

Modicon TM3

I/O expansion modules for Modicon controllers

Catalog

June 2019



Quick access to product information

Get technical information about your product

References

Telefast Pre-wired System
Modicon ABE9 IP 67 passive splitter boxes

References					
Splitter boxes with connection by M23 connector					
Number of channels	Connection by	LED indicator	Reference	Weight kg	
4	4 x M23 female connector	Yes	ABE9T24W123	0.280	
8	8 x M23 female connector	Yes	ABE9T24W123	0.510	
8	8 x M23 female connector	No	ABE9T24W123	0.280	
Splitter boxes with connection by cable					
Number of channels	Connection by	Length m	LED indicator	Reference	Weight kg
4	4 x M23 female connector	14.4	Yes	ABE9T24W123	0.280
8	8 x M23 female connector	14.4	No	ABE9T24W123	0.280
8	8 x M23 female connector	14.4	Yes	ABE9T24W123	0.280
8	8 x M23 female connector	14.4	No	ABE9T24W123	0.280

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XB5AL73415
green flush/red projecting double-headed pushbutton Ø22 with marking

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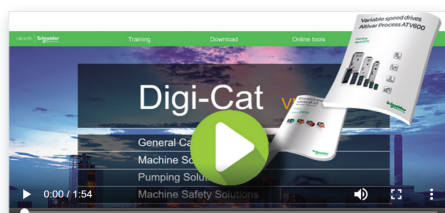
Main

Range of product	Harmony XB5
Product or component type	Complete double-headed push-button
Device short name	XB5
Bezel material	Plastic
Fixing collar material	Plastic
Head type	Standard
Mounting diameter	22 mm
Shape of signaling unit head	Rectangular
Type of operator	Spring return
Operator profile	1 flush - 1 projecting push-buttons
Operators description	Green "I" - red "O"
Contacts type and composition	1 NO - 1 NC
Contact operation	Slow-break

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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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



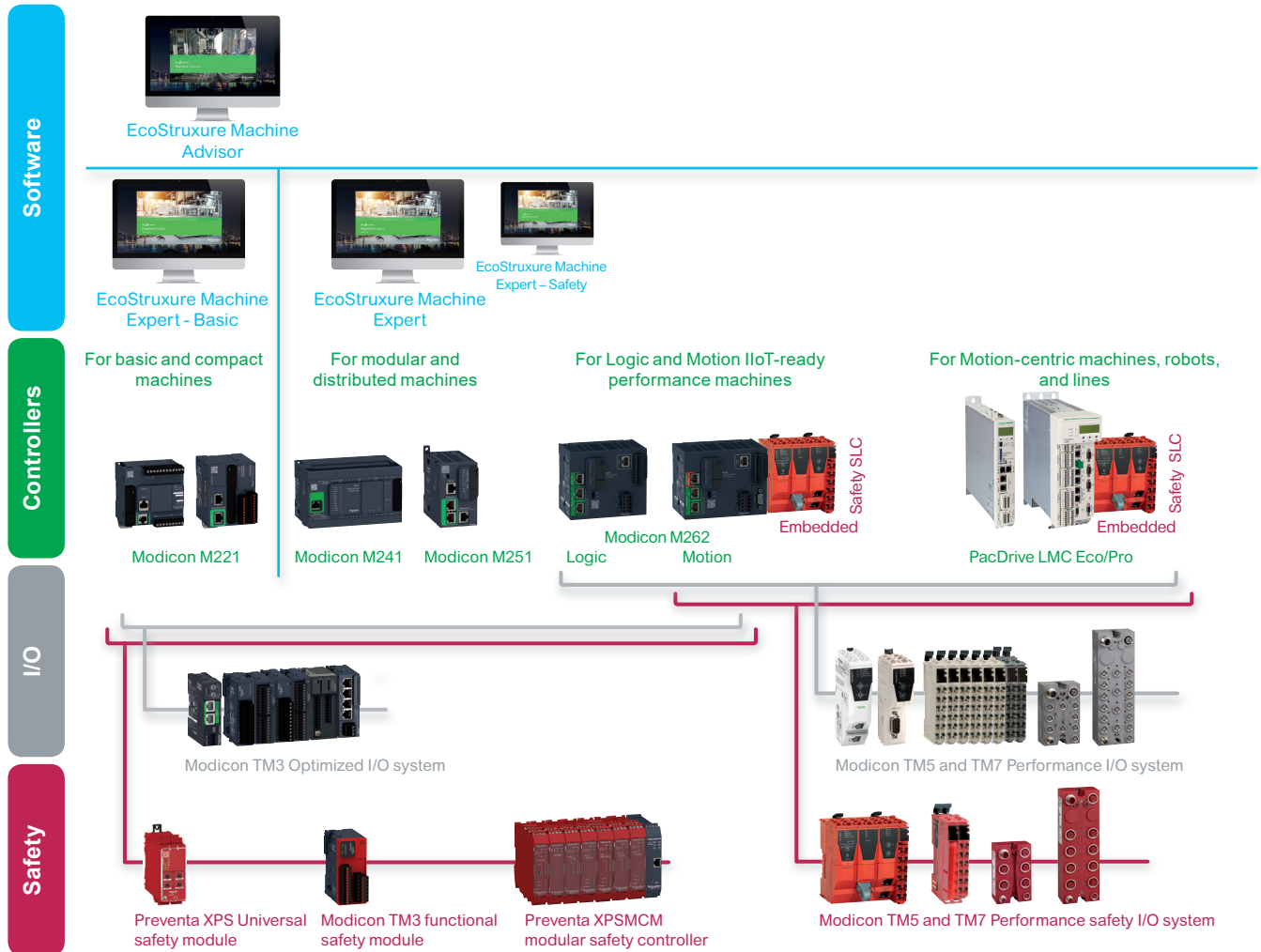
* The Schneider Electric industrial software business and AVEVA have merged to trade as AVEVA Group plc, a UK listed company. The Schneider Electric and Life is On trademarks are owned by Schneider Electric and are being licensed to AVEVA by Schneider Electric.

