



Modicon TM3

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



Modicon

Discover Modicon

Industrial Edge control for IIoT

Modicon IIoT-native edge controllers manage complex interfaces across assets and devices or directly into the cloud, with embedded 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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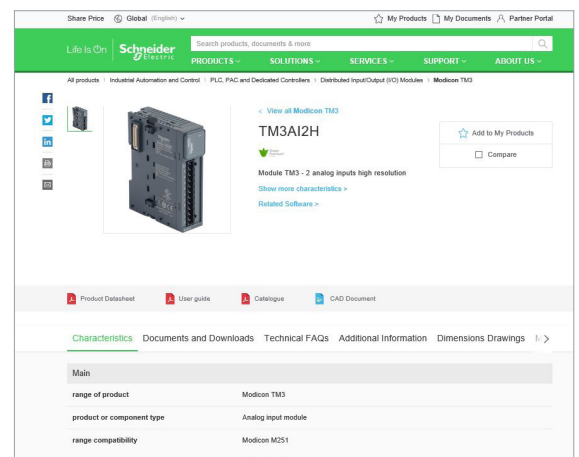
References

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

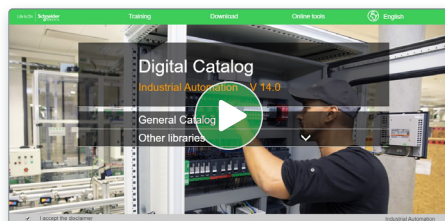
References	Number and type of channels	Input range	Output range	Resolution	Appl. terminal internal (pin)	Reference	Weight (kg)
2 voltage/current inputs	2 x 16 bits of 16 channels	0...+10 VDC 0...+10 VDC 0...25 mA A, 25 mA	16 bits of 16 channels	16 bits of 16 channels	16 bits of 16 channels	16 bits of 16 channels	0.110
4 voltage/current inputs	4 x 16 bits of 16 channels	0...+10 VDC 0...+10 VDC 0...25 mA A, 25 mA	16 bits of 16 channels	16 bits of 16 channels	16 bits of 16 channels	16 bits of 16 channels	0.110
4 voltage/current or temperature inputs	4 x 16 bits of 16 channels	0...+10 VDC 0...+10 VDC 0...25 mA A, 25 mA	16 bits of 16 channels	16 bits of 16 channels	16 bits of 16 channels	16 bits of 16 channels	0.110
4 differential temperature inputs	4 x 16 bits of 16 channels	0...+10 VDC 0...+10 VDC 0...25 mA A, 25 mA	16 bits of 16 channels	16 bits of 16 channels	16 bits of 16 channels	16 bits of 16 channels	0.110

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

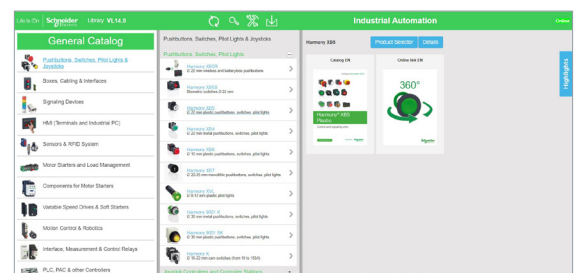
- Characteristics, Dimensions and drawings, Mounting and clearance, Connections and schemas, Performance curves
- Product image, Instruction sheet, User guide, Product certifications, End of life manual



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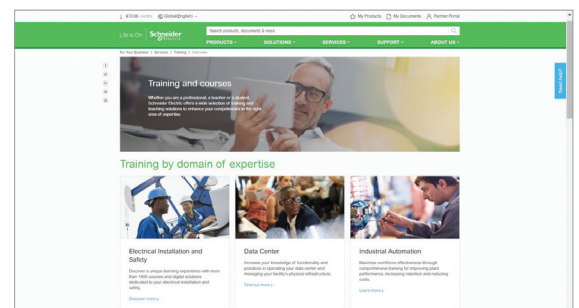


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Life Is On

Schneider Electric

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Modicon TM3

I/O expansion modules for Modicon controllers

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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 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

Innovation At Every Level



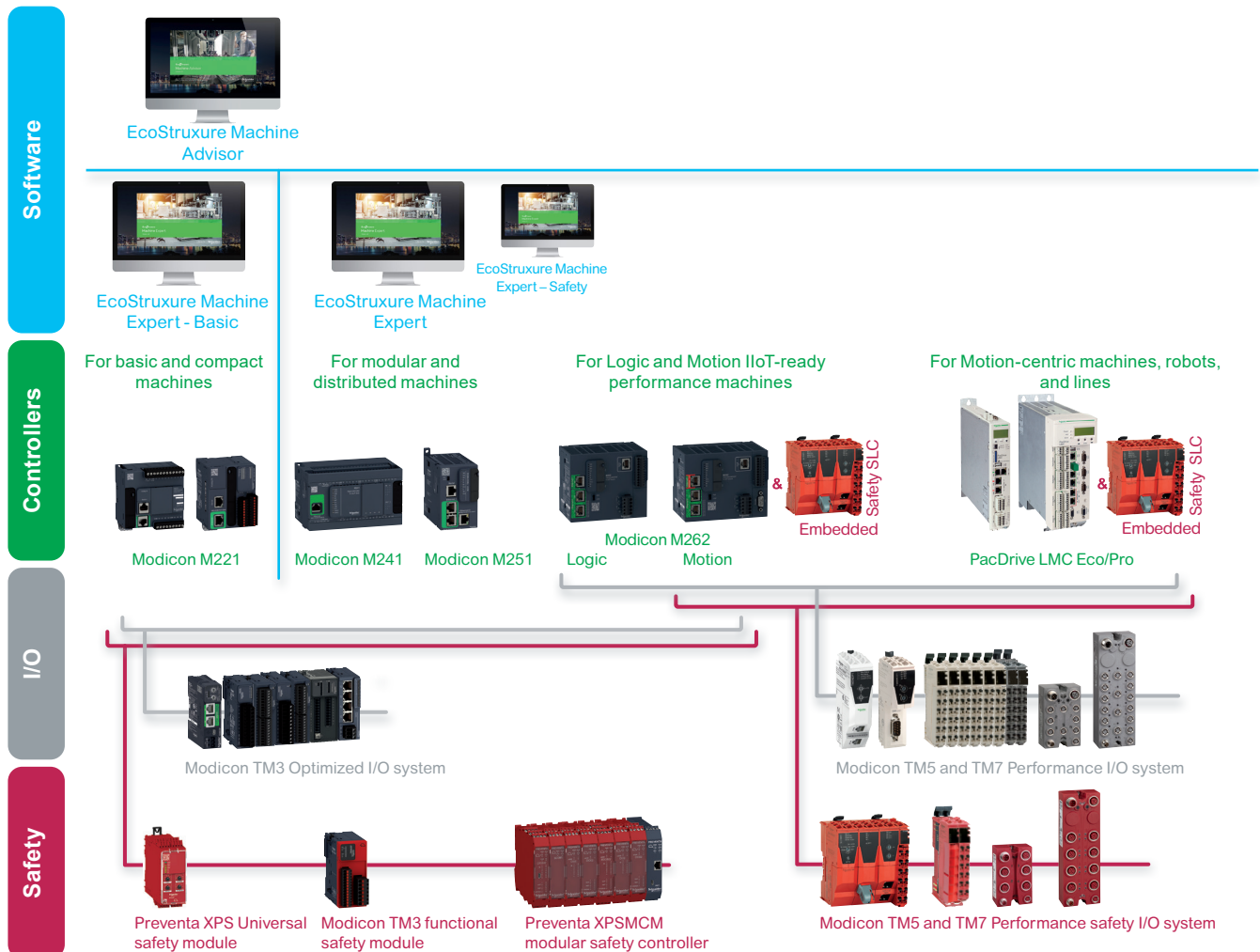
* The Schneider Electric industrial software business and AVEVA have merged to trade as AVEVA Group plc, a UK listed company. The Schneider Electric and Life is On trademarks are owned by Schneider Electric and are being licensed to AVEVA by Schneider Electric.

