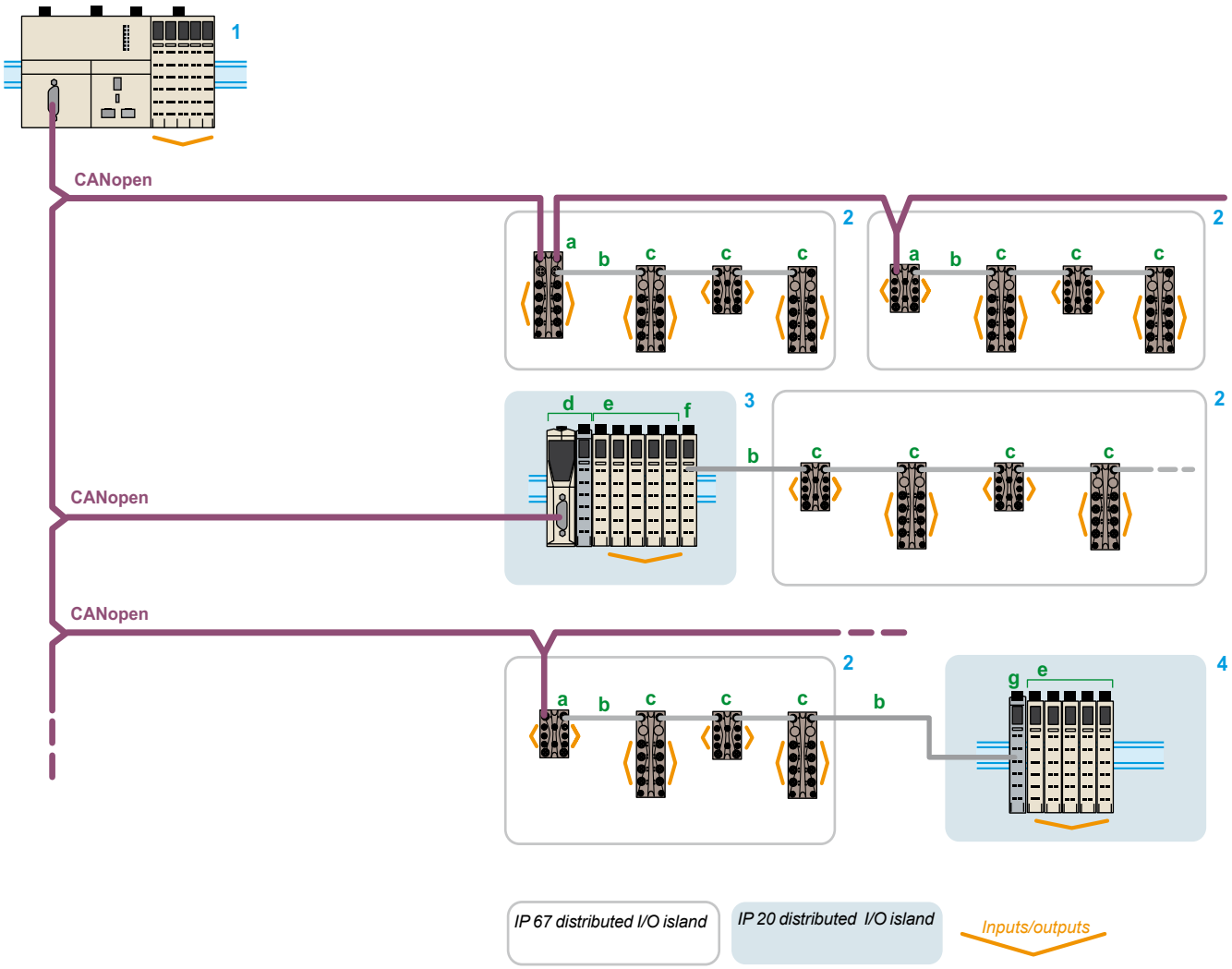
Presentation

To enhance its “Flexible machine Control” concept, a key component of MachineStruxure™, Schneider Electric offers Modicon TM7 IP 67 blocks for mounting outside electrical cabinets, directly on the installation. The IP 67 protection of these blocks enables them to be used within processes or machines in harsh environments (splashing water, oil, dust, etc.).
They have the following characteristics:
- Dust and damp proof
- Robust and compact
- Rapid wiring, economical to use

The CANopen interface I/O blocks enable sensors and actuators distributed over machines to be connected via the CANopen fieldbus. These interface I/O blocks communicate on the bus. They have one part for connecting sensors and actuators using M8 or M12 connectors and one part for connection to the CANopen fieldbus.

The interface I/O block offer comprises IP 67 blocks that connect to a CANopen bus and have digital channels that can be configured as inputs or outputs, including:
- A CANopen interface block with 8 configurable I/O for connection via M8 connector
- Two CANopen interface blocks with 16 configurable I/O

This offer is completed with :
- Digital I/O expansion blocks, see page 40
- Analog input expansion blocks, see page 40
- Power distribution block, see page 40
- Connection accessories, see page 70

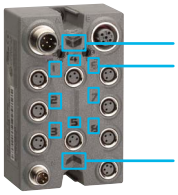


1 Modicon LMC058 motion controller: CANopen bus masters.
2 IP 67 distributed I/O islands. Composition: TM7 CANopen interface block (slave) with digital I/O (a) + TM7 expansion bus cable (b) + TM7 digital/analog blocks (c) *(1)*.
3 IP 20 distributed I/O island. Composition: TM5 CANopen interface module (slave) (d) + TM5 compact *(2)* or TM5 modules (e) *(3)* + transmitter module TM5SBET7 (f) *(4)*.
4 IP 20 distributed I/O island. Composition: receiver module TM5SBER2 (g) *(4)* + TM5 modules (e) *(3)*.

(1) Modicon TM7 Digital or analog block, see page 40
(2) Modicon TM5 compact blocks, see page 18
(3) Modicon TM5 digital modules, see page 22. Modicon TM5 analog modules, see page 30.
(4) Modicon TM5 transmitter and receiver modules, see page 38.

Modicon LMC058 Motion controller
Communication
Distributed I/O on CANopen bus with Modicon TM7 interface blocks IP 67

CANopen interface block with digital I/O



Diagnostics functions

The diagnostic monitoring of faults is indicated by LEDs on CANopen interface I/O blocks, expansion blocks and power distribution blocks and informs the control system (LMC058 motion controller) via the TM7 bus.

Each Modicon TM7 block has LEDs
- To display the status of the TM7 bus, the channel and the power supply
- For quick, precise location of a fault

There are several levels of diagnostics:
- Diagnostics per channel:
  - State of inputs
  - State of outputs
- Communication bus diagnostics:
  - On CAN bus (CANopen interface I/O block)
  - On TM7 expansion bus (CANopen interface I/O block and I/O expansion blocks).

Specifications

Conformity with standards		IEC 61131-2
Product certifications		CE, cURus, GOST-R and c-Tick, ATEX (II 3g EEx nA II T5, IP 67, Ta = 0…60°C)
Temperature	Operation	- 10…+ 60°C (14...140°F)
	Storage	- 25…+ 85°C (- 13...185°F)
Relative humidity		5…95% (without condensation)
Degree of pollution conforming to IEC 60664		2
Degree of protection conforming to IEC 61131-2		IP 67
Altitude	Operation	0...2000 m (0...6560 ft.) *(1)*
	Storage	0...3000 m (0...9842 ft.)
Vibration resistance conforming to IEC 60721-3-5 Class 5M3	DIN rail mounted	7.5 mm (0.295 in.) 2...8 Hz fixed amplitude 20 m/s² (2 gn) 8...200 Hz fixed acceleration 40 m/s² (4 gn) 200...500 Hz fixed acceleration
Shock resistance conforming to IEC 60721-3-5 Class 5M3		300 m/s² (30 gn) for 11 ms, 1/2 sine wave, type 1 shock
Connectors	Type	M8 and/or M12
	Number of operations	50 min.

Electromagnetic compatibility

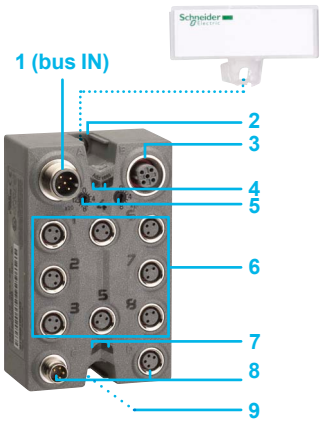
Electrostatic discharges conforming to IEC/EN 61000-4-2	± 8 kV, criterion B (air discharge) ± 4 kV, criterion B (direct discharge)
Electromagnetic fields conforming to IEC/EN 61000-4-3	10 V/m, amplitude modulation 80% at 1 kHz (80 MHz...2 GHz) 1 V/m (2...2.7 GHz)
Fast transients conforming to IEC/EN 61000-4-4	Supply: 2 kV, criterion B I/O: 1 kV, criterion B Shielded cable: 1 kV, criterion B Repetition frequency: 5 and 100 kHz
Immunity to overvoltages, 24 V ⎓ circuit conforming to IEC/EN 61000-4-5	Supply: - 1 kV (12 Ω), criterion B in common mode - 0.5 kV (2 Ω), criterion B in differential mode Unshielded links: - 1 kV (42 Ω), criterion B in common mode - 0.5 kV (42 Ω), criterion B in differential mode Shielded links: - 1 kV (12 Ω), criterion B in common mode - 0.5 kV (2 Ω), criterion B in differential mode
Induced magnetic fields conforming to IEC/EN 61000-4-6	Line supply, I/O signal connections > 10 m (32.8 ft.) Functional earth connection: 10 Vrms, criterion A, amplitude modulation 80% at 1 kHz (150...80 MHz)
Conducted emissions conforming to EN 55011 (IEC/CISPR11)	150...500 kHz, peak 79 dB µV 500 kHz...30 MHz, peak 73 dB µV
Radiated emissions conforming to EN 55011 (IEC/CISPR11)	30...230 MHz, 10 m (32.8 ft) at 40 dB (µV/m) 230 MHz...1 GHz, 10 m (32.8 ft) at 47 dB (µV/m)

(1) Temperature reduction of 0.5°C (32.9°F) for every additional 100 m (328 ft.) altitude above 2000 m (6560 ft.).
Refer to the instruction sheet for each product, downloadable from www.schneider-electric.com