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

Applications		Logic controller			Logic/Motion controller	Motion controller
Type	Specification	For hardwired architectures	For performance-demanding applications		For modular and distributed architectures	For automating machines/lines with 0 - 130 servo or robot axes
						
Performance		0.2 µs/inst	22 ns/inst		22 ns/inst	3...5 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
Supply voltage		24 V --- or 100...240 V ~	24 V --- or 100...240 V ~		24 V ---	24 V ---
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
	Optional	■ 1 Serial Line	■ Ethernet ■ Profibus DP		■ Ethernet ■ Profibus DP	■ Ethernet ■ CANopen
Embedded I/O	Input types	Up to 40 logic inputs Up to 2 analog inputs	Up to 24 logic inputs		–	4 fast digital inputs
	Output types	Up to 16 relay outputs Up to 16 transistor outputs	Up to 16 transistor outputs		–	4 fast digital outputs
Synchronized axes		–	–		–	Up to 16 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
Compatible expansion I/O module ranges (consult the catalog)						
● Local I/O		● Modicon TM3 (DIA3ED2140109EN)	● Modicon TM3 (DIA3ED2140109EN)		● Modicon TM3 (DIA3ED2140109EN)	–
● Remote I/O		● 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 TM5 (DIA3ED2131204EN)
● Distributed I/O on CANopen		–	–		–	● Modicon TM5 (DIA3ED2131204EN) ● Modicon TM7 (DIA3ED2140405EN)
● Distributed I/O on Sercos		–	–		–	● Modicon TM5 (DIA3ED2131204EN)
⚠ Safety I/O		⚠ Modicon TM3 (DIA3ED2140109EN)	⚠ Modicon TM3 (DIA3ED2140109EN)		⚠ 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
More details in catalog		DIA3ED2140106EN	DIA3ED2140107EN		DIA3ED2140108EN	DIA3ED2180503EN
						LMC Eco, LMC Pro2
						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

- > 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 TM7) allow safety functions to be implemented using the Modicon TM5CSLC safety logic controller

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

- > 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

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

- > **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



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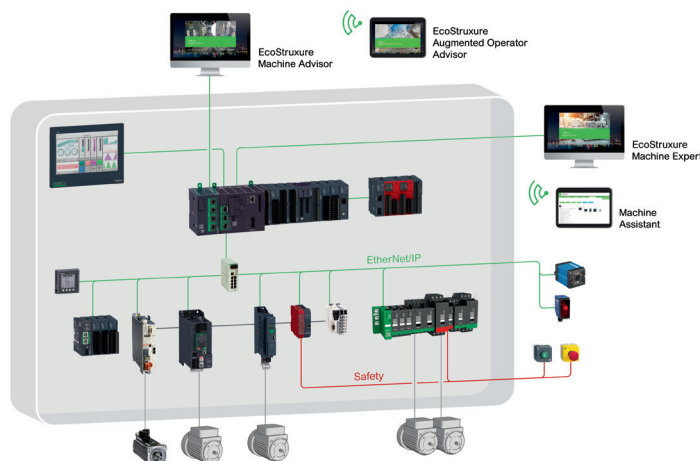