Modicon TM3
I/O expansion modules for Modicon controllers
Controllers for industrial machines

Applications		Logic controller		Logic/Motion controller		Motion controller
Type		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
Specification						
						
Performance		0.2 µs/inst	22 ns/inst	22 ns/inst	3...5 ns/inst	0.5...2 ns/inst
Memory		640 KB RAM, 2 MB Flash	64 MB RAM, 128 MB Flash	64 MB RAM, 128 MB Flash	256 MB RAM, 256 MB Flash	128 KB to 256 KB NV RAM 512 MB DDR2 to 1 GB DDR3L
Supply voltage		24 V $\overline{\text{---}}$ or 100...240 V $\sim$	24 V $\overline{\text{---}}$ or 100...240 V $\sim$	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$
Communication fieldbus and networks	Embedded	■ EtherNet/IP ■ RS 232/RS 485 serial link ■ USB mini-B programming port	■ Ethernet ■ CANopen (master) and SAE J1939 ■ 2 serial links ■ USB mini-B programming port	■ EtherNet/IP ■ CANopen (master) and SAE J1939 ■ Serial link ■ USB mini-B programming port	■ EtherNet/IP ■ Sercos III ■ Modbus TCP ■ Serial link ■ USB mini-B programming port	■ EtherNet/IP ■ Sercos III ■ CANopen ■ Profibus ■ Profinet ■ EtherCAT
	Optional	■ 1 Serial Line	■ Ethernet ■ Profibus DP	■ Ethernet ■ Profibus DP	■ Ethernet ■ CANopen	■ CANopen ■ Profibus DP ■ RT-Ethernet
Embedded I/O	Input types	Up to 40 logic inputs Up 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 transistor outputs	–	4 fast digital outputs	Up to 16 digital outputs Up to 2 analog outputs
Synchronized axes		–	–	–	Up to 16 synchronized axes	Up to 130 synchronized axes
Configuration software		EcoStruxure Machine Expert-Basic (1)	EcoStruxure Machine Expert V1.1 (2)	EcoStruxure Machine Expert V1.1 (2)	EcoStruxure Machine Expert V1.1	EcoStruxure Machine Expert V1.1 (2)
Compatible expansion I/O module ranges (consult the catalog)						
Local I/O Remote I/O Distributed I/O on Ethernet Distributed I/O on CANopen Distributed I/O on Sercos Safety I/O		● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	–
		● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)	–
		● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN) ● Modicon TM5 (DIA3ED2131204EN)	● Modicon TM3 (DIA3ED2140109EN) ● Modicon TM5 (DIA3ED2131204EN)	● Modicon TM3 (DIA3ED2140109EN) ● Modicon TM5 (DIA3ED2131204EN)	● Modicon TM5 (DIA3ED2131204EN)
		–	–	–	● Modicon TM5 (DIA3ED2131204EN) ● Modicon TM7 (DIA3ED2140405EN)	● Modicon TM5 (DIA3ED2131204EN) ● Modicon TM7 (DIA3ED2140405EN)
		–	–	–	● Modicon TM5 (DIA3ED2131204EN)	● Modicon TM5 (DIA3ED2131204EN)
		🔌 Modicon TM3 (DIA3ED2140109EN)	🔌 Modicon TM3 (DIA3ED2140109EN)	🔌 Modicon TM3 (DIA3ED2140109EN) 🔌 Modicon TM5 (DIA3ED2131204EN)	🔌 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	LMC Eco, LMC Pro2
More details in catalog		DIA3ED2140106EN	DIA3ED2140107EN	DIA3ED2140108EN	DIA3ED2180503EN	DIA7ED2160303EN

(1) Formerly named SoMachine Basic.
(2) Formerly named SoMachine, EcoStruxure Machine Expert merges both former software ranges, SoMachine and SoMachine Motion.