Modicon LMC058 Motion controller

Communication

Distributed I/O on CANopen bus with Modicon TM7 interface blocks IP 67

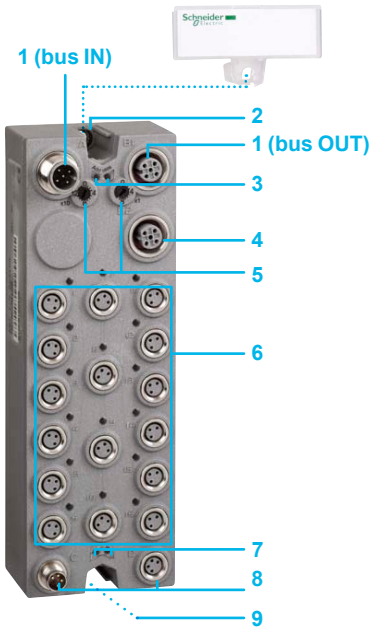


Description

CANopen interface I/O blocks

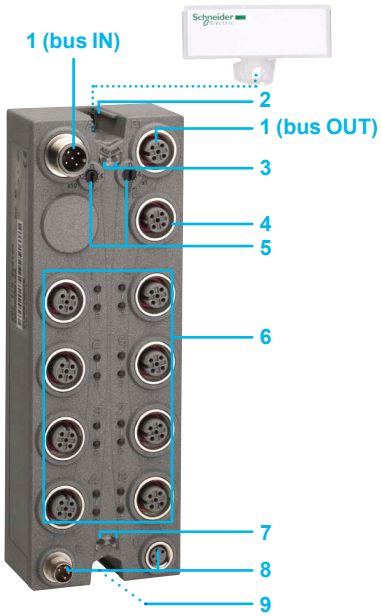
CANopen **8-channel** interface I/O blocks have the following on the front panel:

1. A male M12 connector (bus IN) for connecting the CANopen bus
2. A slot for the interface I/O block label *(1)*
3. A female M12 connector for connecting the TM7 expansion bus
4. Two bus diagnostic LEDs
5. CANopen address settings rotary switches
6. Eight female M8 connectors for connecting sensors and actuators with eight LEDs for indicating channel status
7. Two LEDs indicating the status of the sensor and actuator 24 V ⎓ power supplies
8. Two M8 connectors for connecting the 24 V ⎓ sensor and actuator power supplies: male for PWR IN, female for PWR OUT
9. Fixing using two Ø 4 screws (not supplied) and connection of the functional earth when fixing the block on a metal support



CANopen **16-channel** interface I/O blocks have the following on the front panel:

1. A male M12 connector (bus IN) and a female M12 connector (bus OUT) for connecting the CANopen bus
2. A slot for the interface I/O block label *(1)*
3. Two bus diagnostic LEDs
4. A female M12 connector for connecting the TM7 expansion bus
5. CANopen address settings rotary switches
6. Eight M12 connectors (2 channels per connector) or sixteen M8 connectors for connecting sensors and actuators with LEDs for indicating channel status
7. Two LEDs indicating the status of the sensor and actuator 24 V ⎓ power supplies
8. Two M8 connectors for connecting the 24 V ⎓ sensor and actuator power supplies: male for PWR IN, female for PWR OUT
9. Fixing using two Ø 4 screws (not supplied) and connection of the functional earth when fixing the block on a metal support



(1) Label-holder supplied with IP 67 block

Modicon LMC058 Motion controller

Communication

Distributed I/O on CANopen bus with Modicon TM7 interface blocks IP 67

TM7 NCOM08B

TM7 NCOM16B

TM7 NCOM16A

Modicon TM7 CANopen interface blocks with digital I/O

Max. no. of channels	Number, type of inputs	Number, type of outputs	Sensor/actuator connection	Communication bus	Reference	Weight kg
8 I/O	8, sink *(1)*	8, transistor/ source *(2)*	8 female M8 connectors	CANopen, TM7 bus	**TM7 NCOM08B**	0.195
16 I/O	16, sink *(1)*	16, transistor/ source *(2)*	16 female M8 connectors	CANopen, TM7 bus	**TM7 NCOM16B**	0.320
	16, sink *(1)*	16, transistor/ source *(2)*	8 female M12 connectors	CANopen, TM7 bus	**TM7 NCOM16A**	0.320

(1) Sink inputs: positive logic
(2) Source outputs: positive logic

Architecture, connecting cables

See page 68

Modicon TM7 I/O expansion blocks

See page 40

Connection accessories

See page 70

Separate parts

See page 71

Configuration software

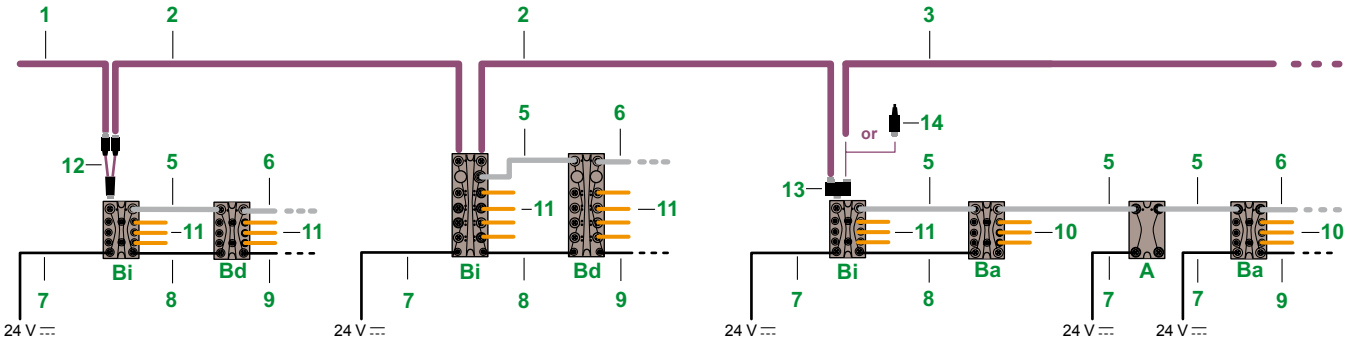
- SoMachine software, see page 76.
- Performance distributed I/O configuration software, please consult our site www.schneider-electric.com

Modicon LMC058 Motion controller

Communication

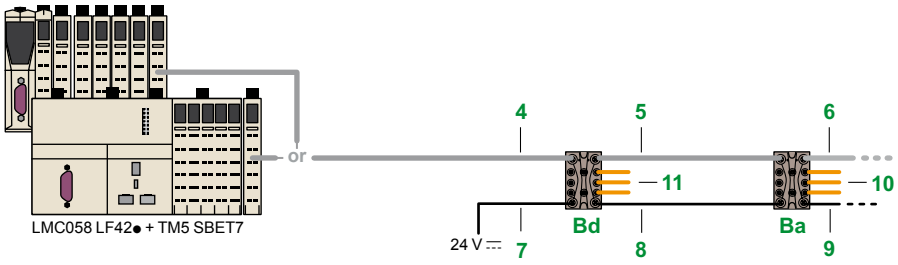
Distributed I/O on CANopen bus with Modicon TM7 interface blocks IP 67

CANopen architecture



TM7 expansion bus architecture

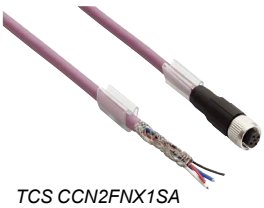
TM5 NCO1 + TM5 SBET7



A Power distribution block
Ba Analog I/O expansion block
Bd Digital I/O expansion block
Bi CANopen interface I/O block

References

Cables for connection to the CANopen bus



TCS CCN2FNX1SA

TCS CCN1MNX●●SA

Designation	Description	Item no.	Length (m)	Reference	Weight kg
CANopen bus connection cables (bus IN)	Equipped with one A-coded 5-way angled female M12 connector and 1 flying lead	1	1	**TCS CCN2FNX1SA**	0.089
			3	**TCS CCN2FNX3SA**	0.195
			10	**TCS CCN2FNX10SA**	0.563
			25	**TCS CCN2FNX25SA**	1.352
	Equipped with one A-coded 5-way straight female M12 connector and 1 flying lead	1	1	**TCS CCN1FNX1SA**	0.089
			3	**TCS CCN1FNX3SA**	0.195
			10	**TCS CCN1FNX10SA**	0.563
			25	**TCS CCN1FNX25SA**	1.352
CANopen bus daisy chain cables	Equipped with two A-coded 5-way angled M12 connectors, 1 male and 1 female, at each end	2	0.3	**TCS CCN2M2F03**	0.090
			1	**TCS CCN2M2F1**	0.127
			2	**TCS CCN2M2F2**	0.179
			5	**TCS CCN2M2F5**	0.337
			10	**TCS CCN2M2F10**	0.600
			15	**TCS CCN2M2F15**	0.863
	Equipped with two A-coded 5-way straight M12 connectors, 1 male and 1 female, at each end	2	0.3	**TCS CCN1M1F03**	0.090
			1	**TCS CCN1M1F1**	0.127
			2	**TCS CCN1M1F2**	0.179
			5	**TCS CCN1M1F5**	0.337
			10	**TCS CCN1M1F10**	0.600
			15	**TCS CCN1M1F15**	0.863
CANopen bus connection cables (bus OUT)	Equipped with one A-coded 5-way angled male M12 connector and 1 flying lead	3	1	**TCS CCN2MNX1SA**	0.089
			3	**TCS CCN2MNX3SA**	0.195
			10	**TCS CCN2MNX10SA**	0.563
			25	**TCS CCN2MNX25SA**	1.352
	Equipped with one A-coded 5-way straight male M12 connector and 1 flying lead	3	1	**TCS CCN1MNX1SA**	0.089
			3	**TCS CCN1MNX3SA**	0.195
			10	**TCS CCN1MNX10SA**	0.563
			25	**TCS CCN1MNX25SA**	1.352
TM7 expansion bus cables					
TM7 expansion bus cables (bus IN)	Equipped with one B-coded 4-way angled female M12 connector and 1 flying lead	4	1	**TCS XCN2FNX1E**	0.089
			3	**TCS XCN2FNX3E**	0.195
			10	**TCS XCN2FNX10E**	0.563
			25	**TCS XCN2FNX25E**	1.352
	Equipped with one B-coded 4-way straight femaleM12 connector and 1 flying lead	4	1	**TCS XCN1FNX1E**	0.089
			3	**TCS XCN1FNX3E**	0.195
			10	**TCS XCN1FNX10E**	0.563
			25	**TCS XCN1FNX25E**	1.352

Modicon LMC058 Motion controller

Communication

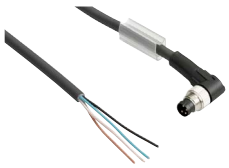
Distributed I/O on CANopen bus with Modicon TM7 interface blocks IP 67

