Catalog | February 2023

Modicon TM3

Expansion I/O modules for **Modicon** M221, M241, M251 and M262 controllers

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Modicon

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Edge control for Industrial IoT

Modicon IIoT-native edge controllers manage complex interfaces across assets and devices or directly into the cloud, with embedded functional safety and cybersecurity. Modicon provides performance and scalability for a wide range of industrial applications up to high-performance multi-axis machines and high-available redundant processes.

Explore our offer

- Modicon HVAC Controllers
- Modicon PLC
- Modicon Motion Controllers
- Modicon PAC
- Modicon I/O
- Modicon Networking
- Modicon Power Supply
- Modicon Wiring
- Modicon Safety

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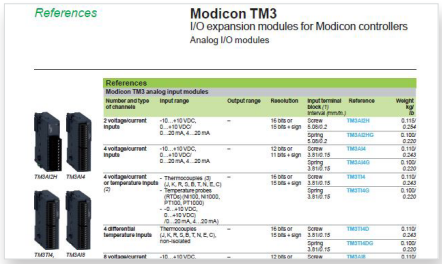

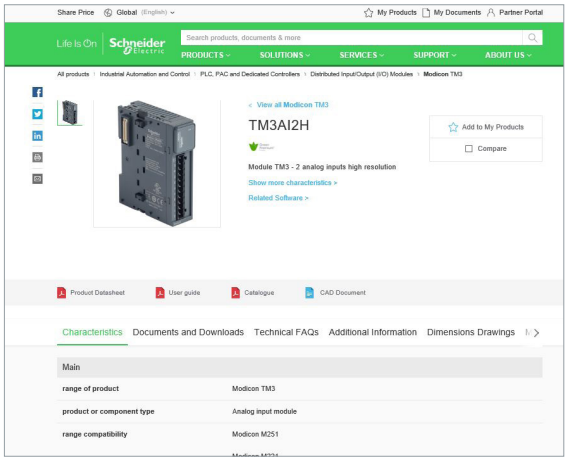

Each commercial reference presented in a catalog contains a hyperlink. Click on it to obtain the technical information of the product:

- Characteristics, Dimensions and drawings, Mounting and clearance, Connections and schemas, Performance curves
- Product image, Instruction sheet, User guide, Product certifications, End of life manual

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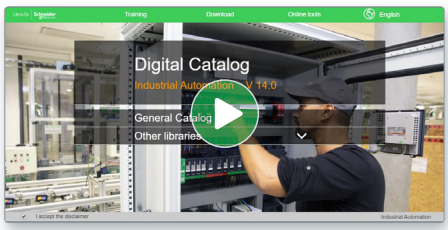

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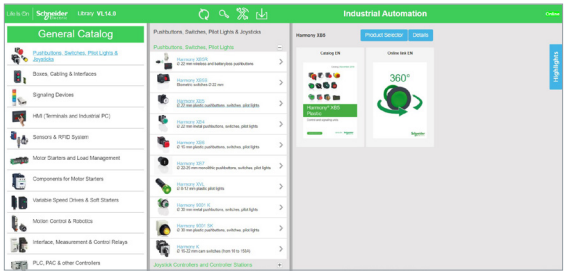

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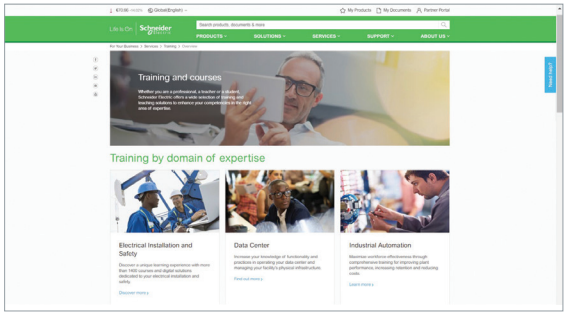

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To be competitive in today's digital era, machine builders must be innovative. Smart machines, those that are better connected, more flexible, more efficient, and safe, are enabling machine builders to innovate in ways never before possible.

EcoStruxure, Schneider Electric's open, IoT-enabled architecture and platform, offers powerful solutions for the digital era. As part of this, EcoStruxure Machine brings powerful opportunities for machine builders and OEMs, empowering them to offer smart machines and compete in the new, digital era.

EcoStruxure Machine brings together key technologies for product connectivity and edge control on premises, and cloud technologies to provide analytics and digital services. EcoStruxure Machine helps you bring more innovation and added value to your customers throughout the entire machine life cycle.

Innovation at Every Level for Machines is full systems across three layers:

– Connected products
Our connected products for measuring, actuating, device level monitoring, and control adhere to open standards to provide unmatched integration opportunities and flexibility

– Edge Control
We are IIoT-ready with a proven set of tested and validated reference architectures that enable the design of end-to-end open, connected, and interoperable systems based on industry standards. Ethernet and OPC UA facilitates IT/OT convergence meaning machine builders reap benefits from web interfaces and cloud.

– Apps, Analytics & Services
Seamless integration of machines to the IT layer allows the collection and aggregation of data ready for analysis – for machine builders and end users alike this means increased uptime and the ability to find information faster for more efficient operations and maintenance.

These levels are completely integrated from shop floor to top floor. And we have cloud offers and end-to-end cybersecurity wrapped around.

EcoStruxure Machine makes it easier for OEMs/ machine builders to offer their customers smarter machines. The advent of smart machines is driven by the changing needs of end users:

– Evolving workforce
– Reducing costs
– Dynamic markets
– Shorter life cycles
– Prioritizing functional safety and cybersecurity

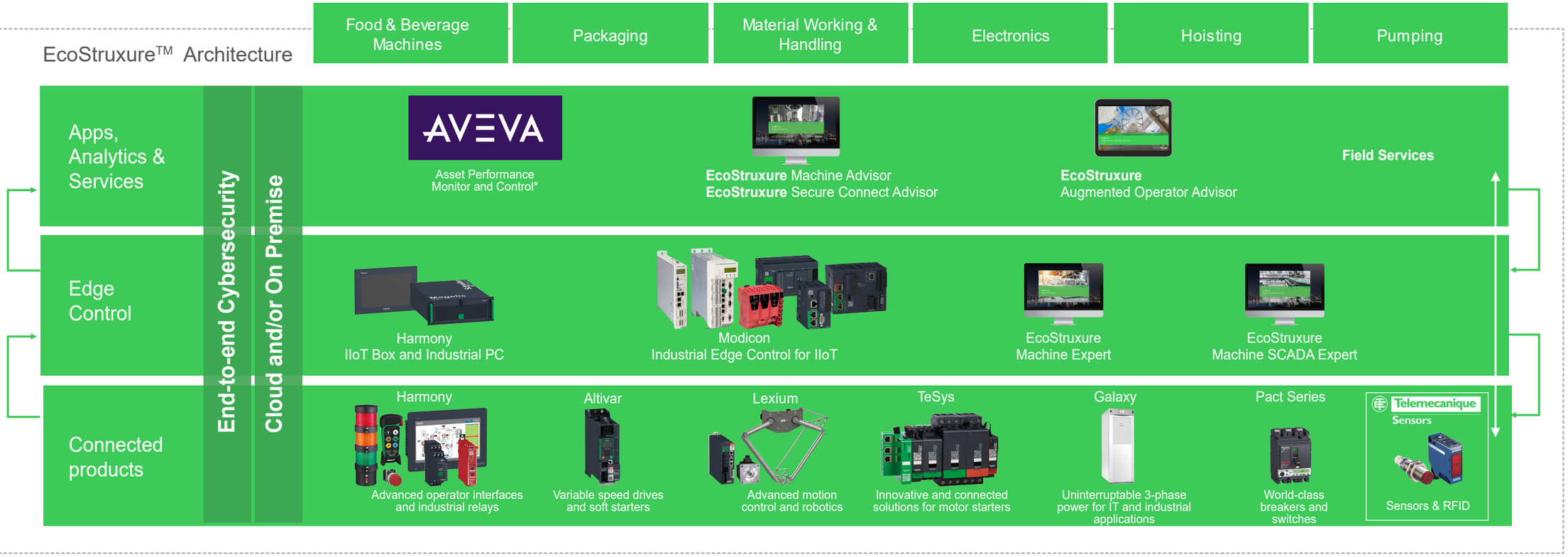
EcoStruxure Machine provides one solution for the whole machine life cycle:

– With Smart Design & Engineering the time to market is reduced by up to 30% using our automated engineering and the simulation capabilities

– During Commissioning & Operation of the machine, resources such as energy, material and loss can be improved, and with seamless integration to the IT world efficiency can be improved by up to 40%

– Smart Maintenance & Services reduces the time for corrective actions up to 50%

EcoStruxure™ Machine



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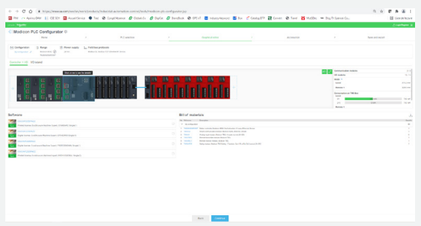
Modicon TM3

I/O expansion modules for Modicon controllers

Controllers for industrial machines

Applications	Type	**Logic controller**			**Logic / Motion controller**	**Motion controller**
	Specification	For hardwired architectures	For performance-demanding applications	For modular and distributed architectures	IIoT ready for performance machines	For automating machines/lines with 0 - 130 servo or robot axes
						
Memory		640 KB RAM, 2 MB Flash	64 MB RAM, 128 MB Flash	64 MB RAM, 128 MB Flash	192 MB RAM, 256 MB Flash	128 KB to 256 KB NV RAM, 512 MB DDR2 to 1 GB DDR3L
Supply voltage		24 V ⎓ or 100...240 V ∿	24 V ⎓ or 100...240 V ∿	24 V ⎓	24 V ⎓	24 V ⎓
Communication fieldbus and networks	Embedded	■ EtherNet/IP Adapter ■ Modbus TCP ■ RS 232/RS 485 Serial Line ■ USB mini-B programming port	■ EtherNet/IP ■ Modbus TCP ■ CANopen (master) and SAE J1939 ■ Serial Line ■ USB mini-B programming port	■ EtherNet/IP ■ Modbus TCP ■ CANopen (master) and SAE J1939 ■ Serial Line ■ USB mini-B programming port	■ EtherNet/IP ■ Modbus TCP ■ Sercos III ■ Serial Line ■ USB mini-B programming port	■ EtherNet/IP ■ Sercos III ■ CANopen ■ Profibus ■ Profinet ■ EtherCAT
	OPC Unified Architecture (OPC UA)	–	■ Server	■ Server	■ Server (encrypted) ■ Client (encrypted) (depending on reference)	■ Server (encrypted) ■ Client (encrypted)
	Optional	■ 1 Serial Line	■ Ethernet ■ Profibus DP	■ Ethernet ■ Profibus DP	■ Ethernet, EtherNet/IP Adapter ■ CANopen Master	■ CANopen ■ Profibus DP ■ RT-Ethernet
Embedded I/O	Input types	Up to 40 logic inputs 2 analog inputs	Up to 24 logic inputs	–	4 fast digital inputs	Up to 20 digital inputs Up to 16 touch probe inputs Up to 4 interrupt inputs Up to 2 analog inputs
	Output types	Up to 16 relay outputs Up to 16 transistor outputs	Up to 16 tansistor outputs	–	4 fast digital outputs	Up to 16 digital outputs Up to 2 analog outputs
Synchronized axes		–	–	–	Up to 24 synchronized axes	Up to 130 synchronized axes
Configuration software		EcoStruxure Machine Expert-Basic	EcoStruxure Machine Expert			
Compatible expansion I/O module ranges (Consult the catalog)						
	● Local I/O	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	–
	● Remote I/O	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	–
	● Distributed I/O on Ethernet	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN) ● Modicon TM5 (DIA3ED2131204EN)	● Modicon TM3 (DIA3ED2140109EN) ● Modicon TM5 (DIA3ED2131204EN)	● Modicon TM3 (DIA3ED2140109EN) ● Modicon TM5 (DIA3ED2131204EN)	● Modicon TM5 (DIA3ED2131204EN)
	● Distributed I/O on CANopen	–	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN) ● Modicon TM5 (DIA3ED2131204EN) ● Modicon TM7 (DIA3ED2140405EN)	● Modicon TM3 (DIA3ED2140109EN) ● Modicon TM5 (DIA3ED2131204EN) ● Modicon TM7 (DIA3ED2140405EN)
	● Distributed I/O on Sercos	–	–	–	● Modicon TM5 (DIA3ED2131204EN)	● Modicon TM5 (DIA3ED2131204EN)
	● Distributed I/O on Modbus Serial Line	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	–
	● Safety I/O	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	Safety I/Os are only supported by the Motion variant of M262 ● Modicon TM3 (DIA3ED2140109EN) ● Modicon TM5 (DIA3ED2131204EN) ● Modicon TM7 (DIA3ED2140405EN)	● Modicon TM5 (DIA3ED2131204EN) ● Modicon TM7 (DIA3ED2140405EN)
Controller range		**Modicon M221/M221 Book**	**Modicon M241**	**Modicon M251**	**Modicon M262**	**PacDrive LMC Eco, LMC Pro2**
More details on our website	Consult the catalogs	DIA3ED2140106EN	DIA3ED2140107EN	DIA3ED2140108EN	DIA3ED2180503EN	DIA7ED2160303EN
	Try the configuration tool	**Modicon PLC configurator**				



