

Motion controller

Modicon LMC058

Catalogue
October 2012



- **Modicon LMC058 Motion controller**
- Selection guide* 2
- Presentation 4 to 10
- Description 11
- References 12
- **I/O expansion modules**
- Local and remote I/O expansion modules* 14
- Distributed I/O expansion modules* 15
- Modicon TM5
 - Compact blocks 16 & 18
 - Digital modules 20 to 25
 - Common distribution modules 26
 - Analog modules 28 to 31
 - Expert modules 32 to 35
 - Power distribution modules 36
 - Transmitter and Receiver modules 38
- Modicon TM7 blocks 40 to 51
 - Digital blocks 42
 - Analog blocks 46
 - Power distribution block 49
- **Communication**
- Modicon TM5 communication module for Profibus DP fieldbus 50
- Modbus and Character mode serial link Cabling system 52
- Modicon TM5 communication modules for Modbus serial link 54
- CANopen Performance architecture with Modicon TM5/TM7 56
- Distributed I/O on CANopen bus
 - with Modicon TM5 (IP 20) interface module 58
 - with Modicon TM7 interface blocks IP 67 62
- CANopen Performance architecture with Modicon TM5 and Modicon TM7 72
- Ethernet Modbus/TCP network 74
- **SoMachine software suite**
- Presentation 76
- References 79
- **Associated offers**
- Altivar 32 variable speed drives and Lexium 32 motion control 80
- TeSys motor starters - open version 82
- Power supplies Phaseo
 - Regulated switch mode power supplies 84
- Operator dialogue terminals
 - Magelis Small Panels 86
 - Magelis GT, GK, GH and GTW Advanced Panels 88 & 90

Applications		<p>General machine control with motion:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Packaging <input type="checkbox"/> Conveying <input type="checkbox"/> ... <p>42 digital I/O</p>
User memory		<p>64 MB (program + data)</p> <p>128 MB</p>
Typical Boolean instruction time		22 ns
User program size		128 program Kinstructions
Power supply		24 V $\overline{\text{---}}$
Channel connection		Via removable spring terminal blocks (supplied)
Inputs		26 x 24 V $\overline{\text{---}}$ inputs including 8 counter inputs (100 kHz)
Digital outputs		16 outputs (0.5 A) including 4 reflex outputs
Built-in communication ports		<p>Programming port for SoMachine V2.0 software</p> <p>Connection of a USB memory stick for transferring programs, data files, firmware updates</p> <p>RS232 serial link</p> <p>RS485 serial link (supplies 250 mA, 5 V for HMI power supply)</p> <p>Protocols: Modbus ASCII/RTU Master/Slave, ASCII (character string)</p> <p>CANopen bus master (63 slaves)</p> <p>CANmotion bus master (8 synchronized axis or 63 slaves)</p> <p>Encoder input (incremental or SSI)</p> <p>Ethernet TCP IP, Web Server, FTP, Ethernet Modbus TCP</p>
Optional communication ports		–
Motion controller type		LMC058 LF42
Page		12



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 $\overline{\text{---}}$

Via removable spring terminal blocks (supplied)

26 x 24 V $\overline{\text{---}}$ 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

12

(1) To be ordered separately, see page 54.



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/Grfcet (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.



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 controllers 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 cut 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.

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.

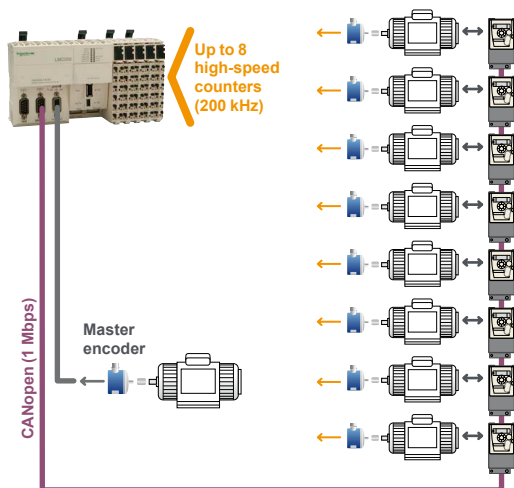
With the availability of PLCopen function blocks specific to the motion control functions in the SoMachine software, you can be sure that developing your applications will be quick and reliable.

Moreover, a complete range of high-speed counter modules is available so you can adapt your configuration to your machine's specific requirements.

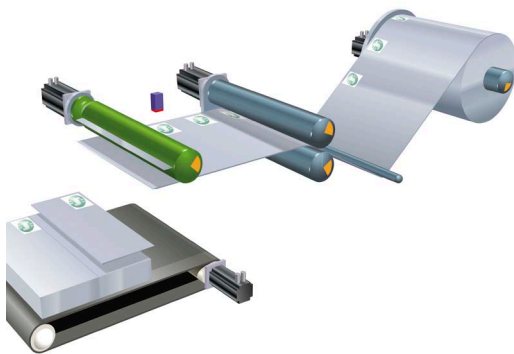
Position control function

Several options are offered in terms of position control:

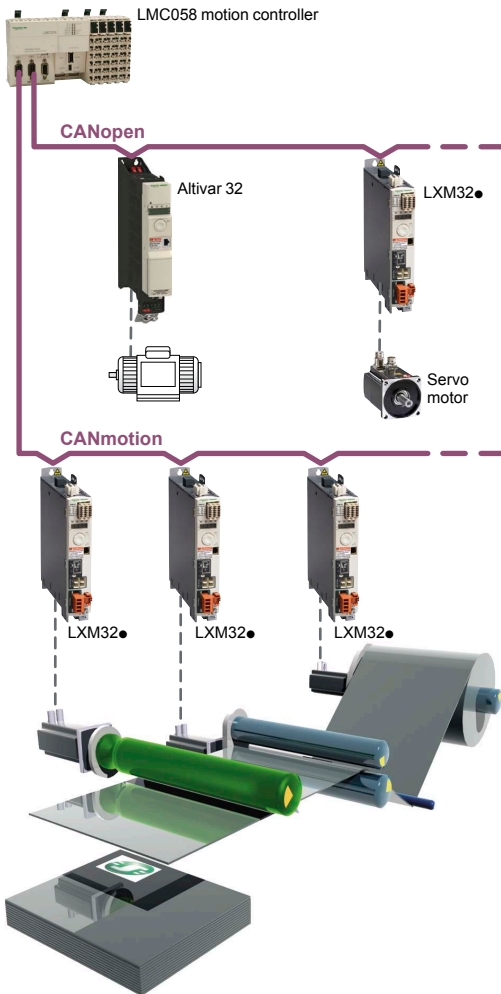
- Creating a sequence in Lexium 32 servo drives, with communication with the LMC058 motion controller achieved by the use of digital I/O
- Creating an application in the LMC058 motion controller and controlling Lexium 32 drives and servo drives and/or Lexium SD3 stepper drives via the integrated CANopen 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)



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



Lexium 32 servo drives: monitoring cutting to length



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.



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	<ul style="list-style-type: none"> ■ 42 digital I/O including 8 high-speed counters (200 kHz) ■ CANopen master ■ CANmotion master
LMC058LF424	<ul style="list-style-type: none"> ■ 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 \pm) 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 dB μ V 500 kHz...30 MHz, quasi peak 73 dB μ V
Radiated emission	EN 55011 (IEC/CISPR11)	30...230 MHz, 10 m @ 40 dB μ V/m 230 MHz...1 GHz, 10 m @ 47 dB μ V/m

Assembly and mounting

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

An 8-way expansion bus connection (2 for the power supply, 2 for the bus and 4 for the data) is used to distribute data and the power supply when assembling the components: the LMC058 motion controller with compact blocks and modules (Digital, analog, Expert, Common Distribution, Power Distribution, bus expansion). 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

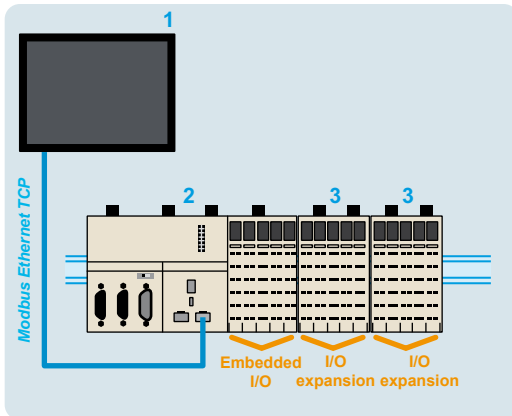
Local I/O

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



Local I/O

Remote I/O

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

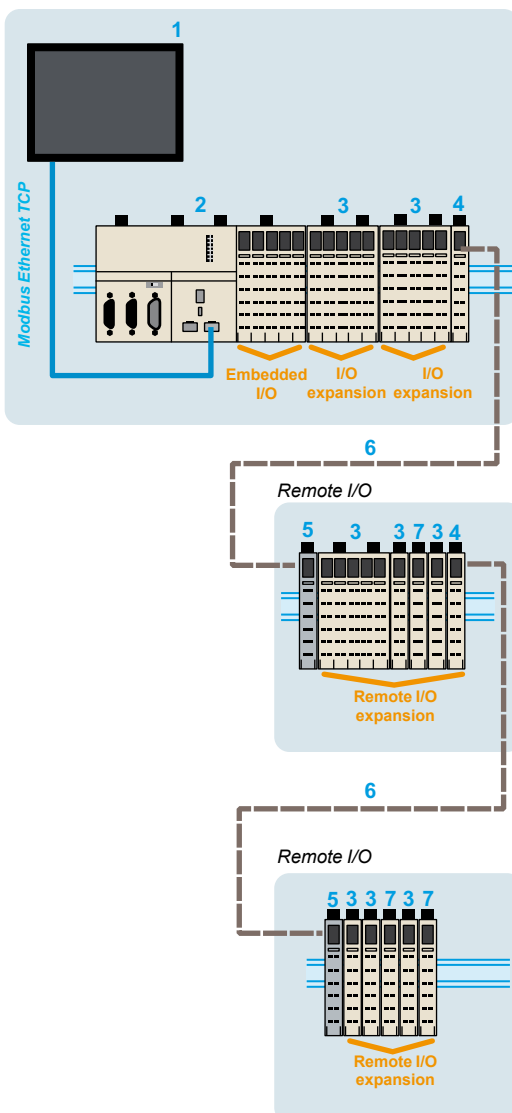
The same modules can be used in either a local and/or remote configuration, linked together with bus expansion cables.

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:

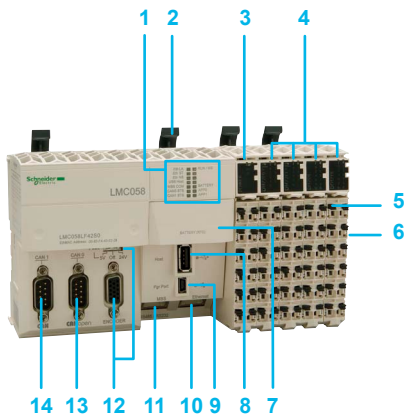
References	Communication ports	Use
LMC058LF42	RJ45 Configurable as RS232 or RS485	ASCII or RTU exchange with Modbus communication protocol
	1 x RJ45 (MDI/MDIX port)	<input type="checkbox"/> FTP server <input type="checkbox"/> Web server <input type="checkbox"/> Modbus TCP server <input type="checkbox"/> Modbus TCP client <input type="checkbox"/> SoMachine Manager <input type="checkbox"/> SNMP <input type="checkbox"/> Ethernet IP device <input type="checkbox"/> 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	RJ45 Configurable as RS232 or RS485	ASCII or RTU exchange with Modbus communication protocol
	1 x RJ45 (MDI/MDIX port)	<input type="checkbox"/> FTP server <input type="checkbox"/> Web server <input type="checkbox"/> Modbus TCP server <input type="checkbox"/> Modbus TCP client <input type="checkbox"/> SoMachine Manager <input type="checkbox"/> SNMP <input type="checkbox"/> Ethernet IP device <input type="checkbox"/> 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

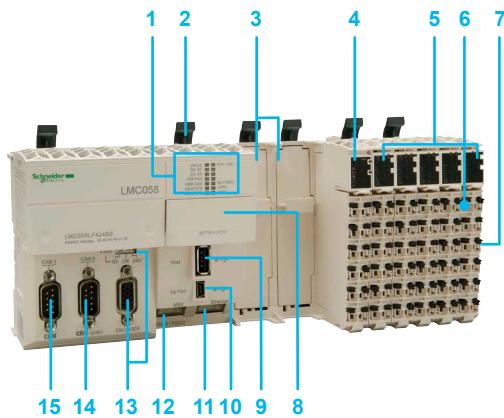
References	Protocols	Number of connections
LMC058LF42	Modbus server	8
LMC058LF424	Modbus device	2
	Ethernet IP device	16
	FTP server	4
	Web server	10