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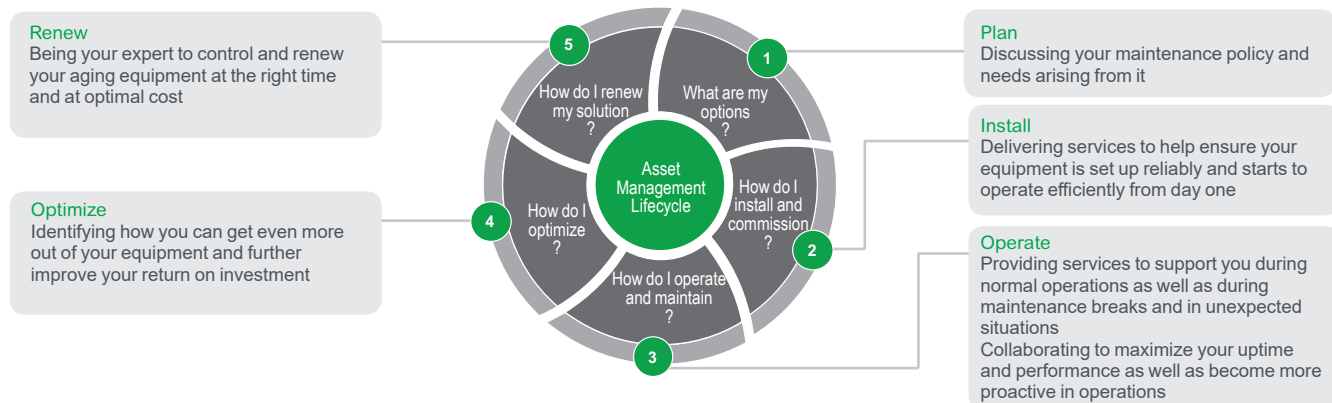


[Steppers Drives & Motors](#)

- > 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



- > 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.



Digital I/O modules



Analog I/O modules



Expert counter modules

Expert control module



TM3 bus expansion modules



Functional safety modules



Bus coupler module

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 module.

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 Ethernet network using the bus coupler module

Local or remote I/O expansion modules

Digital I/O modules

[See pages 10 to 13](#)

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 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 ~ inputs), and event counting with or without event management on fast inputs/thresholds/stop. [See pages 18 to 21.](#)

FOR controlling TeSys 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 pages 26 to 29](#)

For integrated machine safety:

- control of Emergency stops
- control of switches
- control of light curtains
- control of pressure-sensitive mats or edges

Bus coupler module for distributed I/O

Bus coupler module

[See page 30](#)

For creating distributed I/O islands over Ethernet with:

- support for EtherNet/IP and Modbus/TCP communication protocols
- integration of Web services and cybersecurity (Achilles L1)
- integration of the device identification service from the M262 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, Modicon M262 logic/motion controller, and the TM3BC bus coupler module.

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 Ethernet bus coupler module are RJ45 connectors.

Mounting

Modicon TM3 modules are mounted on a symmetrical DIN rail $\bar{\perp}$. They have a locking clip on the top of their casing.

For plate or panel mounting, use the **TMAM2** kit.

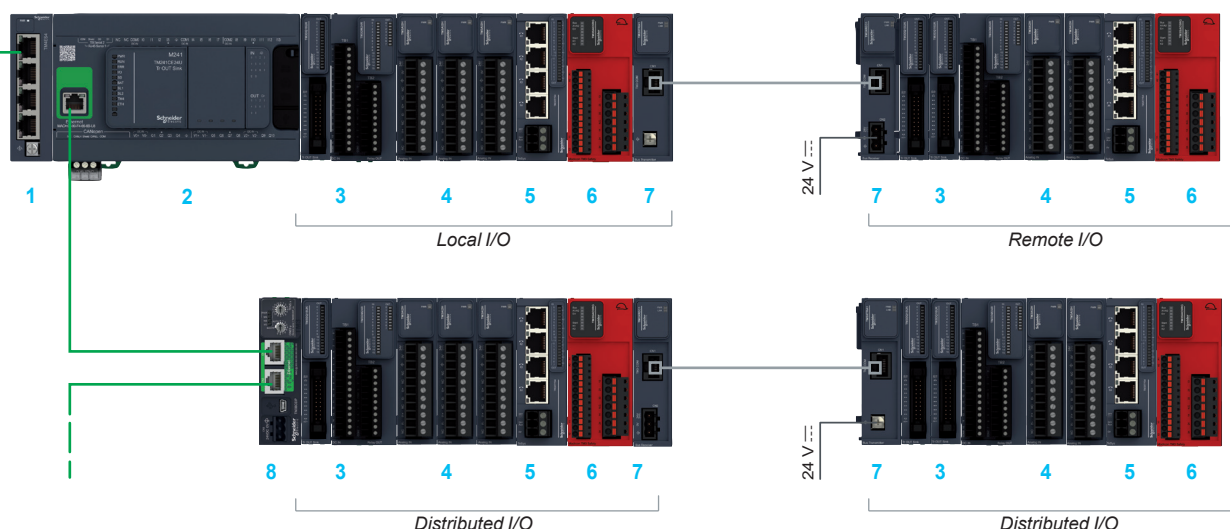
(1) Removable terminal blocks are supplied with Modicon TM3 expansion modules.