Machine Automation



Machine control

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

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

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

- > 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.
- > 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 TM7) allow safety functions to be implemented using the Modicon TM5CSLC safety logic controller
- > Preventa 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 bus
- > Preventa XPSMCM modular safety controllers are suitable for medium size applications with up to 20 safety functions and diagnostics via Modbus TCP, EtherNet/IP, EtherCAT, or Profinet
- > **EcoStruxure Machine Expert – Safety** optional add-on for programming safety logic controllers
- > **EcoStruxure Machine Expert – Basic** software for programming Modicon M221 logic controllers: an intuitive standalone environment accessible to basic skilled technicians
- > **EcoStruxure Machine Advisor** is a cloud-based services platform designed for machine builders to track machines in operation worldwide, monitor performance data, and resolve exceptional events, while reducing support costs by up to 50%

Modicon TM3

I/O expansion modules for Modicon controllers

Machine Automation

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



[Robotics](#)



[Integrated drives](#)

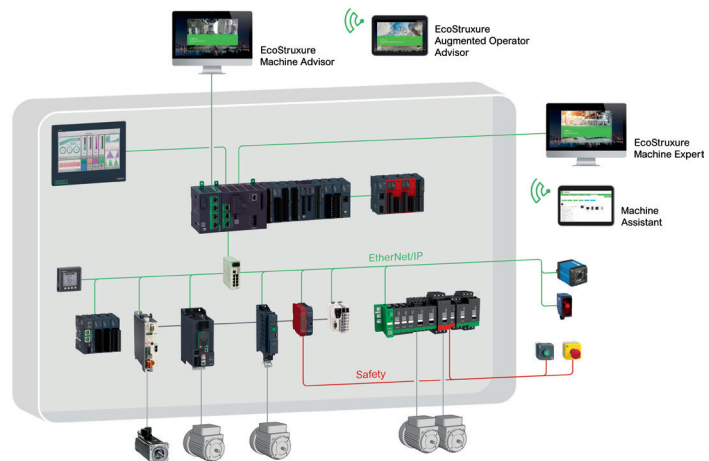


[Servo Drives & Motors](#)



[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 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



- > 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

Expert control module



TM3 bus expansion modules



Functional safety modules



EtherNet/IP
Modbus/TCP

CANopen

Serial Line

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 $\pm$ 50/60 Hz inputs
- relay or transistor outputs

Analog I/O modules

[See pages 16 to 17](#)

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

For high-speed counting (24 V $\pm$ inputs), and event counting with or without event management on fast inputs/thresholds/stop. [See page 18.](#)

For controlling TeSys U motor starters: simplified wiring for the control part connected via RJ45 cables. [See page 22.](#)

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 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 $\sqcup$. 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

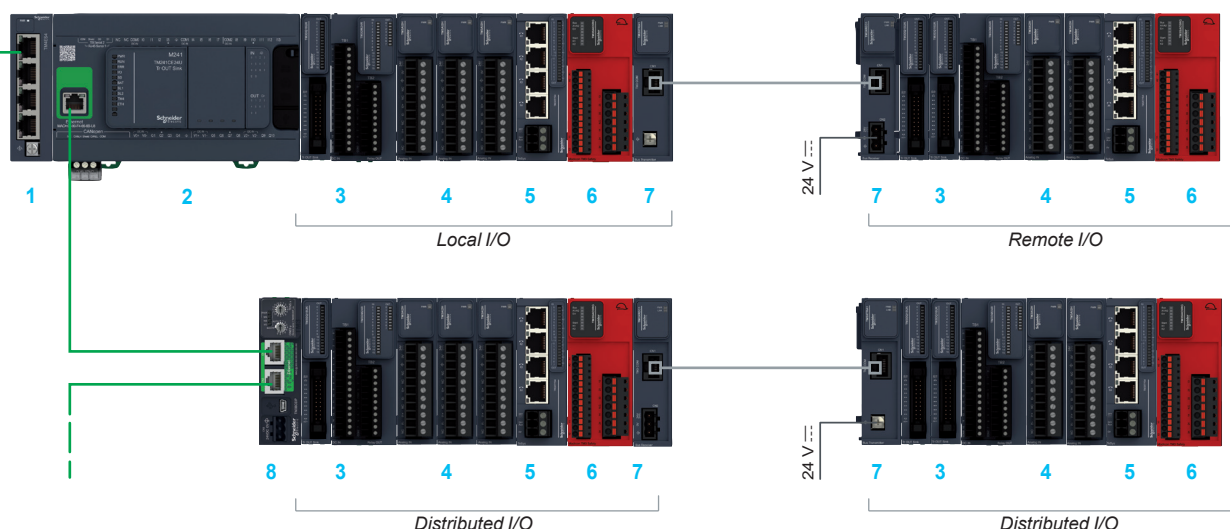
I/O expansion modules for Modicon controllers

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.

Ethernet



- 1 TM4ES4 Ethernet switch communication module
- 2 Modicon TM241CE●● controller
- 3 Digital I/O modules
- 4 Analog I/O modules
- 5 Expert module for controlling TeSys U 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 **VDIP184546●●●**, or any other Cat 5E, F/UT cable.

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 RJ45 cable.
- 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														
	Distributed I/O														
		■ Modicon M221/M221 Book/M241/M251 logic controllers ■ Modicon M262 logic/motion controller 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
Supply voltage		Power supplied by the controller via the bus expansion connector													
Format (W x H x D)		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													
Module	Channels connected:														
	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)).

Presentation

Breakdown of the offer

Digital I/O modules:

- Input modules: 24 V $\overline{\text{---}}$ or 120 V $\sim$
- Relay output modules: 24 V $\overline{\text{---}}$ source transistor or 24 V $\overline{\text{---}}$ sink transistor
- I/O modules: 24 V $\overline{\text{---}}$ inputs/relay outputs, or 24 V $\overline{\text{---}}$ 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 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							
Logic/motion controller	TM241, TM251							
	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

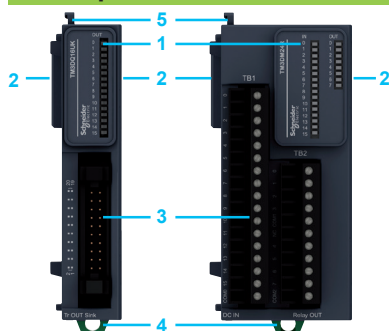
Not possible; use a TM3XTRA1 module + a TM3REC1 module

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 $\perp$.
- 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 $\perp$
- 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



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 $\overline{\text{sink/source}}$	Screw 5.08/0.2	TM3DI8	0.110/ 0.243
		Spring 5.08/0.2	TM3DI8G	0.095/ 0.209
	120 V $\sim$	Screw 5.08/0.2	TM3DI8A	0.110/ 0.243
		–	–	–
16 inputs	24 V $\overline{\text{sink/source}}$	Screw 3.81/0.15	TM3DI16	0.105/ 0.231
		Spring 3.81/0.15	TM3DI16G	0.095/ 0.209
	HE 10 connector –	HE 10 connector –	TM3DI16K (2)	0.075/ 0.165
		–	TM3DI32K (2)	0.110/ 0.243
32 inputs	24 V $\overline{\text{sink/source}}$	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
	HE 10 connector –	0.1 A	HE 10 connector –	TM3DQ16TK (2)	0.075/ 0.165
			–	–	–
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
	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
	HE 10 connector –	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 $\overline{\text{sink/source}}$ 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 $\overline{\text{sink/source}}$ 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 <i>Sold in lots of 10</i>	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 TM3DI16G, 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	
Compatibility	Local and remote I/O
	Distributed I/O