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 \perp symmetrical rail
- 3 A 24 V $\overline{\text{DC}}$ 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 \perp symmetrical rail
- 3 Two free PCI slots for the communication modules
- 4 A 24 V $\overline{\text{DC}}$ 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 $\overline{\text{---}}$ power supply (1)

No. of I/O	Inputs	Outputs	Built-in communication ports	Reference	Weight (kg)
42 I/O	<ul style="list-style-type: none"> ■ 26 x 24 V $\overline{\text{---}}$ digital inputs including 8 counter inputs (200 kHz) 	<ul style="list-style-type: none"> ■ 16 digital transistor outputs (0.5 A) including 4 reflex outputs 	<ul style="list-style-type: none"> <input type="checkbox"/> 1 RJ45 port: Ethernet <input type="checkbox"/> 1 SUB-D port (9-way male): CANopen master <input type="checkbox"/> 1 SUB-D port (9-way male): CANmotion master <input type="checkbox"/> 1 SUB-D port (15-way female): master encoder <input type="checkbox"/> 1 USB-A port: program transfer <input type="checkbox"/> 1 USB-B mini-port: software programming <input type="checkbox"/> 1 RJ45 port: RS232/RS485 serial link 	LMC058LF42	0.550
42 + 4 I/O	<ul style="list-style-type: none"> ■ 26 x 24 V $\overline{\text{---}}$ digital inputs including 8 counter inputs (200 kHz) ■ 4 analog inputs 10 V/- 10 V, 4-20 mA/ 0-20 mA, 12-bit resolution 	<ul style="list-style-type: none"> ■ 16 digital transistor outputs (0.5 A) including 4 reflex outputs 	<ul style="list-style-type: none"> <input type="checkbox"/> 1 RJ45 port: Ethernet <input type="checkbox"/> 1 SUB-D port (9-way male): CANopen master <input type="checkbox"/> 1 SUB-D port (9-way male): CANmotion master <input type="checkbox"/> 1 SUB-D port (15-way female): master encoder <input type="checkbox"/> 1 USB-A port: program transfer <input type="checkbox"/> 1 USB-B mini-port: software programming <input type="checkbox"/> 1 RJ45 port: RS232/RS485 serial link <input type="checkbox"/> + 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 $\overline{\text{---}}$. The 24 V $\overline{\text{---}}$ 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.

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	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	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

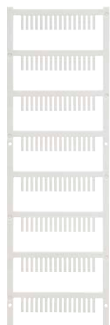
(2) DCE: Data Communication Equipment



TM5ACTLC100



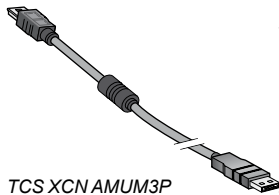
TM5ACTCH100





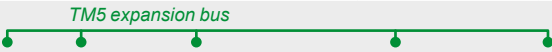
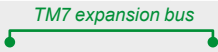






TM5ACLITW1



TM5ACLT1




TCS XCN AMUM3P

Applications		Local and/or remote I/O (IP 20)				Remote I/O expansion bus (IP 67)	
Compatibility		<ul style="list-style-type: none"> ■ Modicon M258 logic controller ■ Modicon LMC058 Motion controller 					
I/O type		Digital	Analog	Digital/analog	Expert	Digital	Analog
Remote I/O	Hardware configuration	 <p>Modicon TM5 transmitter/receiver: For use with remote I/O (1)</p>				 <p>Modicon TM5 transmitter/receiver: Required (1)</p>	
	Bus type	 <p>TM5 expansion bus</p>				 <p>TM7 expansion bus</p>	
		   				 	
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 $\overline{\text{DC}}$ 100/120 V \sim , 100/240 V \sim	Voltage, Current, Temperature	Digital: 24 V $\overline{\text{DC}}$ Analog: Voltage, Current	5 V $\overline{\text{DC}}$, 24 V $\overline{\text{DC}}$ (from 50 kHz to 1 MHz)	24 V $\overline{\text{DC}}$	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 $\overline{\text{DC}}$ 30/230 V \sim , 100/240 V \sim	- 10...+ 10 V, 0...20 mA	Digital: 24 V $\overline{\text{DC}}$ Analog: Voltage/ Current	–	24 V $\overline{\text{DC}}$ 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.

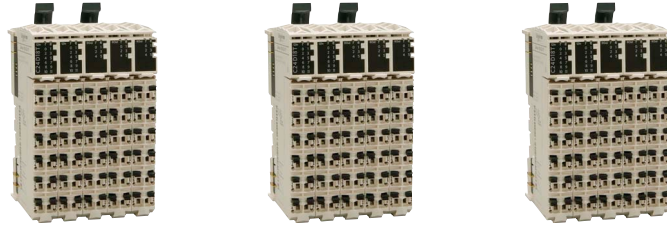


Applications		Performance distributed I/O (IP 20)	Performance distributed I/O (IP 67)
Compatibility		<ul style="list-style-type: none"> ■ Modicon M258 logic controller ■ Modicon LMC058 Motion controller 	
			
Available buses and networks		■ CANopen bus	■ CANopen bus
Configuration with I/O expansion modules	Module type	Modicon TM5 modules and/or Modicon TM7 blocks: <ul style="list-style-type: none"> <input type="checkbox"/> Digital I/O modules <input type="checkbox"/> Analog I/O modules <input type="checkbox"/> Common distribution modules (TM5 only) 	Modicon TM5 modules and/or Modicon TM7 blocks: <ul style="list-style-type: none"> <input type="checkbox"/> Digital I/O modules <input type="checkbox"/> Analog I/O modules <input type="checkbox"/> Common distribution modules (TM5 only)
	Capacity	For 1 Modicon TM5 interface module: 40 TM5/TM7 modules max. Including: <ul style="list-style-type: none"> <input type="checkbox"/> Digital I/O modules: 240 inputs and 240 outputs max. <input type="checkbox"/> 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: <ul style="list-style-type: none"> <input type="checkbox"/> Digital I/O modules: 240 inputs and 240 outputs max. <input type="checkbox"/> 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 $\overline{\text{V}}$) or outputs (24 V $\overline{\text{V}}$)
Type of distributed I/O expansion module		Modicon TM5 CANopen interface module	Modicon TM7 CANopen interface blocks
Page		58	62



Applications	Modicon TM5 compact block Compatibility
---------------------	--

20 I/O	36 I/O	42 I/O
Modicon M258 logic controller Modicon LMC058 Motion controller		



Channel connection

With removable spring terminal blocks (supplied)

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

12	24	24
24 V ---	24 V ---	24 V ---
Type 1	Type 1	Type 1
Sink	Sink	Sink
3-wire	1-wire	1-wire
20.4... 28.8 V ---	20.4... 28.8 V ---	20.4... 28.8 V ---
3.75 mA	3.75 mA	3.75 mA
6.4 kΩ	6.4 kΩ	6.4 kΩ
5 V max. ---	5 V max. ---	5 V max. ---
15 V min. ---	15 V min. ---	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

8, transistor	12, relays with NO contact	18, transistor
24 V ---	24 V ---	24 V ---
0.5 A	0.5 A	0.5 A
1 A max.	5 A max.	2 A max.
Source	Source	Source
3-wire	1-, 2- or 3-wire	2-wire
20.4...28.8 V ---	20.4...28.8 V ---	20.4...28.8 V ---
Yes	Yes	Yes

Analog inputs	Number
	Type
	Range
	Resolution
	Sampling period
	without filtering
	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
----	----	----

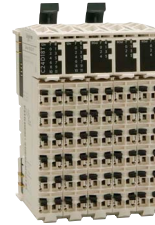
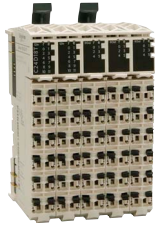
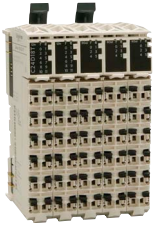
(1) Source output: PNP output. Sink output: NPN output.



24 I/O

16 I/O

Modicon M258 logic controller
Modicon LMC058 Motion controller



With removable spring terminal blocks (supplied)

12
24 V $\overline{\text{---}}$
Type 1
Sink
2-wire
20.4... 28.8 V $\overline{\text{---}}$
3.75 mA
6.4 k Ω
5 V max. $\overline{\text{---}}$
15 V min. $\overline{\text{---}}$
6, transistor
24 V $\overline{\text{---}}$
0.5A
2 A max.
Source
2-wire
20.4...28.8 V $\overline{\text{---}}$
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 μ s	-	-	-
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 \sim RMS	500 V \sim RMS	500 V \sim RMS	500 V \sim RMS
TM5 C12D6T6L	TM5 CAI8O8VL	TM5 CAI8O8CL	TM5 CAI8O8CVL
19	19	19	19

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 TM5ACTB12 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.

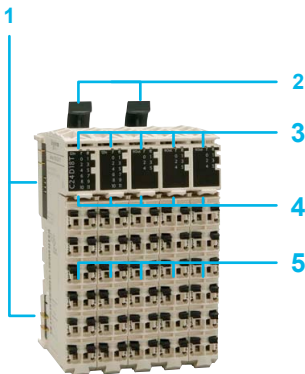
The TM5 C●●●●●● I/O compact block offer consists of:

- A 24 V $\overline{\text{V}}$ digital I/O compact block, with 12 sink inputs and 8 transistor outputs
- A 24 V $\overline{\text{V}}$ digital I/O compact block, with 24 sink inputs and 12 relay outputs
- A 24 V $\overline{\text{V}}$ digital I/O compact block, with 24 sink inputs and 18 transistor outputs
- A 24 V $\overline{\text{V}}$ 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 $\overline{\text{V}}$ 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:

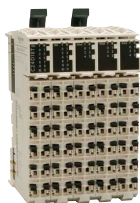
- 1 On each side of the base, a bus expansion connection for the link with the previous controller or block
- 2 Two mechanical locking clips for mounting/dismounting on a symmetrical rail
- 3 Five LED display blocks for the channels and compact block diagnostics
- 4 Five slots for the plain text cover 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

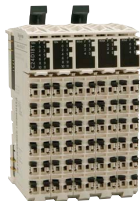
Device colour: white



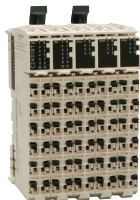
TM5C12D8T



TM5C24D12R



TM5C24D18T



TM5C12D6T6L



TM5CAI8O8VL



TM5CAI8O8CL



TM5CAI8O8CVL



TM5ACTB●●



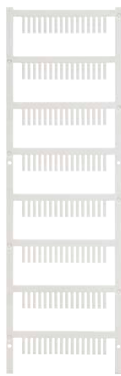
TM5ACTLC100



TM5ACTCH100



TM5ACTL1



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 $\overline{\text{---}}$, Sink, 3-wire	8 transistor digital outputs, 3-wire, 24 V $\overline{\text{---}}$, Source, 0.5 A	TM5C12D8T	0.037 0.082
36 I/O	24 digital inputs, 24 V $\overline{\text{---}}$, Sink, 1-wire, 0.5 A max	12 digital outputs, 5 A relay, with NO contact, 30 V $\overline{\text{---}}$ /230 V \sim	TM5C24D12R	0.037 0.082
42 I/O	24 digital inputs, 24 V $\overline{\text{---}}$, Sink, 1-wire	18 transistor digital outputs, 24 V $\overline{\text{---}}$, 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 $\overline{\text{---}}$, 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 $\overline{\text{---}}$, 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 outputs - 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 outputs 0...20 mA Resolution 12 bits	TM5CAI8O8CL	0.037 0.082
	8 analogue inputs: <input type="checkbox"/> 4 voltage inputs - 10...+ 10 Vdc <input type="checkbox"/> 4 current inputs 0...20 mA/4...20 mA Resolution <input type="checkbox"/> voltage: 11 bits + sign <input type="checkbox"/> current: 12 bits	8 analogue outputs: <input type="checkbox"/> 4 voltage outputs - 10...+ 10 Vdc <input type="checkbox"/> + 4 current outputs 0...20 mA Resolution <input type="checkbox"/> voltage: 11 bits + sign <input type="checkbox"/> 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 $\overline{\text{---}}$ 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	Transparent	100	TM5ACTLC100	0.100 0.220
Precut legend strips of paper	Plain text cover holder	White	100	TM5ACTLS100	0.100 0.220
Coloured plastic identifiers	Labelling 16 connection channel terminals	White	1	TM5ACLITW1	0.015
		Red	1	TM5ACLITR1	0.033
		Blue	1	TM5ACLITB1	
Metal tool	Inserting/removing identifiers	Black	1	TM5ACTL1	0.030 0.066

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

Modicon LMC058 Motion controller

I/O expansion modules

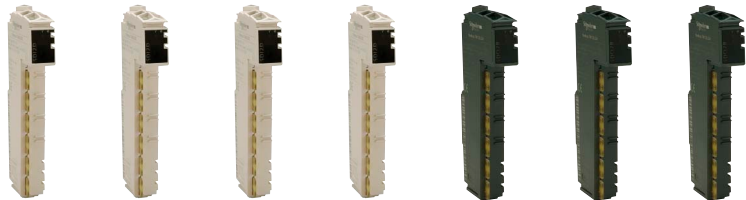
Modicon TM5 Digital modules and Modicon TM5 Digital/Analog module

Applications Type of expansion module

Compatibility

2 to 12 digital input channels

Modicon M258 logic controller, Modicon LMC058 motion controller



Channel connection

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

With removable spring terminal blocks (to be ordered separately)

2	4	6	12	2	4	6
24 V $\overline{\text{DC}}$				100/240 V \sim		
Type 1				Type 1		
Sink						
1-, 2- or 3-wire		1 or 2-wire	1-wire	1-, 2- or 3-wire	1 or 2-wire	
$\overline{\text{DC}}$ 20.4... 28.8 V				\sim 100... 240 V		
3.75 mA				5 mA at \sim 100 V		10 mA at \sim 120 V
6.4 k Ω				-		
$\overline{\text{DC}}$ 5 V max.				-		
$\overline{\text{DC}}$ 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 $\overline{\text{---}}$	24 V $\overline{\text{---}}$
Type 1	Type 1
Sink	Sink
1-wire	1-wire
$\overline{\text{---}}$ 20.4...28.8 V	$\overline{\text{---}}$ 20.4...28.8 V
3.3 mA	3.75 mA
7.2 k Ω	6.4 k Ω
$\overline{\text{---}}$ 5 V max.	$\overline{\text{---}}$ 5 V max.
$\overline{\text{---}}$ 15 V min.	$\overline{\text{---}}$ 15 V min.