TCS XCN1M1F●●E

TCS XCN1MNX●●E

TCS XCNDFNX●●V

TCS XCNDMDF●●V



TCS XCNEXNX●●V

TCS XCN1M●●SA

Connection accessories *(continued)*

Designation	Description	Item no.	Length (m)	Reference	Weight kg
TM7 expansion bus cables *(continued)*					
TM7 bus daisy chain cables	Equipped with two B-coded 4-way angled M12 connectors, 1 male and 1 female, at each end	5	0.3	**TCS XCN2M2F03E**	0.090
			1	**TCS XCN2M2F1E**	0.127
			2	**TCS XCN2M2F2E**	0.179
			5	**TCS XCN2M2F5E**	0.337
			10	**TCS XCN2M2F10E**	0.600
			15	**TCS XCN2M2F15E**	0.863
	Equipped with two B-coded 4-way straight M12 connectors, 1 male and 1 female, at each end	5	0.3	**TCS XCN1M1F03E**	0.090
			1	**TCS XCN1M1F1E**	0.127
			2	**TCS XCN1M1F2E**	0.179
			5	**TCS XCN1M1F5E**	0.337
			10	**TCS XCN1M1F10E**	0.600
			15	**TCS XCN1M1F15E**	0.863
TM7 expansion bus cables (bus OUT)	Equipped with one B-coded 4-way angled male M12 connector and 1 flying lead	6	1	**TCS XCN2MNX1E**	0.089
			3	**TCS XCN2MNX3E**	0.195
			10	**TCS XCN2MNX10E**	0.563
			25	**TCS XCN2MNX25E**	1.352
	Equipped with one B-coded 4-way straight male M12 connector and 1 flying lead	6	1	**TCS XCN1MNX1E**	0.089
			3	**TCS XCN1MNX3E**	0.195
			10	**TCS XCN1MNX10E**	0.563
			25	**TCS XCN1MNX25E**	1.352
Power distribution cables					
Power IN power distribution cables	Equipped with one 4-way angled female M8 connector and 1 flying lead	7	1	**TCS XCNEFNX1V**	0.041
			3	**TCS XCNEFNX3V**	0.105
			10	**TCS XCNEFNX10V**	0.329
			25	**TCS XCNEFNX25V**	0.809
	Equipped with one 4-way straight female M8 connector and 1 flying lead	7	1	**TCS XCNDFNX1V**	0.041
			3	**TCS XCNDFNX3V**	0.105
			10	**TCS XCNDFNX10V**	0.329
			25	**TCS XCNDFNX25V**	0.809
Power daisy chain cables	Equipped with two 4-way angled M8 connectors, 1 male and 1 female, at each end	8	0.3	**TCS XCNEMEF03V**	0.028
			1	**TCS XCNEMEF1V**	0.050
			2	**TCS XCNEMEF2V**	0.082
			5	**TCS XCNEMEF5V**	0.178
			10	**TCS XCNEMEF10V**	0.338
			15	**TCS XCNEMEF15V**	0.498
	Equipped with two 4-way straight M8 connectors, 1 male and 1 female, at each end	8	0.3	**TCS XCNDMDF03V**	0.105
			1	**TCS XCNDMDF1V**	0.329
			2	**TCS XCNDMDF2V**	0.809
			5	**TCS XCNDMDF5V**	0.105
			10	**TCS XCNDMDF10V**	0.329
			15	**TCS XCNDMDF15V**	0.809
Power OUT power distribution cables	Equipped with one 4-way angled male M8 connector and 1 flying lead	9	1	**TCS XCNEXNX1V**	0.041
			3	**TCS XCNEXNX3V**	0.105
			10	**TCS XCNEXNX10V**	0.329
			25	**TCS XCNEXNX25V**	0.809
	Equipped with one 4-way straight male M8 connector and 1 flying lead	9	1	**TCS XCNDMNX1V**	0.041
			3	**TCS XCNDMNX3V**	0.105
			10	**TCS XCNDMNX10V**	0.329
			25	**TCS XCNDMNX25V**	0.809
Cables for connecting analog sensors and actuators					
Cables for connecting sensors and actuators	Equipped with one A-coded 5-way angled male M12 connector and 1 flying lead	10	2	**TCS XCN2M2SA**	0.143
			5	**TCS XCN2M5SA**	0.258
			15	**TCS XCN2M15SA**	0.546
	Equipped with one A-coded 5-way straight male M12 connector and 1 flying lead	10	2	**TCS XCN1M2SA**	0.143
			5	**TCS XCN1M5SA**	0.258
			15	**TCS XCN1M15SA**	0.546
Cables for connecting digital sensors and actuators					
Please consult our **"Detection for OsiSense automation solutions" catalogue**		11			
Accessories					
See next page		12 13 14			

Modicon LMC058 Motion controller

Communication

Distributed I/O on CANopen bus with Modicon TM7 interface blocks IP 67

TM7 ACYCJ

TM7 ACYC

TM7 ACTHA

Connection accessories

Description	Composition	Item no.	Reference	Weight kg
CAN bus Y cable	Equipped with 2x5-way M12 connectors, 1 male and 1 female, and at the other end: 1x5-way male M12 connector	12	**TM7 ACYCJ**	0.031
CAN Y connector	For connecting 2xM12 connectors, 1 male and 1 female, to male M12 connector on the expansion block	13	**TM7 ACYC**	0.100
Line terminator (for end of bus)	Equipped with 1x5-way male M12 connector	14	**TM7 ACTLA**	0.023
Connector with temperature probe for measurement by thermocouple *(1)*	Equipped with 1x5-way male M12 connector	–	**TM7 ACTHA**	0.100

(1) For use with the **TM7 BAI4PLA** *expansion block for measurement with compensation of the temperature of the connector.*

Modicon LMC058 Motion controller

Communication

Distributed I/O on CANopen bus with Modicon TM7 interface blocks IP 67

TM7 ACMP

Separate parts

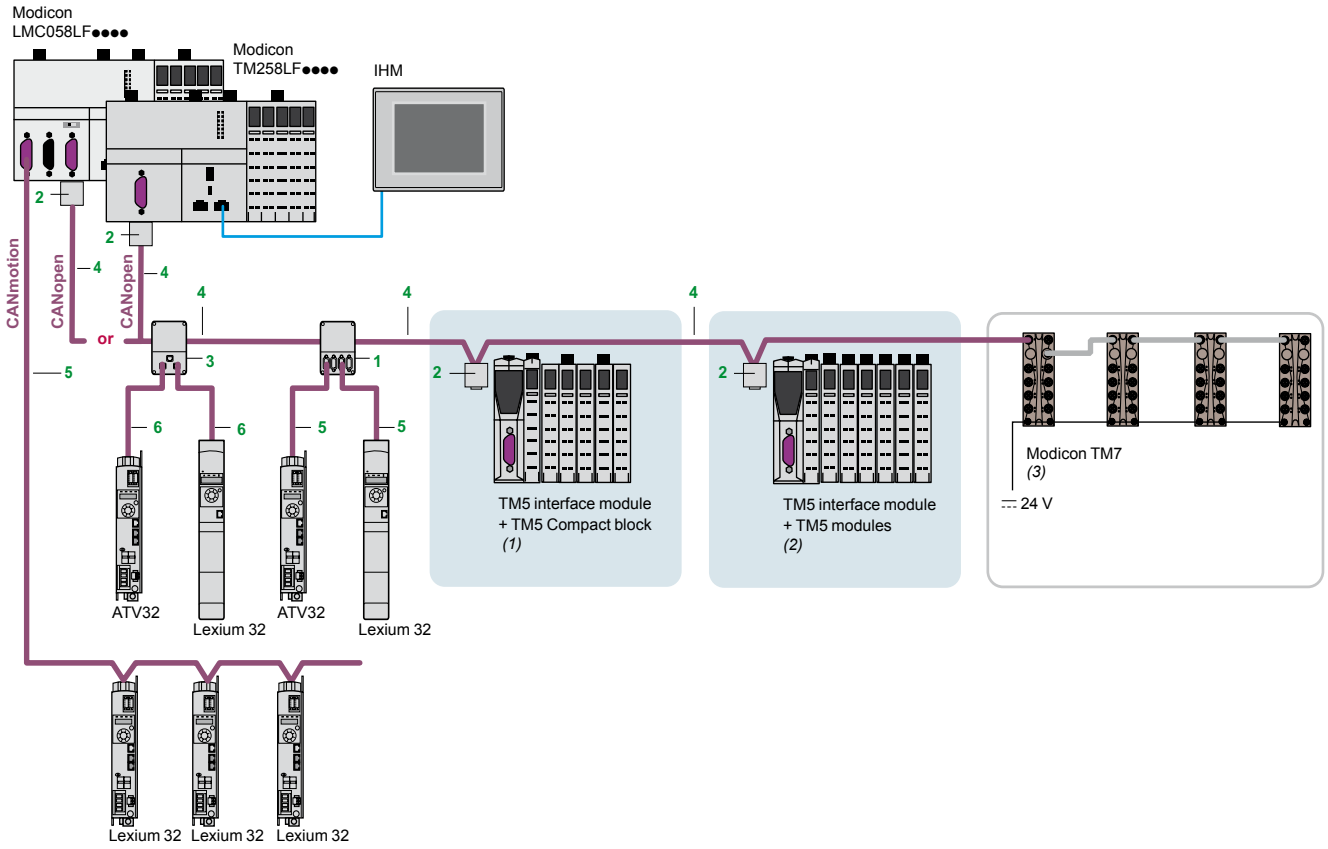
Description	Composition	Unit reference	Weight kg
Sealing plugs *(1)*	For M8 connector for Modicon TM7 IP 67 blocks **Lot of 50**	**TM7 ACCB**	0.100
	For M12 connector for Modicon TM7 IP 67 blocks **Lot of 50**	**TM7 ACCA**	0.100
Mounting plate on ⊥ symmetrical DIN rail	For Modicon TM7 IP 67 blocks	**TM7 ACMP**	0.020
	For Modicon TM7 IP 67 blocks **Lot of 10**	**TM7 ACMP10**	0.200
Set of two screwdrivers	For tightening the rings on M8 and M12 connectors to the correct torque	**TM7 ACTW**	0.198

(1) The use of sealing plugs ensures that unused connectors on Modicon TM7 IP 67 blocks have IP 67 protection.

Modicon LMC058 Motion controller
Communication
CANopen Performance architecture with Modicon TM5 and Modicon TM7

CANopen Performance architecture

Example of connection of a CANopen Performance architecture dedicated to machines and modular installations.