Analog inputs	Analog outputs	Analog I/O
■ Modicon M221/M221 Book/M241/M251 logic controllers ■ Modicon M262 logic/motion controller		
Modicon TM3BC bus coupler modules		



Inputs	Number
	Type
	Range
	Resolution
	Transfer time

2 inputs	4 inputs	4 inputs	4 inputs
Voltage/current	Voltage/current	Temperature or voltage/current	Temperature
-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
16 bits or 15 bits + sign	12 bits or 11 bits + sign	16 bits or 15 bits + sign	16 bits or 15 bits + sign
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

Outputs	Number
	Type
	Range
	Resolution
	Transfer time

–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–

Supply voltage
Format (W x H x D) mm (in.)
Mounting

Via 24 V external power supply					
23.6 x 90 x 70 (0.93 x 3.54 x 2.76)					
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.)
	via removable screw terminal blocks at intervals of 3.81 mm (0.15 in.)
	via removable spring terminal blocks at intervals of 5.08 mm (0.2 in.)
	via removable spring terminal blocks at intervals of 3.81 mm (0.15 in.)

TM3AI2H	–	–	–
–	TM3AI4	TM3TI4	TM3TI4D
TM3AI2HG	–	–	–
–	TM3AI4G	TM3TI4G	TM3TI4DG

–	–	TM3AQ2	TM3AQ4	TM3TM3	–
TM3AI8	TM3TI8T	–	–	–	TM3AM6
–	–	TM3AQ2G	TM3AQ4G	TM3TM3G	–
TM3AI8G	TM3TI8TG	–	–	–	TM3AM6G

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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 $\overline{\text{DC}}$ 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

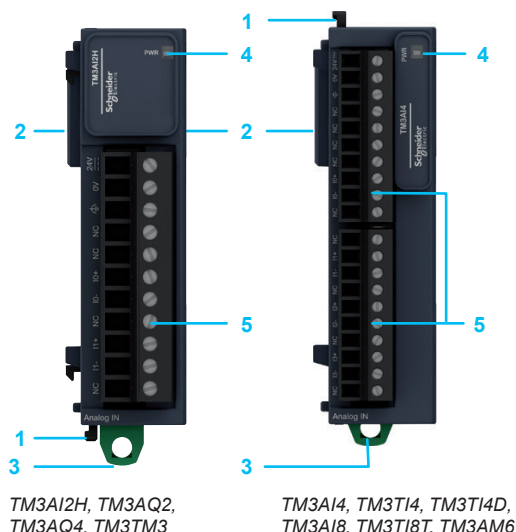
- Analog modules are mounted on a symmetrical DIN rail $\sqcap$.
- For plate or panel mounting, use the **TMAM2** kit.
- The **TM2XMTGB** grounding plate simplifies connection of the cable shielding (shielding must be connected to the device's functional ground).

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 $\sqcap$
- 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 TM3AI4



TM3TI4, TM3TI4D TM3AI8



TM3TI8T



TM3AQ2 TM3AQ4



TM3TM3 TM3AM6



TM200RSRCMC



TM2XMTGB

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
Grounding plate	Support equipped with 10 male Faston connectors for connecting the cable shielding (via 6.35 mm/0.25 in. connectors, not supplied) and the functional grounds (FG)	TM2XMTGB	0.045/ 0.099
Shielding connection clamps <i>Sold in lots of 25</i>	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	TM200RSRCMC	—
Mounting kit <i>Sold in lots of 10</i>	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	
Compatibility	Local and remote I/O Distributed I/O

- 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.

Modicon M262 logic/motion controller
—



Inputs	Number of counter channels
	Conforming to IEC/EN 61131-2
	Type of signal (1)
	Frequency per channel
	Type of input
	Nominal input voltage
	Voltage limit values
	Resolution
	Acquisition time on capture
	Event generation time to the PLC

10 fast inputs
Yes
Source or sink
200 kHz
Type 1
24 V $\overline{---}$ I/O, type 1
0...28.8 V $\overline{---}$
32 signed bits
$\leq 3 \mu s$
—

Outputs	Number
	Type
	Response on threshold

8 fast outputs
Source
$\leq 10 \mu s$

Supply voltage
Format (W x H x D) mm (in.)
Mounting

Via 24 V $\overline{---}$ external power supply
30.2 x 90 x 70 (1.19 x 3.54 x 2.76)
Mounting on symmetrical DIN rail $\perp$ or panel using special mounting kit TMAM2

Module	Channels connected:
	via removable screw terminal blocks at intervals of 3.81 mm (0.15 in.)
	via removable spring terminal blocks at intervals of 3.81 mm (0.15 in.)

TM3XHC202
TM3XHC202G

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

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- 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).



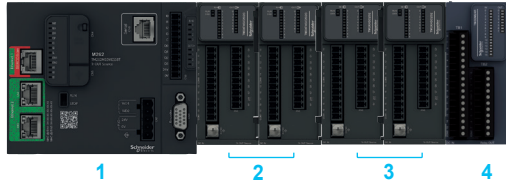
10 fast inputs
Yes
Source or sink
200 kHz
Type 1
24 V $\overline{---}$ I/O, type 1
0...28.8 V $\overline{---}$
32 signed bits
$\leq 3 \mu s$
$\leq 100 \mu s$

8 fast outputs
Source
$\leq 10 \mu s$

Via 24 V $\overline{---}$ external power supply
30.2 x 90 x 70 (1.19 x 3.54 x 2.76)
Mounting on symmetrical DIN rail $\perp$ or panel using special mounting kit TMAM2

TM3XFHSC202
TM3XFHSC202G

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

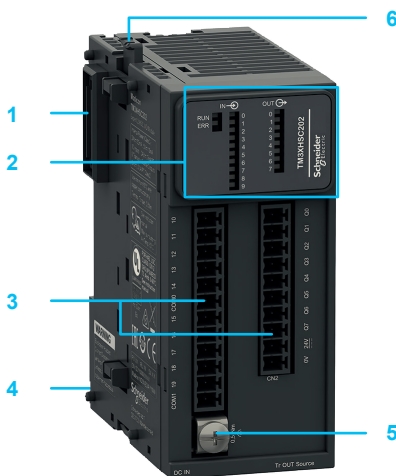
- Counter modules are mounted on a symmetrical DIN rail $\overline{\text{L}}$.
- For plate or panel mounting, use the **TMAM2** kit.
- The **TM2XMTGB** grounding plate simplifies connection of the cable shielding (shielding must be connected to the device's functional ground).