(2) Modicon ABE7 Telefast pre-wired system to be ordered separately (please refer to catalog ref. [DIA3ED2160602EN](#) (click link to open)).

Modicon TM3 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 motor starters
- 6 Functional safety modules
- 7 Bus expansion modules (transmitter and receiver) and bus expansion cable
- 8 TM3BC 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 module is used to create distributed I/O islands on the Ethernet network.

- The bus coupler module is connected via an isolated RJ45/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 pages 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 module														
																
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 $\overline{\text{---}}$	120 V \sim	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$									24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$	
	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 $\overline{\text{---}}$ / 240 V \sim	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$ / 240 V \sim	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$	24 V $\overline{\text{---}}$ / 240 V \sim	24 V $\overline{\text{---}}$ / 240 V \sim	
	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)	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 on symmetrical DIN rail  or panel using special mounting kit TMAM2														
Mounting																
Module	Channels connected:															
	via removable screw terminal blocks at intervals of 5.08 mm (0.2 in.)	TM3DI8	TM3DI8A	—	—	—	—	—	—	—	—	—	—	—	—	
	via removable screw terminal blocks at intervals of 3.81 mm (0.15 in.)	—	—	TM3DI16	—	—	—	—	—	—	—	—	—	—	—	
	via removable spring terminal blocks at intervals of 5.08 mm (0.2 in.)	TM3DI8G	—	—	—	—	—	—	—	—	—	—	—	—	—	
	via removable spring terminal blocks at intervals of 3.81 mm (0.15 in.)	—	—	TM3DI16G	—	—	—	—	—	—	—	—	—	—	—	
	via HE 10 connectors (1)	—	—	TM3DI16K	TM3DI32K	—	—	—	—	—	—	—	—	—	—	
Page		13														

Presentation

Breakdown of the offer

Digital I/O modules:

- Input modules: 24 V \sim or 120 V \sim
- Relay output modules: 24 V \sim source transistor or 24 V \sim sink transistor
- I/O modules: 24 V \sim inputs/relay outputs, or 24 V \sim 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							
	TM241, TM251							
Logic/motion controller	TM262							
Bus coupler	TM3BCEIP							

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

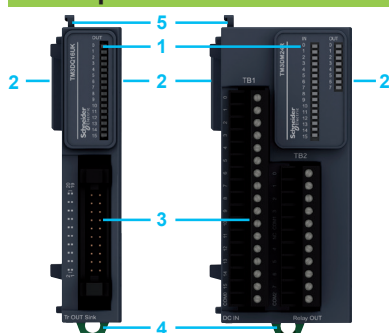
Not possible; use a TM3XTRA1 module + a TM3REC1 module

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 \sqcup .
- 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 \sqcup
- 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	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 —	TM3DI16K (2)	0.075/ 0.165
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
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	HE 10 connector —	TM3DQ16TK (2)	0.075/ 0.165
			Screw 3.81/0.15	TM3DQ16U	0.105/ 0.231
		0.1 A	Spring 3.81/0.15	TM3DQ16UG	0.095/ 0.209
			HE 10 connector —	TM3DQ16UK (2)	0.075/ 0.165
	Transistor, source	0.1 A	HE 10 connector —	TM3DQ32TK (2)	0.115/ 0.254
			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 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 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 module		



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

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8 inputs	8 inputs	–	–	2 inputs	4 inputs
Voltage/current	Temperature	–	–	Temperature or voltage/current	Voltage/current
-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
12 bits or 11 bits + sign	16 bits or 15 bits + sign	–	–	16 bits or 15 bits + sign	12 bits or 11 bits + sign
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)