References

Standard tap junctions and connectors

Designation	Description	Item no.	Length	Reference	Weight kg
IP 20 CANopen tap junction	4 SUB-D ports. Screw terminal block for connecting the trunk cables Line termination	1	–	**TSX CANTDM4**	0.196
IP 20 connectors CANopen 9-way female SUB-D. Switch for line termination	90° angled	2	–	**TSX CANKCDF90T**	0.046
	Straight *(4)*	–	–	**TSX CANKCDF180T**	0.049
	90° angled with 9-way SUB-D for connecting a PC or diagnostic tool	–	–	**TSX CANKCDF90TP**	0.051
IP 20 CANopen tap junction for Altivar and Lexium	2 RJ45 ports	3	–	**VW3 CANTAP2**	0.250

TSX CAN TDM4

VW3 CAN TAP2

TSX CAN KCD F90T

TSX CAN KCD F180T

TSX CAN KCD F90TP

(1) Modicon TM5 interface module (see page 58) + Modicon TM5 Compacts blocks (see page 18).
(2) Modicon TM5 interface module (see page 58) + Modicon TM5 modules: Digital modules (see page 22) ; Analog modules (see page 30) ; Expert module (see page 34).
(3) Modicon TM7 offer: TM7 IP 67 I/O blocks, expansion cable, and accessories (see page 40).
(4) For connection to Altivar IMC integrated controller card.

Modicon LMC058 Motion controller
Communication
CANopen Performance architecture with Modicon TM5 and Modicon TM7

References (continued)

IP 20 standard cables and preassembled cordsets

Designation	Description	Item no.	Length	Reference	Weight kg
CANopen cables (2 x AWG 22 2 x AWG 24)	For standard environment *(1)*, CE marking: low smoke. Zero halogen. Flame-retardant (IEC 60332-1)	4	50 m	**TSX CAN CA50**	4.930
			100 m	**TSX CAN CA100**	8.800
			300 m	**TSX CAN CA300**	24.560
	For standard environment *(1)*, UL certification, CE marking: flame-retardant (IEC 60332-2)	4	50 m	**TSX CAN CB50**	3.580
			100 m	**TSX CAN CB100**	7.840
			300 m	**TSX CAN CB300**	21.870
	For harsh environments *(1)* or mobile installations, CE marking: low smoke. Zero halogen. Flame-retardant (IEC 60332-1). Oil-resistant	4	50 m	**TSX CAN CD50**	3.510
			100 m	**TSX CAN CD100**	7.770
			300 m	**TSX CAN CD300**	21.700
CANopen preassembled cordsets One 9-way female SUB-D connector at each end.	For standard environment *(1)*, CE marking: low smoke. Zero halogen. Flame-retardant (IEC 60332-1)	–	0.3 m	**TSX CAN CADD03**	0.091
			1 m	**TSX CAN CADD1**	0.143
			3 m	**TSX CAN CADD3**	0.295
			5 m	**TSX CAN CADD5**	0.440
	For standard environment *(1)*, UL certification, CE marking: flame-retardant (IEC 60332-2)	–	0.3 m	**TSX CAN CBDD03**	0.086
			1 m	**TSX CAN CBDD1**	0.131
			3 m	**TSX CAN CBDD3**	0.268
			5 m	**TSX CAN CBDD5**	0.400
CANopen preassembled cordsets	Cordsets with one 9-way female SUB-D connector and one RJ45 connector	5	0.5 m	**TCS CCN 4F3M05T**	0.100
			1 m	**TCS CCN 4F3M1T**	0.100
				VW3 M38 05R010 *(2)*	0.100
			3 m	**TCS CCN 4F3M3T**	0.160
	Cordsets with two 9-way SUB-D connectors, one female and one male	–	0.5 m	**TLA CDCBA005**	0.100
			1.5 m	**TLA CDCBA015**	0.120
			3 m	**TLA CDCBA030**	0.190
			5 m	**TLA CDCBA050**	0.350

VW3 CAN A71

AM0 2CA 001V000

IP 20 connection accessories

CANopen connector for Altivar 71 *(3)*	9-way female SUB-D Switch for line termination. Cables exit at 180°	–	–	**VW3 CAN KCDF180T**	0.100
Adaptor for Altivar 71 drive	SUB-D to RJ45 CANopen adaptor	–	–	**VW3 CANA71**	0.100
CANopen preassembled cordsets	1 RJ45 connector at each end	6	0.3 m	**VW3 CANCARR03**	0.100
			1 m	**VW3 CANCARR1**	0.100
CANopen bus adaptor for Lexium 17D	Hardware interface for CANopen-compliant link + 1 connector for a PC terminal	–	–	**AM0 2CA001V000**	0.110
Y-connector	CANopen/Modbus	–	–	**TCS CTN011M11F**	0.100

IP 67 cables and preassembled cordsets, IP 67 connection accessories for Modicon TM7 blocks

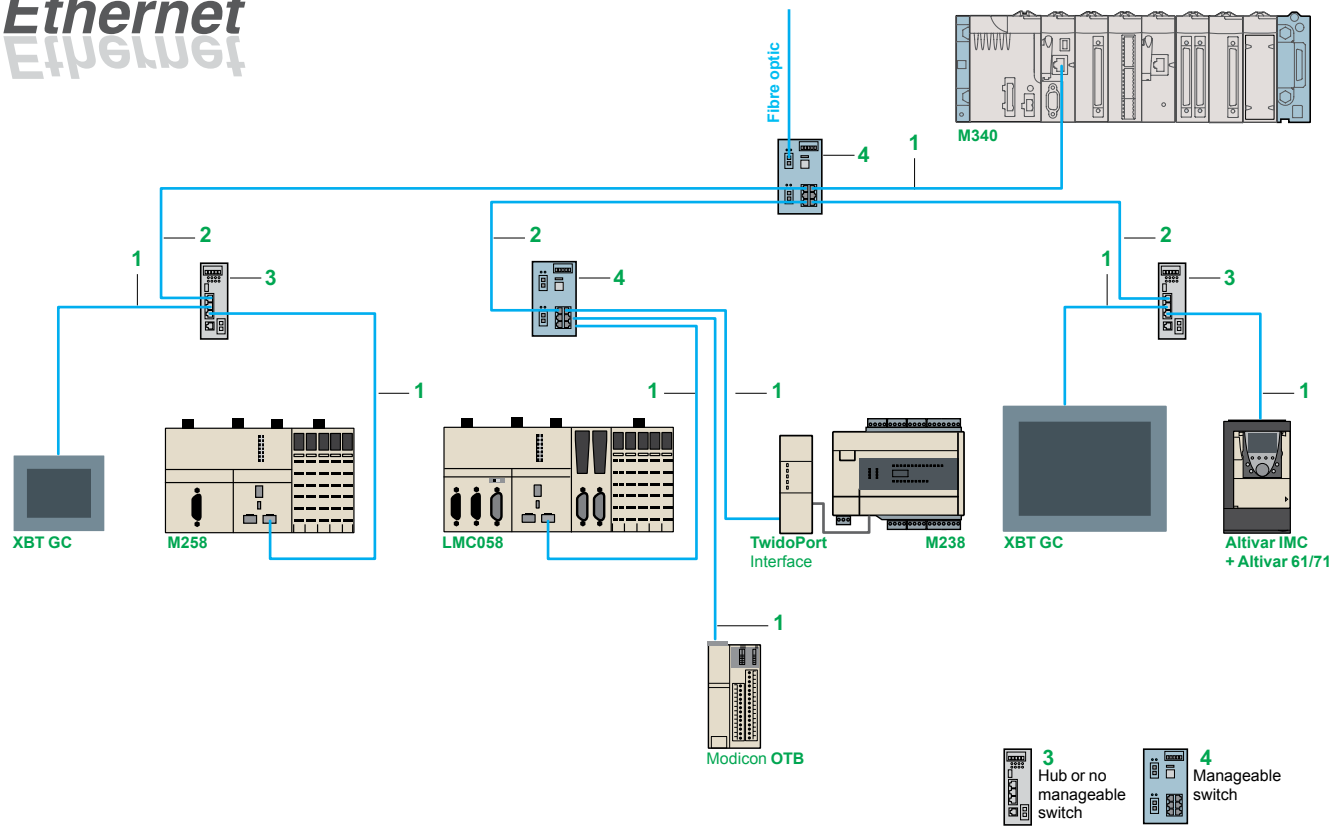
(see page 68)

(1) Standard environment: no particular environmental constraints, operating temperature between + 5°C and + 60°C, and in fixed installations
Harsh environment: resistance to hydrocarbons, industrial oils, detergents, solder splashes, relative humidity up to 100%, saline atmosphere, significant temperature variations, operating temperature between - 10°C and + 70°C, or in mobile installations.
(2) Cordset equipped with a line terminator.
(3) For **ATV 71H●●●M3**, **ATV 71HD11M3X**, **HD15M3X**, **ATV 71H075N4**... **HD18N4** *drives, this connector can be replaced by the* **TSX CAN KCDF 180T** *connector.*

Modicon LMC058 Motion controller
Communication
Ethernet Modbus/TCP network

Ethernet

Ethernet Modbus/TCP or Ethernet IP network architecture



References *(1)*

Shielded copper connection cables

ConneXium shielded copper connection cables are available in two versions to comply with the different standards and approvals in force:

■ **Shielded twisted pair copper cables to standard EIA/TIA 568**

These cables conform to:
- standard EIA/TIA 568, category CAT 5E,
- standard IEC 11801/EN 50173, class D.

Their flame resistance conforms to:
- NFC 32070# classification C2
- standards IEC 322/1,
- Low Smoke Zero Halogen (LSZH).

■ **Shielded twisted pair copper cables, UL and CSA 22.1 approved**

These cables conform to:
- standards UL and CSA 22.1.

Their flame resistance conforms to NFPA 70.

"Do It Yourself" cable and connectors

The ConneXium "Do It Yourself" range allows the user to make up Ethernet copper cables on site and to the required length. They are designed for cabling Ethernet 10/100 Mbit/s networks. The maximum length of cables made up in this way is 80 m. They can be assembled quickly using a knife and cutting pliers (no special tools are required).