Description

Modicon TM3 counter modules

- 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 $\overline{\text{L}}$
- 5 Screw terminal for the functional ground (FG) connection
- 6 Locking catch for the adjacent module

(1) Removable terminal blocks supplied with each module.



TM3XHSC202



TM3XHSC202
TM3XHSC202G



TM3XFHSC202
TM3XFHSC202G



TM2XMTGB

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
Grounding plate	Support equipped with 10 male Faston connectors for connecting the cable shielding (via 6.35 mm/0.25 in. connectors, not supplied) and the functional grounds (FG)	TM2XMTGB	0.045/ 0.099
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

Expert module for TeSys U motor starter applications

Presentation

The **TM3XTYS4** expert 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 U motor starters.

Controlling motor starters with the TM3XTYS4 expert module

Each of the four channels on the **TM3XTYS4** expert 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** expert 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 U motor starters.

Configuration

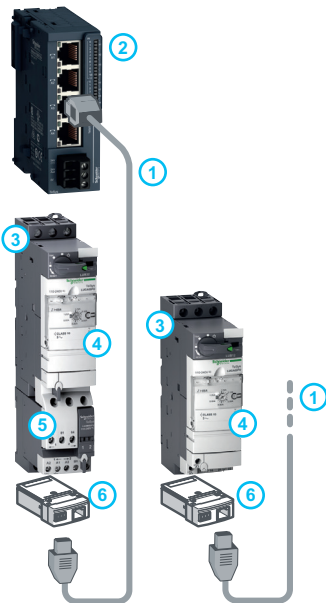
- The expert module connects directly to the logic controllers on the TM3 bus connector or to the bus expansion system (receiver module).
- One or more expert modules can be connected to Modicon M221, M221 Book, M241, and M251 logic controllers and Modicon M262 logic/motion controller according to the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

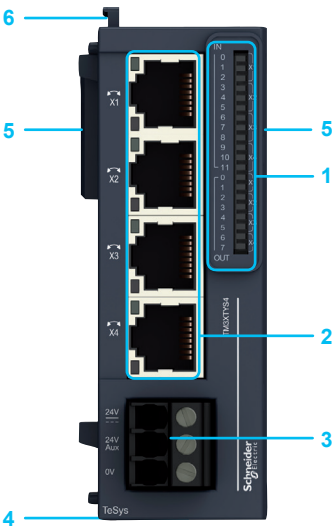
Mounting

- The **TM3XTYS4** expert 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 U		
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 U motor starter applications**, please visit our [website](#)





TM3XTYS4

Description

TM3XTYS4 expert 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 $\overline{\text{---}}$ power supply for the inputs and starter coils (1)
- 4 Clip for locking on symmetrical DIN rail $\perp$
- 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

References

Expert module (1)

Designation	Number and type of channels	Reference	Weight kg/ lb
Expert module for controlling TeSys U motor starters 24 V $\overline{\text{---}}$ power supply (1.2 A)	4 motor starters	TM3XTYS4	0.115/ 0.254

Separate parts

Designation	Description	Reference	Weight kg/ lb
Mounting kit Sold in lots of 10	For mounting expert 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 M262 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 **VDIP184546**, or any other Cat 5E, F/UT cable.

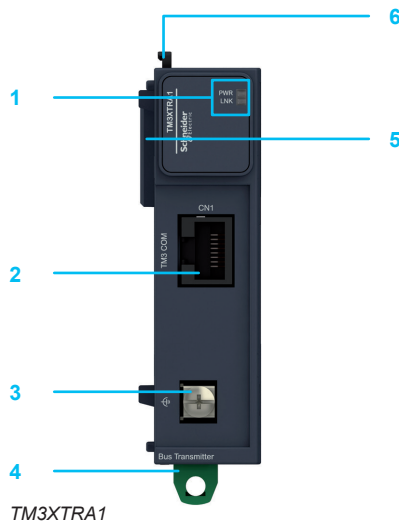
Mounting

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

Description

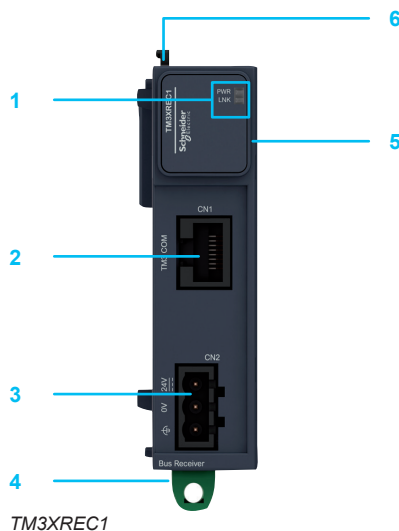
TM3XTRA1 transmitter module

- 1 Block with 2 LEDs displaying communication and power supply status
- 2 RJ45 connector for the **VDIP184546** bus expansion cable, or any other shielded Cat 5E, F/UT 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 receiver module

- 1 Block with 2 LEDs displaying communication and power supply status
- 2 RJ45 connector for the **VDIP184546** bus expansion cable, or any other shielded Cat 5E, F/UT 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

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 $\overline{\text{DC}}$ (with external power supply)	TM3XREC1 (1)	0.075/ 0.165

Accessory for transmitter module

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

Connection cables for C€ market

Designation	Used for	Length m (ft)	Reference	Weight kg/ lb
Shielded category 5E TM3 bus expansion cables	TM3 bus expansion by linking transmitter and receiver modules Equipped with an RJ45 connector at each end	0.5 (1.64)	VDIP184546005	—
		1 (3.28)	VDIP184546010	—
		2 (6.56)	VDIP184546020	—
		3 (9.84)	VDIP184546030	—
		5 (16.40)	VDIP184546050	—

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	—

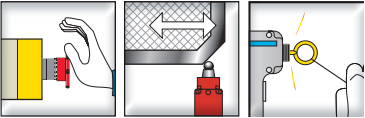
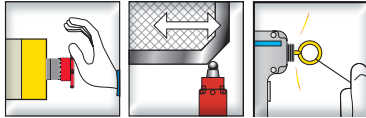
Replacement parts