–	–	2 outputs	4 outputs	1 output	2 outputs
–	–	Voltage/current	Voltage/current	Voltage/current	Voltage/current
–	–	-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
–	–	12 bits or 11 bits + sign	12 bits or 11 bits + sign	12 bits or 11 bits + sign	12 bits or 11 bits + sign
–	–	1 or 10 ms (configurable)	1 or 10 ms (configurable)	1 or 10 ms (configurable)	1 or 10 ms (configurable)

–	–	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

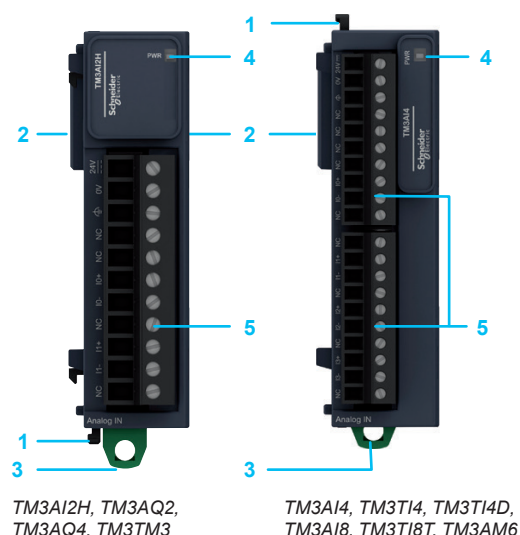
- Analog modules are mounted on a symmetrical DIN rail \sqcap .
- For plate or panel mounting, use the **TMAM2** kit.
- The **TM2XMTGB** grounding plate simplifies connection of the cable shielding (shielding must be connected to the device's functional ground).

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		<div>■ High-speed counter with reflex output management, no event management</div> <div>■ Single or dual counter with additional period meter and frequency meter functions. These functions manage reflex outputs.</div>		<div>■ High-speed counter with reflex output management and event management</div> <div>■ Single or dual counter with additional period meter and frequency meter functions. These functions manage reflex outputs and PLC events (first two local slots).</div>	
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 $\overline{\text{---}}$ I/O, type 1		24 V $\overline{\text{---}}$ I/O, type 1	
	Voltage limit values	0...28.8 V $\overline{\text{---}}$		0...28.8 V $\overline{\text{---}}$	
	Resolution	32 signed bits		32 signed bits	
	Acquisition time on capture	$\leq 3\text{ }\mu\text{s}$		$\leq 3\text{ }\mu\text{s}$	
	Event generation time to the PLC	—		$\leq 100\text{ }\mu\text{s}$	
Outputs	Number	8 fast outputs		8 fast outputs	
	Type	Source		Source	
	Response on threshold	$\leq 10\text{ }\mu\text{s}$		$\leq 10\text{ }\mu\text{s}$	
Supply voltage		Via 24 V $\overline{\text{---}}$ 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 \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.)	TM3XHC202		TM3XFHSC202	
	via removable spring terminal blocks at intervals of 3.81 mm (0.15 in.)	TM3XHC202G		TM3XFHSC202G	
Page		21		21	

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





- 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

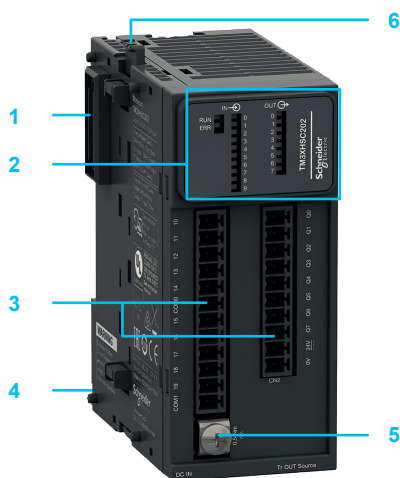
- Counter modules are mounted on a symmetrical DIN rail $\overline{\text{L}}$.
- For plate or panel mounting, use the **TMAM2** kit.
- The **TM2XMTGB** grounding plate simplifies connection of the cable shielding (shielding must be connected to the device's functional ground).