Description	Characteristics	Length	Reference	Weight kg
Ethernet copper cable 2 shielded twisted pairs 24 AWG	Conforming to the above-mentioned standards and approvals	300 m 984.252 ft	**TCSECN300R2**	–
RJ 45 connector	Conforming to EIA/TIA-568-D	–	**TCSEK3MDS**	–
M12 connector	Conforming to IEC 60176-2-101	–	**TCSEK1MDRS**	–

(1) Other versions (fibre optic, switches, …): please consult our site www.schneider-electric.com

490 NT●000●●

TCSESU043F1N0

TCSESM043F2C●0

499NMS/NSS25102

TCSESM083F2C●0

TCSESU051F0

References (continued)

Shielded twisted pair cables to standard EIA/TIA568

Description	Pre-formed at both ends	Item	Length	Reference	Weight kg lb
Straight cables	2 x RJ45 connectors For connection to terminal equipment (DTE)	1	2 m (6.562 ft)	**490NTW00002**	–
			5 m (16.404 ft)	**490NTW00005**	–
			12 m (39.370 ft)	**490NTW00012**	–
			40 m (131.234 ft)	**490NTW00040**	–
			80 m (262.467 ft)	**490NTW00080**	
Crossover cables	2 x RJ45 connectors For connection between hubs, switches and transceivers	2	5 m (16.404 ft)	**490NTC00005**	–
			12 m (39.370 ft)	**490NTC00015**	–
			40 m (131.234 ft)	**490NTC00040**	–
			80 m (262.467 ft)	**490NTC00080**	–

Shielded twisted pair cables, UL and CSA 22.1 approved

Description	Pre-formed at both ends	Item	Length	Reference	Weight kg lb
Straight cables	2 x RJ45 connectors For connection to terminal equipment (DTE)	1	2 m (6.562 ft)	**490NTW00002U**	–
			5 m (16.404 ft)	**490NTW00005U**	–
			12 m (39.370 ft)	**490NTW00012U**	–
			40 m (131.234 ft)	**490NTW00040U**	–
			80 m (262.467 ft)	**490NTW00080U**	–
Crossover cables	2 x RJ45 connectors For connection between hubs, switches and transceivers	2	5 m (16.404 ft)	**490NTC00005U**	–
			40 m (131.234 ft)	**490NTC00040U**	–
			80 m (262.467 ft)	**490NTC00080U**	–

Shielded twisted pair cable for IP 67 switch

Description	Pre-formed at both ends	Item	Length	Reference	Weight kg lb
Straight cables	1 x IP 67 4-way M12 connector and 1 x RJ45 connector	–	1 m (3.281 ft)	**TCSECL1M3M1S2**	–
			3 m (9.843 ft)	**TCSECL1M3M3S2**	–
			5 m (16.404 ft)	**TCSECL1M3M5S2**	–
			10 m (32.808 ft)	**TCSECL1M3M10S2**	–
			25 m (82.021 ft)	**TCSECL1M3M25S2**	–
			40 m (131.234 ft)	**TCSECL1M3M40S2**	–

ConneXium hub

Description	Number of ports		Item	Reference	Weight kg lb
	Copper cable	Fibre optic			
Twisted pair hub 10BASE-T copper ports, RJ45 shielded connectors	4	–	3	**499NEH10410**	0.530 *1.168*

ConneXium switches

Description	Number of ports		Item	Manag -eable	Reference	Weight kg lb
	Copper cable	Fibre optic				
Optimized twisted pair switch 10BASE-T/100BASE-TX copper ports, RJ45 shielded connectors 100BASE-FX optic port, SC connectors	3	–	3	No	**TCS ESU033FN0**	0.113 *0.249*
	4	1	3	No	**TCS ESU043FN0**	0.120 *0.265*
	5	–	3	No	**TCS ESU053FN0**	0.113 *0.249*
Twisted pair switches 10BASE-T/100BASE-TX copper ports, RJ45 shielded connectors	8	–	3	No	**499NES18100**	0.230 *0.507*
	8	–	4	Yes	**TCSESM083F23F0**	0.410 *0.904*
Twisted pair and fibre optic switches 10BASE-T/100BASE-TX copper ports, RJ45 shielded connectors. 100BASE-FX optic ports, SC connectors	3	1, multimode	4	Yes	**TCSESM043F1CU0**	0.400 *0.882*
	2	2, multimode	4	Yes	**TCSESM043F2CU0**	0.400 *0.882*
	3	1, single-mode	4	Yes	**TCSESM043F1CS0**	0.400 *0.882*
	2	2, single-mode	4	Yes	**TCSESM043F2CS0**	0.400 *0.882*
	4	1, multimode	3	No	**499NMS25101**	0.330 *0.728*
	3	2, multimode	3	No	**499NMS25102**	0.335 *0.739*
	4	1, single-mode	3	No	**499NSS25101**	0.330 *0.728*
	3	2, single-mode	3	No	**499NSS25102**	0.335 *0.739*
	7	1, multimode	4	Yes	**TCSESM083F1CU0**	0.410 *0.904*
	6	2, multimode	4	Yes	**TCSESM083F2CU0**	0.410 *0.904*
	7	1, single-mode	4	Yes	**TCSESM083F1CS0**	0.410 *0.904*
	6	2, single-mode	4	Yes	**TCSESM083F2CS0**	0.410 *0.904*
IP 67 twisted pair switch *(1)* 10BASE-T/100BASE-TX copper ports, shielded M12 connectors (type D)	5	–	–	No	**TCSESU051F0**	0.210 *0.463*

(1) Require special cables with M12 connectors for their ⎓ 24 V supply: **XZCP1●64L●**

Modicon LMC058 Motion controller
SoMachine software suite
Simplify machine programming and commissioning

SoMachine software platform

Presentation

SoMachine is the OEM solution software for developing, configuring and commissioning the entire machine in a single software environment, including logic, motion control, HMI and related network automation functions.

SoMachine allows you to program and commission all the elements in Schneider Electric's Flexible and Scalable Control platform, the comprehensive solution-oriented offer for OEMs, which helps you achieve optimized control solution for each machine's requirements.

Flexible and Scalable Control platforms include:

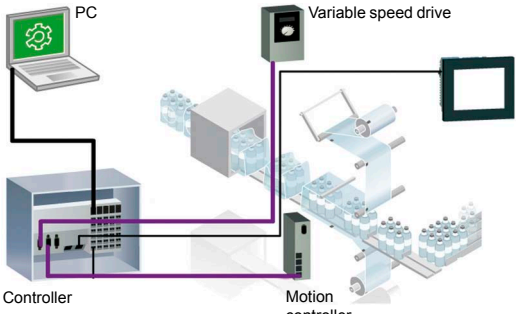
Controllers:
- HMI controllers: XBT GC, XBT GT/GK CANopen,
- Logic controllers: Modicon M238, Modicon M258,
- Motion Controller: Modicon LMC 058,
- Integrated Controller Card: Altivar IMC,
- I/Os range: Modicon TM2, Modicon TM5 and Modicon TM7 offers

HMI:
- Small Panels Magelis™ STO/STU
- Advanced Panels Magelis™ GH/GK/GT
- Optimum Advanced Panels Magelis™ GTO

SoMachine is a professional, efficient, and open software solution integrating Vijeo-Designer.
It integrates also the configuring and commissioning tool for motion control devices.
It features the IEC 61131-3 languages, integrated field bus configurators, expert diagnostics and debugging, as well as outstanding capabilities for maintenance and visualisation.

SoMachine integrates tested, validated, documented and supported expert application libraries dedicated to applications in Pumping, Packaging, Hoisting and Conveying.

SoMachine provides you:
- One software package
- One project file
- One cable connection
- One download operation



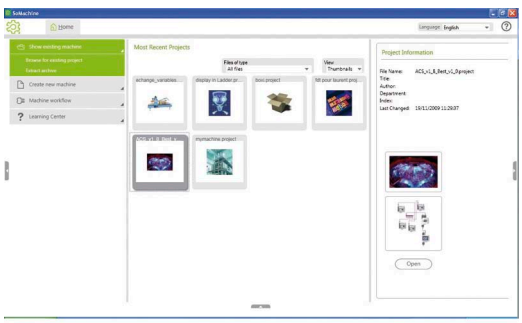
Software solution

Visual graphic user interface

Navigation within SoMachine is intuitive and highly visual. Presentation is optimized in such a way that selecting the development stage of the desired project makes the appropriate tools available. The user interface ensures nothing is overlooked, and suggests the tasks to be performed throughout the project development cycle. The workspace has been streamlined, so that only that which is necessary and relevant to the current task is featured, without any superfluous information.

Learning centre

From the home menu, the learning centre provides several tools to get started with SoMachine. An animated file explains briefly the SoMachine interface and concept.
An e-learning allows to run a self-training about SoMachine. A third section gives access to several documented examples of simple coding with SoMachine.
An intuitive and efficient online help is also available, guiding you to get the appropriate answer.

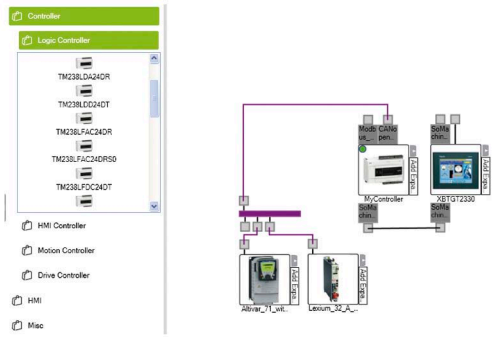


Project management

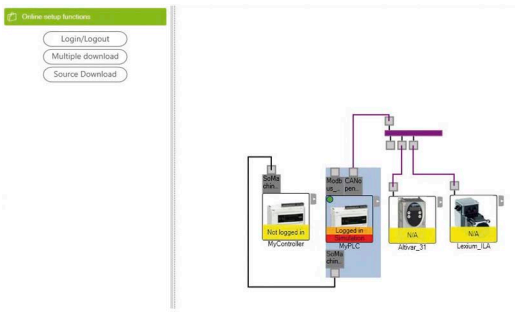
Projects management

The implemented project management principle allows to browse quickly through the existing projects getting the relevant information without the need to open them before selection.
The user can create a new project, starting from several means: using Tested Validated and Documented Architectures, using the provided examples, using an existing project or start with an empty project. There is quick access to the most recently-used projects.
There is as well a way to start a project from standard project taking advantages of a pre-configured program (task, library, ...)

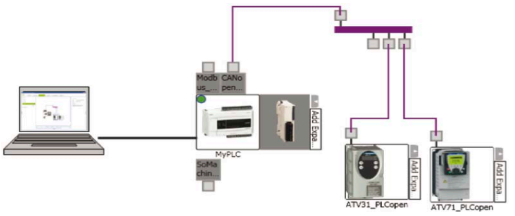
Modicon LMC058 Motion controller
SoMachine software suite
Simplify machine programming and commissioning



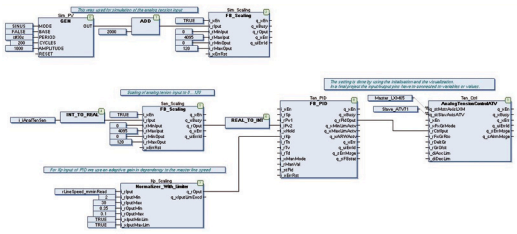
Configuration



Commissioning



Transparency



Application Function Blocks

Project properties

For each project, the user has the option to define additional information, through simple forms. It's also possible to attach documents, a customer picture and a configuration picture.

Configuration

From the graphic user interface, the user can easily build his architecture and configure the devices of the architecture.

Description of the architecture

A graphic editor can be used to assemble the various elements easily by a simple drag & drop. A devices catalogue is displayed on the left of the screen. It is split into several sections: controllers, HMI, Miscellaneous and search.

Configuration of the device

Directly from the topologic view of the user interface, a simple click drives the user to the configuration screen of the selected device.

Programming and debug

Programming is an essential step, and the user has to carefully design it to be as efficient as possible. Advanced control and HMI functions cover all the needs of an OEM engineer in terms of creating the control and visualisation system.
Powerful tools allow debug and functional tests such as simulation, step by step execution, break points and trace.