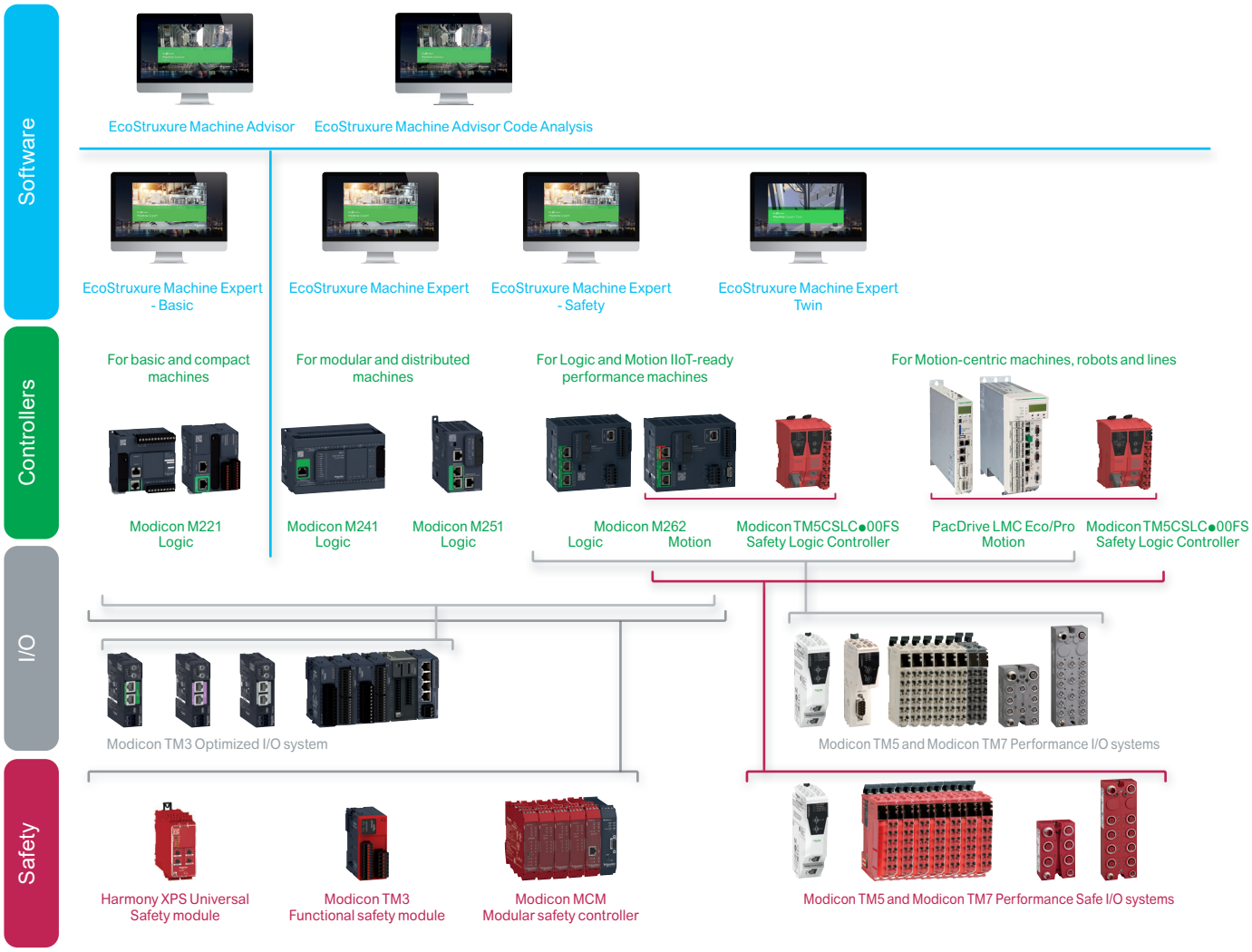
> Select your architecture of controller and I/O by
- Usage and application
- Connectivity, services and IIOT (Protocols, WeB and communication services)
- I/O
- Power supply

Modicon TM3

I/O expansion modules for Modicon controllers

Machine Automation

Machine Automation



Machine control

> From basic to motion- and robot-centric machines with the PacDrive 3 offer, Modicon controllers and solutions bring a consistent and scalable response to achieving flexibility, performance, productivity and digitization.

The scalability and consistency of I/O ranges allow you to select the right offer depending on your needs

> Modicon TM3 Optimized I/O system for more compact and modular machines
> Modicon TM5 for more performance-demanding machines, with Modicon TM7 for harsh environments: Both Performance I/O ranges (Modicon TM5 and Modicon TM7) allow safety functions to be implemented using Modicon TM5CSLC●00FS safety logic controller

Embedded Safety provides holistic solutions to Modicon M262 and PacDrive 3 LMC motion controllers, increasing overall safety demand in Machine Automation

> Modicon TM5CSLC●00FS safety logic controllers are suitable safety option for Medium to large size applications with Motion safety functions
> Harmony XPS Universal safety modules cover a wide range of safety functions, suitable for small applications with 4-5 safety functions, with diagnostic information provided to controllers via a single wire connection
> Modicon TM3 safety functional modules are suitable for small applications covering E-Stop functions and diagnostics via TM3 I/O bus
> Modicon MCM modular safety controllers are suitable for medium size applications with up to 64 dual channel safety functions and diagnostics via Modbus TCP, Modbus RTU, EtherNet/IP, CANopen, EtherCAT and Profibus

All of those devices are managed within a single software, **EcoStruxure Machine Expert**, a powerful and collaborative engineering environment

> EcoStruxure Machine Expert – Safety: an optional addon for programming TM5CSLC●00FS safety logic controllers
> EcoStruxure Machine Expert – Basic: a software for programming Modicon M221 logic controllers, an intuitive standalone environment accessible to basic skilled technicians
> EcoStruxure Machine Advisor: a cloud-based services platform designed for machine builders to track machines in operation worldwide, monitor performance data and resolve exceptional events

Machine Automation

Comprehensive Schneider offers for machine builders

> Lexium servo drives, motors and robotics are designed to control applications ranging from a single independent axis up to high-performance synchronized multi-axis machines requiring high-speed and precise positioning and movements

Multi carrier systems

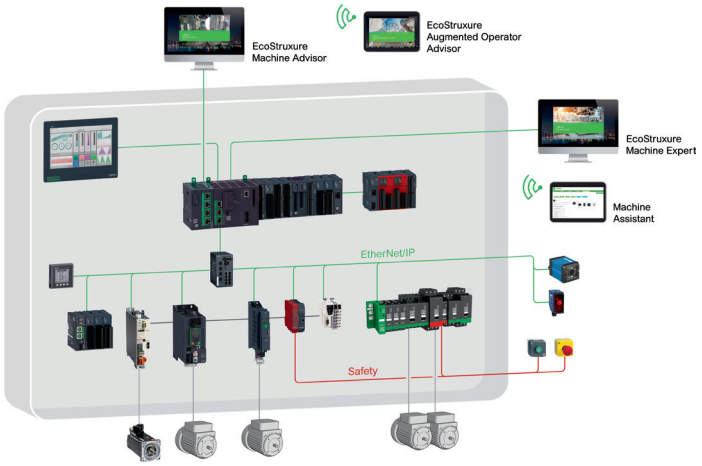
Robotics

Integrated drives

Servo Drives & Motors

Steppers Drives & Motors

> The Lexium offer is designed for a broad range of motion-centric machines in applications such as Packaging, Material Handling, Material Working, Food and Beverage and Electronics

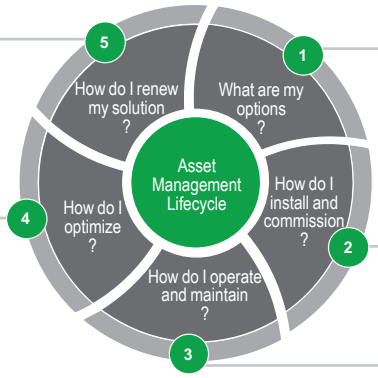


> Schneider Electric has developed Tested Validated & Documented Architectures (TVDA) applicable for generic machine control applications as well as for dedicated segment applications such as Packaging, Material Working, Material Handling, Hoisting, Pumping, or generic Machine Control applications

Choose Schneider Electric to help secure your investment and benefit from worldwide services at every step of your project

Renew
Being your expert to control and renew your aging equipment at the right time and at optimal cost

Optimize
Identifying how you can get even more out of your equipment and further improve your return on investment



Plan
Discussing your maintenance policy and needs arising from it

Install
Delivering services to help ensure your equipment is set up reliably and starts to operate efficiently from day one

Operate
Providing services to support you during normal operations as well as during maintenance breaks and in unexpected situations
Collaborating to maximize your uptime and performance as well as become more proactive in operations

> From planning and inception to modernization, we help ensure optimal technical and business performance. Our field service engineers combine 30+ years of manufacturer-level experience with the latest technology to bring innovation to every level of our offer and every step of your project.

> Our machine control dedicated services empower you to maximize your business infrastructure and face increasingly stringent demands on productivity, safety, equipment availability and performance optimization.

Modicon TM3
I/O expansion modules for Modicon controllers
Presentation of the range

Digital I/O modules

Analog I/O modules

Expert counter modules

Parallel interface module

TM3 bus expansion modules

Functional safety modules

EtherNet/IP *CANopen* *Serial Line*
Modbus/TCP
Bus coupler modules

Modicon TM3 range

The Modicon TM3 offer enhances the capabilities of Modicon M221, M221 Book, M241, and M251 logic controllers, Modicon M262 logic/motion controller, and the TM3BC bus coupler modules.
The flexibility offered by the TM3 expansion modules systems allows:
- I/O to be remotely located in the enclosure or in another cabinet, up to 5 m *(16.40 ft)* away, using the bus expansion system
- I/O to be distributed via islands over the networks (Ethernet, CANopen, Serial line) using the bus coupler modules

Local or remote I/O expansion modules

Digital I/O modules
See page 10
For creating configurations with up to 488 digital I/O (depending on the controller). These modules are available with the same connections as the controllers.
Modules with 8 to 32 inputs/outputs:
- 24 V or 120 V ⎓ 50/60 Hz inputs
- relay or transistor outputs

Analog I/O modules
See page 16
For creating configurations with up to 114 analog I/O (depending on the controller), designed to receive, amongst other things, position, temperature, and speed sensor signals. They are also capable of controlling variable speed drives or any other device equipped with a current or voltage input.
Modules with 2 to 8 inputs/outputs:
- voltage/current or temperature inputs
- voltage/current or temperature outputs
- voltage/current inputs/outputs

Expert modules
See page 18
For high-speed counting (24 V ⎓ inputs), and event counting with or without event management on fast inputs/thresholds/stop.

Parallel interface module
See page 22
For controlling up to 4 TeSys Ultra motor starters: simplified wiring for the control part connected via RJ45 cables.

TM3 bus expansion modules
See page 24
Transmitter and receiver modules and bus expansion cable for locating I/O remotely

Safety I/O modules

Functional safety modules
See page 26
For integrated machine safety:
- control of Emergency stops
- control of switches
- control of light curtains
- control of pressure-sensitive mats or edges

Bus coupler modules for distributed I/O

Bus coupler modules
See page 30
For creating distributed I/O islands:
- support for EtherNet/IP, Modbus/TCP, CANopen, or Modbus Serial Line communication protocols
- integration of Web services and cybersecurity (Achilles L1)
- integration of the device identification service from the Modicon M262 logic/motion controller

Specific features

Modicon TM3 expansion modules have been designed with a simple interlocking assembly mechanism. A bus expansion connector is used to distribute data (data synchronization) and provide power during assembly on the bus coupler module, and on the Modicon M221, M221 Book, M241, and M251 logic controllers,and Modicon M262 logic/motion controller.

Connections

The following connections are available on the front face of the expansion modules (depending on the model):
- removable screw terminal blocks for the I/O and the power supply *(1)*
- removable spring terminal blocks for the I/O *(1)*
- HE 10 connectors, for use with HE 10/flying leads or HE 10/HE 10 cordsets and Modicon ABE7 Telefast sub-bases *(2)*

The connectors on the bus expansion modules and bus coupler modules are RJ45 connectors.