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

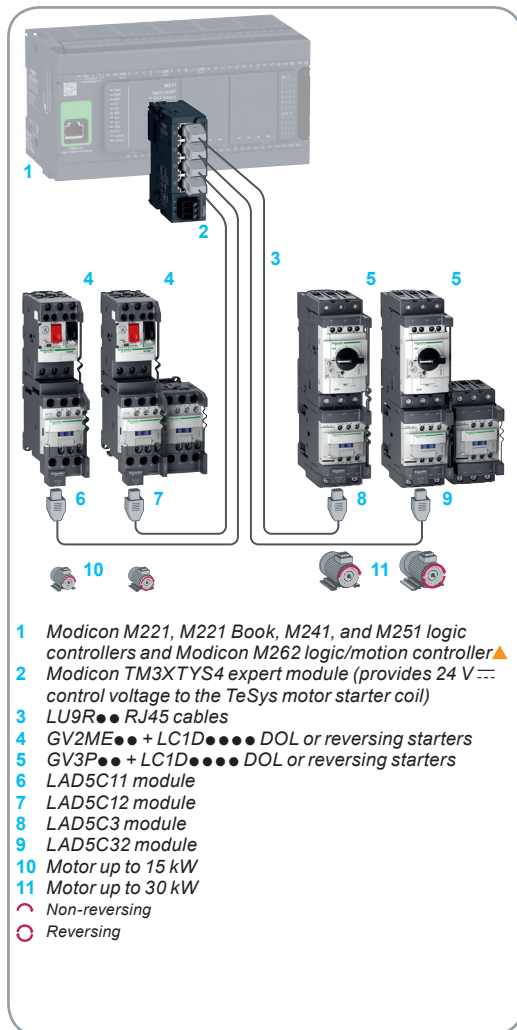
Modicon TM3 expert counter modules

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.



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 motor starters.

The **TM3XTYS4** expert module is a component of the TeSys SoLink system that provides simple, fast, error-free wiring for 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 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.

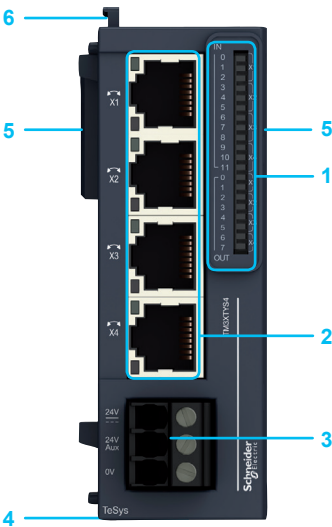
Mounting

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

TeSys motor starter application examples

	DOL Up to 15 kW/400 V	From 18.5 to 30 kW/400 V	Reversing Up to 15 kW/400 V	From 18.5 to 30 kW/400 V
TeSys D				
1 Motor circuit breaker	GV2ME●● or GV2P●●	GV3P●●	GV2ME●● or GV2P●●	GV3P●●
2 Contactor 24 V ---	LC1D09BL to LC1D32BL LC1D09BD to LC1D32BD	LC1D40ABD to LC1D65ABD	LC2D09BL to LC2D32BL LC2D09BD to LC2D32BD	LC2D40BD to LC1D65BD
3 Combination block	GV2AF3	—	GV2AF3	—
4 Auxiliary contact	GVAE20	GVAE20	GVAE20	GVAE20
5 Connection module	LAD5C11	LAD5C31	LAD5C12	LAD5C32
Connection cables				
6 Length: 0.3 m (0.98 in)	LU9R03			
6 Length: 1 m (3.28 in)	LU9R10			
6 Length: 3 m (9.84 in)	LU9R30			
Modicon TM3 module				
7 Modicon TM3	TM3XTYS4			
TeSys U				
8 Power base	LUB120 or LUB320		LU2B12BL or LU2B32BL	
9 Control unit 24 V ---	LUCA/LUCB/LUCC/ LUCD●●BL		LUCA/LUCB/LUCC/LUCD●●BL	
10 Terminal block	LU9BN11C		LU9MRC	
11 Parallel wiring module	LUFC00		LUFC00	

For more information about TeSys motor starter applications, visit our website www.schneider-electric.com.



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 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 modules 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 **VDIP184546●●●**, or any other Cat 5E, F/UT cable.