Commissioning

For an easy and fast diagnostic, the menu commissioning allows the user to check the online state of his architecture.Through the topologic view of the configuration, the devices display if you are logged in or not, as well as if they are in run or stop mode.

Documentation

Because a printed file of the project is an important element, it is possible to build and customize the project report:
- select the items to be included in the report,
- organize the sections,
- define the page layout
- and then launch the printing.

Transparency

SoMachine supports Device Type manager (DTM) because it is a field device tool (FDT) container.
With DTM's representing field device in SoMachine, direct communications are possible to every single device via SoMachine, the controller and the field bus (Modbus for all devices and CANopen for the I/O's).
From the SoMachine unique environment, the remote devices can be set-up off-line and tuned on-line.

Dedicated OEM application libraries (AFB libraries)

SoMachine can be extended through its solution extension DVD. It integrates tested, validated, documented and supported expert application libraries dedicated to many OEM applications. Their simple configuration speeds up design, commissioning, installation and troubleshooting.
These libraries cover the following applications:
- Packaging,
- Hoisting,
- Conveying,
- Pumping

Tested Validated Documented Architectures (TVDA)

SoMachine provides a variety of preset projects with ready-to-use architectures you can adapt to individual requirements. Some of them are generic TVDA, they are based on controllers configuration. The solution extension DVD brings specific application solutions oriented TVDA's to SoMachine.

Modicon LMC058 Motion controller

SoMachine software suite

Simplify machine programming and commissioning

SoMachine characteristics

Overview

IEC 61131-3 programming languages	■ IL (Instruction List) ■ LD (Ladder Diagram) ■ SFC (Sequential Function Chart) ■ ST (Structured Text) ■ FBD (Function Block Diagram) ■ + CFC (Continous Function Chart)
Controller programming services	■ Multi-tasking: Mast, Fast, Event ■ Functions (Func) and Function Blocks (FBs) ■ Data Unit Type (DUTs) ■ On-line changes ■ Watch windows ■ Graphical monitoring of variables (trace) ■ Breakpoints, step-by-step execution ■ Simulation ■ Visualization for application and machine set-up
HMI-based services	■ Graphics libraries containing more than 4000 2D and 3D objects. ■ Simple drawing objects (points, line, rectangles, ellipses, etc …) ■ Preconfigured objects (button, switch, bar graph, etc …) ■ Recipes (32 groups of 256 recipes with max. 1024 ingredients) ■ Action tables ■ Alarms ■ Printing ■ Java scripts ■ Multimedia file support: wav, png, jpg, emf, bmp ■ Variable trending
Motion services	■ Embeded devices configuration and commissioning ■ CAM profile editor ■ Sample application trace ■ Motion and drive function blocks libraries for inverters, servos and steppers ■ Visualization screens ■ Logical encoder
Global services	■ User access and profile ■ Project documentation printing ■ Project comparison (control) ■ Variable sharing based on publish/subscribe mechanism ■ Library version management ■ Energy efficiency machine monitoring
Integrated fieldbus configurators	■ Control network: □ Modbus Serial Line □ Modbus TCP ■ Field bus: □ CANopen □ CANmotion ■ Connectivity: □ Profibus-DP □ Ethernet IP
Expert and solutions libraries	■ PLCopen function blocks for Motion control □ Example: MC_MoveAbsolute, MC_CamIn, ServoDrive, ... ■ Packaging function blocks □ Example: Analog film tension control, rotary knife, lateral film position control, ... ■ Conveying function blocks □ Example: tracking, turntable, conveyor , ... ■ Hoisting functions □ Hoisting function blocks: anti-sway, anti-crab, hoisting position synchronisation, ... □ Application template for industrial crane ■ Pumping application □ Pumping function blocks □ Application template for booster ■ Energy Efficiency library

Modicon LMC058 Motion controller
SoMachine software suite
Simplify machine programming and commissioning

Product offer

SoMachine software is delivered on a DVD, it is a product oriented version that includes all SoMachine features related to generic hardware (M238, M258, LMC058, XBT GC, Altivar IMC), as well as generic TVDA

The solution features are added to SoMachine by installing its solution extension DVD. It includes all SoMachine solutions hardware, plus all the dedicated application libraries and TVDA.

References

- SoMachine is available in 6 languages:
  - English
  - French
  - German
  - Italian
  - Spanish
  - Simplified Chinese.
- System Requirements:
  - Processor: Pentium 4 - 1,8 GHz or higher , Pentium M 1.0 GHz or equivalent
  - RAM Memory: 2 GByte; recommended: 3 GByte
  - Hard Disk: 3.5 GB, recommended: 5 GB
  - OS: Windows XP Professional, Windows 7 Professional 32/64 bytes
  - Drive: DVD reader
  - Display: 1024 × 768 pixel resolution or higher
  - Peripherals: a Mouse or compatible pointing device
  - Peripherals: USB interface
  - Web Access: Web registration requires Internet access
- The documentation is supplied in electronic format: complete on-line help plus complementary documentation in pdf version.

SoMachine software for generic controllers

Supported controllers	TVDA	Reference	
		DVD *(1)*	**Licence** *(2)* / number & type
■ M238 ■ M258 ■ LMC058 ■ XBT GC ■ XBT GT/GK with control function ■ Altivar IMC	- Optimized HW XBT GC - Optimized HW M238 - Optimized CANopen M238 - Optimized AS-Interface M238 - Optimized CANopen XBT GC/GT/GK - Optimized CANopen Altivar IMC - Performance HW M258 - Performance CANopen M258 - Performance CANmotion LMC058	**MSDCHNSFNV31** + Trial licence (30 days)	**MSDCHNLMUA** /1 (Single) **MSDCHNLMTA** /10 (Team) **MSDCHNLMFA** /100 (Facility)

SoMachine solution extension for Solution controllers *(3)*

Added controllers	Added TVDA	Added libraries	Reference *(4)*
			DVDs and Licence / number & type
■ M238S ■ M258S ■ LMC058S ■ XBT GC with CANopen module type S ■ XBT GT/GK with control function type S ■ Altivar IMC with control function type S	- Optimized CANopen Altivar IMC - Performance CANmotion LMC058 - Hoisting Optimized CANopen M238 - Conveying Performance CANmotion LMC058	Hoisting Conveying Packaging	**MSDCHLLMUV31S0** / 1 (Single) **MSDCHLLMTV31S0** / 10 (Team) **MSDCHLLMFV31S0** /100 (Facility)

SoMachine software compatibility and hardware control platforms

Product type	Version
Logic controller Modicon M238	≥ V1.0
HMI controller XBT GC	
Logic controller Modicon M238S	≥ V2.0
Modicon M258 logic controller	
Modicon M258 logic controllerS	
Modicon LMC058 Motion controller	≥ V3.0
Modicon LMC058 Motion controllerS	≥ V2.0
HMI controller XBT GT/GK with control function type S, XBT GC with CANopen module type S	
Altivar IMC integrated controller card	≥ V3.1
Altivar IMC integrated controller card with control function type S	≥ V2.0
TM5 CANopen Interface	≥ V3.0
TM7 CANopen Interface block	
Altivar IMC integrated controller card (with patch)	

(1) The DVD is mandatory and delivered with a trial licence.
(2) One of the 3 type of Licences is mandatory.
(3) For this offer, please contact Schneider electric.
(4) Each reference for SoMachine solution software contains: one generic trail DVD, one solution extension V3.1 DVD and one licence.

Modicon LMC058 Motion controller

Associated offers

Altivar 32 variable speed drives and Lexium 32 motion control

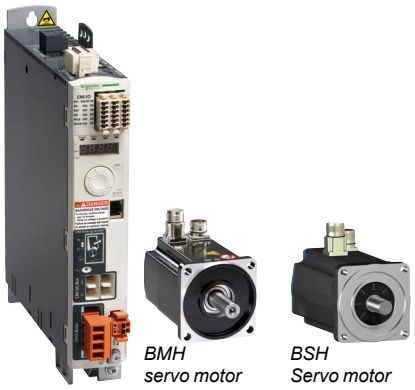
Application areas	Commons		**Printing, material handling, conveying, transfer machines, packaging, textiles, etc.**
	Specific		**Hoisting, wood-working or metal processing machines, etc.**
Technology type			**Altivar 32 variable speed drives without sensor (velocity control)**

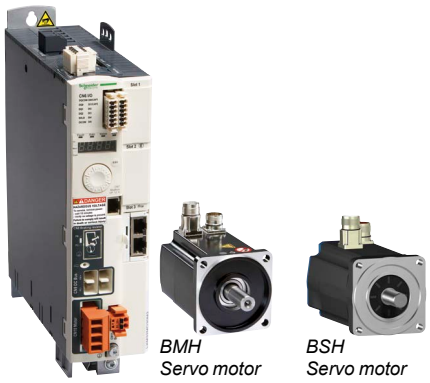
Power range for 50…60 Hz (kW) line supply			0.18…15
	Single-phase 100…120 V (kW)		–
	Single-phase 200…240 V (kW)		0.18…2.2
	Three-phase 380…480 V (kW)		–
	Three-phase 380…500 V (kW)		0.37…15
Drive	Motor speed		0.1…599 Hz
	Type of control	Asynchronous motor	Voltage/frequency ratios: U/f and 5-point U/f Sensorless flux vector control ratio Kn² quadratic ratio (pump/fan) Energy saving ratio
		Synchronous motor	Ratio for synchronous motor without sensor
	Motor sensor	Integrated	–
		Available as an option	–
	Transient overtorque		170…200% of the nominal motor torque
	Peak current		–
Number of functions			150
Safety functions	Integrated		4: STO (Safe Torque Off), SLS (Safe Limited Speed), SDI (Safe Direction Information), SS1 (Safe Stop 1)
	Available as an option		–
Number of I/O	Inputs	Analog	3
		Logic	6
	Outputs	Analog	1: configurable as voltage (0-10 V) or current (0-20 mA)
		Logic	1
	Relay outputs		2
Communication	Integrated		Modbus, CANopen
	Available as an option		DeviceNet, PROFIBUS DP V1, EtherNet/IP, Modbus TCP, EtherCat
	Bluetooth link®		Integrated
Options			SoMove setup software Simple Loader and Multi-Loader configuration tools IP 54 or IP 65 remote display terminal and remote graphic display terminal Filters, braking resistors, line chokes
Standards and certifications			IEC 61800-5-1, IEC 61800-3 (environments 1 and 2, category C2), UL 508C, EN 954-1 category 3, ISO/EN 13849-1/- 2 category 3 (PL e), IEC 61508 (parts 1 & 2) SIL 3 level, draft standard EN 50495E IEC 60721-3-3, classes 3C3 and 3S2
			CE, UL, CSA, C-Tick, NOM, GOST
References			**ATV 32**
Pages			Please consult our web site www.schneider-electric.com

Printing, material handling, conveying, transfer machines, packaging, textiles, etc.