Mounting

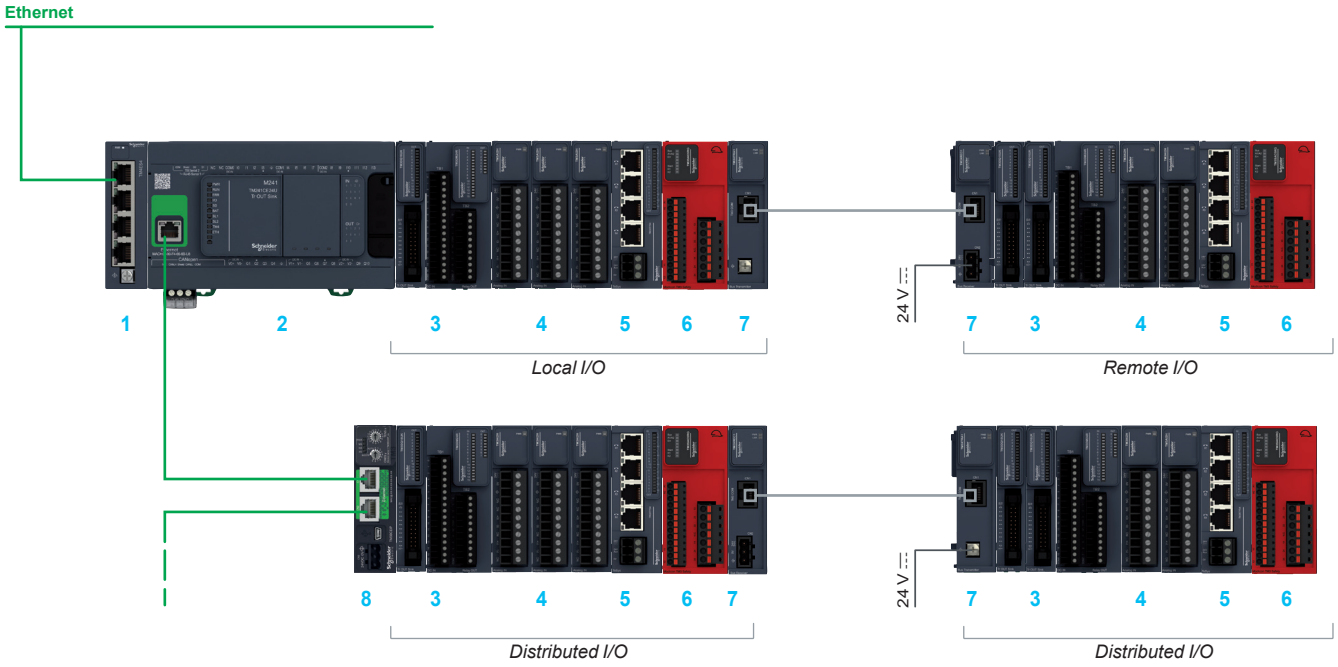
Modicon TM3 modules are mounted on a symmetrical DIN rail ⊔. They have a locking clip on the top of their casing.
For plate or panel mounting, use the **TMAM2** kit.

(1) Removable terminal blocks are supplied with Modicon TM3 expansion modules.
(2) Modicon ABE7 Telefast pre-wired system to be ordered separately (please refer to catalog ref. DIA3ED2160602EN (click link to open).

Modicon TM3
I/O expansion modules for Modicon controllers
Modicon TM3 expansion system

Modicon TM3 expansion system

EcoStruxure Machine Expert software is used to configure the local and remote I/O and distributed I/O islands.



1 TM4ES4 Ethernet switch communication module
2 Modicon TM241CE●● controller
3 Digital I/O modules
4 Analog I/O modules
5 Parallel interface module for controlling TeSys Ultra motor starters
6 Functional safety modules
7 Bus expansion modules (transmitter and receiver) and bus expansion cable
8 Ethernet bus coupler module

Local and remote I/O configuration

Local I/O

Maximum configuration: 7 Modicon TM3 expansion modules associated with a Modicon M221, M221 Book, M241, or M251 logic controller, or Modicon M262 logic/motion controller. Depending on the expansion module references, there may be fewer than 7 (see page 12).

Remote I/O

Maximum configuration : 14 Modicon TM3 expansion modules (7 local modules + 7 remote modules) with Modicon TM3 bus expansion modules (transmitter module and receiver module).

The transmitter and receiver bus expansion modules can be used to:

- increase the number of expansion modules that can be connected to a Modicon M221, M221 Book, M241, or M251 logic controller, or a Modicon M262 logic/motion controller from 7 to 14
- locate Modicon TM3 expansion modules remotely, up to 5 m (*16.40 ft*) away

The transmitter module and receiver module are physically connected by a bus expansion cable, reference **ACTPC6FULS●●WE**.

Distributed I/O configuration

The Modicon TM3BC bus coupler modules are used to create distributed I/O islands on EtherNet/IP, Modbus/TCP, CANopen, or Modbus Serial Line fieldbus.

- The bus coupler modules are connected via an isolated RJ45cable.
- Maximum configuration: 14 Modicon TM3 expansion modules (7 modules + 7 modules) with the Modicon TM3 bus expansion system (transmitter module and receiver module) (see page 30).

Modicon TM3
I/O expansion modules for Modicon controllers
Digital I/O modules

Applications		**Digital inputs**				**Digital outputs**								**Digital inputs/outputs**	
Compatibility	Local and remote I/O	■ Modicon M221/M221 Book/M241/M251 logic controllers ■ Modicon M262 logic/motion controller													
	Distributed I/O	Modicon TM3BC bus coupler modules													
															
Inputs	Number and type of inputs	8 logic inputs	8 logic inputs	16 logic inputs	32 logic inputs	–	–	–	–	–	–	–	–	4 logic inputs	16 logic inputs
	Nominal voltage	24 V ⎓	120 V ∿	24 V ⎓	24 V ⎓	–	–	–	–	–	–	–	–	24 V ⎓	24 V ⎓
	Input type	Type 1 (IEC 61131-2, Edition 3)				–	–	–	–	–	–	–	–	Type 1 (IEC 61131-2, Edition 3)	
	Input logic	Sink/source	–	Sink/source	Sink/source	–	–	–	–	–	–	–	–	Sink/source	Sink/source
Outputs	Number and type of outputs	–	–	–	–	8 relay outputs	8 transistor outputs	8 transistor outputs	16 relay outputs	16 transistor outputs	16 transistor outputs	32 transistor outputs	32 transistor outputs	4 relay outputs	8 relay outputs
	Nominal voltage					24 V ⎓/ 240 V ∿	24 V ⎓	24 V ⎓	24 V ⎓/ 240 V ∿	24 V ⎓	24 V ⎓	24 V ⎓	24 V ⎓	24 V ⎓/ 240 V ∿	24 V ⎓/ 240 V ∿
	Contact type	–	–	–	–	1 NO contact	–	–	1 NO contact	–	–	–	–	1 NO contact	1 NO contact
	Logic	–	–	–	–	–	Source	Sink	–	Source	Sink	Source	Sink	–	–
	Maximum output current - Per output	–	–	–	–	2 A	0.5 A	0.5 A	2 A	0.5 A for TM3DQ16T and TM3DQ16TG 0.1 A for TM3DQ16TK	0.5 A for TM3DQ16U and TM3DQ16UG 0.1 A for TM3DQ16UK	0.1 A	0.1 A	2 A	2 A
	- Per group of channels	–	–	–	–	7 A	4 A	4 A	8 A	4 A for TM3DQ16T and TM3DQ16TG 2 A for TM3DQ16TK	2 A	2 A	2 A	7 A	7 A
Certifications & standards		CE, UKCA, RCM, EAC, cULus, cULus Haz. Loc. EN/IEC 61131-2													
Supply voltage		Power supplied by the controller via the bus expansion connector				Power supplied by the controller via the bus expansion connector									
Format (W x H x D)	mm (*in.*)	23.6 x 90 x 70 *(0.93 x 3.54 x 2.76)*	23.6 x 90 x 70 *(0.93 x 3.54 x 2.76)*	TM3DI16, TM3DI16G : 23.6 x 90 x 70 *(0.93 x 3.54 x 2.76)* TM3DI16K: 17.6 x 90 x 70 *(0.69 x 3.54 x 2.76)*	30.2 x 90 x 70 *(1.19 x 3.54 x 2.76)*	23.6 x 90 x 70 *(0.93 x 3.54 x 2.76)*				TM3DQ16T, TM3DQ16TG, TM3DQ16U, TM3DQ16UG: 23.6 x 90 x 70 *(0.93 x 3.54 x 2.76)* TM3DQ16UG, TM3DQ16UK: 17.6 x 90 x 70 *(0.69 x 3.54 x 2.76)*	30.2 x 90 x 70 *(1.19 x 3.54 x 2.76)*	23.6 x 90 x 70 *(0.93 x 3.54 x 2.76)*	39.1 x 90 x 70 *(1.53 x 3.54 x 2.76)*
Mounting		Mounting on symmetrical DIN rail ⊐ or panel using special mounting kit TMAM2				Mounting on symmetrical DIN rail ⊐ or panel using special mounting kit TMAM2									
	Channels connected:														
Module	via removable screw terminal blocks at intervals of 5.08 mm *(0.2 in.)*	**TM3DI8**	**TM3DI8A**	–	–	**TM3DQ8R**	**TM3DQ8T**	**TM3DQ8U**	–	–	–	–	–	**TM3DM8R**	–
	via removable screw terminal blocks at intervals of 3.81 mm *(0.15 in.)*	–	–	**TM3DI16**	–	–	–	–	**TM3DQ16R**	**TM3DQ16T**	**TM3DQ16U**	–	–	–	**TM3DM24R**
	via removable spring terminal blocks at intervals of 5.08 mm *(0.2 in.)*	**TM3DI8G**	–	–	–	**TM3DQ8RG**	**TM3DQ8TG**	**TM3DQ8UG**	–	–	–	–	–	**TM3DM8RG**	–
	via removable spring terminal blocks at intervals of 3.81 mm *(0.15 in.)*	–	–	**TM3DI16G**	–	–	–	–	**TM3DQ16RG**	**TM3DQ16TG**	**TM3DQ16UG**	–	–	–	**TM3DM24RG**
	via HE 10 connectors *(1)*	–	–	**TM3DI16K**	**TM3DI32K**	–	–	–	–	**TM3DQ16TK**	**TM3DQ16UK**	**TM3DQ32TK** *(1)*	**TM3DQ32UK** *(1)*	–	–
Page		13				13									

(1) Compatible with the Modicon ABE7 Telefast pre-wired system (please refer to catalog ref. DIA3ED2160602EN (click link to open)).

Modicon TM3
I/O expansion modules for Modicon controllers
Digital I/O modules

Presentation

Breakdown of the offer

Digital I/O modules:
- Input modules: 24 V ⎓ or 120 V ∿
- Relay output modules: 24 V ⎓ source transistor or 24 V ⎓ sink transistor
- I/O modules: 24 V ⎓ inputs/relay outputs, or 24 V ⎓ transistor inputs/relay outputs

Configurable input options

TM3DI and TM3DM modules *(except for TM3DIA8 modules)* have two optional functions that can be configured using EcoStruxure™ Machine Expert software:
- An input filtering option: Integrating the filter value helps to improve input acquisition speed or reduce the effect of noise on the controller input *(1)*.
- An input latching option: Latching is used to capture incoming pulses with shorter amplitude widths than the controller scan time *(1)*.

Specific features

- If a hardware failure is detected, outputs TM3DO and TM3DM switch to fallback mode previously configured to 0, 1, or hold *(1)*.
- Firmware updates are supported via the TM3 expansion bus, with any type of controller or the bus coupler *(1)*.

Connections

- Screw-type connectors at intervals of 5.08 mm *(0.2 in.)* for ease of wiring: identical to the connectors on M221/M241 logic controllers
- Screw-type or spring-type connectors at intervals of 3.81 mm (*0.15 in.)* for compact dimensions: identical to the connectors on **TM221M16●●** and **TM221ME16●●** controllers
- HE10 connectors for lower wiring costs using the Modicon ABE7 Telefast pre-wired system: identical to the connectors on **TM221M32TK** and **TM221ME32TK** controllers

I/O configuration

- Local I/O: A maximum of 7 I/O modules can be attached to the controller in accordance with the restrictions indicated in the table below.
- Distributed I/O with TM3 bus expansion system: 7 additional I/O modules can be used without restriction. These modules are attached to a **TM3XREC1** receiver module.

		Number of TM3 expansion modules attached to the controller						
		1	2	3	4	5	6	7
Logic controllers	**TM221C(E)16R**							
	TM221C(E)16T, TM221C(E)16U							
	TM221C(E)24R							
	TM221C(E)24T, TM221C(E)24U							
	TM221C(E)40R							
	TM221C(E)40T, TM221C(E)40U							
	TM221M(E)16R(G)							
	TM221M(E)16T(G), TM221M(E)32TK							
	TM241, TM251							
Logic/motion controller	**TM262**							
Bus coupler modules	**TM3BCEIP, TM3BCCO, TM3BCSL**							

Possible regardless of the TM3 module references

Possible regardless of the TM3 module references but without a TM3DQ16R module in the configuration

Possible for some configurations, to be checked in EcoStruxure Machine Expert or by calculating the total consumption

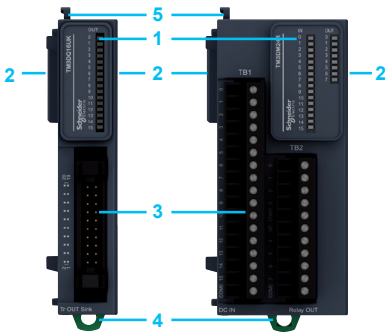
Not possible; use a TM3XTRA1 module + a TM3REC1 module

TM3 expansion modules are powered by the logic controllers via the bus connector on the side of the products. This connector delivers two voltages, 5 V and 24 V. You should therefore calculate the total TM3 expansion module consumption and check that it is definitely compatible with the maximum current delivered by the controller. This information is available on each product data sheet or in the hardware reference guide. This can be checked in the Configuration page in the EcoStruxure Machine Expert programming software.

Mounting

Digital I/O modules are mounted on a symmetrical DIN rail ⎍. For plate or panel mounting, use the **TMAM2** kit.