2	4	2	4	4	6	8	12	2	2	4
24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$					100/240 V \sim		$\overline{\text{---}}$ 30/ \sim 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	
$\overline{\text{---}}$ 20, 4...28.8 V	$\overline{\text{---}}$ 20.4...28.8 V	$\overline{\text{---}}$ 20.4...28.8 V					\sim 80...264 V		$\overline{\text{---}}$ 24...36 V \sim 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
----	----



More technical information on www.schneider-electric.com

Presentation

The TM5 S●●●● digital module offer consists of:

- Eleven input, mixed I/O and output electronic modules (sensor and preactuator 24 V $\overline{\text{---}}$ 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:

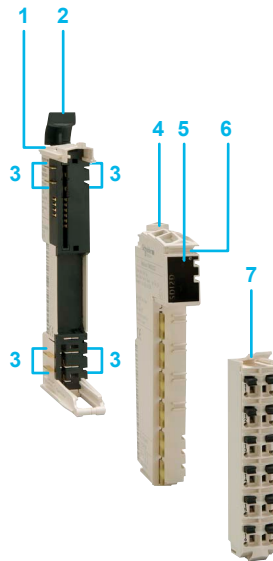
- Removable terminal
- Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators in addition, the quality of the spring terminals avoids the need for periodic retightening
- Hot swapping

The digital modules offer includes:

- Four 24 V $\overline{\text{---}}$ digital input modules with 2, 4, 6 or 12 sink inputs
- One 24 V $\overline{\text{---}}$ 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 $\overline{\text{---}}$ 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

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 $\overline{\text{---}}$ 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 $\overline{\text{---}}$ inputs/outputs	8 sink inputs, 4 source transistor outputs	TM5 SDM12DT	0.025
--	--	-------------	-------

Digital output electronic modules

24 V $\overline{\text{---}}$ 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 $\overline{\text{---}}$ 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 $\overline{\text{---}}$	–	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 $\overline{\text{---}}$ 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.

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:

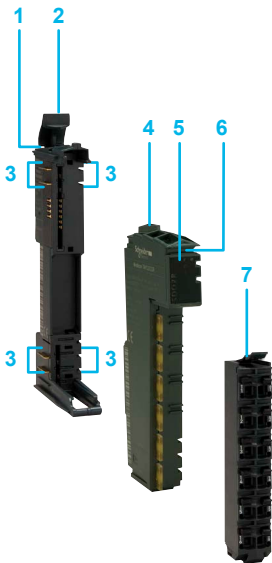
- Two 100/240 V ~ digital input electronic modules, with 2 or 4 inputs
- A 100/120 V ~ digital input electronic module, with 6 inputs
- A 100/240 V ~ digital output electronic modules, with 2 outputs
- Two 30 V ~/230 V ~ digital output electronic modules, with 2 or 4 relay outputs

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



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 \square /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.

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.

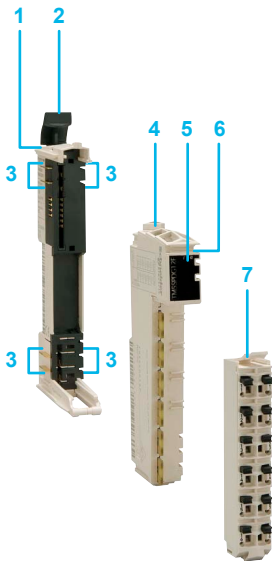
This offer is completed by a non-functioning dummy module TM5 SD000 which can be used to:

- 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



Device colour: white



TM5 SPDG●●●



TM5 ACBM●●



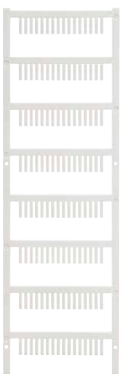
TM5 ACTB●●



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 $\overline{\text{---}}$	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 $\overline{\text{---}}$	–	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 $\overline{\text{---}}$ 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	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

Applications	Type of expansion module
	Compatibility

1 to 6 analog input channels
Modicon M258 logic controller, Modicon LMC058 motion controller



Channel connection	
Analog inputs	Number
	Type
	Range
	Resolution
	Sampling period

With removable spring terminal blocks (to be ordered separately)					
2	2	4	4	2	4
Voltage/current				Pt100/Pt1000 temperature probe	
- 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	
12 bits + sign	15 bits + sign	12 bits + sign	15 bits + sign	16 bits	
300 µs	–	400 µs	–	–	
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	
Isolation	Channel-to-channel
	Between channel groups
	Channel-to-bus

Type of electronic module

Associated bus base (2)

Associated terminal block (2)

Page

Internal
Non-isolated
–
~ 500 V RMS

TM5 SAI2L	TM5 SAI2H	TM5 SAI4L	TM5 SAI4H	TM5 SAI2PH	TM5 SAI4PH
TM5 ACBM11, TM5 ACBM15					
TM5 ACTB06, TM5 ACTB12		TM5 ACTB12		TM5 ACTB06, TM5 ACTB12	

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
----	----	----

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.

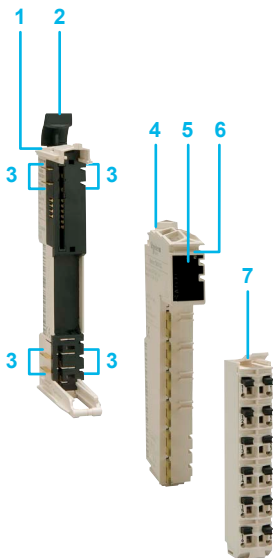
It is advisable to use the TM2XMTGB earthing plate which simplifies connection of the analog sensor and actuator cable shielding. This shielding must be connected to the device's functional earth.

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



Device colour: white



TM5 SAI●● TM5 SAO●● TM5 SAO●●



TM5 ACBM●● TM5 ACTB●●



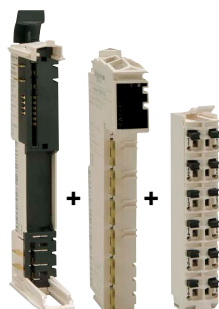
TM5 ACTLC100 TM5 ACTCH100



TM5 ACLPL10 TM5 ACLPR10



TM2 XMTGB TM200 RSRCEMC



TM5 SA4●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	16 bits	TM5 SAI2TH	0.025
6 J, K, S, N thermocouple inputs	Type K: - 270...+ 1372°C	16 bits	TM5 SAI6TH	0.025
	Type S: - 50...+ 1768°C			
	Type N: - 270...+ 1300°C			

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 $\overline{\text{---}}$	-	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 $\overline{\text{---}}$ 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 <i>(Order with plain text cover holder TM5 ACTCH100)</i>	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

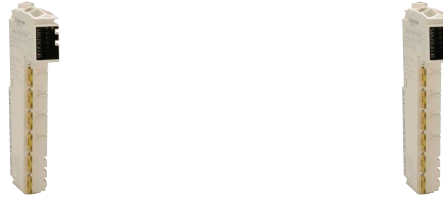
Separate parts

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 <i>Sold in lots of 25</i>	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 <i>(Sold in lots of 5)</i>	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

Applications	Upcounting, downcounting, period measurement, frequency meter, frequency generator, 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 $\overline{\text{DC}}$	24 V $\overline{\text{DC}}$ asymmetrical
Voltage limit values	20.4... 28.8 V $\overline{\text{DC}}$	–
Frequency per channel	50 kHz	100 kHz
Resolution	–	16/32 bits
Functions	Event counting Interval measurement	2 x 24 V $\overline{\text{DC}}$ auxiliary inputs 24 V $\overline{\text{DC}}$ 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 $\overline{\text{---}}$ asymmetrical	5 V $\overline{\text{---}}$ symmetrical	5 V $\overline{\text{---}}$ symmetrical
–	20.4... 28.8 V $\overline{\text{---}}$	20.4... 28.8 V $\overline{\text{---}}$
100 kHz	250 kHz	1 MHz
16/32 bits	16/32 bits	32 bits
2 x 24 V $\overline{\text{---}}$ auxiliary inputs 24 V $\overline{\text{---}}$ encoder power supply	2 x 24 V $\overline{\text{---}}$ auxiliary inputs	2 x 24 V $\overline{\text{---}}$ auxiliary inputs
TM5 SE2IC01024	TM5 SE1IC02505	TM5SE1SC10005

TM5 ACBM11, TM5 ACBM15

TM5 ACTB12

35

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 $\overline{\text{---}}$ auxiliary inputs 24 V $\overline{\text{---}}$ encoder power supply	Sink
TM5 SE2IC01024	2	100 kHz	2 x 24 V $\overline{\text{---}}$ auxiliary inputs 24 V $\overline{\text{---}}$ encoder power supply	Sink
TM5 SE1IC02505	1	250 kHz	2 x 24 V $\overline{\text{---}}$ auxiliary inputs $\overline{\text{---}}$ 5 V encoder power supply	Sink
TM5 SE1SC10005	1	1 MHz	2 x 24 V $\overline{\text{---}}$ auxiliary inputs $\overline{\text{---}}$ 5 V SSI encoder power supply	Sink

The function parameters are set by configuration using SoMachine software.

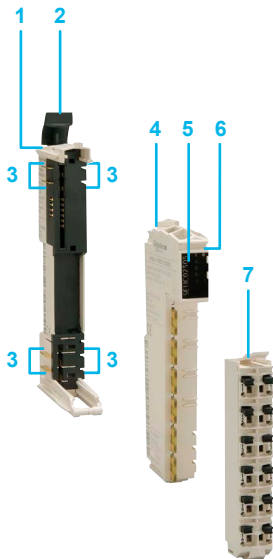
Each Expert module consists of three parts to be ordered separately:

- 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

Device colour: white



TM5 SDI2DF



TM5 SE●●●●●●●●



TM5 ACBM●●



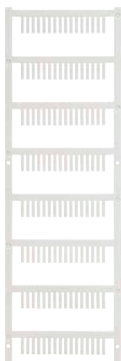
TM5 ACTB●●



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 $\overline{\text{---}}$ auxiliary inputs 24 V $\overline{\text{---}}$ encoder power supply	TM5 SE1IC01024	0.025
	2	2 x 24 V $\overline{\text{---}}$ auxiliary inputs 24 V $\overline{\text{---}}$ encoder power supply	TM5 SE2IC01024	0.025
250 kHz	1	2 x 24 V $\overline{\text{---}}$ auxiliary inputs	TM5 SE1IC02505	0,025
1 MHz	1	2 x 24 V $\overline{\text{---}}$ auxiliary inputs	TM5SE1SC10005	0,025

Bus bases

Power supply	Characteristics	Sold in lots of	Unit reference	Weight kg
24 V $\overline{\text{---}}$	–	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 $\overline{\text{---}}$	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 <i>(Order with plain text cover holder TM5ACTCH100)</i>	Locking plain text cover holder TM5ACTCH100	Transparent	100	TM5 ACTLC100	0.001
Precut legend strips of paper	Plain text cover holder TM5ACTCH100	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

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:

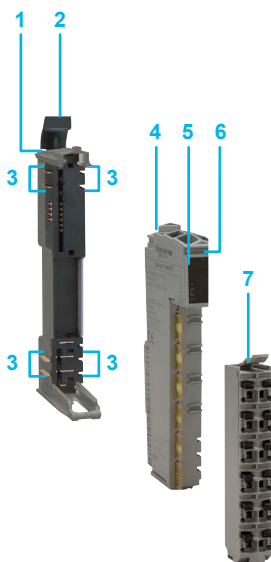
- A power distribution electronic module
- A bus base
- A terminal block

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

Device colour: grey



TM5 SP●●



TM5 ACBM●●



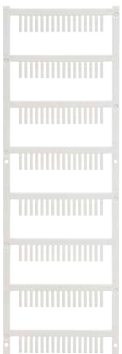
TM5 ACTB●●



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
24 V ~	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

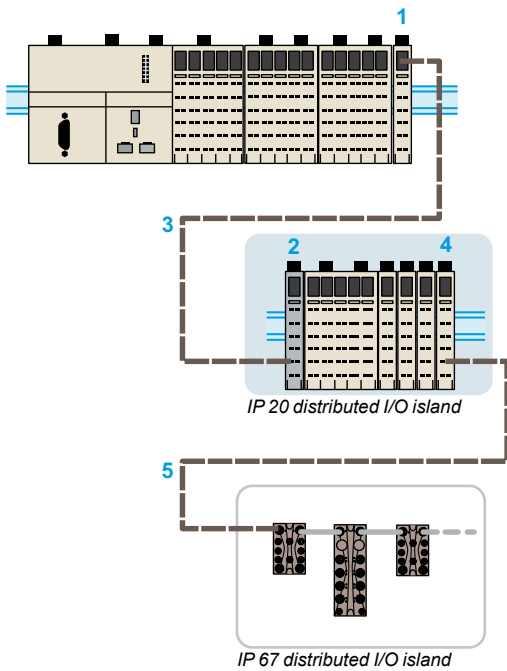
Power supply	Characteristics	Sold in lots of	Unit reference	Weight kg
24 V ~	Isolated on the left on the power supply to the I/O modules in 24 V ~	1	TM5 ACBM01R	0.020
		10	TM5 ACBM01R10	0.020
24 V ~	Isolated on the left on the power supply to the I/O modules in 24 V ~ Address setting	1	TM5 ACBM05R	0.020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



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 XCNNXN100**.

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:

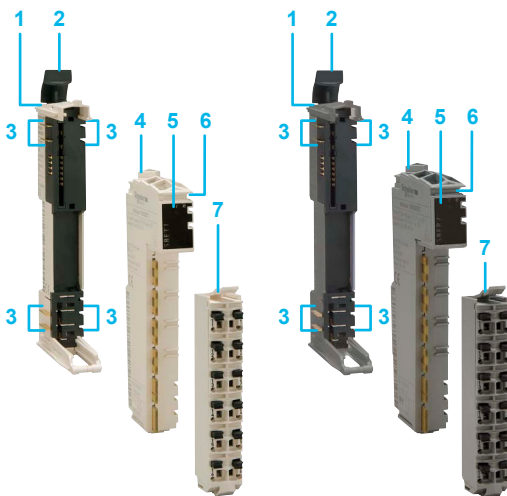
- Removable connector
- Spring terminals which can be used for quick, tool-free connection of the sensors and preactuators. In addition, the quality of the spring terminals avoids the need for periodic retightening

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



TM5 SBET1 TM5 SBET7



TM5 SBER2



TM5 ACBM1●



TM5 ACBM0●R



TM5 ACTB●●



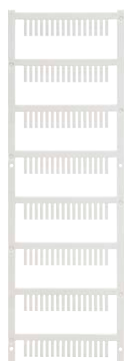
TM5 ACTB12PS



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 $\overline{\text{DC}}$ 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 XCNNXN100	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 $\overline{\text{DC}}$	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	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.

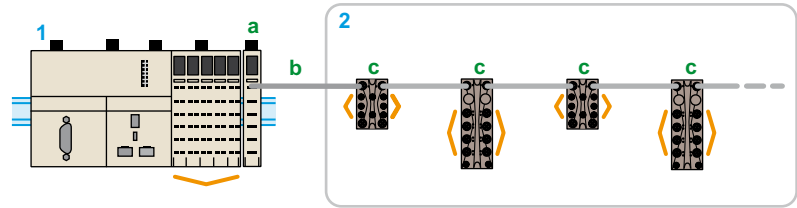
Presentation

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



IP 67 distributed I/O island

Inputs/outputs

- 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).

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 $\bar{\bar{c}}$ 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.



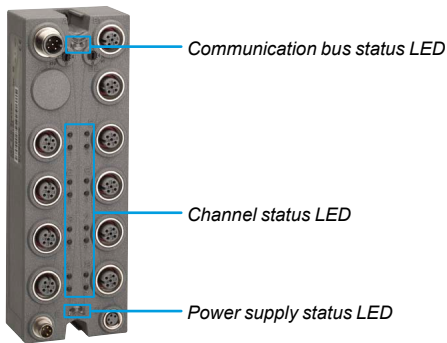
Digital I/O expansion block



Analog I/O expansion block



Power distribution block



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 DIN rail mounted conforming to IEC 60721-3-5 Class 5M3	7.5 mm (0.295 in.) 2...8 Hz fixed amplitude 20 m/s ² (2 gn) 8...200 Hz fixed acceleration 40 m/s ² (4 gn) 200...500 Hz fixed acceleration
Shock resistance conforming to IEC 60721-3-5 Class 5M3	300 m/s ² (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 $\overline{\text{---}}$ 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

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	–	–	–

8	16	16
8	16	16
–	–	–

Digital inputs	Voltage/current	24 V $\overline{---}$ /7 mA	24 V $\overline{---}$ /7 mA	24 V $\overline{---}$ /7 mA
	Type	Sink (1)	Sink (1)	Sink (1)
	IEC 61131-2 conformity	Type 1	Type 1	Type 1

24 V $\overline{---}$ /7 mA	24 V $\overline{---}$ /7 mA	24 V $\overline{---}$ /7 mA
Sink (1)	Sink (1)	Sink (1)
Type 1	Type 1	Type 1

Digital outputs	Voltage	–	–	–
	Type	–	–	–
	Current per output	–	–	–
	Current per expansion block	–	–	–

–	–	–
–	–	–
–	–	–
–	–	–

Sensor/actuator power supply	Voltage	24 \rightarrow $\overline{---}$	24 V $\overline{---}$	24 V $\overline{---}$
	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

24 \rightarrow $\overline{---}$	24 V $\overline{---}$	24 V $\overline{---}$
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

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

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
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
–	–	–
4-way male M8	4-way male M8	4-way male M8
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

Yes	Yes	Yes
Yes	Yes	Yes
Yes	Yes	Yes

Type of expansion block

TM7 BDI8B	TM7 BDI16B	TM7 BDI16A
------------------	-------------------	-------------------

Pages

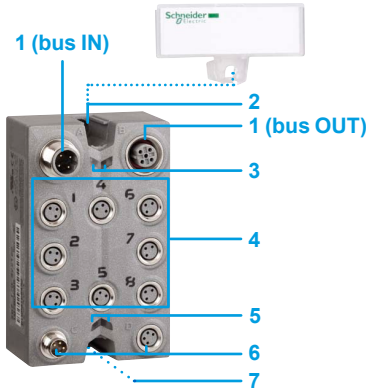
45	45	45
----	----	----

(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 $\overline{\text{---}}$ /4.4 mA	24 V $\overline{\text{---}}$ /4.4 mA	24 V $\overline{\text{---}}$ /4.4 A max.
–	Sink (1)	Sink (1)	Sink (1)
–	Type 1	Type 1	Type 1
24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$
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 $\overline{\text{---}}$	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$
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

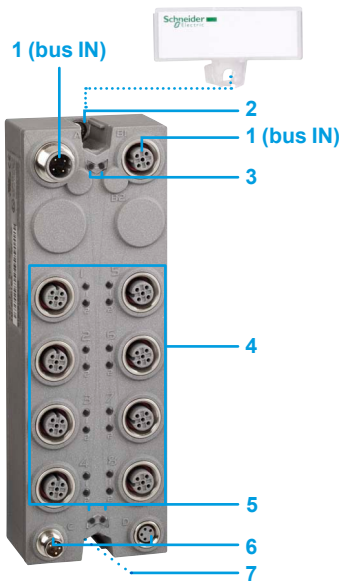


Description

Digital I/O expansion blocks

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

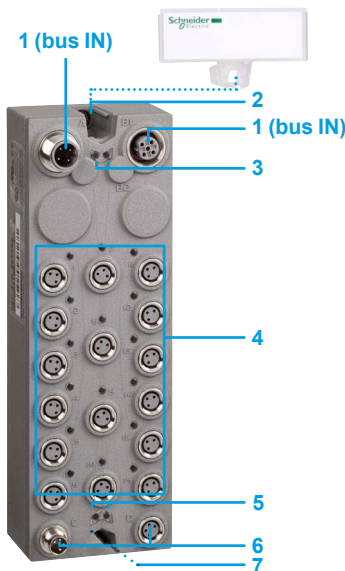
- 1 A male M12 connector (bus IN) and a female M12 connector (bus OUT) for connecting the TM7 expansion bus
- 2 A slot for the expansion block label (1)
- 3 Two bus diagnostic LEDs
- 4 Eight female M8 connectors for connecting sensors and actuators with LEDs for indicating channel status
- 5 Two LEDs indicating the status of the sensor and actuator 24 V $\overline{\text{---}}$ power supplies
- 6 Two M8 connectors for connecting the 24 V $\overline{\text{---}}$ sensor and actuator power supplies: male for PWR IN, female for PWR OUT
- 7 Fixing using two \varnothing 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 $\overline{\text{---}}$ power supplies
- 6 Two M8 connectors for connecting the 24 V $\overline{\text{---}}$ sensor and actuator power supplies: male for PWR IN, female for PWR OUT
- 7 Fixing using two \varnothing 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.

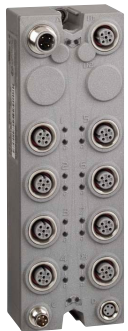




TM7 BDI8B,
TM7 BDO8TAB,
TM7 BDM8B



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 $\overline{\text{---}}$ IEC type 1

(2) 24 V $\overline{\text{---}}$

(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

Applications

Analog I/O expansion blocks

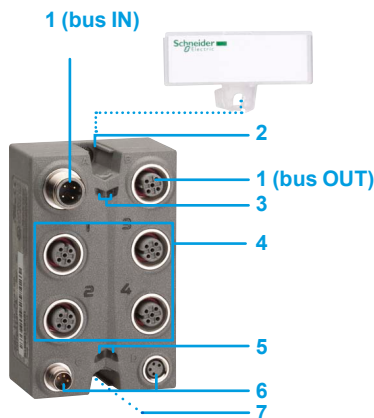


Degree of protection		IP 67	IP 67	IP 67	
Type of housing		Plastic	Plastic	Plastic	
Modularity (number of channels)	Max. number of analog channels	4	4	4	
	Analog inputs	4	4	–	
	Temperature inputs	–	–	4	
	Analog outputs	–	–	–	
Inputs	Type	Voltage - 10...+ 10 V $\ddot{=}$	Current 0...20 mA	Pt 100 temperature 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 $\ddot{=}$	24 V $\ddot{=}$	–	
	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 $\overline{\text{---}}$	Current 0...20 mA
16 bits	–	–	11 bits + sign	12 bits
–	Voltage - 10... + 10 V $\overline{\text{---}}$	Current 0...20 mA	Voltage - 10... + 10 V $\overline{\text{---}}$	Current 0...20 mA
–	11 bits + sign	12 bits	11 bits + sign	12 bits
–	–	–	–	–
–	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$
–	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



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 $\bar{\text{---}}$ power supplies
- 6 Two M8 connectors for connecting the 24 V $\bar{\text{---}}$ sensor and actuator power supplies: male for PWR IN, female for PWR OUT
- 7 Fixing using two $\varnothing 4$ 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.

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 $\bar{\text{---}}$	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 $\bar{\text{---}}$	Voltage - 10...+ 10 V $\bar{\text{---}}$	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



TM7 BAI4●LA,
TM7 BAO4●LA,
TM7 BAM4●LA

Architecture, Connecting cables

See page 68

Connection accessories

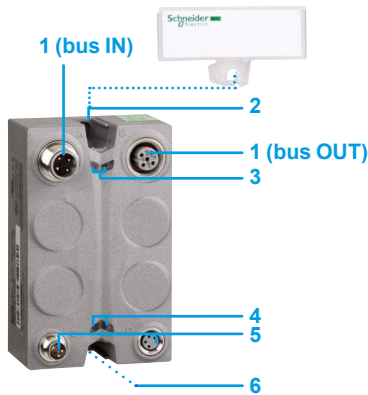
See page 70

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



TM7 SPS1A

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 $\overline{\text{---}}$ power supplies
- 5 Two M8 connectors for connecting the 24 V $\overline{\text{---}}$ sensor and actuator power supplies: male for PWR IN, female for PWR OUT
- 6 Fixing using two $\varnothing 4$ 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.