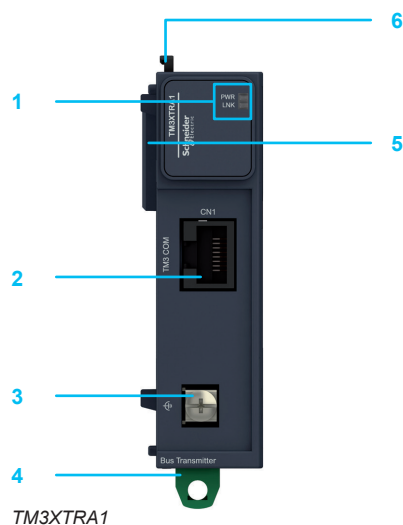
Mounting

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

Description


TM3XTRA1 transmitter module

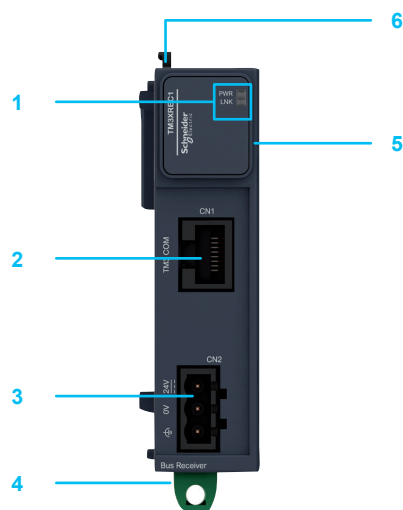
- 1 Block with 2 LEDs displaying communication and power supply status
- 2 RJ45 connector for the **VDIP184546●●●** bus expansion cable, or any other shielded Cat 5E, F/UT cable
- 3 Screw terminal for the functional ground (FG) connection
- 4 Clip for locking on symmetrical DIN rail .
- 5 TM3 bus connector providing continuity of the link with the connected module
- 6 Locking catch for the adjacent module



TM3XTRA1

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



TM3XREC1

(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	—

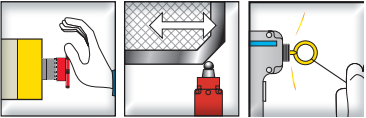
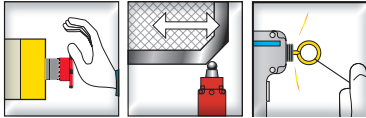
Replacement parts

Designation	Description	Unit reference	Weight kg/ lb
Mounting kit 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 (powered by *Preventa* technology)

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 module	



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

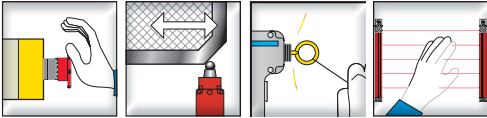
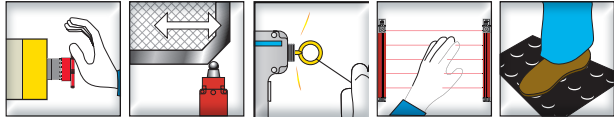
Unlimited	Unlimited
24 V ---	24 V ---

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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▲ Available Q1 2019



More technical information on www.schneider-electric.com



More technical information on www.schneider-electric.com

Modicon TM3

I/O expansion modules for Modicon controllers

Functional safety modules (powered by **Preventa** technology)



Presentation

Modicon TM3 functional safety modules are designed using Preventa 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.

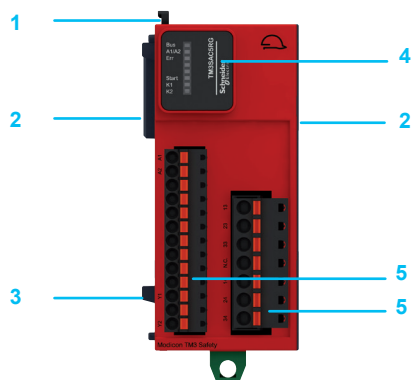
Mounting

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

Modicon TM3

I/O expansion modules for Modicon controllers

Functional safety modules (powered by **Preventa** technology)