Description



Modicon TM3 digital I/O modules

1 Display block with module channel status and diagnostics LEDs
2 TM3 bus connectors (one on each side). These are designed to provide continuity of the link between connected modules.
3 Input or output channel terminal blocks (depending on model: screw terminals, spring terminals, or HE 10 connector)
4 Clip for locking on symmetrical DIN rail ⎍
5 Locking catch for the adjacent module

(1) Except on Modicon M221 and Modicon M221 Book logic controllers

Modicon TM3
I/O expansion modules for Modicon controllers
Digital I/O modules


TM3DI8


TM3DI8G


TM3DI8A


TM3DI32K


TM3DQ16U


TM3DQ16UG


TM3DQ16UK


TM3DQ32TK


TM3DQ32UK


TM3DM24R


TM3DM24RG

References

Modicon TM3 digital input modules

Number of logic inputs	Input type	Input terminal block *(1)* Interval *(mm/in.)*	References	Weight kg/ *lb*
8 inputs	24 V ⎓ sink/source	Screw 5.08/*0.2*	TM3DI8	0.110/ *0.243*
		Spring 5.08/*0.2*	TM3DI8G	0.095/ *0.209*
	120 V ∿	Screw 5.08/*0.2*	TM3DI8A	0.110/ *0.243*
16 inputs	24 V ⎓ sink/source	Screw 3.81/*0.15*	TM3DI16	0.105/ *0.231*
		Spring 3.81/*0.15*	TM3DI16G	0.095/ *0.209*
		HE 10 connector –	TM3DI16K *(2)*	0.075/ *0.165*
32 inputs	24 V ⎓ sink/source	HE 10 connector –	TM3DI32K *(2)*	0.110/ *0.243*

Modicon TM3 digital output modules

Number of logic outputs	Output type	Output current	Output terminal block *(1)* Interval *(mm/in.)*	References	Weight kg/ *lb*
8 outputs	Relay	2 A	Screw 5.08/*0.2*	TM3DQ8R	0.130/ *0.287*
			Spring 5.08/*0.2*	TM3DQ8RG	0.115/ *0.254*
	Transistor, source	0.5 A	Screw 5.08/*0.2*	TM3DQ8T	0.110/ *0.243*
			Spring 5.08/*0.2*	TM3DQ8TG	0.095/ *0.209*
	Transistor, sink	0.5 A	Screw 5.08/*0.2*	TM3DQ8U	0.110/ *0.243*
			Spring 5.08/*0.2*	TM3DQ8UG	0.095/ *0.209*
16 outputs	Relay	2 A	Screw 3.81/*0.15*	TM3DQ16R	0.140/ *0.309*
			Spring 3.81/*0.15*	TM3DQ16RG	0.130/ *0.287*
	Transistor, source	0.5 A	Screw 3.81/*0.15*	TM3DQ16T	0.105/ *0.231*
			Spring 3.81/*0.15*	TM3DQ16TG	0.095/ *0.209*
		0.1 A	HE 10 connector –	TM3DQ16TK *(2)*	0.075/ *0.165*
	Transistor, sink	0.5 A	Screw 3.81/*0.15*	TM3DQ16U	0.105/ *0.231*
			Spring 3.81/*0.15*	TM3DQ16UG	0.095/ *0.209*
		0.1 A	HE 10 connector –	TM3DQ16UK *(2)*	0.075/ *0.165*
32 outputs	Transistor, source	0.1 A	HE 10 connector –	TM3DQ32TK *(2)*	0.115/ *0.254*
	Transistor, sink	0.1 A	HE 10 connector –	TM3DQ32UK *(2)*	0.115/ *0.254*

Modicon TM3 mixed digital I/O modules

Number of logic I/O	Number and type of inputs	Number and type of outputs	I/O terminal block *(1)* Interval *(mm/in.)*	References	Weight kg/ *lb*
8 inputs/outputs	4 x 24 V ⎓ sink/source inputs	4 relay outputs, 2 A	Screw 5.08/*0.2*	TM3DM8R	0.120/ *0.265*
			Spring 5.08/*0.2*	TM3DM8RG	0.100/ *0.220*
24 inputs/outputs	16 x 24 V ⎓ sink/source inputs	8 relay outputs, 2 A	Screw 3.81/*0.15*	TM3DM24R	0.165/ *0.364*
			Spring 3.81/*0.15*	TM3DM24RG	0.155/ *0.342*

Separate parts

Designation	Description	Reference	Weight kg/ *lb*
Mounting kit Sold in lots of 10	For plate or panel mounting of digital I/O modules	TMAM2	0.065/ *0.143*
Set of I/O terminal blocks	4 x 10-way and 4 x 11-way removable screw terminal blocks for TM3DI16, TM3DQ16R, TM3DQ16T, and TM3DQ16U modules	TMAT2MSET	0.127/ *0.280*
	4 x 10-way and 4 x 11-way removable spring terminal blocks for 3DI16G, TM3DQ16RG, TM3DQ16TG, and TM3DQ16UG modules	TMAT2MSETG	0.127/ *0.280*

(1) Removable screw or spring-type terminal blocks, supplied.
(2) Modules compatible with the Modicon ABE7 Telefast pre-wired system (please refer to catalog ref. DIA3ED2160602EN (click link to open)).

Modicon TM3
I/O expansion modules for Modicon controllers
Analog I/O modules

Applications		**Analog inputs**						**Analog outputs**		**Analog I/O**	
Compatibility	Local and remote I/O	■ Modicon M221/M221 Book/M241/M251 logic controllers ■ Modicon M262 logic/motion controller									
	Distributed I/O	Modicon TM3BC bus coupler modules									
											
Inputs	Number	**2 inputs**	**4 inputs**	**4 inputs**	**4 inputs**	**8 inputs**	**8 inputs**	–	–	**2 inputs**	**4 inputs**
	Type	**Voltage/current**	**Voltage/current**	**Temperature or voltage/current**	**Temperature**	**Voltage/current**	**Temperature**	–	–	**Temperature or voltage/current**	**Voltage/current**
	Range	-10…+10 VDC, 0…+10 VDC/ 0…20 mA, 4…20 mA	-10…+10 VDC, 0…+10 VDC/ 0…20 mA, 4…20 mA	- Thermocouples (J, K, R, S, B, T, N, E, C) - Temperature probes (RTDs): (Ni100, Ni1000, PT100, PT1000) - -10…+10 VDC, 0…+10 VDC / 0…20 mA, 4…20 mA	Thermocouples (J, K, R, S, B, T, N, E, C), non-isolated	-10…+10 VDC, 0…+10 VDC/ 0…20 mA, 4…20 mA	- Thermocouples (J, K, R, S, B, T, N, E, C) - NTC and PTC thermistors	–	–	- Thermocouples (J, K, R, S, B, T, N, E, C) - Temperature probes (RTDs): (Ni100, Ni1000, PT100, PT1000) - -10…+10 VDC, 0…+10 VDC/0…20 mA, 4…20 mA	-10…+10 VDC, 0…+10 VDC/ 0…20 mA, 4…20 mA
	Resolution	16 bits or 15 bits + sign	12 bits or 11 bits + sign	16 bits or 15 bits + sign	16 bits or 15 bits + sign	12 bits or 11 bits + sign	16 bits or 15 bits + sign	–	–	16 bits or 15 bits + sign	12 bits or 11 bits + sign
	Transfer time	1 or 10 ms (configurable)	1 or 10 ms (configurable)	100 ms per channel for temperature signals. 1 or 10 ms (configurable) for voltage/current signals	100 ms per channel for temperature signals	1 or 10 ms (configurable)	100 ms per channel	–	–	100 ms per channel for temperature signals. 1 or 10 ms (configurable) for voltage/current signals	1 or 10 ms (configurable)
Outputs	Number	–	–	–	–	–	–	**2 outputs**	**4 outputs**	**1 output**	**2 outputs**
	Type	–	–	–	–	–	–	**Voltage/current**	**Voltage/current**	**Voltage/current**	**Voltage/current**
	Range	–	–	–	–	–	–	-10…+10 VDC, 0…+10 VDC/ 0…20 mA, 4…20 mA	-10…+10 VDC, 0…+10 VDC/ 0…20 mA, 4…20 mA	-10…+10 VDC, 0…+10 VDC/ 0…20 mA, 4…20 mA	-10…+10 VDC, 0…+10 VDC/ 0…20 mA, 4…20 mA
	Resolution	–	–	–	–	–	–	12 bits or 11 bits + sign	12 bits or 11 bits + sign	12 bits or 11 bits + sign	12 bits or 11 bits + sign
	Transfer time	–	–	–	–	–	–	1 or 10 ms (configurable)	1 or 10 ms (configurable)	1 or 10 ms (configurable)	1 or 10 ms (configurable)
Certifications & standards		CE CE, UKCA, RCM, EAC, cULus, cULus Haz. Loc. EN/IEC 61131-2									
Supply voltage		Via 24 V ⎓ external power supply									
Format (W x H x D) mm (*in.*)		23.6 x 90 x 70 *(0.93 x 3.54 x 2.76)*									
Mounting		Mounting on symmetrical DIN rail ⊔ or panel using special mounting kit TMAM2									
Module	Channels connected:										
	via removable screw terminal blocks at intervals of 5.08 mm *(0.2 in.)*	**TM3AI2H**	–	–	–	–	–	**TM3AQ2**	**TM3AQ4**	**TM3TM3**	–
	via removable screw terminal blocks at intervals of 3.81 mm *(0.15 in.)*	–	**TM3AI4**	**TM3TI4**	**TM3TI4D**	**TM3AI8**	**TM3TI8T**	–	–	–	**TM3AM6**
	via removable spring terminal blocks at intervals of 5.08 mm *(0.2 in.)*	**TM3AI2HG**	–	–	–	–	–	**TM3AQ2G**	**TM3AQ4G**	**TM3TM3G**	–
	via removable spring terminal blocks at intervals of 3.81 mm *(0.15 in.)*	–	**TM3AI4G**	**TM3TI4G**	**TM3TI4DG**	**TM3AI8G**	**TM3TI8TG**	–	–	–	**TM3AM6G**
Page		17				17					

Modicon TM3
I/O expansion modules for Modicon controllers
Analog I/O modules

Presentation

- TM3AI●● and TM3TI●● analog input modules are used to acquire various analog values (voltage, current, or temperature) in industrial applications.
- TM3TI4D● analog input modules are used to acquire temperature values in industrial applications.
- TM3AQ●● 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.
- TM3TM●● and TM3AM●● mixed analog modules combine voltage/current or temperature inputs with one or two voltage/current outputs in the same unit.

When the controller stops, the outputs on each TM3 analog module can be configured to fall back (hold the last value or a specified value). This function, when set to 'hold', is useful when debugging the application or when a fault is detected, in order not to disturb the process being controlled.

Breakdown of the offer

Analog I/O modules Modules with 2 to 8 analog inputs/outputs:
- voltage/current or temperature inputs
- temperature inputs
- voltage/current outputs

Connections

- Screw-type or spring-type connectors at intervals of 5.08 mm *(0.2 in.)* for ease of wiring: identical to the connectors on Modicon M221 (TM221C●●●●) and Modicon M241 (TM241C●●●●) logic controllers
- Screw-type or spring-type connectors at intervals of 3.81 mm *(0.15 in.)* for compact dimensions: identical to the connectors on Modicon M221 Book (TM221M16●● and TM221ME16●●) logic controllers

Configuration

- Analog I/O modules connect to Modicon M221, M221 Book, M241, and M251 logic controllers and Modicon M262 logic/motion controller according to the general rules for the Modicon TM3 system: 7 local modules max. plus 7 remote modules.
- An external 24 V ⎓ power supply is required for each Modicon TM3 analog module.
- The I/O modules are designed with isolation by an optocoupler between the internal electronics and the I/O channels.

Mounting

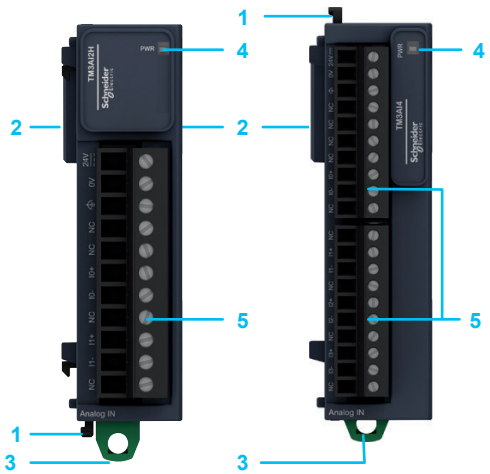
- Analog modules are mounted on a symmetrical DIN rail ⊔.
- For plate or panel mounting, use the **TMAM2** kit.

Description

Modicon TM3 analog modules

1 Locking catch for the adjacent module
2 TM3 bus connectors (one on each side). These are designed to provide continuity of the link between connected modules.
3 Clip for locking on symmetrical DIN rail ⊔
4 Module power status LED
5 Removable spring or screw terminal blocks (depending on the model) for connecting the analog channels and the 24 V power supply *(1)*

(1) Removable terminal blocks supplied with each module.