Power distribution block

Function	Connection	Communication bus	Reference	Weight kg
24 V $\overline{\text{---}}$ /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

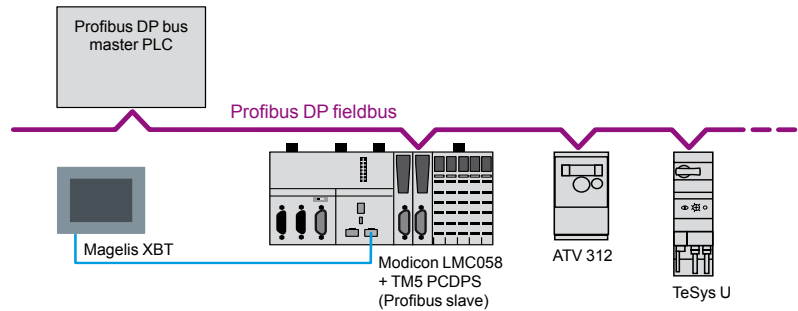
Communication

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

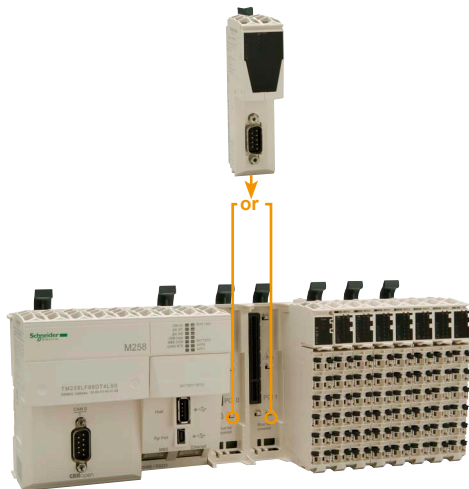
And any third-party device compatible with Profibus DP standard profiles.

Profibus communication module

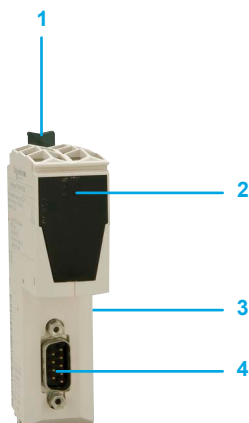
The **TM5 PCDPS** communication module is designed for **LMC 058LF424** motion controllers and is installed in one of the two free PCI slots.

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.



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



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



490 NAD 911 03

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

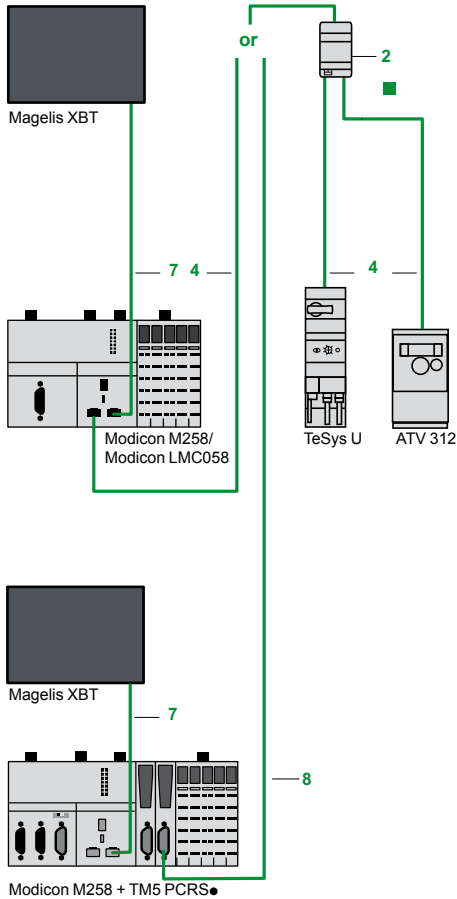
Description	Length	Item no.	Reference	Weight kg
Profibus DP connection cables	100 m	1	TSX PBS CA 100	–
	400 m	1	TSX PBS CA 400	–

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	–

Modbus cabling system

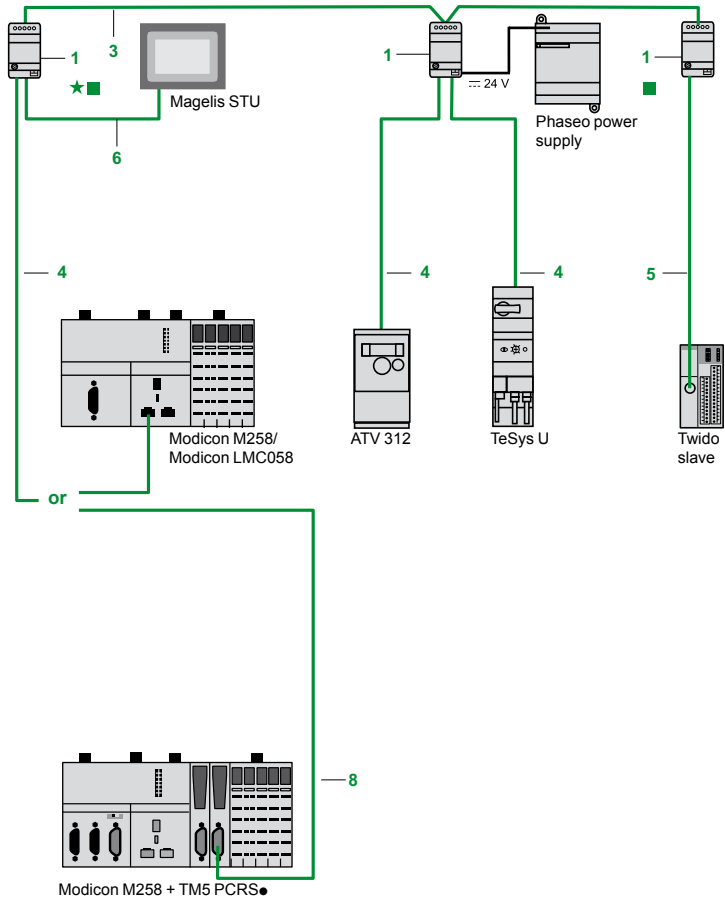
Non-isolated link

(Modicon M258, LMC058 master)



Isolated link

(Modicon M258, LMC058 master)



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

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

- ★ Line polarization active
- Line termination

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 U _L	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 U _L 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 1 m	VW3 A8 306 TF03 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 $\overline{\text{---}}$ 20 mA power supply, Mounting on 35 mm U _L	–	–	XGS Z24	0.100	
RS 485 double shielded twisted pair trunk cables	Modbus serial link, supplied without connector	3	100 m 200 m 500 m	TSX CSA 100 TSX CSA 200 TSX CSA 500	5.680 10.920 30.000	
Modbus RS 485 cordsets	2 x RJ45 connectors	4	0.3 m 1 m 3 m	VW3 A8 306 R03 VW3 A8 306 R10 VW3 A8 306 R30	0.030 0.050 0.150	
	1 x RJ45 connector and 1 end with flying leads	–	1 m 3 m	TWD XCA FJ010 VW3 A8 306 D30	0.060 0.150	
	1 x mini-DIN connector for Twido controller and 1 x RJ45 connector	–	0.3 m 1 m 3 m	TWD XCA RJ003 TWD XCA RJ010 TWD XCA RJ030	0.040 0.090 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 10 m	TWD XCA FD010 TSX CX 100	0.062 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	



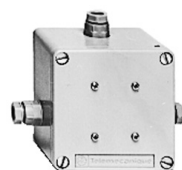
TWD XCA ISO



TWD XCA T3RJ



LU9 GC3



TSX SCA 50



XGS Z24

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

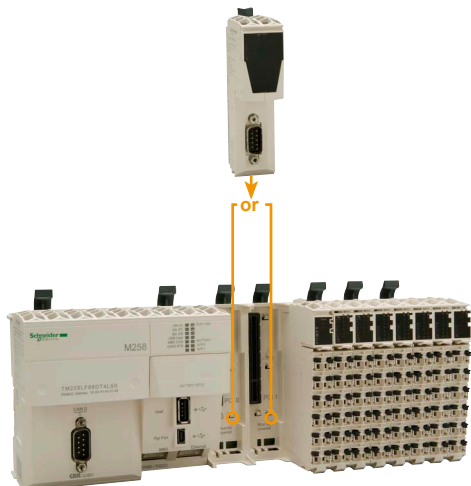
(1) Line isolation recommended for line distances > 10 m.

(2) Forces configuration of the Twido controller built-in RS 485 port with the TwidoSuite programming protocol parameters.

(3) Carries the 5 V $\overline{\text{---}}$ 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 $\overline{\text{---}}$ 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.



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

Presentation

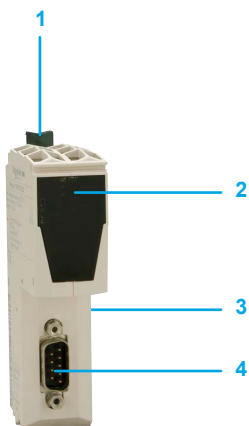
TM5 PCRS● communication modules are designed for **LMC 058LF42** and **LMC 058LF424** motion controllers, and are installed in one of the two free PCI slots in.

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: <input type="checkbox"/> RS232 with TM258 PCRS2 <input type="checkbox"/> RS485 with TM258 PCRS4
TXD	Yellow	Transmission on interface: <input type="checkbox"/> RS232 with TM258 PCRS2 <input type="checkbox"/> RS485 with TM258 PCRS4



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.

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.



TeSys U + communication module LUL C08



Modicon TM5 Transmitter/Receiver module



Modicon TM7 CANopen interface Blocks



Preventa XPS MC



Altivar 71



Altivar 32



LEX 32A



Lexium ILA1B

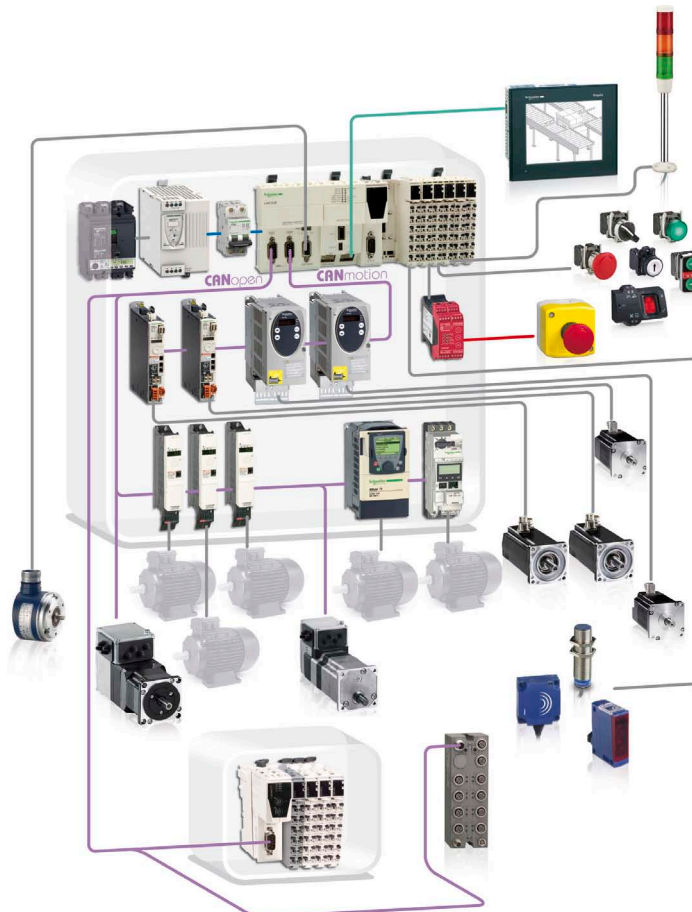
Modicon LMC058 Motion controller

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
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.