Clamping, cutting, cutting to length, flying shear, rotary knife, Pick & Place, winding, marking, etc.

Lexium 32 servo drives with sensor feedback (position control)





0.15…7		
0.15…0.8		
0.3…1.6		
0.4…7		
–		
Nominal speed: ■ BMH servo motors: continuous stall torque range between 1.2…84 Nm for nominal speeds between 1200 and 5000 rpm ■ BSH servo motors: continuous stall torque range between 0.5…33.4 Nm for nominal speeds between 2500 and 6000 rpm		
–		
Synchronous motor with sensor feedback for BMH and BSH servo motors		
SinCos Hiperface® sensor		
–		Resolver encoder Analog encoder (motor and machine) Digital encoder (machine only)
–		
Peak current, up to 4 times the drive direct current for 1 second		
–		
1: STO (Safe Torque Off)		
4: SLS (Safe Limited Speed), SS1 (Safe Stop 1), SS2 (Safe Stop 2), SOS (Safe Operating Stop)		
2	–	–
6	1 capture input	6 (2 of which can be used as a capture input)
–	–	–
5	–	3
–	–	–
Modbus	Modbus, CANopen, CANmotion	Modbus
–	–	CANopen, CANmotion, DeviceNet, EtherNet/IP, PROFIBUS DP V1, EtherCat
Available as an option	Available as an option	Available as an option
SoMove setup software Multi-Loader configuration tool Graphic display terminal Filters, braking resistors, line chokes		
IEC 61800-5-1, IEC 61800-3 (environments 1 and 2, categories C2 and C3), IEC 61000-4-2/4-3/4-4/4-5, ISO/EN 13849-1 (PL e), IEC 61508 SIL 3 level		
CE, UL, CSA, TÜV		
LXM 32C	**LXM 32A**	**LXM 32M**
Please consult our web site www.schneider-electric.com		

Modicon LMC058 Motion controller
Associated offers
TeSys motor starters - open version

Applications	**Pre-assembled starters**			
	Small machines starting under full load: D.O.L. starters			**Machines starting under no-load: star-delta starters**
Starter type	**D.O.L. or reversing starters with circuit-breaker**		**D.O.L. starters with fuse protection**	**Soft start units or star-delta starters to be used in association with a circuit-breaker or fuses**
					
Level of service	Type 1 coordination		Type 2 coordination	–	–
Power at 400 V	Up to 5.5 kW	Up to 37 kW		Up to 37 kW	Up to 132 kW
Type of components	**Combination automatic motor starter with overload protection built into the circuit-breaker**			**Fuse carrier + plate-mounted contactor**	**3 contactors (line, star and delta, mounted on plate, rail or chassis)**
Pages	Please consult your Customer Care Centre				

Starters for customer assembly
Small machines starting under full load: D.O.L. starters **Machines starting under no-load: star-delta starters**

D.O.L. or reversing starters	D.O.L., reversing or star-delta starters with circuit-breakers	D.O.L., reversoing or star-delta starters with fuses
	 	     	  	  

Total coordination	Type 1 and type 2 coordination		–	–
Up to 15 kW	Up to 110 kW	Up to 315 kW		Up to 355 kW
Starter-controller	**Thermal magnetic circuit-breaker + contactor(s)**	**Magnetic circuit-breaker + contactor(s) + thermal overload relay**	**Fuse carrier + contactor(s) + thermal overload relay**	**Switch-disconnector-fuse + contactor(s) + thermal overload relay**
Please consult your Customer Care Centre				

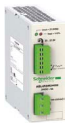
Modicon LMC058 Motion controller

Associated offers

Power supplies and transformers Phaseo

Regulated switch mode power supplies

Power supplies		Regulated switch mode power supplies **ABL 8MEM, ABL 7RM: 7 to 60 W - Rail mounting** **ABL 8REM, ABL 7RP: 60 to 144 W - Rail mounting**			
					
Nominal input voltage		~ 100...240 V ⎓ 120...250 V			
Connection to worldwide line supplies	United States - 120 V (phase-to-neutral) - 240 V (phase-to-phase)	Single-phase (N-L1) connection or 2-phase (L1-L2) connection			
	Europe - 230 V (phase-to-neutral) - 400 V (phase-to-phase)	Single-phase (N-L1) connection			
	United States - 277 V (phase-to-neutral) - 480 V (phase-to-phase)	–			
Undervoltage control		Yes			
Protection against overloads and short-circuits		Yes, voltage detection. Automatic reset on elimination of the fault			
Diagnostics relay		–			
Compatibility with function modules		–			
Power reserve (Boost)		1.25 to 1.4 In for 1 minute, depending on model (for ABL 8MEM)			No
Output voltage		⎓ 5 V	⎓ 12 V	⎓ 24 V	⎓ 48 V
Output current	0.3 A			**ABL 8MEM24003**	
	0.6 A			**ABL 8MEM24006**	
	1.2 A			**ABL 8MEM24012**	
	2 A		**ABL 8MEM12020**		
	2.5 A			**ABL 7RM24025**	**ABL 7RP4803**
	3 A			**ABL 8REM24030**	
	3.5 A				
	4 A	**ABL 8MEM05040**			
	5 A		**ABL 7RP1205**	**ABL 8REM24050**	
	6 A				
	10 A				
	20 A				
	30 A				
	40 A				
Pages		Please consult our web site www.schneider-electric.com			

ABL4: 85 to 960 W - Compact - Rail mounting			Function modules ABL 8DCC: converters ⎓/⎓	
				
∼ 100…230 V	∼ 120 V or ∼ 230 V	∼ 400…500 V	⎓ 24 V	
Single-phase (N-L1) connection	Single-phase (N-L1) connection or 2-phase (L1-L2) connection	–	–	
–	Single-phase (N-L1) connection	3-phase (L1-L2-L3) connection	–	
–	–	3-phase (L1-L2-L3) connection	–	
No	No	No	–	
Yes, current limitation Automatic reset on elimination of the fault			Yes, current limitation	
Yes	Yes	Yes	Yes, depending on model	
Yes with buffer module, battery and battery check modules, redundancy module and discriminating downstream protection module				
Depending on model: 1.5 to 1.7 In for 5 to 30 seconds			No	

⎓ 24 V			⎓ 5 V	⎓ 7...12 V
				ABL 8DCC12020 *(1)*
ABL 4RSM24035				
ABL 4RSM24050				
			ABL 8DCC05060 *(1)*	
	ABL 4RSM24100			
	ABL 4RSM24200	**ABL 4WSR24200**		
		ABL 4WSR24300		
		ABL 4WSR24400		

Please consult our web site www.schneider-electric.com *(2)*

(1) Converter module ⎓/⎓, must be used with a Phaseo power supply.
(2) Certain offers can not be marketed in certain countries, please consult your "Customer Care Centre".

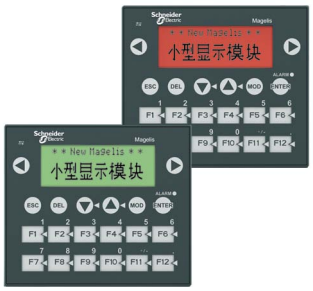
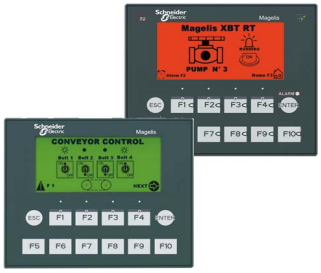
Modicon LMC058 Motion controller

Associated offers

Operator dialogue terminals: Magelis Small Panels

Applications		**Display of graphic pages**		
Type of terminal		**Small Panels with touch screen**		
				
Display	Type	Monochrome STN LCD (200 x 80 pixels), backlit - Green, orange and red, or - White, pink and red	Colour QVGA TFT LCD (320 x 240 pixels)	
	Capacity	3.4" (monochrome)	3.5" (colour)	5.7" (colour)
Data entry		Via touch screen		
Memory capacity	Application	16 MB Flash		
	Expansion	–		
Functions	Maximum number of pages	Limited by internal FLASH EPROM memory capacity		
	Variables per page	Unlimited		
	Representation of variables	Alphanumeric, bitmap, bargraph, gauge, curves, buttons, LEDs		
	Recipes	32 groups of 64 recipes		
	Curves	Yes, with log		
	Alarm logs	Yes		
	Real-time clock	Access to the PLC real-time clock		
	Alarm relay	–		
	Buzzer	Yes		
Communication	Asynchronous serial link	RS 232C/RS 485 *(1)* RS 232C using Zelio protocol *(2)*	RS 232C/RS 485	
	Downloadable protocols	Uni-TE, Modbus and for PLC brands: Allen-Bradley, Omron, Mitsubishi, Siemens		
	Printer link	USB for serial or parallel printer		
	USB ports	1 host type A and 1 device type mini-B		
	Networks	1 Ethernet TCP/IP port (10BASE-T/100BASE-TX) *(3)*	1 Ethernet TCP/IP port (10BASE-T/100BASE-TX)	
Development software		Vijeo Designer (on Windows XP, Windows Vista and Windows 7)		
Operating system		Magelis		
References		**HMI STO 5●●**	**HMI STU 655**	**HMI STU 855**
Page		Please consult our web site www.schneider-electric.com		

(1) Only HMI STO 511/512.
(2) Only HMI STO 501.
(3) Only HMI STO 531/532.

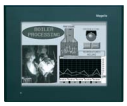
Display of text messages and/or semi-graphic pages	Display of text messages and/or semi-graphic pages Control and configuration of data	
Small Panels with keypad	**Small Panels with keypad**	**Small Panels with touch screen and keypad**
		
Green backlit monochrome LCD, height 5.5 mm or Green, orange or red backlit monochrome LCD, height 4.34…17.36 mm	Green, orange or red backlit monochrome LCD, height 4.34…17.36 mm	Green, orange or red backlit monochrome matrix LCD (198 x 80 pixels), height 4…16 mm
2 lines of 20 characters or 1 to 4 lines of 5 to 20 characters (monochrome)	1 to 4 lines of 5 to 20 characters (monochrome)	2 to 10 lines of 5 to 33 characters (monochrome)
Via keypad with 8 keys (4 customizable)	Via keypad with ■ 12 function keys or numeric entry (depending on context) ■ 8 service keys	Via keypad with ■ 4 function keys ■ 8 service keys Via touch screen and keypad with ■ 10 function keys ■ 2 service keys
512 KB Flash		512 KB Flash EPROM
–		
128/200 application pages 256 alarm pages	128/200 application pages 256 alarm pages	200 application pages 256 alarm pages
40…50	40…50, bargraph, buttons, LEDs	50
Alphanumeric		Alphanumeric, bargraph, buttons, LEDs
–		
Yes		
Yes *(5)*	Yes	
Access to the PLC real-time clock	Access to the PLC real-time clock	
–		
–		Yes *(4)*
RS 232C/RS 485		
Uni-TE, Modbus and for PLC brands: Allen-Bradley, Omron, Mitsubishi, Siemens		
RS 232C serial link *(5)*		
–		
–		
Vijeo Designer Lite (on Windows 2000, Windows XP and Windows Vista)		
Magelis		
XBT N ●●●●	**XBT R ●●●**	**XBT RT ●●●**
Please consult our web site www.schneider-electric.com		

(4) Only XBT RT511.
(5) Depending on model.