TM3SAC5R



TM3SAC5RG



TM3SAF5R



TM3SAF5RG



TM3SAFL5R



TM3SAFL5RG



TM3SAK6R



TM3SAK6RG

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 module

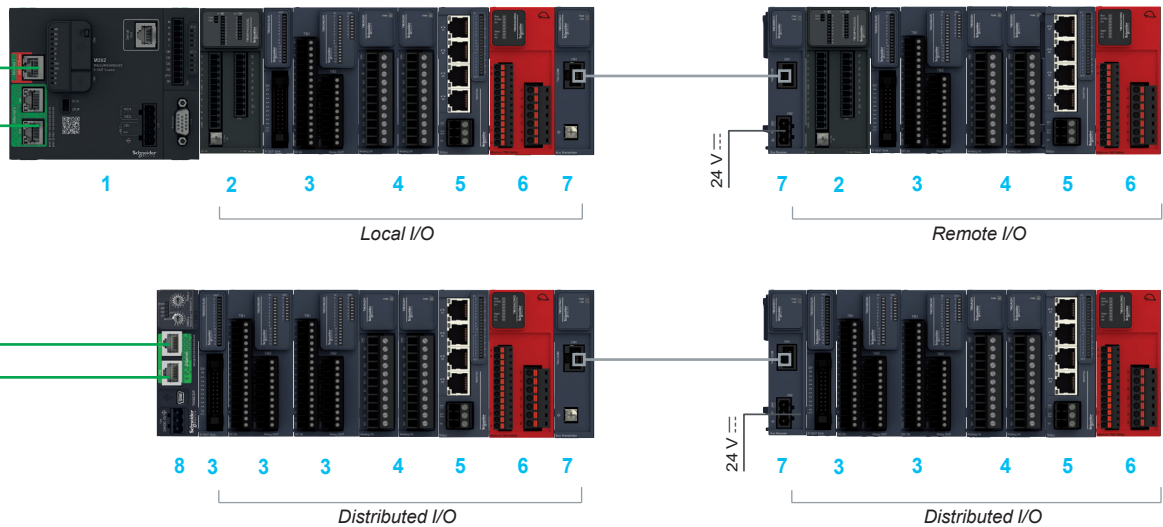
Presentation

Ethernet

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, 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 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)

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

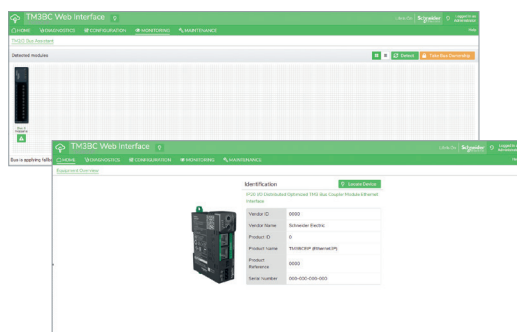
The TM3BCEIP bus coupler module connects to Modicon M241 and Modicon M251 logic controllers and Modicon M262 logic/motion controller according to the general rules for the TM3 system: 7 local modules max. plus 7 remote or distributed modules.

Format

W x H x D: 27 x 90 x 70 mm (0.93 x 3.54 x 2.76 in.)

Mounting

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

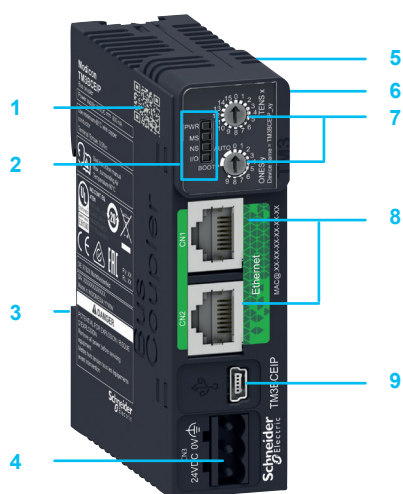


Web server

Modicon TM3

I/O expansion modules for Modicon controllers

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 thumbwheels 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

References

Bus coupler module

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

Replacement parts

Designation	Description	Unit reference	Weight kg/ lb
Mounting kit Sold in lots of 10	For mounting TM3BCEIP 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

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.

#			
490NTW00002U	25	TM3XFHSC202G	21
490NTW00005U	25	TM3XHSC202	21
T		TM3XHSC202G	21
TM2XMTGB	17	TM3XREC1	25
	21	TM3XTRA1	25
TM3AI2H	17	TM3XTYS4	23
TM3AI2HG	17	TM200RSRCMC	17
TM3AI4	17	TMA262SET8S	21
TM3AI4G	17	TMAM2	13
TM3AI8	17		17
TM3AI8G	17		21
TM3AM6	17		23
TM3AM6G	17		25
TM3AQ2	17		29
TM3AQ2G	17	TMAT2MSET	31
TM3AQ4	17		13
TM3AQ4G	17	TMAT2MSETG	17
TM3BCEIP	12		13
	31	TMAT2PSET	25
TM3DI8	13		31
TM3DI8A	13	V	
TM3DI8G	13	VDIP184546005	25
TM3DI16	13	VDIP184546010	25
TM3DI16G	13	VDIP184546020	25
TM3DI16K	13	VDIP184546030	25
TM3DI32K	13	VDIP184546050	25
TM3DM8R	13		
TM3DM8RG	13		
TM3DM24R	13		
TM3DM24RG	13		
TM3DQ8R	13		
TM3DQ8RG	13		
TM3DQ8T	13		
TM3DQ8TG	13		
TM3DQ8U	13		
TM3DQ8UG	13		
TM3DQ16R	13		
TM3DQ16RG	13		
TM3DQ16T	13		
TM3DQ16TG	13		
TM3DQ16TK	13		
TM3DQ16U	13		
TM3DQ16UG	13		
TM3DQ16UK	13		
TM3DQ32TK	13		
TM3DQ32UK	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		
TM3TM3G	17		
TM3XFHSC202	21		



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