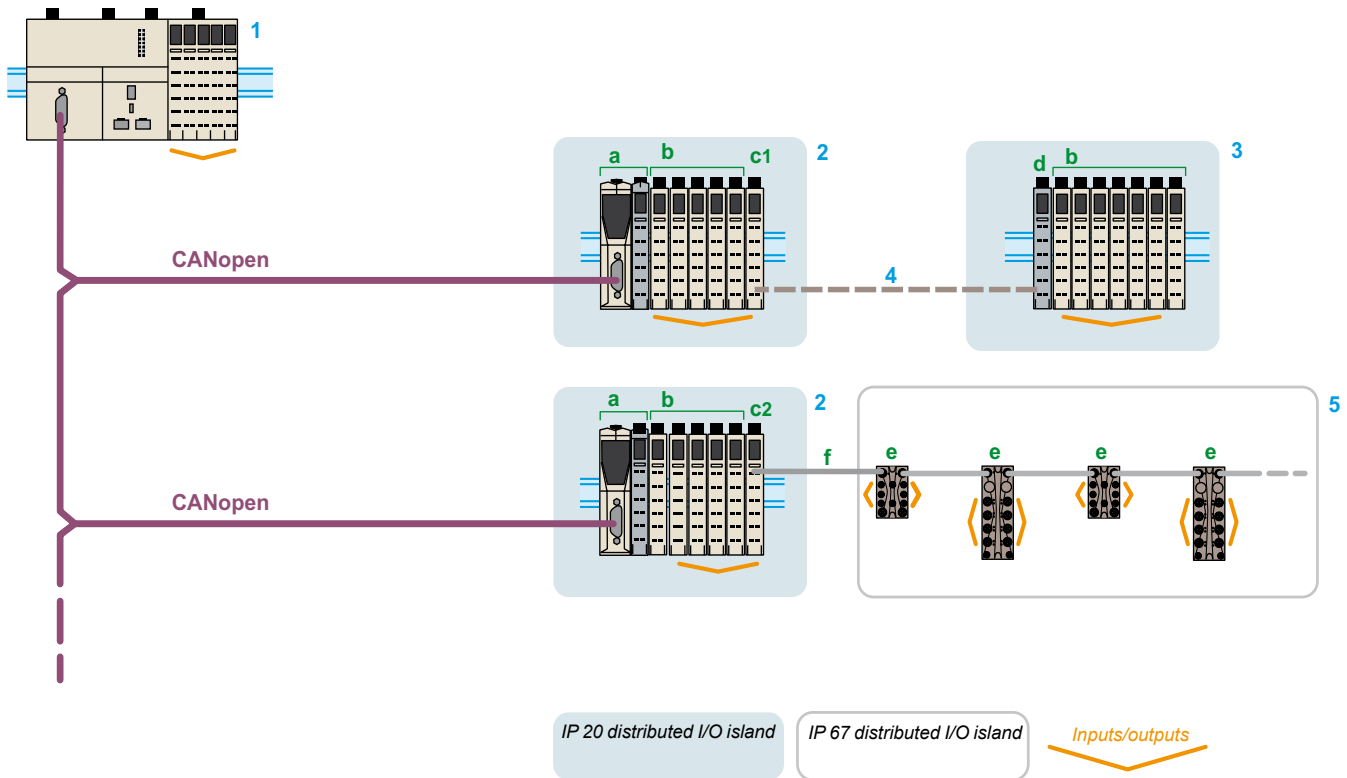
Modicon LMC058 Motion controller Communication

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.



Presentation

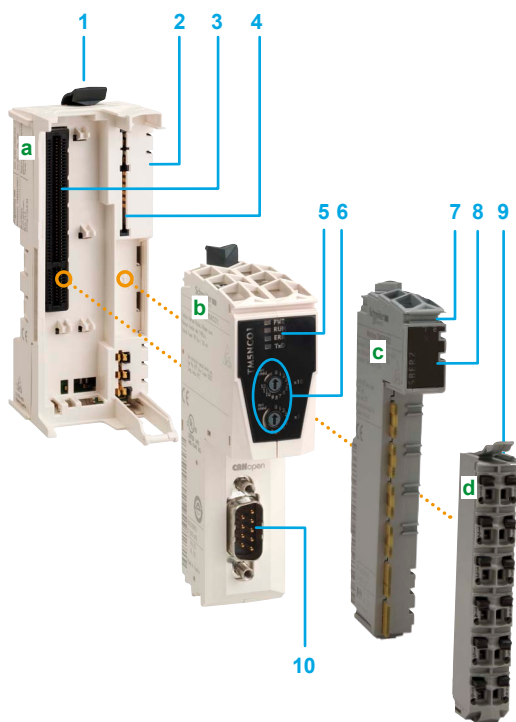
The TM5 CANopen interface module offer consists of 4 parts to be ordered separately (1):

- 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.

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\overline{DC} 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 dB μ V
		500 kHz...30 MHz, quasi-peak at 73 dB μ V
Radiated emissions conforming to EN/IEC 55011/CISPR11		30...230 MHz, 10 m @ 40 dB μ V/m
		230 MHz...1 GHz, 10 m @ 47 dB μ V/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 $\overline{\text{---}}$	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 $\overline{\text{---}}$	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 \bullet 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 $\overline{=}$ /4.4 mA	24 V $\overline{=}$ /4.4 mA
Type	Sink (1)	Sink (1)
IEC 61131-2 conformity	Type 1	Type 1

Digital outputs

Voltage	24 V $\overline{=}$	24 V $\overline{=}$
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 $\overline{=}$	24 V $\overline{=}$
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
	On TM7 bus	Yes

Type of CANopen interface I/O block

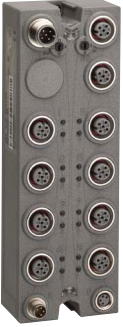
TM7 NCOM08B	TM7 NCOM16B
--------------------	--------------------

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 $\overline{\text{---}}$ /4.4 mA

Sink (1)

Type 1

24 V $\overline{\text{---}}$

Transistor/Source (2)

0.5 A max.

4 A max.

24 V $\overline{\text{---}}$

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

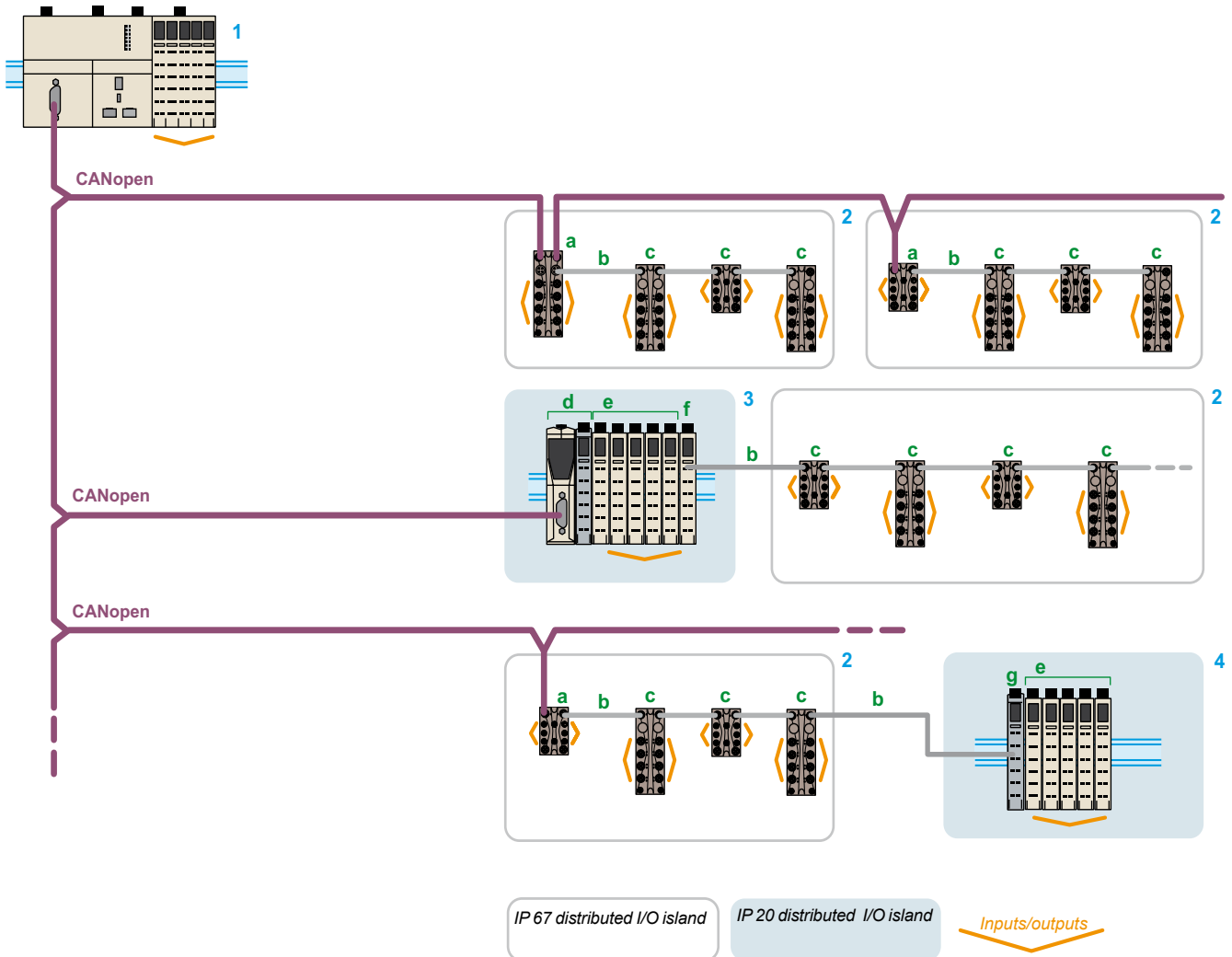
The CANopen interface I/O blocks enable sensors and actuators distributed over machines to be connected via the CANopen fieldbus. These interface I/O blocks communicate on the bus. They have one part for connecting sensors and actuators using M8 or M12 connectors and one part for connection to the CANopen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



Communication bus status LED
Channel status LED
Power supply status LED

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/s ² (2 gn) 8...200 Hz fixed acceleration 40 m/s ² (4 gn) 200...500 Hz fixed acceleration
Shock resistance conforming to IEC 60721-3-5 Class 5M3	300 m/s ² (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

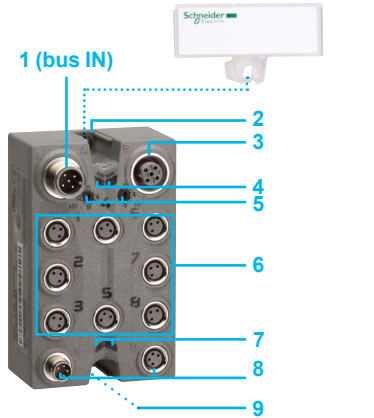
Electrostatic discharges conforming to IEC/EN 61000-4-2	± 8 kV, criterion B (air discharge) ± 4 kV, criterion B (direct discharge)
Electromagnetic fields conforming to IEC/EN 61000-4-3	10 V/m, amplitude modulation 80% at 1 kHz (80 MHz...2 GHz) 1 V/m (2...2.7 GHz)
Fast transients conforming to IEC/EN 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 $\overline{\text{---}}$ 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 μ V 500 kHz...30 MHz, peak 73 dB μ V
Radiated emissions conforming to EN 55011 (IEC/CISPR11)	30...230 MHz, 10 m (32.8 ft) at 40 dB (μ V/m) 230 MHz...1 GHz, 10 m (32.8 ft) at 47 dB (μ V/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

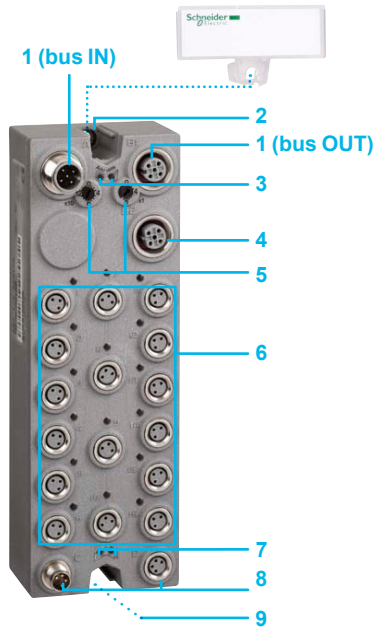


Description

CANopen interface I/O blocks

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

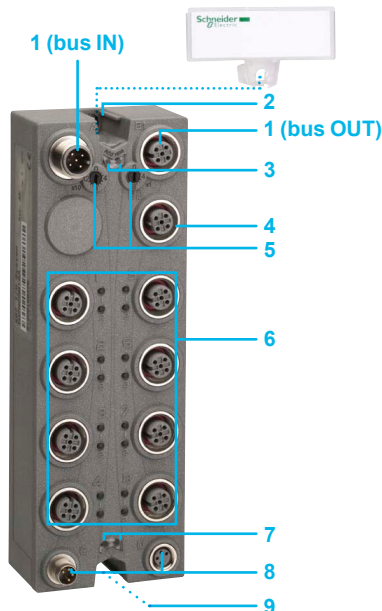
- 1 A male M12 connector (bus IN) for connecting the CANopen bus
- 2 A slot for the interface I/O block label (1)
- 3 A female M12 connector for connecting the TM7 expansion bus
- 4 Two bus diagnostic LEDs
- 5 CANopen address settings rotary switches
- 6 Eight female M8 connectors for connecting sensors and actuators with eight LEDs for indicating channel status
- 7 Two LEDs indicating the status of the sensor and actuator 24 V $\overline{\text{DC}}$ power supplies
- 8 Two M8 connectors for connecting the 24 V $\overline{\text{DC}}$ sensor and actuator power supplies: male for PWR IN, female for PWR OUT
- 9 Fixing using two \varnothing 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 $\overline{\text{DC}}$ power supplies
- 8 Two M8 connectors for connecting the 24 V $\overline{\text{DC}}$ sensor and actuator power supplies: male for PWR IN, female for PWR OUT
- 9 Fixing using two \varnothing 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