Modicon LMC058 Motion controller

Associated offers

Operator dialogue terminals: Magelis GT, GK, GH and GTW Advanced Panels

Applications		**Display of text messages, graphic objects and synoptic views Control and configuration of data**		
Type of terminal		**Touch screen Advanced Panels**		
				
Display	Type	Backlit monochrome (amber or red mode) STN LCD (320 x 240 pixels) or TFT LCD	Backlit monochrome or colour STN LCD or backlit colour TFT LCD (320 x 240 pixels) or (640 x 480 pixels) *(3)*	Backlit colour STN LCD or colour TFT LCD (640 x 480 pixels)
	Capacity	3.8" (monochrome or colour)	5.7" (monochrome or colour)	7.5" (colour)
Data entry		Via touch screen		
	Static function keys	–		
	Dynamic function keys	–		
	Service keys	–		
	Alphanumeric keys	–		
Memory capacity	Applications	32 MB Flash EPROM	16 MB Flash EPROM *(3)*	32 MB Flash EPROM
	Expansion	–	By means of 128, 256, 512 MB, 1, 2 or 4 GB CF card (except XBT GT2110)	
Functions	Maximum number of pages	Limited by internal Flash EPROM memory capacity	Limited by capacity of internal Flash EPROM memory or CF card memory	
	Variables per page	Unlimited (8000 variables max.)		
	Representation of variables	Alphanumeric, bitmap, bargraph, gauge, tank, tank level indicator, curves, polygon, button, LED		
	Recipes	32 groups of 64 recipes comprising 1024 ingredients max.		
	Curves	Yes, with log		
	Alarm logs	Yes		
	Real-time clock	Built-in		
	Discrete I/O	–		1 input (reset) and 3 outputs (alarm, buzzer, run)
	Multimedia I/O	–	*(3)*	1 audio input (microphone), 1 composite video input (digital or analogue video camera), 1 audio output (loudspeaker) *(1)*
Communication	Downloadable protocols	Uni-TE *(2)*, Modbus, Modbus TCP/IP *(1)* and for PLC brands: Mitsubishi, Omron, Allen-Bradley and Siemens		
	Asynchronous serial link	RS 232C/485 (COM1)	RS 232C/RS 422/485 (COM1) and RS 485 (COM2)	
	USB ports	1	1 *(3)*	1
	Bus and networks	–	Modbus Plus and Fipway with USB gateway, PROFIBUS DP and Device Net with optional card	
		Ethernet TCP/IP (10BASE-T/100BASE-TX) *(1)*		
	Printer link	USB port for parallel printer	RS 232C (COM1) serial link, USB port for parallel printer	
Development software		Vijeo Designer (on Windows XP, Windows Vista and Windows 7)		
Operating system		Magelis (200 MHz RISC CPU)	Magelis (133 MHz RISC CPU) *(3)*	Magelis (266 MHz RIS CPU)
Type of terminal		**XBT GT11/13**	**XBT GT21/22/23/24/29**	**XBT GT42/43**
Page		Please consult our web site www.schneider-electric.com		

(1) Depending on model.
(2) Uni-TE version V2 for Twido controller and TSX Micro/Premium platform.
(3) For XBTGT 2430, 32 MB Flash EPROM, 1 sound output, 2 USB ports, 266 MHz RISC CPU.
(4) For XBT GT 5430.

Display of text messages, graphic objects and synoptic views
Control and configuration of data

Touch screen Advanced Panels

Backlit colour STN LCD or colour TFT LCD (640 x 480 pixels or 800 x 600 pixels) *(4)*	Backlit colour TFT LCD (800 x 600 pixels)	Backlit colour TFT LCD (1024 x 768 pixels)
10.4" (colour)	12.1" (colour)	15" (colour)
Via touch screen		
–		
–		
–		
–		
32 MB Flash EPROM		
By means of 128, 256, 512 MB, 1, 2 or 4 GB CF card		
Limited by capacity of internal Flash EPROM memory or CF card memory		
Unlimited (8000 variables max.)		
Alphanumeric, bitmap, bargraph, gauge, tank, tank level indicator, curves, polygon, button, LED		
32 groups of 64 recipes comprising 1024 ingredients max.		
Yes, with log		
Yes		
Built-in		
1 input (reset) and 3 outputs (alarm, buzzer, run)		
1 audio input (microphone), 1 composite video input (digital or analogue video camera), 1 audio output (loudspeaker) *(1)*		
Uni-TE *(2)*, Modbus, Modbus TCP/IP *(1)* and for PLC brands: Mitsubishi, Omron, Allen-Bradley and Siemens		
RS 232C/RS 422/485 (COM1) and RS 485 (COM2)		
2		
Modbus Plus with USB gateway		
Ethernet TCP/IP (10BASE-T/100BASE-TX)		
RS 232C (COM1) serial link, USB port for parallel printer		
Vijeo Designer (on Windows XP, Windows Vista and Windows 7)		
Magelis (266 MHz RIS CPU)		
XBT GT52/53/54	**XBT GT63**	**XBT GT73**
Please consult our web site www.schneider-electric.com		

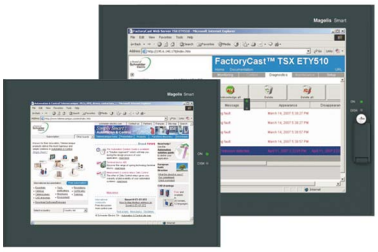
Modicon LMC058 Motion controller

Associated offers

Operator dialogue terminals: Magelis GT, GK, GH and GTW Advanced Panels

Applications		**Display of text messages, graphic objects and synoptic views Control and configuration of data**	
Type of terminal		**Advanced Panels with keypad**	
			
Display	Type	Colour TFT LCD (320 x 240 pixels) or monochrome STN	Colour TFT LCD (640 x 480 pixels)
	Capacity	5.7" (monochrome or colour)	10.4" (colour)
Data entry		Via keypad and/or touch screen (configurable) and/or by industrial pointer	
	Static function keys	10	12
	Dynamic function keys	14	18
	Service keys	8	
	Alphanumeric keys	12	
Memory capacity	Application	16 MB Flash EPROM	32 MB Flash EPROM
	Expansion	By means of 128, 256, 512 MB, 1, 2 or 4 GB CF card	
Functions	Maximum number of pages	Limited by capacity of internal Flash EPROM memory or CF card memory	
	Variables per page	Unlimited (8000 variables max.)	
	Representation of variables	Alphanumeric, bitmap, bargraph, gauge, tank, tank level indicator, curves, polygon, button, LED	
	Recipes	32 groups of 64 recipes comprising 1024 ingredients max.	
	Curves	Yes, with log	
	Alarm logs	Yes	
	Real-time clock	Built-in	
	Discrete I/O	–	1 input - 3 outputs
	Multimedia I/O	–	–
Communication	Downloadable protocols	Uni-TE *(2)*, Modbus, Modbus TCP/IP *(1)* and for PLC brands: Mitsubishi, Omron, Allen-Bradley and Siemens	
	Asynchronous serial link	RS 232C/RS 422/485 (COM1) RS 485 (COM2)	
	USB ports	1	*2*
	Bus and networks	Modbus Plus, Fipway with USB gateway, PROFIBUS DP and Device Net with optional card	
		Ethernet TCP/IP (10BASE-T/100BASE-TX)	
	Printer link	RS 232C (COM1) serial link, USB port for parallel printer	
Development software		Vijeo Designer (on Windows XP, Windows Vista and Windows 7)	
Operating system		Magelis (CPU 266 MHz RISC)	
Type of terminal		**XBT GK 21/23**	**XBT GK 53**
Page		Please consult our web site www.schneider-electric.com	

(1) Depending on model.
(2) Uni-TE version V2 for Twido controller and TSX Micro/Premium platform.

Display of text messages, graphic objects and synoptic views Control and configuration of data			
Portable Advanced Panels	**Open touch screen Advanced Panels**		
			
Colour TFT LCD (640 x 480 pixels)	Colour TFT LCD (800 x 600 pixels)	Colour TFT LCD (800 x 600 pixels)	Colour TFT LCD (1024 x 768 pixels)
5.7" (colour)	8.4" (colour)	12" (colour)	15" (colour)
Via touch screen	Via touch screen		
11	–		
–	–		
–	–		
–	–		
32 MB Flash EPROM	1 GB CF system card included with terminal, expandable to 4 GB	2 GB CF system card included with terminal, expandable to 4 GB	
By means of 128, 256, 512 MB, 1, 2 or 4 GB CF card			
Limited by capacity of internal Flash EPROM memory or CF card memory			
Unlimited (8000 variables max.)			
Alphanumeric, bitmap, bargraph, gauge, tank, tank level indicator, curves, polygon, button, LED			
32 groups of 64 recipes comprising 1024 ingredients max.			
Yes, with log			
Yes			
Built-in			
–			
1 audio output			
Uni-TE (2), Modbus, Modbus TCP/IP and for PLC brands: Mitsubishi, Omron, Rockwell Automation and Siemens	Uni-TE *(2)*, Modbus, Modbus TCP/IP *(1)* and for PLC brands: Mitsubishi, Omron, Allen-Bradley and Siemens		
RS 232C/RS 422-485 (COM1)	RS 232C (COM1) RS 232C (COM2)	RS 232C (COM1)	RS 232C (COM1) RS 232C (COM2)
1	4	4 + 1 on front	
–	Modbus Plus with USB gateway		
1 Ethernet port (10BASE-T/100BASE-TX)	1 TCP/IP Ethernet port (10BASE-T/100BASE-TX) and 1 Ethernet port (10BASE-T/100BASE-TX/1 GB)		
–	RS 232C (COM1 or COM2) serial link, USB port for parallel printer		
Vijeo Designer (on Windows XP, Windows Vista and Windows 7)			
Magelis (266 MHz RISC CPU)	Windows XP Embedded		
XBT GH 2460	**XBT GTW 450**	**XBT GTW 652**	**HMI GTW 7353**
Please consult our web site www.schneider-electric.com			

(1) Depending on model.
(2) Uni-TE version V2 for Twido controller and TSX Micro/Premium platform.

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