TM3AI2H, TM3AQ2, TM3AQ4, TM3TM3

TM3AI4, TM3TI4, TM3TI4D, TM3AI8, TM3TI8T, TM3AM6

Modicon TM3
I/O expansion modules for Modicon controllers
Analog I/O modules


TM3AI2H TM3AI4


TM3TI4, TM3TI4D TM3AI8


TM3TI8T


TM3AQ2 TM3AQ4


TM3TM3 TM3AM6


TM200RSRCEMC

References

Modicon TM3 analog input modules

Number and type of channels	Input range	Output range	Resolution	Input terminal block *(1)* Interval *(mm/in.)*	Reference	Weight kg/ *lb*
2 voltage/current inputs	-10…+10 VDC, 0…+10 VDC/ 0…20 mA, 4…20 mA	–	16 bits or 15 bits + sign	Screw 5.08/*0.2*	TM3AI2H	0.115/ *0.254*
				Spring 5.08/*0.2*	TM3AI2HG	0.100/ *0.220*
4 voltage/current inputs	-10…+10 VDC, 0…+10 VDC/ 0…20 mA, 4…20 mA	–	12 bits or 11 bits + sign	Screw 3.81/*0.15*	TM3AI4	0.110/ *0.243*
				Spring 3.81/*0.15*	TM3AI4G	0.100/ *0.220*
4 voltage/current or temperature inputs *(2)*	- Thermocouples *(3)* (J, K, R, S, B, T, N, E, C) - Temperature probes (RTDs) (Ni100, Ni1000, PT100, PT1000) - -0…+10 VDC, 0…+10 VDC) /0…20 mA, 4…20 mA)	–	16 bits or 15 bits + sign	Screw 3.81/*0.15*	TM3TI4	0.110/ *0.243*
				Spring 3.81/*0.15*	TM3TI4G	0.100/ *0.220*
4 differential temperature inputs	Thermocouples (J, K, R, S, B, T, N, E, C), non-isolated	–	16 bits or 15 bits + sign	Screw 3.81/*0.15*	TM3TI4D	0.110/ *0.243*
				Spring 3.81/*0.15*	TM3TI4DG	0.100/ *0.220*
8 voltage/current inputs	-10…+10 VDC, 0…+10 VDC/ 0…20 mA, 4…20 mA	–	12 bits or 11 bits + sign	Screw 3.81/*0.15*	TM3AI8	0.110/ *0.243*
				Spring 3.81/*0.15*	TM3AI8G	0.100/ *0.220*
8 temperature inputs	- Thermocouples *(3)* (J, K, R, S, B, T, N, E, C) - NTC and PTC thermistors	–	16 bits or 15 bits + sign	Screw 3.81/*0.15*	TM3TI8T	0.110/ *0.243*
				Spring 3.81/*0.15*	TM3TI8TG	0.100/ *0.220*

Modicon TM3 analog output modules

2 voltage/current outputs	–	-10…+10 VDC, 0…+10 VDC/ 0…20 mA 4…20 mA	12 bits or 11 bits + sign	Screw 5.08/*0.2*	TM3AQ2	0.115/ *0.254*
				Spring 5.08/*0.2*	TM3AQ2G	0.100/ *0.220*
4 **voltage/current outputs**	–	-10…+10 VDC, 0…+10 VDC/ 0…20 mA 4…20 mA	12 bits or 11 bits + sign	Screw 5.08/*0.2*	TM3AQ4	0.115/ *0.254*
				Spring 5.08/*0.2*	TM3AQ4G	0.100/ *0.220*

Modicon TM3 mixed analog I/O modules

2 temperature or voltage/current inputs *(2)* **and 1 voltage/current output**	- Thermocouples *(3)* (J, K, R, S, B, T, N, E, C) - Temperature probes (RTDs) (Ni100, Ni1000, PT100, PT1000) - -0…+10 VDC, 0…+10 VDC)/ 0…20 mA, 4…20 mA	-10…+10 VDC, 0…+10 VDC/ 0…20 mA 4…20 mA	16 bits or 15 bits + sign (for inputs) 12 bits or 11 bits + sign (for output)	Screw 5.08/*0.2*	TM3TM3	0.115/ *0.254*
				Spring 5.08/*0.2*	TM3TM3G	0.100/ *0.220*
4 voltage/current inputs and 2 voltage/current outputs	-10…+10 VDC, 0…+10 VDC/ 0…20 mA, 4…20 mA	-10…+10 VDC, 0…+10 VDC/ 0…20 mA, 4…20 mA	12 bits or 11 bits + sign (for inputs and outputs)	Screw 3.81/*0.15*	TM3AM6	0.110/ *0.243*
				Spring 3.81/*0.15*	TM3AM6G	0.100/ *0.220*

Separate parts

Designation	Description	Unit reference	Weight kg/ *lb*
Shielding connection clamps Sold in lots of 25	Assembly and grounding of the cable shielding. Pack of 25 clamps including 20 for Ø 4.8 mm *(0.189 in.)* cable and 5 for Ø 7.9 mm *(0.311 in.)* cable	TM200RSRCEMC	–
Mounting kit Sold in lots of 10	For mounting analog I/O modules on a plate or panel	TMAM2	0.065/ *0.143*
Set of I/O terminal blocks	4 x 10-way and 4 x 11-way removable screw terminal blocks for TM3AI4, TM3TI4, TM3AI8, TM3TI8, and TM3AM6 modules	TMAT2MSET	0.127/ *0.280*
	4 x 10-way and 4 x 11-way removable spring terminal blocks for TM3AI4G, TM3TI4G, TM3AI8G, TM3TI8G, and TM3AM6G modules	TMAT2MSETG	0.127/ *0.280*

(1) Removable terminal blocks supplied with each module.
(2) Each input can be configured independently for temperature or voltage/current.
(3) Use isolated thermocouples only.

Modicon TM3
I/O expansion modules for Modicon controllers
Expert counter modules

Applications		■ High-speed counter with reflex output management, no event management ■ Single or dual counter with additional period meter and frequency meter functions. These functions manage reflex outputs.	■ High-speed counter with reflex output management and event management ■ Single or dual counter with additional period meter and frequency meter functions. These functions manage reflex outputs and PLC events (first two local slots).
Compatibility	Local and remote I/O	Modicon M262 logic/motion controller	
	Distributed I/O	–	
			
Inputs	Number of counter channels	10 fast inputs	10 fast inputs
	Conforming to IEC/EN 61131-2	Yes	Yes
	Type of signal *(1)*	Source or sink	Source or sink
	Frequency per channel	200 kHz	200 kHz
	Type of input	Type 1	Type 1
	Nominal input voltage	24 V ⎓ I/O, type 1	24 V ⎓ I/O, type 1
	Voltage limit values	0...28.8 V ⎓	0...28.8 V ⎓
	Resolution	32 signed bits	32 signed bits
	Acquisition time on capture	≤ 3 µs	≤ 3 µs
	Event generation time to the PLC	–	≤100 µs
Outputs	Number	8 fast outputs	8 fast outputs
	Type	Source	Source
	Response on threshold	≤ 10 µs	≤ 10 µs
Certifications & standards		CE, UKCA, RCM, EAC, cULus, cULus Haz. Loc. CSA C22.2 No 142, ANSI/ISA 12-12-01, CSA C22.2 No 213 IEC/EN 61010-2-201	CE, UKCA, RCM, EAC, cULus, cULus Haz. Loc. CSA C22.2 No 142, ANSI/ISA 12-12-01, CSA C22.2 No 213
Supply voltage		Via 24 V ⎓ external power supply	
Format (W x H x D) mm (*in.*)		30.2 x 90 x 70 *(1.19 x 3.54 x 2.76)*	
Mounting		Mounting on symmetrical DIN rail ⎍ or panel using special mounting kit	
Module	Channels connected:		
	via removable screw terminal blocks at intervals of 3.81 mm *(0.15 in.)*	**TM3XHSC202**	**TM3XFHSC202**
	via removable spring terminal blocks at intervals of 3.81 mm *(0.15 in.)*	**TM3XHSC202G**	**TM3XFHSC202G**
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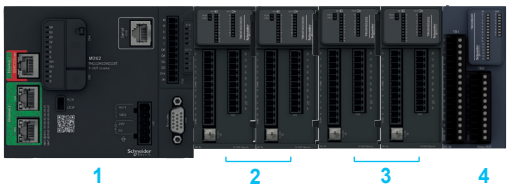
(1) Source output: PNP output; Sink output: NPN output.

Modicon TM3
I/O expansion modules for Modicon controllers
Expert counter modules



1 Modicon M262 logic/motion controller
2 TM3XFHSC expert counter module (event management available on first two slots only)
3 TM3XHSC expert counter module
4 TM3 I/O module

Presentation

Expert counter modules are used to count the pulses generated by a sensor or to process signals from an incremental encoder.
The counter functions allow reflex outputs to be managed on all modules.
TM3XFHSC202/G modules offer an additional event management function on the M262 logic/motion controller when installed in the first two local slots.
The function parameters are set by configuration using EcoStruxure Machine Expert software.

Integrated I/O functions

Simple inputs:
- Standard digital inputs
- Inputs with latching option (latching is used to capture pulses)
- Inputs with event generation in the M262 controller (valid for TM3XFHSC202 and TM3XFHSC202G modules only)

Single counter function: 10 x 32-bit channels
- Pulse up/down counter

Expert counter functions: 10x 32-bit channels
- Expert counter: Up/down counting on preset or modulo with option to manage reflex outputs, captures, and events depending on model
- Period meter: Measures the time between two edges; used to manage reflex outputs or event-triggered actions
- Frequency meter: Gives the frequency in hertz

Supply voltage: external 24 V ⎓ power supply

Connections

Screw or spring-type connectors at intervals of 3.81 mm *(0.15 in.)* for compact dimensions.

Configuration

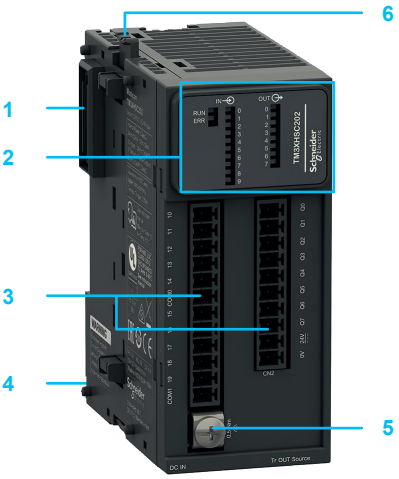
Counter modules connect to M262 logic/motion controller according to the general rules for the Modicon TM3 system: 7 local modules max. plus 7 remote modules.

Mounting

- Counter modules are mounted on a symmetrical DIN rail ⊔.
- For plate or panel mounting, use the **TMAM2** kit.

Description

Modicon TM3 counter modules



TM3XHSC202

1 TM3 bus connectors
2 Display block with module channel status and diagnostics LEDs
3 Slot for removable screw or spring-type terminal blocks (depending on the model) for connecting counter channels *(1)*
4 Clip for locking on symmetrical DIN rail ⊔
5 Screw terminal for the functional ground (FG) connection
6 Locking catch for the adjacent module

(1) Removable terminal blocks supplied with each module.

Modicon TM3
I/O expansion modules for Modicon controllers
Expert counter modules

TM3XHSC202
TM3XHSC202G

TM3XFHSC202
TM3XFHSC202G

References

Modicon TM3 expert counter modules

Module type	Inputs	Outputs	Input terminal block *(1)* Interval *(mm/in.)*	Reference	Weight kg/ *lb*
High-speed counter	10 fast inputs	8 fast outputs	Screw 3.81/*0.15*	TM3XHSC202	0.150/ *0.330*
			Spring 3.81/*0.15*	TM3XHSC202G	0.150/ *0.330*
High-speed counter with event management	10 fast inputs	8 fast outputs	Screw 3.81/*0.15*	TM3XFHSC202	0.150/ *0.330*
			Spring 3.81/*0.15*	TM3XFHSC202G	0.150/ *0.330*

Separate parts

Designation	Description	Unit reference	Weight kg/ *lb*
Mounting kit Sold in lots of 10	For mounting expert modules on a plate or panel	TMAM2	0.065/ *0.143*
Set of I/O terminal blocks	2 screw terminal blocks	TMA262SET8S	0.127/ *0.280*
	2 spring terminal blocks	TMA262SET8S	0.127/ *0.280*

(1) Removable terminal blocks supplied with each module.

Modicon TM3

I/O expansion modules for Modicon controllers

Parallel interface module for TeSys Ultra motor starter applications

Presentation

The **TM3XTYS4** Parallel interface module is a pre-wired interface for use with Modicon M221, M221 Book, M241, and M251 logic controllers, and Modicon M262 logic/motion controller, designed to monitor and control up to four TeSys Ultra motor starters.

Controlling motor starters with the TM3XTYS4 Parallel interface module

Each of the four channels on the **TM3XTYS4** Parallel interface module has:

■ Two outputs for controlling the motor starter:
- Control in one direction
- Control in two directions, if reversing starter

■ Three inputs for the motor starter status:
- Ready
- Run
- Detected fault

The inputs are connected in series with the motor starter auxiliary contacts.

Connections

- The **TM3XTYS4** Parallel interface module is equipped with four RJ45 connectors for connecting to the motor starters.
- Dedicated **LU9R●●●** cables equipped with RJ45 connectors at both ends are available for connecting TeSys Ultra motor starters.

Configuration

- The **TM3XTYS4** module connects directly to the logic controllers on the TM3 bus connector or to the bus expansion system (receiver module).
- One or more Parallel interface modules can be connected to Modicon M221, M221 Book, M241, and M251 logic controllers and Modicon M262 logic/motion controller according to the general rules for the TM3 system: 7 local modules max. plus 7 remote modules.

Certifications

CE, UKCA, RCM, EAC, cULus, cULus Haz. Loc.

Mounting

- The **TM3XTYS4** module is mounted on a symmetrical DIN rail ⊐⊏.
- For plate or panel mounting, use the **TMAM2** kit.

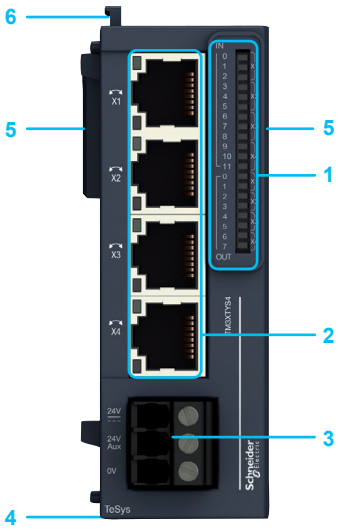
Connection cables		
1 Length: 0.3 m *(0.98 in)*	**LU9R03**	
1 Length: 1 m *(3.28 in)*	**LU9R10**	
1 Length: 3 m *(9.84 in)*	**LU9R30**	
Modicon TM3 module		
2 Modicon TM3	**TM3XTYS4**	
TeSys Ultra		
3 Power base	**LUB120 or LUB320**	**LU2B12BL or LU2B32BL**
4 Control unit 24 V ⎓	**LUCA/LUCB/LUCC/ LUCD●●BL**	**LUCA/LUCB/LUCC/LUCD●●BL**
5 Terminal block	**LU9BN11C**	**LU9MRC**
6 Parallel wiring module	**LUFC00**	**LUFC00**

For more information about **TeSys Ultra motor starter applications**, please visit our website

Modicon TM3

I/O expansion modules for Modicon controllers

Parallel interface module for TeSys Ultra motor starter applications



Description

TM3XTYS4 Parallel interface module

1 Block with 20 LEDs displaying the status of the 12 input channels and 8 output channels
2 Four RJ45 connectors for motor starter connection cables
3 Screw terminal block for connecting the 24 V ⎓ power supply for the inputs and starter coils *(1)*
4 Clip for locking on symmetrical DIN rail ⊔
5 TM3 bus connectors (one on each side). These are designed to provide continuity of the link between connected modules.
6 Locking catch for the adjacent module

TM3XTYS4

References

Parallel interface module *(1)*

Designation	Description	Reference	Weight kg/ *lb*
Parallel interface module	For controlling up to 4 TeSys Ultra motor starters 24 V ⎓ power supply (1.2 A)	TM3XTYS4	0.115/ *0.254*

Separate parts

Designation	Description	Reference	Weight kg/ *lb*
Mounting kit Sold in lots of 10	For mounting Parallel interface module on a plate or panel	TMAM2	0.065/ *0.143*

(1) The module is supplied with a removable screw terminal block for connecting the power supply.

Modicon TM3

I/O expansion modules for Modicon controllers

Modicon TM3 bus expansion system: transmitter and receiver modules

Presentation

TM3 transmitter and receiver modules can be used to:

- Increase the number of TM3 I/O expansion modules that can be connected to an M2●● logic controller or Modicon M262 logic/motion controller from 7 to 14
- locate Modicon TM3 expansion modules remotely, up to 5 m (*16.404 ft*) away

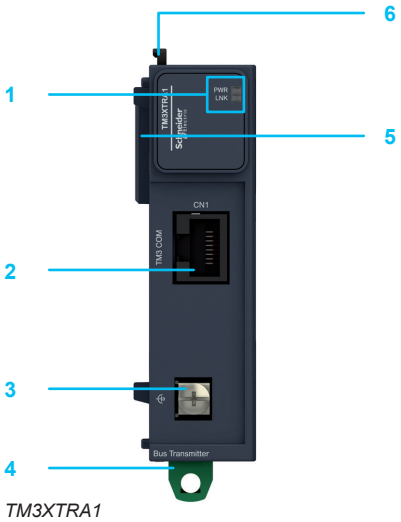
The transmitter module and receiver module are physically connected by a bus expansion cable, reference **ACTPC6FULS●●WE**.

Certifications

CE , UKCA, RCM, EAC, cULus, cULus Haz. Loc.

Mounting

- TM3 bus expansion modules are mounted on a symmetrical DIN rail ⊔.
- For plate or panel mounting, use the **TMAM2** kit.

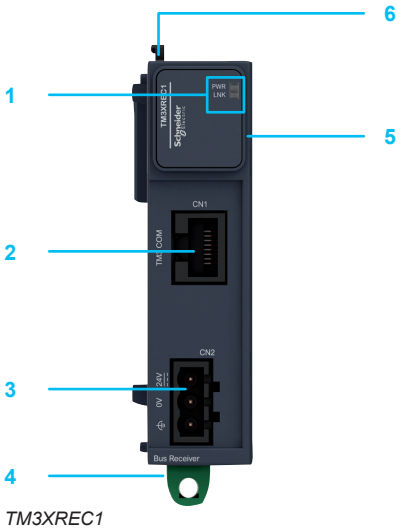


TM3XTRA1

Description

TM3XTRA1 transmitter module

1 Block with 2 LEDs displaying communication and power supply status
2 RJ45 connector for the **ACTPC6FULS●●WE** bus expansion cable
3 Screw terminal for the functional ground (FG) connection
4 Clip for locking on symmetrical DIN rail ⊔
5 TM3 bus connector providing continuity of the link with the connected module
6 Locking catch for the adjacent module



TM3XREC1

TM3XREC1 receiver module

1 Block with 2 LEDs displaying communication and power supply status
2 RJ45 connector for the **ACTPC6FULS●●WE** bus expansion cable
3 Slot for screw terminal block for connecting the power supply *(1)*
4 Clip for locking on symmetrical DIN rail ⊔
5 TM3 bus connector providing continuity of the link with the connected module
6 Locking catch for the adjacent module

(1) Removable terminal block supplied with each module.

Modicon TM3

I/O expansion modules for Modicon controllers

Modicon TM3 bus expansion modules: transmitter and receiver modules

TM3XTRA1

TM3XREC1

ACTPC6FULS●●WE

490NTW0000●U

References

Modicon TM3 bus expansion system

Designation	Characteristics	Reference	Weight kg/ *lb*
Transmitter module	Data transmission module Power supply: via the TM3 bus	TM3XTRA1	0.065/ *0.143*
Receiver module	Data reception module Power supply: 24 V ⎓ (with external power supply)	TM3XREC1 *(1)*	0.075/ *0.165*

Accessory for transmitter module

Designation	Characteristics	Length m *(ft)*	Reference
Functional ground cable	Functional ground for the TM3XTRA1 transmitter module	0.12 *(0.39)*	Cable supplied with the TM3XTRA1 transmitter module

Connection cables for CE market

Designation	Used for	Length m *(ft)*	Reference	Weight kg/ *lb*
Actassi Patch cord (4 pairs Cat 6 F/UTP patch cord)	TM3 bus expansion by linking transmitter and receiver modules Equipped with an RJ45 connector at each end	0.5 *(1.64)*	ACTPC6FULS05WE	–
		1 *(3.28)*	ACTPC6FULS10WE	–
		2 *(6.56)*	ACTPC6FULS20WE	–
		3 *(9.84)*	ACTPC6FULS30WE	–
		5 *(16.40)*	ACTPC6FULS50WE	–

Connection cables for UL market

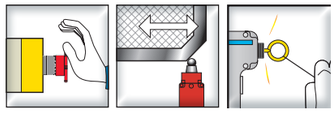
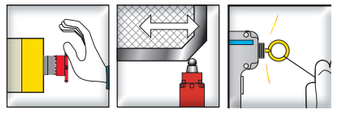
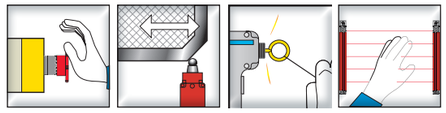
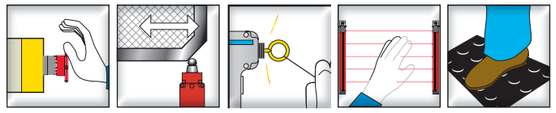
Designation	Used for	Length m *(ft)*	Reference	Weight kg/ *lb*
Shielded twisted pair TM3 bus expansion cables, UL compatible	TM3 bus expansion by linking transmitter and receiver modules Equipped with an RJ45 connector at each end	2 *(6.56)*	490NTW00002U	–
		5 *(16.40)*	490NTW00005U	–

Replacement parts

Designation	Description	Unit reference	Weight kg/ *lb*
Mounting kit Sold in lots of 10	For mounting bus expansion modules on a plate or panel	TMAM2	0.065/ *0.143*
Set of power supply terminal blocks	8 removable screw terminal blocks	TMAT2PSET	0.127/ *0.280*

(1) The module is supplied with a removable screw terminal block for connecting the power supply.

Modicon TM3
I/O expansion modules for Modicon controllers
Functional safety modules

Safety application		 **Control of Emergency stop and switches**	 **Control of Emergency stop and switches**	 **Control of Emergency stop, switches, solid-state output safety light curtains, and pressure sensors with PNP+PNP outputs**	 **Control of Emergency stop, switches, pressure-sensitive mats and edges, solid-state output safety light curtains, and pressure sensors with PNP+PNP or PNP+NPN outputs**
Compatibility	Local and remote I/O	■ Modicon M221/M221 Book/M241/M251 logic controllers ■ Modicon M262 logic/motion controller			
	Distributed I/O	Modicon TM3BC bus coupler modules			
					
Maximum achievable safety level		PL d/Category 3 conforming to EN/ISO 13849-1 SIL CL2 conforming to EN/IEC 62061	PL e/Category 4 conforming to EN/ISO 13849-1 SIL CL3 conforming to EN/IEC 62061	PL d/Category 3 conforming to EN/ISO 13849-1 SIL CL2 conforming to EN/IEC 62061	PL e/Category 4 conforming to EN/ISO 13849-1 SIL CL3 conforming to EN/IEC 62061
Standards (product)		EN/IEC 60947-1 EN/IEC 60947-5-1	EN/IEC 60947-1 EN/IEC 60947-5-1	EN/IEC 60947-1 EN/IEC 60947-5-1	EN/IEC 60947-1 EN/IEC 60947-5-1
Standards (machine assembly)	Emergency stop circuits	EN/IEC 60204-1 EN/ISO 13850	EN/IEC 60204-1 EN/ISO 13850	EN/IEC 60204-1 EN/ISO 13850	EN/IEC 60204-1 EN/ISO 13850
	Switches in protection devices	EN/ISO 14119	EN/ISO 14119	EN/ISO 14119	EN/ISO 14119
	Type 4 light curtains equipped with solid-state safety outputs with test function	–	–	Also designed for use with equipment conforming to EN/IEC 61496-1 up to type 4	Also designed for use with equipment conforming to EN/IEC 61496-1 up to type 4
	4-wire pressure-sensitive mats or edges	–	–	–	Also designed for use with equipment conforming to EN 1760-1
Certifications		UL, TÜV, EAC, RCM	UL, TÜV, EAC, RCM	UL, TÜV, EAC, RCM	UL, TÜV, EAC, RCM
Safety circuits	Number	3 NO	3 NO	3 NO	3 NO
	Type	Instantaneous opening relay	Instantaneous opening relay	Instantaneous opening relay	Instantaneous opening relay
Module fuse protection		Internal, electronic	Internal, electronic	Internal, electronic	Internal, electronic
Indicator		6 LEDs	8 LEDs	8 LEDs	8 LEDs
Power supply		24 V ⎓	24 V ⎓	24 V ⎓	24 V ⎓
Synchronization time between inputs		Unlimited	Unlimited	Unlimited	Unlimited/ON configured in software If ON: 2 or 4 s depending on wiring
Input channel voltage		24 V ⎓	24 V ⎓	24 V ⎓	24 V ⎓
Safety module	Channels and power supply connected:				
	via removable screw terminal blocks	**TM3SAC5R**	**TM3SAF5R**	**TM3SAFL5R**	**TM3SAK6R**
	via removable spring terminal blocks	**TM3SAC5RG**	**TM3SAF5RG**	**TM3SAFL5RG**	**TM3SAK6RG**
Page		29		29	

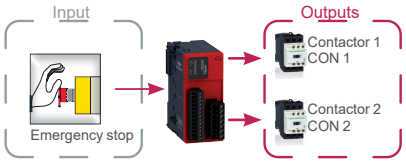
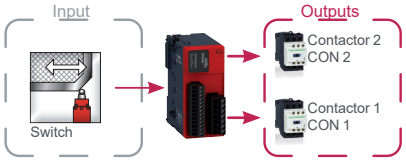
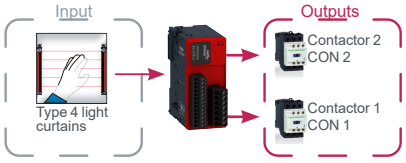
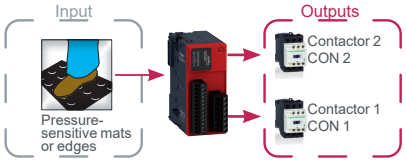
Modicon TM3
I/O expansion modules for Modicon controllers
Functional safety modules

Presentation

Modicon TM3 functional safety modules are designed to incorporate machine safety into the overall machine control.

Data acquisition: control of safety products
- Emergency stop button: complementary protection measures
- Monitoring devices used in protection systems to control access to hazardous areas
- Light curtains and safety mats to detect intrusion into hazardous areas

Monitoring and processing
- Modicon TM3 functional safety modules control the input signals from monitoring devices and act as an interface with contactors and variable speed drives, causing the machine to stop.
- Modicon TM3 functional safety modules complement the embedded I/O on Modicon M221, M221 Book, M241, and M251 logic controllers and Modicon M262 logic/motion controller.

Functional safety modules	Safety system/Performance level reached
For control of Emergency stops	Category 4/PL e, SIL3 architecture 
For control of switches	Category 4/PL e, SIL3 architecture 
For control of type 4 light curtains	Category 4/PL e, SIL3 architecture 
For control of pressure-sensitive mats or edges	Category 4/PL e, SIL3 architecture 

- The safety outputs available on all 4 modules are relay type, guided by microprocessor technology.
- Diagnostic utilities use the LEDs on the front of the module, which provide information on the monitoring circuit status.
- The diagnostic information is shared via the TM3 bus.
- The Start button monitoring function is configurable depending on the wiring.

Connections

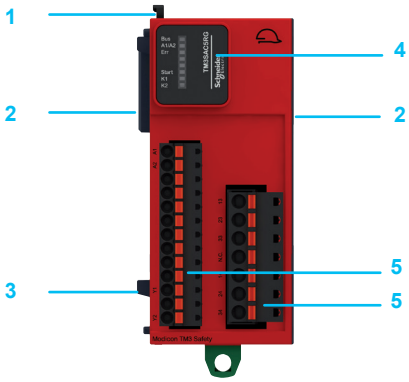
Equipped with removable screw or spring-type terminals (depending on the model) for connecting the safety channels.

Configuration

Modicon TM3 functional safety modules connect to Modicon M221, M221 Book, M241, and M251 logic controllers and Modicon M262 logic/motion controller according to the general rules for the TM3 system: 7 local modules max. plus 7 remote modules.

Mounting

- Modicon TM3 functional safety modules are mounted on a symmetrical DIN rail ⊔.
- For plate or panel mounting, use the **TMAM2** kit.



Description

Modicon TM3 functional safety modules

1 Locking catch for the adjacent module
2 TM3 bus connectors (one on each side). These are designed to provide continuity of the link between connected modules.
3 Clip for locking on symmetrical DIN rail
4 Display block (6 or 8 *(1)* green/red LEDs) for the module channel status and diagnostics
5 Removable spring or screw-type terminal blocks (depending on the model) for connecting the safety channels and the power supply


TM3SAC5R


TM3SAC5RG


TM3SAF5R


TM3SAF5RG


TM3SAFL5R


TM3SAFL5RG


TM3SAK6R


TM3SAK6RG

References

Designation	Maximum achievable safety level	Input terminal block *(2)*	Reference	Weight kg/ lb
24 V ⎓ power supply				
Functional safety modules for control of: - Emergency stop - switches	PL d/Category 3 conforming to EN/ISO 13849-1 SIL CL2 conforming to EN/IEC 62061	Screw	TM3SAC5R	0.190/ *0.420*
		Spring	TM3SAC5RG	0.190/ *0.420*
Functional safety modules for control of: - Emergency stop - switches	PL e/Category 4 conforming to EN/ISO 13849-1 SIL CL3 conforming to EN/IEC 62061	Screw	TM3SAF5R	0.190/ *0.420*
		Spring	TM3SAF5RG	0.190/ *0.420*
Functional safety modules for control of: - Emergency stop - switches - safety light curtains with solid-state outputs	PL d/Category 3 conforming to EN/ISO 13849-1 SIL CL2 conforming to EN/IEC 62061	Screw	TM3SAFL5R	0.190/ *0.420*
		Spring	TM3SAFL5RG	0.190/ *0.420*
Functional safety modules for control of: - Emergency stop - switches - safety light curtains with solid-state outputs - pressure-sensitive mats or edges	PL e/Category 4 conforming to EN/ISO 13849-1 SIL CL3 conforming to EN/IEC 62061	Screw	TM3SAK6R	0.190/ *0.420*
		Spring	TM3SAK6RG	0.190/ *0.420*

Separate parts

Designation	Description	Reference	Weight kg/ lb
Mounting kit Sold in lots of 10	For mounting functional safety modules on a plate or panel	TMAM2	0.065/ *0.143*

(1) Depending on the model.
(2) Removable screw or spring-type terminal blocks, supplied with the safety module.

Modicon TM3
I/O expansion modules for Modicon controllers
Bus coupler modules

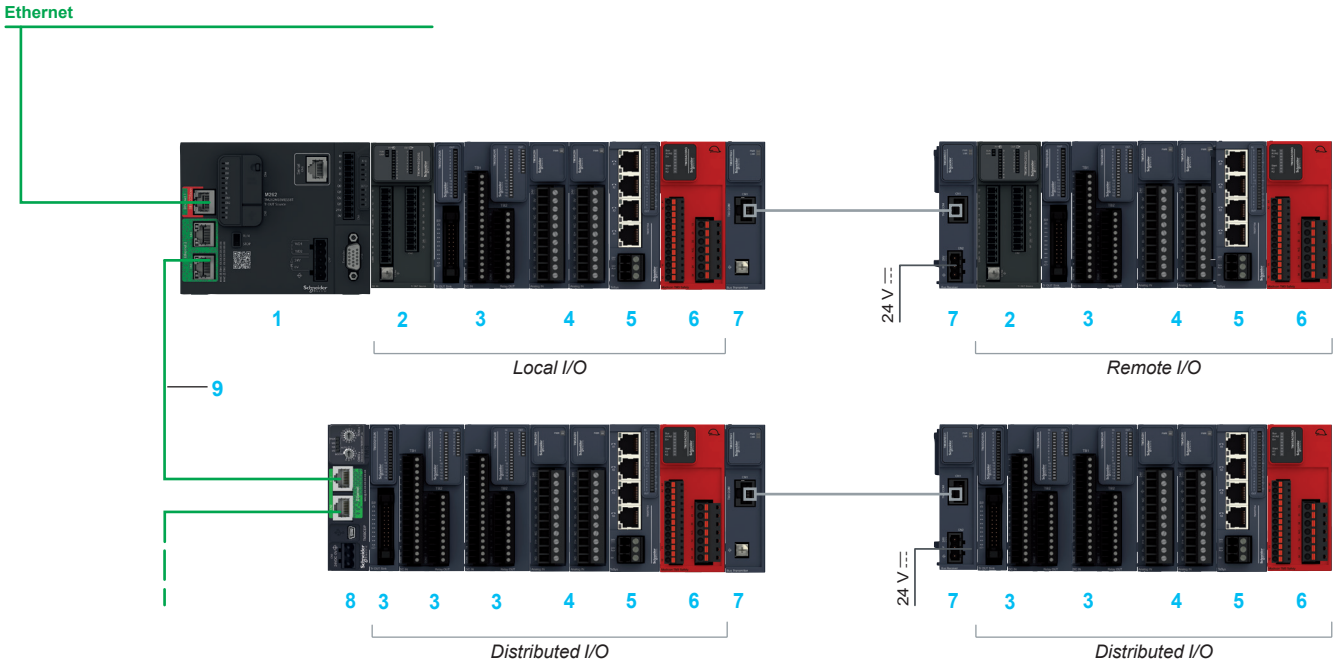
Applications		**Managing communication on Ethernet network**	**Managing communication on CANopen bus**	**Managing communication on Modbus Serial Line**
Compatibility		■ Modicon M221/M221 Book/M241/M251 logic controllers ■ Modicon M262 logic/motion controller	■ Modicon M241 /M251 logic controller ■ Modicon M262 logic/motion controller equipped with TMSCO1 Smart communication module	■ Modicon M221/M221 Book/M241/M251 logic controllers ■ Modicon M262 logic/motion controller
				
Bus or network type	Protocols	EtherNet/IP Modbus/TCP	CANopen	Modbus Serial Line
	Connector type	2 isolated switched Ethernet ports:	2 isolated CANopen ports	2 isolated RS485 ports
	terminal type	RJ45 ports	RJ45 ports	RJ45 ports
	Data rate	10/100 Mbit/s	20 kbits/s... 1 Mbits/s (configurable)	1.2...112.2 kbits/s
Configuration of network/bus		96 EtherNet/IP bus couplers max.	63 CANopen bus couplers max.	32 Modbus bus couplers max.
Configuration of I/O		448 digital I/O max. 112 analog I/O max.	448 digital I/O max. 112 analog I/O max.	448 digital I/O max. 112 analog I/O max.
Certifications & standards		CE, cULus, EAC, RCM, UKCA, EU RO Mutual Recognition EN 61131-2, UL/CSA 61010-1, UL/CSA 61010-2-201		
Supply voltage		24 V ⎓ power supply	24 V ⎓ power supply	24 V ⎓ power supply
Interface module		**TM3BCEIP**	**TM3BCCO**	**TM3BCSL**
Page		32	34	36

Modicon TM3
I/O expansion modules for Modicon controllers
Ethernet Bus coupler module

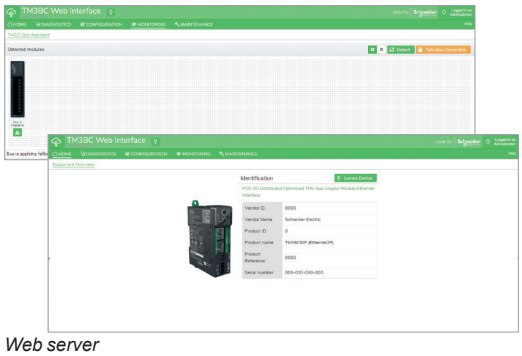
Ethernet

Presentation

The TM3BCEIP bus coupler module is used to create distributed I/O islands, managed by a master controller via the Ethernet communication network, and to exchange data using the EtherNet/IP and Modbus/TCP protocols between the controllers and the distributed I/O on the Ethernet network.
It is compatible with Modicon M221 *(1)*, M241, and M251 logic controllers and Modicon M262 logic/motion controller.



1 Modicon M262 logic/motion controller
2 TM3 expert counter module (event management available on first two slots only)
3 Digital I/O modules
4 Analog I/O modules
5 Parallel interface module for controlling TeSys Ultra motor starters
6 Functional safety modules
7 Bus expansion modules (transmitter and receiver) and bus expansion cable
8 TM3BCEIP bus coupler module (several bus coupler are allowed)
9 Shielded cable



Web server

Specific features

- Embedded Web server
- Embedded cybersecurity (Achilles L1) and user access rights management via a Web server
- Two isolated RJ45 ports on the front of the module for communication over Ethernet (the second port can be connected to other devices in a daisy chain or ring topology)
  - Ethernet half duplex/full duplex service, autonegotiation, and auto-MDIX supported
  - 10/100 Mbps data transfer rate (physical layer interface in RMII mode, with automatic cable detection supported)

Ethernet services

- EtherNet/IP Adapter
- Modbus/TCP/IP server
- EtherNet/IP protocol version: IPv4, limited use of IPv6 (only default @)
- RSTP ring topology supported
- Simple Network Management Protocol (SNMP)
- Devices Profile for Web Services (DPWS)
- FDR client
- DHCP client
- BOOTP client
- Address conflict detection

Configuration

The TM3BCEIP bus coupler module connects to Modicon M241 and Modicon M251 logic controllers and Modicon M262 logic/motion controller according to the general rules for the TM3 system: 7 local modules max. plus 7 remote or distributed modules.

Format

W x H x D: 27 x 96.5 x 70 mm *(0.93 x 3.54 x 3.79 in.)*

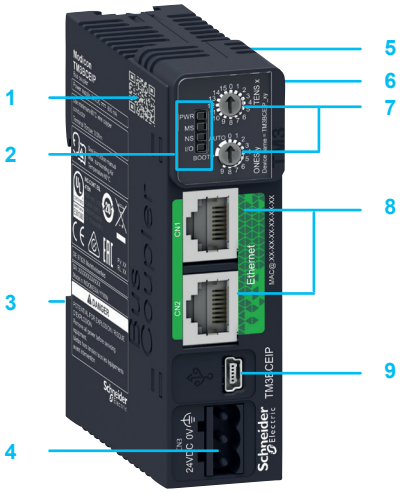
Mounting

- The TM3BCEIP bus coupler module is mounted on a symmetrical DIN rail ⎍.
- For plate or panel mounting, use the **TMAM2** kit.

Modicon TM3

I/O expansion modules for Modicon controllers

Ethernet Bus coupler module



TM3BCEIP

Description

1 Device ID QR code, also provides access to technical documentation
2 Block of status LEDS for the power supply, module, network, and I/O
3 Clip for locking on symmetrical DIN rail
4 Removable terminal block for connecting the integrated power supply (24 V) and functional ground *(1)*
5 TM3 bus connector providing continuity of the link with the connected module
6 Locking catch for the adjacent module
7 Two rotary switches for I/O island addressing purposes
8 Two Ethernet ports: isolated RJ45 connectors for the Ethernet network connection, for firmware updates and accessing the Web server and configuration parameters
9 USB-B port for firmware updates and accessing the Web server and configuration parameters *(2)*

References

Ethernet bus coupler module

Designation	Characteristics	Reference	Weight kg/ *lb*
Bus coupler module for Ethernet network	EtherNet/IP and Modbus/TCP protocols	**TM3BCEIP**	0.100/ *0.220*

Replacement parts

Designation	Description	Unit reference	Weight kg/ *lb*
Panel mounting kit Sold in lots of 10	For mounting TM3BCEIP module on a plate or panel	**TMAM2**	0.065/ *0.143*
Set of power supply terminal blocks Sold in lots of 8	Removable screw terminal blocks	**TMAT2PSET**	0.127/ *0.280*

Connection accessories

Ethernet cordsets: Please refer to catalog ref. DIA3ED2160105EN

Configuration software

EcoStruxure Machine Expert software: Please refer to catalog ref. DIA3ED2180701EN

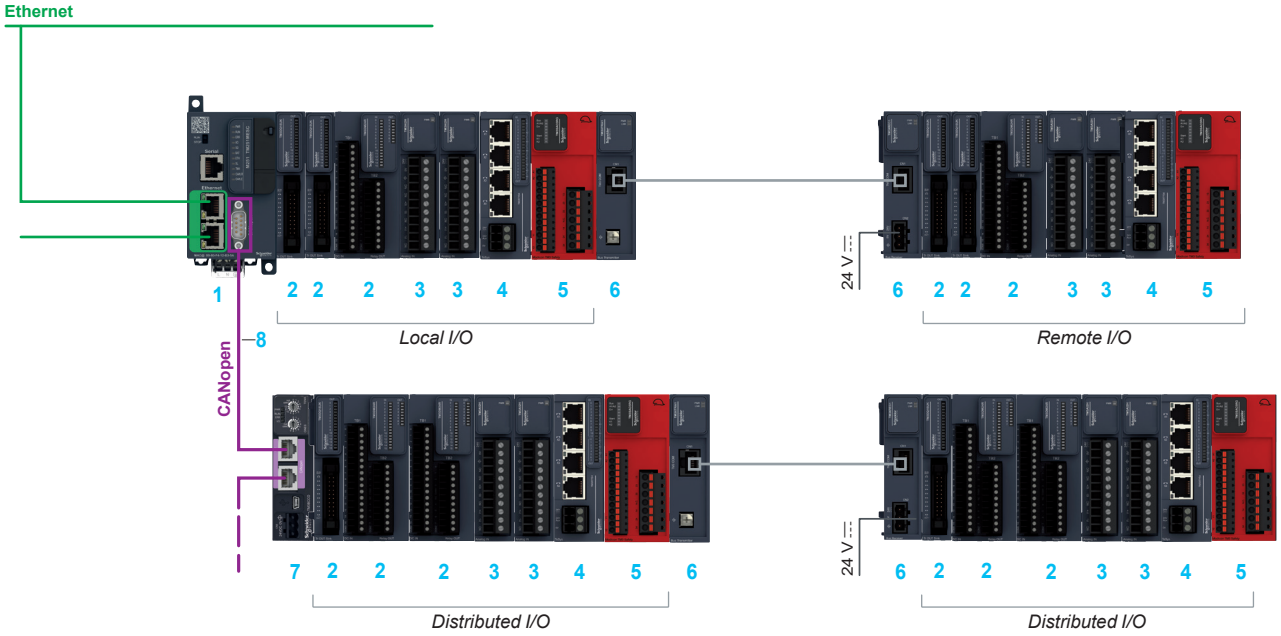
(1) The module is supplied with a removable screw terminal block for connecting the power supply.
(2) TM3BCEIP is configurable with EcoStruxure Machine Expert software.

Modicon TM3
I/O expansion modules for Modicon controllers
CANopen Bus coupler module

Presentation

The CANopen fieldbus is specially designed to be integrated into control systems. It provides openness and interoperability for various devices (drives, motor starters, smart sensors, etc.).
Having CANopen connectivity at several levels can help to reduce costs and optimize creation of the control system.
It offers the following advantages:
- Quicker wiring time
- More reliable load
- Flexibility when adding or removing devices, as well as easier installation

The TM3BCCO bus coupler module is designed for creating distributed I/O islands on the CANopen bus. It is compatible with Modicon M241 and Modicon M251 logic controllers, and Modicon M262 logic/motion controller equipped with TMSCO1 Smart communication module type.



1 Modicon TM251MESC logic controller: CANopen bus master
2 Digital I/O modules
3 Analog I/O modules
4 Parallel interface module for controlling TeSys Ultra motor starters
5 Functional safety modules
6 Bus expansion modules (transmitter and receiver) and bus expansion cable
7 TM3BCCO bus coupler module (slave) (several bus coupler are allowed)
8 CANopen shielded cable

Configuration

The TM3BCCO bus coupler module connects to Modicon M241, Modicon M251 logic controllers and Modicon M262 logic/motion controller according to the general rules for the TM3 system: 7 local modules max. plus 7 remote or distributed modules.

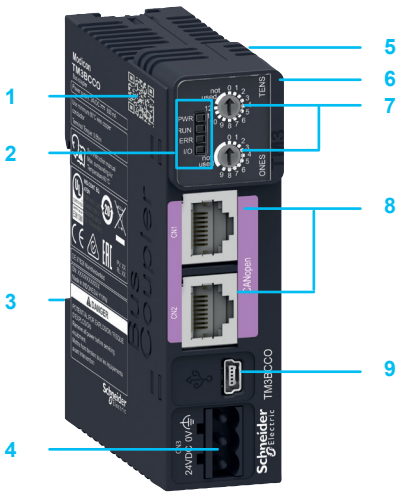
Format

W x H x D: 27 x 96.5 x 70 mm *(0.93 x 3.54 x 3.79 in.)*

Mounting

- The TM3BCCO bus coupler module is mounted on a symmetrical DIN rail ⊐⌊.
- For plate or panel mounting, use the **TMAM2** kit.

Modicon TM3
I/O expansion modules for Modicon controllers
CANopen Bus coupler module



TM3BCCO

Description

1 Device ID QR code, also provides access to technical documentation
2 Block of status LEDS for the power supply, module, network, and I/O
3 Clip for locking on symmetrical DIN rail
4 Removable terminal block for connecting the integrated power supply (24 V) and functional ground *(1)*
5 TM3 bus connector providing continuity of the link with the connected module
6 Locking catch for the adjacent module
7 Two rotary switches for I/O island addressing and speed settings
8 Two CANopen ports: isolated RJ45 connectors for the CANopen bus connection
9 USB-B port for firmware updates and accessing the Web server and configuration parameters *(2)*

References

CANopen bus coupler module

Designation	Characteristics	Reference	Weight kg/ *lb*
Bus coupler module for CANopen bus	CANopen protocol	**TM3BCCO**	0.100/ *0.220*

Replacement parts

Designation	Description	Unit reference	Weight kg/ *lb*
Panel mounting kit Sold in lots of 10	For mounting TM3BCCO module on a plate or panel	**TMAM2**	0.065/ *0.143*
Set of power supply terminal blocks Sold in lots of 8	Removable screw terminal blocks	**TMAT2PSET**	0.127/ *0.280*

Connection accessories

CANopen cordsets: Please refer to catalog ref. DIA3ED2160104EN

Configuration software

EcoStruxure Machine Expert software: Please refer to catalog ref. DIA3ED2180701EN

(1) The module is supplied with a removable screw terminal block for connecting the power supply.
(2) TM3BCCO is configurable with EcoStruxure Machine Expert software.

Modicon TM3
I/O expansion modules for Modicon controllers
Modbus Serial Line Bus coupler

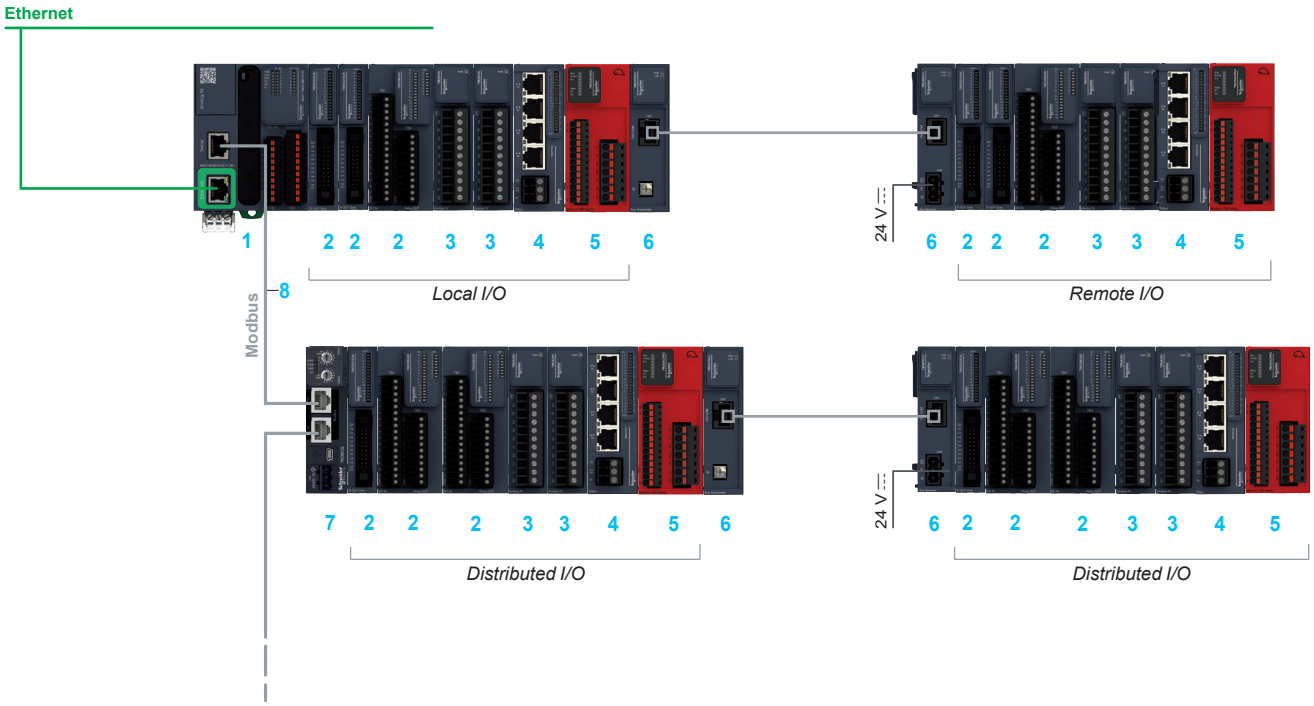
MODBUS

Presentation

The Modbus Serial Line meets the needs of master/slave architectures, and consists of a master station and slave stations. Only the master station can initiate the exchange (direct communication between slave stations is not possible).
Two exchange methods are possible:
- Question/reply, questions from the master are addressed to a specific slave. The master waits for the reply to be returned by the slave polled.
- Distribution, the master distributes a message to all the slave stations on the bus. These stations execute the instruction without sending a reply.

The TM3BCSL bus coupler module is designed to enable communication between controllers (Master in the architecture) and numerous devices (Slaves) such as HMIs, printers, energy meters, variable speed drives, motor starters, and remote I/O, according to Modbus RS485 communication protocol.

TM3BCSL is compatible with Modicon M221, Modicon M241 and Modicon M251 logic controllers, Modicon M262 logic/motion controllers.



1 Modicon M221 logic controller (Serial link port RS485): RJ45 connector
2 Digital I/O modules
3 Analog I/O modules
4 Parallel interface module for controlling TeSys Ultra motor starters
5 Functional safety modules
6 Bus expansion modules (transmitter and receiver) and bus expansion cable
7 TM3BCSL bus coupler module (slave) (several bus coupler are allowed)
8 Serial Line shielded cable

Configuration

The TM3BCSLbus coupler module connects to Modicon M221, Modicon M241 and Modicon M251 logic controllers, and Modicon M262 logic/motion controllers according to the general rules for the TM3 system: 7 local modules max. plus 7 remote or distributed modules.

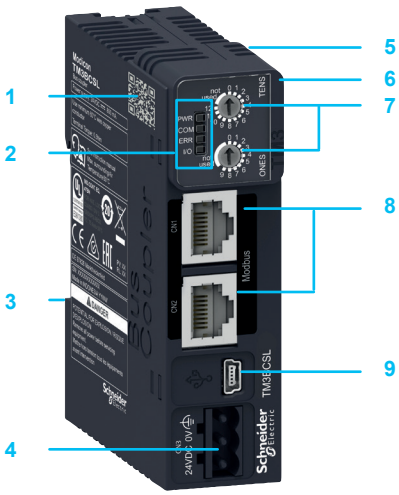
Format

W x H x D: 27 x 96.5 x 70 mm *(0.93 x 3.54 x 3.79 in.)*

Mounting

- The TM3BCSL bus coupler module is mounted on a symmetrical DIN rail ⎍.
- For plate or panel mounting, use the **TMAM2** kit.

Modicon TM3
I/O expansion modules for Modicon controllers
Modbus Serial Line Bus coupler



TM3BCSL

Description

1 Device ID QR code, also provides access to technical documentation
2 Block of status LEDS for the power supply, module, network, and I/O
3 Clip for locking on symmetrical DIN rail
4 Removable terminal block for connecting the integrated power supply (24 V) and functional ground *(1)*
5 TM3 bus connector providing continuity of the link with the connected module
6 Locking catch for the adjacent module
7 Two rotary switches for I/O island addressing and speed settings
8 Two Serial Line ports: isolated RJ45 (RS 485) connectors for the Modbus Serial Line bus connection
9 USB-B port for firmware updates and accessing the Web server and configuration parameters *(2)*

References

Modbus Serial Line coupler module

Designation	Characteristics	Reference	Weight kg/ *lb*
Bus coupler module for Modbus Serial Line	Modbus RS485 protocol	**TM3BCSL**	0.100/ *0.220*

Replacement parts

Designation	Description	Unit reference	Weight kg/ *lb*
Panel mounting kit Sold in lots of 10	For mounting TM3BCSL module on a plate or panel	**TMAM2**	0.065/ *0.143*
Set of power supply terminal blocks Sold in lots of 8	Removable screw terminal blocks	**TMAT2PSET**	0.127/ *0.280*

Connection accessories

Modbus Serial Line cordsets: Please refer to catalog ref. DIA3ED2160106EN

Configuration software

EcoStruxure Machine Expert software: Please refer to catalog ref. DIA3ED2180701EN

(1) The module is supplied with a removable screw terminal block for connecting the power supply.
(2) TM3BCSL is configurable with EcoStruxure Machine Expert software.

Modicon TM3

I/O expansion modules for Modicon controllers

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