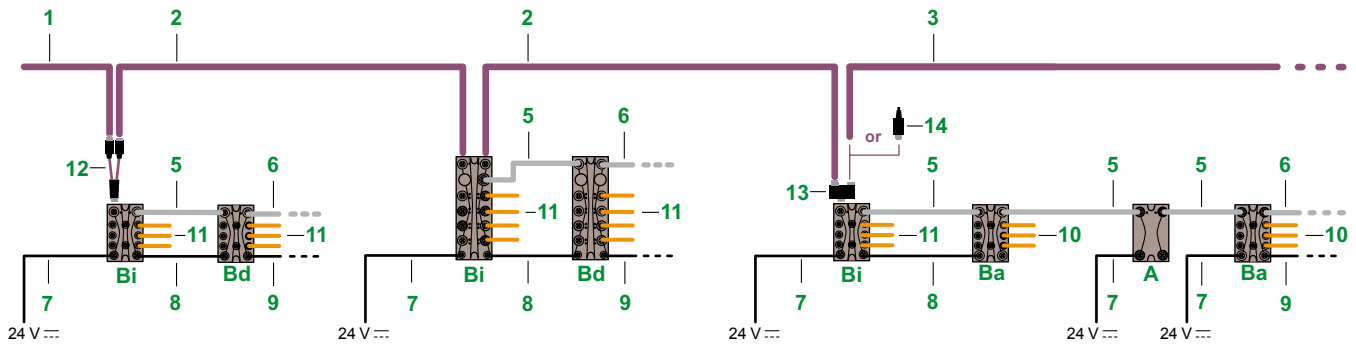
Separate parts

See page 71

Configuration software

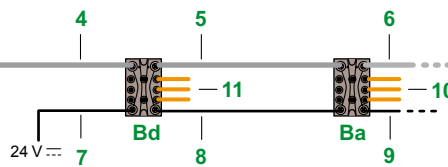
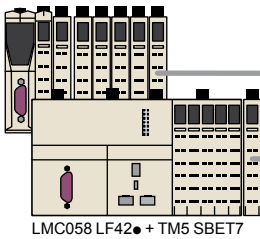
- SoMachine software, see page 76.
- Performance distributed I/O configuration software, please consult our site www.schneider-electric.com

CANopen architecture



TM7 expansion bus architecture

TM5 NCO1 + TM5 SBET7

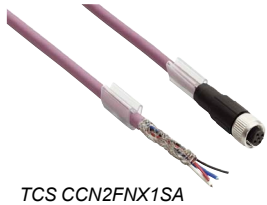


- A** Power distribution block
- Ba** Analog I/O expansion block
- Bd** Digital I/O expansion block
- Bi** CANopen interface I/O block

References

Cables for connection to the CANopen bus

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	3	TCS CCN2FNX3SA	0.195
		10	10	TCS CCN2FNX10SA	0.563
		25	25	TCS CCN2FNX25SA	1.352
		1	1	TCS CCN1FNX1SA	0.089
	Equipped with one A-coded 5-way straight female M12 connector and 1 flying lead	3	3	TCS CCN1FNX3SA	0.195
		10	10	TCS CCN1FNX10SA	0.563
		25	25	TCS CCN1FNX25SA	1.352
		2	0.3	TCS CCN2M2F03	0.090
		1	1	TCS CCN2M2F1	0.127
CANopen bus daisy chain cables	Equipped with two A-coded 5-way angled M12 connectors, 1 male and 1 female, at each end	2	2	TCS CCN2M2F2	0.179
		5	5	TCS CCN2M2F5	0.337
		10	10	TCS CCN2M2F10	0.600
		15	15	TCS CCN2M2F15	0.863
		2	0.3	TCS CCN1M1F03	0.090
	Equipped with two A-coded 5-way straight M12 connectors, 1 male and 1 female, at each end	1	1	TCS CCN1M1F1	0.127
		2	2	TCS CCN1M1F2	0.179
		5	5	TCS CCN1M1F5	0.337
		10	10	TCS CCN1M1F10	0.600
		15	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	3	TCS CCN2MNX3SA	0.195
		10	10	TCS CCN2MNX10SA	0.563
		25	25	TCS CCN2MNX25SA	1.352
		3	1	TCS CCN1MNX1SA	0.089
	Equipped with one A-coded 5-way straight male M12 connector and 1 flying lead	3	3	TCS CCN1MNX3SA	0.195
		10	10	TCS CCN1MNX10SA	0.563
		25	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	3	TCS XCN2FNX3E	0.195
		10	10	TCS XCN2FNX10E	0.563
		25	25	TCS XCN2FNX25E	1.352
	Equipped with one B-coded 4-way straight female M12 connector and 1 flying lead	4	1	TCS XCN1FNX1E	0.089
3		3	TCS XCN1FNX3E	0.195	
10		10	TCS XCN1FNX10E	0.563	
25		25	TCS XCN1FNX25E	1.352	

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 XCNEYNX1V	0.041
					3	TCS XCNEYNX3V	0.105
					10	TCS XCNEYNX10V	0.329
				25	TCS XCNEYNX25V	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					



TCS XCN1M1F●●E



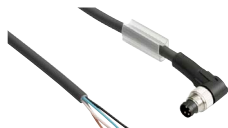
TCS XCN1MNX●●E



TCS XCNEFNX●●V



TCS XCNDMDF●●V



TCS XCNEYNX●●V



TCS XCN1M●●SA

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

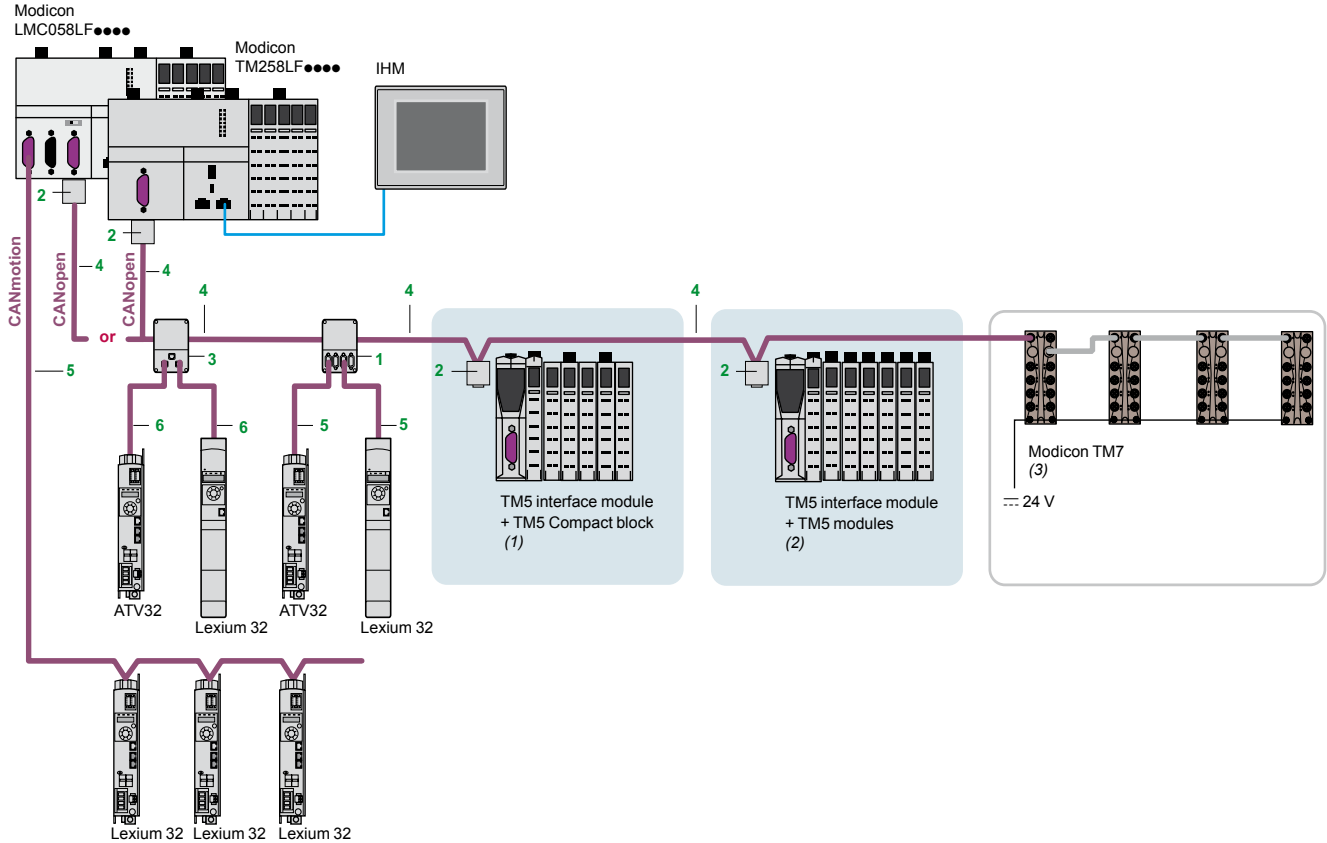
Separate parts

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.

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

- (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.



TSX CAN TDM4



VW3 CAN TAP2



TSX CAN KCD F90T



TSX CAN KCD F180T



TSX CAN KCD F90TP

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	
				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					
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 CANCERR03	0.100		
			1 m	VW3 CANCERR1	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)							



VW3 CAN A71



AM0 2CA 001V000

(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.

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	—



490 NT●000●●

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	—



TCSESU043F1N0

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	—



TCSESM043F2C●0

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
	8	—	3	No	499NES18100	0.230 0.507
Twisted pair switches 10BASE-T/100BASE-TX copper ports, RJ45 shielded connectors	8	—	4	Yes	TCSESM083F23F0	0.410 0.904
	3	1, multimode	4	Yes	TCSESM043F1CU0	0.400 0.882
Twisted pair and fibre optic switches 10BASE-T/100BASE-TX copper ports, RJ45 shielded connectors. 100BASE-FX optic ports, SC connectors	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



499NMS/NSS25102



TCSESM083F2C●0



TCSESU051F0

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●



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

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

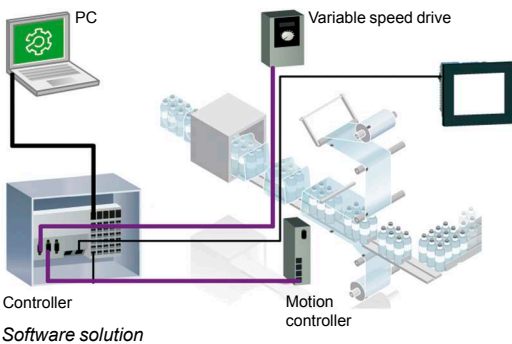
From the home menu, the learning centre provides several tools to get started with SoMachine. An animated file explains briefly the SoMachine interface and concept. An e-learning allows to run a self-training about SoMachine. A third section gives access to several documented examples of simple coding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

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,)



Software solution



Project management

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)

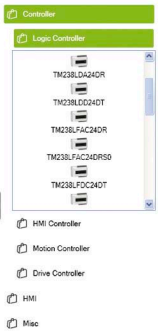
SoMachine can be extended through its solution extension DVD. It integrates tested, validated, documented and supported expert application libraries dedicated to many OEM applications. Their simple configuration speeds up design, commissioning, installation and troubleshooting.

These libraries cover the following applications:

- Packaging,
- Hoisting,
- Conveying,
- Pumping

Tested Validated Documented Architectures (TVDA)

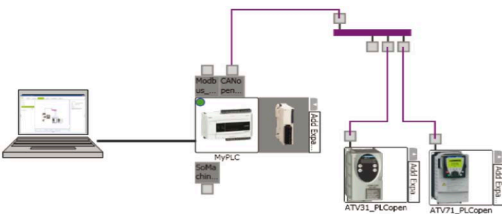
SoMachine provides a variety of preset projects with ready-to-use architectures you can adapt to individual requirements. Some of them are generic TVDA, they are based on controllers configuration. The solution extension DVD brings specific application solutions oriented TVDA's to SoMachine.