Designation	Description	Unit reference	Weight kg/ lb
Mounting kit <i>Sold in lots of 10</i>	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	
Compatibility	Local and remote I/O
	Distributed I/O

	
Control of Emergency stop and switches	Control of Emergency stop and switches
■ Modicon M221/M221 Book/M241/M251 logic controllers ■ Modicon M262 logic/motion controller Modicon TM3BC bus coupler modules	



Maximum achievable safety level	
Standards (product)	
Standards (machine assembly)	Emergency stop circuits
	Switches in protection devices
	Type 4 light curtains equipped with solid-state safety outputs with test function
	4-wire pressure-sensitive mats or edges
Product certifications	

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
EN/IEC 60947-1 EN/IEC 60947-5-1	EN/IEC 60947-1 EN/IEC 60947-5-1
EN/IEC 60204-1 EN/ISO 13850	EN/IEC 60204-1 EN/ISO 13850
EN/ISO 14119	EN/ISO 14119
–	–
–	–
UL, CSA, TÜV, EAC, RCM	UL, CSA, TÜV, EAC, RCM

Safety circuits	Number
	Type
Module fuse protection	
Indicator	
Power supply	

3 NO	3 NO
Instantaneous opening relay	Instantaneous opening relay
Internal, electronic	Internal, electronic
6 LEDs	8 LEDs
24 V ---	24 V ---

Synchronization time between inputs
Input channel voltage

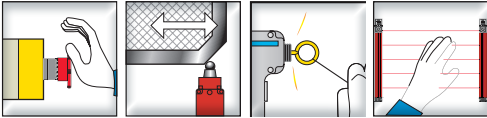
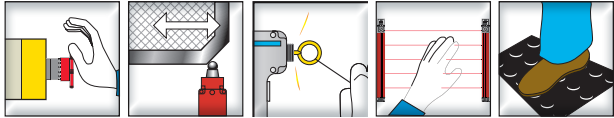
Unlimited	Unlimited
24 V ---	24 V ---

Safety module	Channels and power supply connected:
	via removable screw terminal blocks
	via removable spring terminal blocks

TM3SAC5R	TM3SAF5R
TM3SAC5RG	TM3SAF5RG

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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



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
EN/IEC 60947-1 EN/IEC 60947-5-1	EN/IEC 60947-1 EN/IEC 60947-5-1
EN/IEC 60204-1 EN/ISO 13850	EN/IEC 60204-1 EN/ISO 13850
EN/ISO 14119	EN/ISO 14119
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
–	Also designed for use with equipment conforming to EN 1760-1
UL, CSA, TÜV, EAC, RCM	UL, CSA, TÜV, EAC, RCM

3 NO	3 NO
Instantaneous opening relay	Instantaneous opening relay
Internal, electronic	Internal, electronic
8 LEDs	8 LEDs
24 V ---	24 V ---

Unlimited	Unlimited/ON configured in software If ON: 2 or 4 s depending on wiring
24 V ---	24 V ---

TM3SAFL5R	TM3SAK6R
TM3SAFL5RG	TM3SAK6RG

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Presentation

Modicon TM3 functional safety modules are designed using the latest technology. They can be used 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

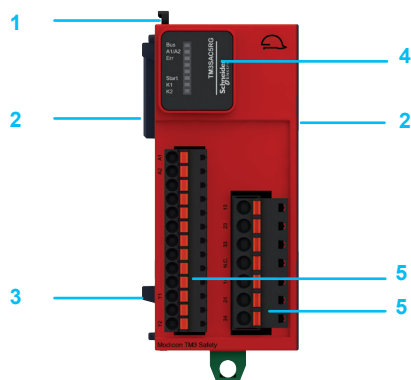
Equipped with removable screw or spring-type terminals (depending on the model) for connecting the safety channels.

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

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	
Compatibility		■ Modicon M221/M221 Book/M241/M251 logic controllers ■ Modicon M262 logic/motion controller	
			
Bus or network type	Protocols	EtherNet/IP Modbus/TCP	
	Connector type	2 isolated switched Ethernet ports:	
	terminal type	RJ45 ports	
	Data rate	10/100 Mbit/s	
Configuration		90 EtherNet/IP bus couplers max.	
Certifications		EN 61131-2 UL/CSA 61010-1 UL/CSA 61010-2-201 CE cULus EAC	
Supply voltage		24 V $\overline{\text{---}}$ power supply	
Interface module		TM3BCEIP	
Page		32	

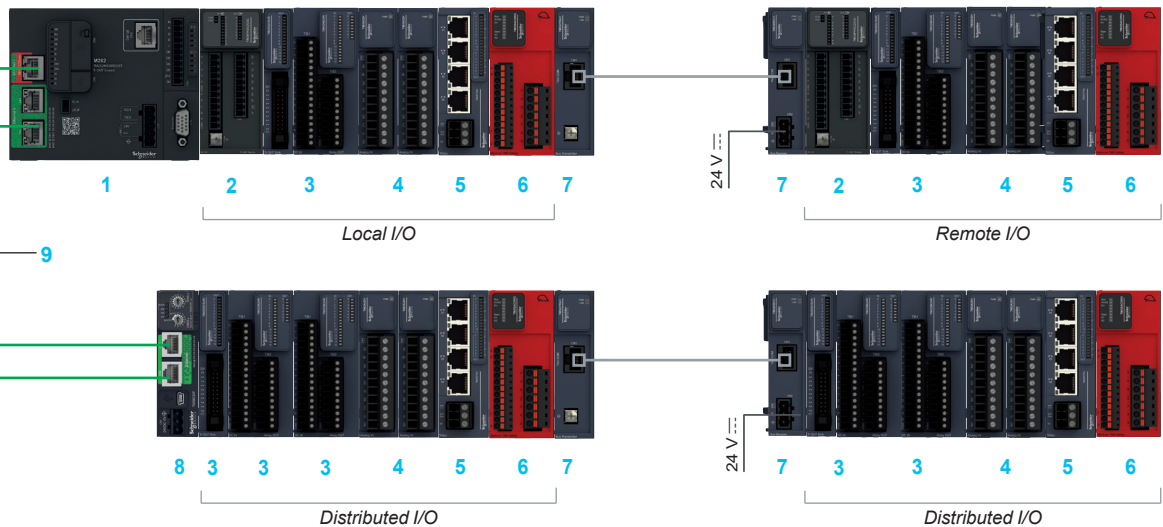
Managing communication on CANopen bus		Managing communication on Modbus Serial Line	
■ Modicon M241 /M251 logic controller ■ Modicon M262 logic/motion controller equipped with TMSCO1 Smart communication module		■ Modicon M221/M221 Book/M241/M251 logic controllers ■ Modicon M262 logic/motion controller	
			
CANopen		Modbus Serial Line	
2 isolated CANopen ports		2 isolated RS485 ports	
RJ45 ports		RJ45 ports	
20 kbits/s... 1 Mbits/s (configurable)		1.2...112.2 kbits/s	
64 CANopen bus couplers max.		32 Modbus bus couplers max.	
EN 61131-2 UL/CSA 61010-1 UL/CSA 61010-2-201 CE cULus EAC		EN 61131-2 UL/CSA 61010-1 UL/CSA 61010-2-201 CE cULus EAC	
24 V $\overline{\text{---}}$ power supply		24 V $\overline{\text{---}}$ power supply	
TM3BCCO		TM3BCSL	
34		36	

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.

Ethernet



- 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 Expert module for controlling TeSys U 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

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: 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

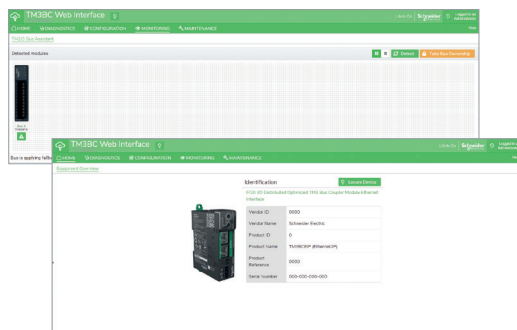
The TM3BCEIP bus coupler module connects to Modicon M241 and Modicon M251 logic controllers and Modicon M262 logic/motion controller according to the general rules for the TM3 system: 7 local modules max. plus 7 remote or distributed modules.

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.



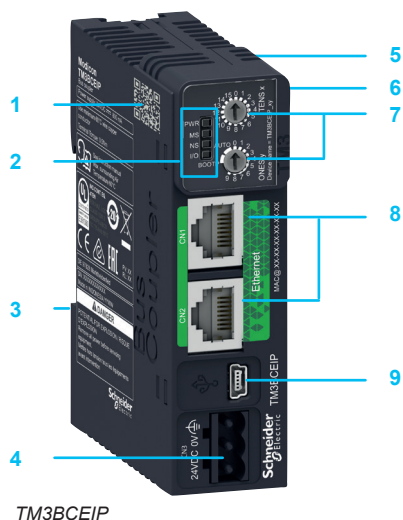
Web server

(1) Compatible with Modicon M221 logic controllers in Q2 2020.

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.



Presentation

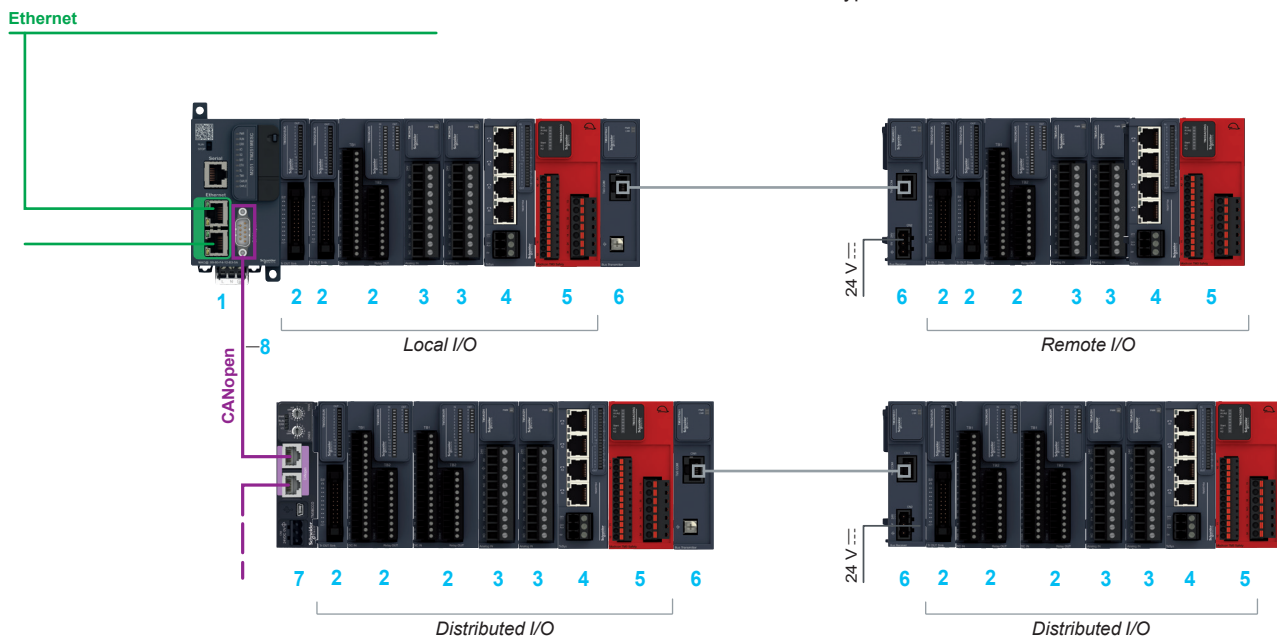
The CANopen fieldbus is specially designed to be integrated into control systems. It provides openness and interoperability for various devices (drives, motor starters, smart sensors, etc.).

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 Expert module for controlling TeSys U 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.)

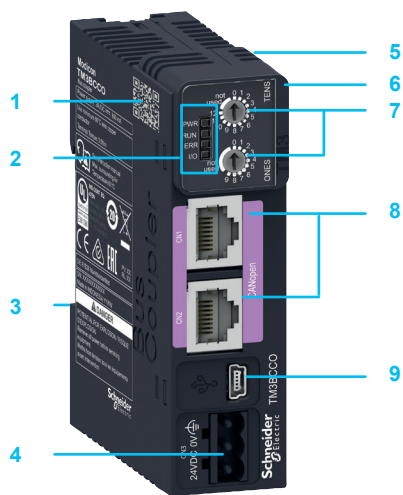
Mounting

- The TM3BCCO bus coupler module is mounted on a symmetrical DIN rail $\perp$.
- 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 W0DBn2

Presentation

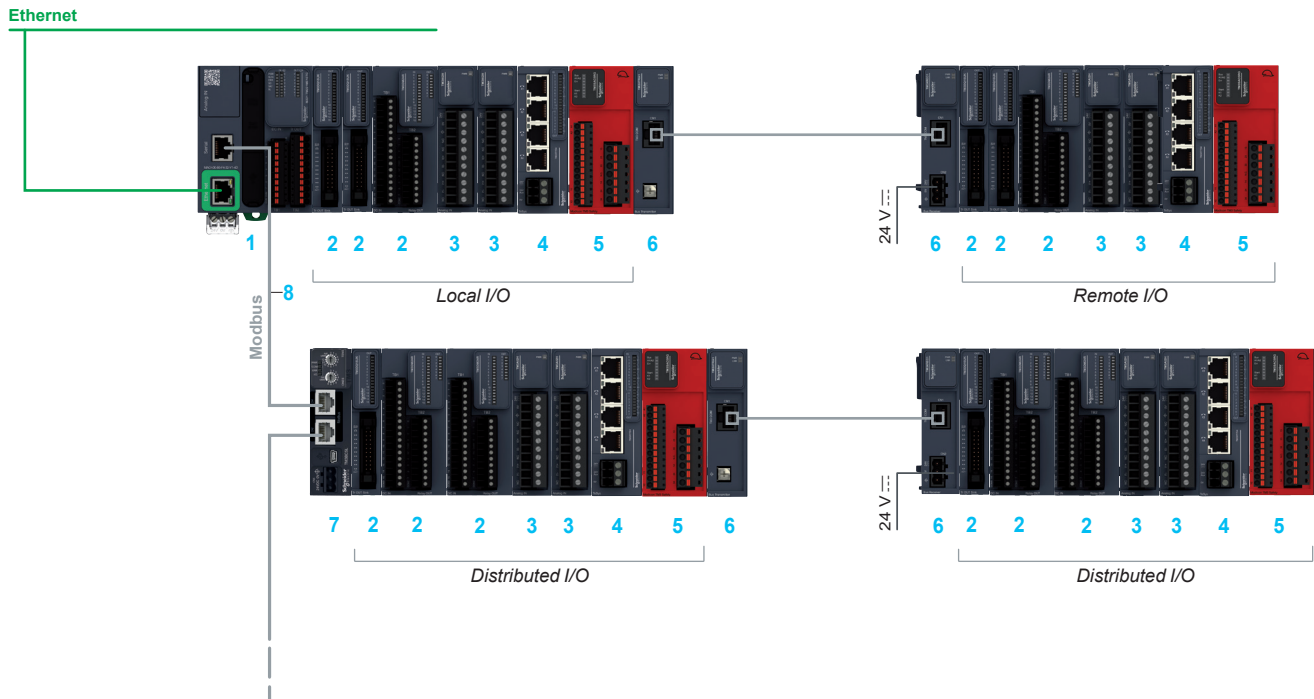
The Modbus Serial Line meets the needs of master/slave architectures, and consists of a master station and slave stations. Only the master station can initiate the exchange (direct communication between slave stations is not possible).

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 Expert module for controlling TeSys U 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.)

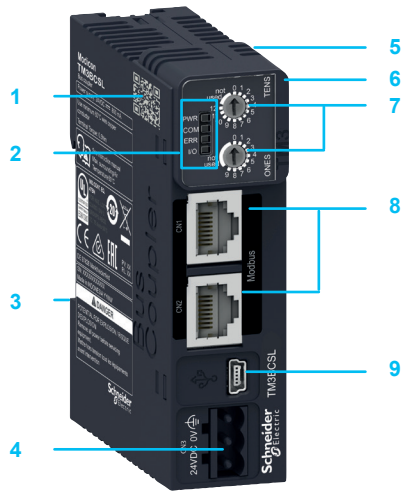
Mounting

- The TM3BCSL bus coupler module is mounted on a symmetrical DIN rail 15.
- 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 <i>Sold in lots of 10</i>	For mounting TM3BCSL module on a plate or panel	TMAM2	0.065/ 0.143
Set of power supply terminal blocks <i>Sold in lots of 8</i>	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.

#			
490NTW00002U	25	TM3TM3G	17
490NTW00005U	25	TM3XFHSC202	21
T		TM3XFHSC202G	21
TM200RSRCMC	17	TM3XHSC202	21
TM2XMTGB	17	TM3XHSC202G	21
	21	TM3XREC1	25
TM3AI2H	17	TM3XTRA1	25
TM3AI2HG	17	TM3XTYS4	23
TM3AI4	17	TMA262SET8S	21
TM3AI4G	17	TMAM2	35
TM3AI8	17		37
TM3AI8G	17		13
TM3AM6	17		17
TM3AM6G	17		21
TM3AQ2	17		23
TM3AQ2G	17		25
TM3AQ4	17		25
TM3AQ4G	17	TMAT2MSET	29
TM3BCCO	35		13
TM3BCEIP	33	TMAT2MSETG	17
TM3BCSL	37		13
TM3DI16	13	TMAT2PSET	35
TM3DI16G	13		37
TM3DI16K	13		25
TM3DI32K	13	V	
TM3DI8	13	VDIP184546005	25
TM3DI8A	13	VDIP184546010	25
TM3DI8G	13	VDIP184546020	25
TM3DM24R	13	VDIP184546030	25
TM3DM24RG	13	VDIP184546050	25
TM3DM8R	13		
TM3DM8RG	13		
TM3DQ16R	13		
TM3DQ16RG	13		
TM3DQ16T	13		
TM3DQ16TG	13		
TM3DQ16TK	13		
TM3DQ16U	13		
TM3DQ16UG	13		
TM3DQ16UK	13		
TM3DQ32TK	13		
TM3DQ32UK	13		
TM3DQ8R	13		
TM3DQ8RG	13		
TM3DQ8T	13		
TM3DQ8TG	13		
TM3DQ8U	13		
TM3DQ8UG	13		
TM3SAC5R	29		
TM3SAC5RG	29		
TM3SAF5R	29		
TM3SAF5RG	29		
TM3SAFL5R	29		
TM3SAFL5RG	29		
TM3SAK6R	29		
TM3SAK6RG	29		
TM3TI4	17		
TM3TI4D	17		
TM3TI4DG	17		
TM3TI4G	17		
TM3TI8T	17		
TM3TI8TG	17		
TM3TM3	17		

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