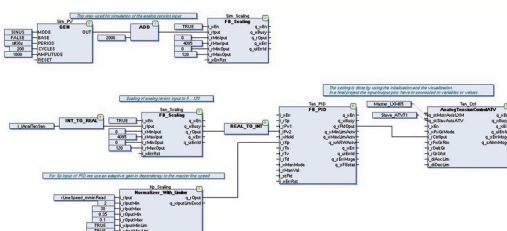
Configuration



Commissioning



Transparency



Application Function Blocks

SoMachine characteristics	
Overview	
IEC 61131-3 programming languages	<ul style="list-style-type: none"> ■ IL (Instruction List) ■ LD (Ladder Diagram) ■ SFC (Sequential Function Chart) ■ ST (Structured Text) ■ FBD (Function Block Diagram) ■ + CFC (Continuous Function Chart)
Controller programming services	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Embedded 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Control network: <ul style="list-style-type: none"> □ Modbus Serial Line □ Modbus TCP ■ Field bus: <ul style="list-style-type: none"> □ CANopen □ CANmotion ■ Connectivity: <ul style="list-style-type: none"> □ Profibus-DP □ Ethernet IP
Expert and solutions libraries	<ul style="list-style-type: none"> ■ PLCOpen function blocks for Motion control <ul style="list-style-type: none"> □ Example: MC_MoveAbsolute, MC_CamIn, ServoDrive, ... ■ Packaging function blocks <ul style="list-style-type: none"> □ Example: Analog film tension control, rotary knife, lateral film position control, ... ■ Conveying function blocks <ul style="list-style-type: none"> □ Example: tracking, turntable, conveyor , ... ■ Hoisting functions <ul style="list-style-type: none"> □ Hoisting function blocks: anti-sway, anti-crab, hoisting position synchronisation, ... □ Application template for industrial crane ■ Pumping application <ul style="list-style-type: none"> □ Pumping function blocks □ Application template for booster ■ Energy Efficiency library

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	- Optimized HW XBT GC	MSDCHNSFNV31 + Trial licence (30 days)	MSDCHNLMUA /1 (Single) MSDCHNLMTA /10 (Team) MSDCHNLMFA /100 (Facility)
■ M258	- Optimized HW M238		
■ LMC058	- Optimized CANopen M238		
■ XBT GC	- Optimized AS-Interface M238		
■ XBT GT/GK with control function	- Optimized CANopen XBT GC/GT/GK		
■ Altivar IMC	- Optimized CANopen Altivar IMC		
	- Performance HW M258		
	- Performance CANopen M258		
	- Performance CANmotion LMC058		

SoMachine solution extension for Solution controllers (3)

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

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
	Specific
Technology type	

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



Power range for 50...60 Hz (kW) line supply	
	Single-phase 100...120 V (kW)
	Single-phase 200...240 V (kW)
	Three-phase 380...480 V (kW)
	Three-phase 380...500 V (kW)

0.18...15
–
0.18...2.2
–
0.37...15

Drive	Motor speed	
	Type of control	Asynchronous motor
		Synchronous motor
Motor sensor	Integrated	
	Available as an option	
Transient overtorque		
Peak current		

0.1...599 Hz
Voltage/frequency ratios: U/f and 5-point U/f
Sensorless flux vector control ratio
Kn ² quadratic ratio (pump/fan)
Energy saving ratio
Ratio for synchronous motor without sensor
–
–
170...200% of the nominal motor torque
–

Number of functions	
Safety functions	Integrated
	Available as an option

150
4: STO (Safe Torque Off), SLS (Safe Limited Speed), SDI (Safe Direction Information), SS1 (Safe Stop 1)
–

Number of I/O	Inputs	Analog
		Logic
	Outputs	Analog
		Logic
Relay outputs		

3
6
1: configurable as voltage (0-10 V) or current (0-20 mA)
1
2

Communication	Integrated
	Available as an option
	Bluetooth link®

Modbus, CANopen
DeviceNet, PROFIBUS DP V1, EtherNet/IP, Modbus TCP, EtherCat
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

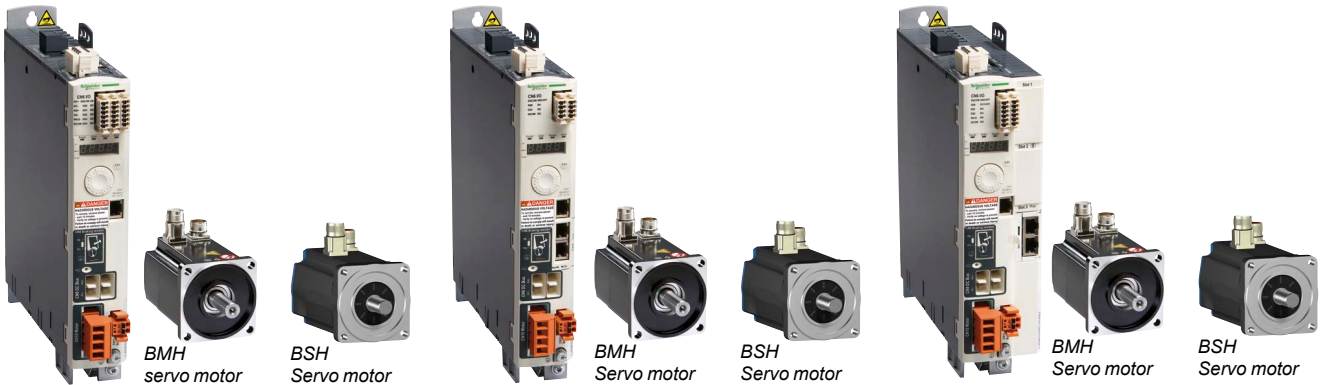
ATV 32

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

More technical information on www.schneider-electric.com

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., reversing 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

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			Yes, current limitation
Automatic reset on elimination of the fault			
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".

Applications

Display of graphic pages

Type of terminal

Small Panels with touch screen



Display	Type
	Capacity

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)	
3.4" (monochrome)	3.5" (colour)	5.7" (colour)

Data entry

Via touch screen

Memory capacity	Application
	Expansion

16 MB Flash
–

Functions	Maximum number of pages
	Variables per page
	Representation of variables
	Recipes
	Curves
	Alarm logs
	Real-time clock
	Alarm relay
	Buzzer

Limited by internal FLASH EPROM memory capacity
Unlimited
Alphanumeric, bitmap, bargraph, gauge, curves, buttons, LEDs
32 groups of 64 recipes
Yes, with log
Yes
Access to the PLC real-time clock
–
Yes

Communication	Asynchronous serial link
	Downloadable protocols
	Printer link
	USB ports
	Networks

RS 232C/RS 485 (1) RS 232C using Zelio protocol (2)	RS 232C/RS 485
Uni-TE, Modbus and for PLC brands: Allen-Bradley, Omron, Mitsubishi, Siemens	
USB for serial or parallel printer	
1 host type A and 1 device type mini-B	
1 Ethernet TCP/IP port (10BASE-T/100BASE-TX) (3)	1 Ethernet TCP/IP port (10BASE-T/100BASE-TX)

Development software
Operating system

Vijeo Designer (on Windows XP, Windows Vista and Windows 7)
Magelis

References

HMI STO 500 | **HMI STO 655** | **HMI STO 855**

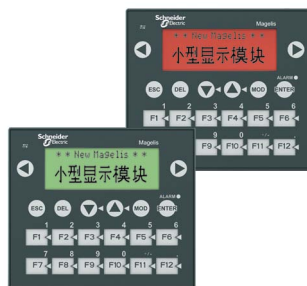
Page

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 40...50	128/200 application pages 256 alarm pages 40...50, bargraph, buttons, LEDs	200 application pages 256 alarm pages 50
Alphanumeric		Alphanumeric, bargraph, buttons, LEDs
Yes	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.

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	Capacity	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)																																				
		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		<table border="1"> <tr> <td>Applications</td> <td>32 MB Flash EPROM</td> <td>16 MB Flash EPROM (3)</td> <td>32 MB Flash EPROM</td> </tr> <tr> <td>Expansion</td> <td>-</td> <td colspan="2">By means of 128, 256, 512 MB, 1, 2 or 4 GB CF card (except XBT GT2110)</td> </tr> </table>			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)																													
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		<table border="1"> <tr> <td>Maximum number of pages</td> <td>Limited by internal Flash EPROM memory capacity</td> <td colspan="2">Limited by capacity of internal Flash EPROM memory or CF card memory</td> </tr> <tr> <td>Variables per page</td> <td colspan="3">Unlimited (8000 variables max.)</td> </tr> <tr> <td>Representation of variables</td> <td colspan="3">Alphanumeric, bitmap, bargraph, gauge, tank, tank level indicator, curves, polygon, button, LED</td> </tr> <tr> <td>Recipes</td> <td colspan="3">32 groups of 64 recipes comprising 1024 ingredients max.</td> </tr> <tr> <td>Curves</td> <td colspan="3">Yes, with log</td> </tr> <tr> <td>Alarm logs</td> <td colspan="3">Yes</td> </tr> <tr> <td>Real-time clock</td> <td colspan="3">Built-in</td> </tr> <tr> <td>Discrete I/O</td> <td>-</td> <td colspan="2">1 input (reset) and 3 outputs (alarm, buzzer, run)</td> </tr> <tr> <td>Multimedia I/O</td> <td>-</td> <td>(3)</td> <td>1 audio input (microphone), 1 composite video input (digital or analogue video camera), 1 audio output (loudspeaker) (1)</td> </tr> </table>			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)
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		<table border="1"> <tr> <td>Downloadable protocols</td> <td colspan="3">Uni-TE (2), Modbus, Modbus TCP/IP (1) and for PLC brands: Mitsubishi, Omron, Allen-Bradley and Siemens</td> </tr> <tr> <td>Asynchronous serial link</td> <td>RS 232C/485 (COM1)</td> <td colspan="2">RS 232C/RS 422/485 (COM1) and RS 485 (COM2)</td> </tr> <tr> <td>USB ports</td> <td>1</td> <td>1 (3)</td> <td>1</td> </tr> <tr> <td>Bus and networks</td> <td>-</td> <td colspan="2">Modbus Plus and Fipway with USB gateway, PROFIBUS DP and Device Net with optional card</td> </tr> <tr> <td>Printer link</td> <td>Ethernet TCP/IP (10BASE-T/100BASE-TX) (1)</td> <td colspan="2">USB port for parallel printer RS 232C (COM1) serial link, USB port for parallel printer</td> </tr> </table>			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		Printer link	Ethernet TCP/IP (10BASE-T/100BASE-TX) (1)	USB port for parallel printer RS 232C (COM1) serial link, USB port for parallel printer																	
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																																						
Printer link	Ethernet TCP/IP (10BASE-T/100BASE-TX) (1)	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		<table border="1"> <tr> <td>Magelis (200 MHz RISC CPU)</td> <td>Magelis (133 MHz RISC CPU) (3)</td> <td colspan="2">Magelis (266 MHz RIS CPU)</td> </tr> </table>			Magelis (200 MHz RISC CPU)	Magelis (133 MHz RISC CPU) (3)	Magelis (266 MHz RIS CPU)																																	
Magelis (200 MHz RISC CPU)	Magelis (133 MHz RISC CPU) (3)	Magelis (266 MHz RIS CPU)																																						
Type of terminal		<table border="1"> <tr> <td>XBT GT11/13</td> <td>XBT GT21/22/23/24/29</td> <td colspan="2">XBT GT42/43</td> </tr> </table>			XBT GT11/13	XBT GT21/22/23/24/29	XBT GT42/43																																	
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



More technical information on 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
	Capacity

Colour TFT LCD (320 x 240 pixels) or monochrome STN	Colour TFT LCD (640 x 480 pixels)
5.7" (monochrome or colour)	10.4" (colour)

Data entry	Static function keys
	Dynamic function keys
	Service keys
	Alphanumeric keys

Via keypad and/or touch screen (configurable) and/or by industrial pointer	
10	12
14	18
8	
12	

Memory capacity	Application
	Expansion

16 MB Flash EPROM	32 MB Flash EPROM
By means of 128, 256, 512 MB, 1, 2 or 4 GB CF card	

Functions	Maximum number of pages
	Variables per page
	Representation of variables
	Recipes
	Curves
	Alarm logs
	Real-time clock
	Discrete I/O
	Multimedia I/O

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 - 3 outputs
–	–

Communication	Downloadable protocols
	Asynchronous serial link
	USB ports
	Bus and networks
	Printer link

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 485 (COM2)	
1	2
Modbus Plus, Fipway with USB gateway, PROFIBUS DP and Device Net with optional card Ethernet TCP/IP (10BASE-T/100BASE-TX)	
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.

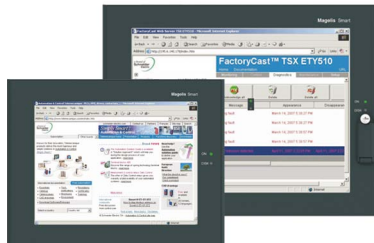
(2) Uni-TE version V2 for Twido controller and TSX Micro/Premium platform.



**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.



Schneider Electric Industries SAS

www.schneider-electric.com

Head Office
35, rue Joseph Monier
F-92500 Rueil-Malmaison
France

The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein.

Design: Schneider Electric
Photos: Schneider Electric
Printed by: