IIoT-ready for performance machines

Catalog June **2019**









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	B5AL en flush/	73415 red projecting double-he d your XB5AL73415 datasheet	aded pushbutton Ø22 with marking	
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		Range of product	Harmony XBS	
Discover other products &		Product or component type	Complete double-headed push-button	
accessories		Device short name	XB5	
Discover your Schneider Elect	tric	Bezel material	Plastic	
ools		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 "T" - red "O"	
		Contacts type and	1 NO + 1 NC	
		composition		



- Updated quarterly
- Embeds product selectors and configurators,
- 360° images, training centersOptimized search by commercial reference

Life Is On



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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 offer 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

Eco Struxure Machine



* 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.

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	EcoStruxure Machine provides one solution for the
ers	 With Smart Design & Engineering the time to market is reduced by up to 30% using our automated engineering and the simulation capabilities
1	 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

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

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Logic/Motion controller Modicon M262 IIoT-ready for performance machines Controllers for industrial machines

A	-				· · · · · · · · · · · · · · · · · · ·	•• <i>·· · · ·</i>
Applications						
	Specification	For hardwired architectures	For performance-demanding applications	For modular and dist	ributed architectures IIoT ready for performance machir	For automating machines/lines with 0 - 130 servo or robot axes
Performance		0.2 µs/inst	22 ns/inst	22 ns/inst	35 ns/inst	0.52 ns/inst
Memory		640 KB RAM, 2 MB Flash	64 MB RAM, 128 MB Flash	64 MB RAM, 128 MB F	ash 256 MB RAM, 256 MB Flash	128 KB to 256 KB NV RAM 512 MB DDR2 to 1 GB DDR3L
Supply voltage		24 V $=$ or 100240 V \sim	24 V $=$ or 100240 V \sim	24 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) a Serial link USB mini-B program 	 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	EthernetProfibus DP	EthernetProfibus DP	EthernetCANopen	CANopenProfibus DPRT-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 tansistor outputs	Up to 16 tansistor outputs	-	4 fast digital outputs	Up to 16 digital outputs Up to 2 analog outputs
Synchronized axes	S	-	-	-	Up to 16 synchronized axes	Up to 130 synchronized axes
Configuration soft	ware	EcoStruxure Machine Expert-Basic (1)	EcoStruxure Machine Expert V1.1 (2)	EcoStruxure Machine E	EcoStruxure Machine Expert V1.1	EcoStruxure Machine Expert V1.1 (2)
Compatible expansion catalog)	sion I/O module ranges (consult the					
	Local I/O	Modicon TM3 (<u>DIA3ED2140109EN)</u>	Modicon TM3 (DIA3ED2140109EN)	Modicon TM3 (DIA3)	Modicon TM3 (DIA3ED2140109EN)	-
	Remote I/O	Modicon TM3 (DIA3ED2140109EN)	Modicon TM3 (<u>DIA3ED2140109EN)</u>	Modicon TM3 (DIA3)	• Modicon TM3 (<u>DIA3ED2140109EN</u>)	-
	Distributed I/O on Ethernet	Modicon TM3 (<u>DIA3ED2140109EN)</u>	 Modicon TM3 (<u>DIA3ED2140109EN</u>) Modicon TM5 (<u>DIA3ED2131204EN</u>) 	Modicon TM3 (DIA3) Modicon TM5 (DIA3)	ED2140109EN) • Modicon TM3 (DIA3ED2140109EN) ED2131204EN) • Modicon TM5 (DIA3ED2131204EN)	Modicon TM5 (<u>DIA3ED2131204EN</u>)
	Distributed I/O on CANopen	-	-	-	Modicon TM5 (<u>DIA3ED2131204EN</u>) Modicon TM7 (<u>DIA3ED2140405EN</u>)	 Modicon TM5 (<u>DIA3ED2131204EN</u>) Modicon TM7 (<u>DIA3ED2140405EN</u>)
	Distributed I/O on Sercos	-	-	-	Modicon TM5 (DIA3ED2131204EN)	Modicon TM5 (DIA3ED2131204EN)
	∽ Safety I/O	Modicon TM3 (DIA3ED2140109EN)	← Modicon TM3 (DIA3ED2140109EN)	S Modicon TM3 (DIA3	ED2140109EN)	 Modicon TM5 (<u>DIA3ED2131204EN</u>) Modicon TM7 (<u>DIA3ED2140405EN</u>)
Controller range		Modicon M221/M221 Book	Modicon M241	Modicon M251	Modicon M262	LMC Eco, LMC Pro2
More details in cata	alog	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.





Logic/Motion controller – Modicon M262 IIoT ready for performance machines

Machine Automation

Мас	hine Automation				
Software	EcoStruxure Machine	ne	ruxure Machine pert – Safety		
	For basic and compact machines	For modular and distributed machines	For Logic and Motion IIoT- performance machine	-ready es	For Motion-centric machines, robots, and lines
Controllers	Modicon M221	Modicon M241 Modicon M2	Modicon M262 251 Logic Motion	Safety SLC	PacDrive LMC Eco/Pro
Q	Modicon TM3	Coptimized I/O system		Modicon T	M5 and TM7 Performance I/O system
Safety	Preventa XPS Unive safety module	rsal Modicon TM3 functional safety module	Preventa XPSMCM modular safety controller	Modicon TM	5 and TM7 Performance safety I/O system
Mach	ine control		 From basic to motion- and r Modicon controllers and so achieving flexibility, perform 	robot-centric ma lutions bring a c nance, productiv	achines with the PacDrive 3 offer, onsistent and scalable response to vity, and digitization.
The s to sel	calability and consistency o ect the right offer dependin	of I/O ranges allow you g on your needs	 Modicon TM3 Optimized I/C Modicon TM5 for more perf harsh environments; Both F safety functions to be imple 	O system for mo formance-dema Performance I/C mented using th	re compact and modular machines Inding machines, with Modicon TM7 for I ranges (Modicon TM5 and TM7) allow I Modicon TM5CSLC safety logic controlle
Embe M262 safety	dded Safety provides holist and PacDrive LMC controlle / demand in Machine Autom	ic solutions to Modicon rs, increasing overall ation	 Preventa XPS Universal sa suitable for small application information provided to cor Modicon TM3 safety functions Preventa XPSMCM module applications with up to 20 ss EtherNet/IP, EtherCAT, or I 	afety modules c ons with 4-5 saf- ntrollers via a si onal modules a and diagnostics ar safety contro safety functions Profinet	over a wide range of safety functions, ety functions, with diagnostic ngle wire connection re suitable for small applications s via TM3 bus Ilers are suitable for medium size and diagnostics via Modbus TCP,
All the EcoSt engin	ese devices are managed with truxure Machine Expert, a por eering environment	nin a single software, werful and collaborative	 EcoStruxure Machine Explogic controllers EcoStruxure Machine Explogic controllers: an intuitive technicians EcoStruxure Machine Admination builders to track m data, and resolve exception 	pert – Safety op pert – Basic sof e standalone env visor is a cloud- achines in opera al events, while	tional addon for programming safety tware for programming Modicon M221 rironment accessible to basic skilled based services platform designed for ation worldwide, monitor performance reducing support costs by up to 50%

IIoT ready for performance machines 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



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



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.



IIoT-ready for performance machines

General overview

Modicon M262, the IIoT-ready controller for Logic and Motion machines

As a Machine Builder, manufacturing machines with logic or motion control and moving into the Industry 4.0 era, you are looking for a controller with embedded cloud connectivity that offers cybersecurity capability and supports monitoring, analytics, and predictive maintenance.

As the latest polyvalent controller for Logic and Motion with cloud protocols (MQTT, HTTP, JSON, OPC UA) and encryption (TLS), the Modicon M262 is made for you. Modicon controllers are a key part of our EcoStruxure Machine that provides complete architecture from Connected Products, Edge Control to Apps, Analytics, and services.

Modicon M262 controllers embed Industrial Internet of Things (IIoT) protocols and encryption to provide direct cloud connectivity and digital services.

Digitization

Integrate your machine in any cloud and on-premise environment



Machine to Plant

- Easily integrate machines into the production line and plant, thanks to open protocols
- > Allow direct communication with the IT system: Connect to SCADA, MES, ERP, CMMS, Web browser, etc.
- Via OPC UA, SQL, FTPs, HTTPs, SNMP, SNTP, and PackML



Direct Machine to Cloud o-

> Without additional gateway, benefit from cloud apps, analytics, and services with EcoStruxure Machine Advisor

0

MQTT and HTTP protocols, JSON and TLS encryption allow connection to other Schneider platforms or third-party cloud platforms

Use the Modicon M262 APIs and take advantage of IT capabilities such as email exchange, event management in the calendar, interaction with social networks, weather information, etc.



Machine to Human > Improve and reduce commissioning and maintenance times Web visu and Machine Assistant running on the Web server

Structured networking with up to 5 separate Ethernet ports (2 embedded in the M262, and up to 3 additional ports with TMSES4) to allow easy integration into your plant, production line, ERP, MES, SCADA with open protocols like OPC UA, PackML or SQL



- > Automation "à la carte" with smart communication modules
- > Scalable performance Manage logic applications, synchronized motion, embedded safety, and cloud connectivity all in one controller
- I/O system adjusted to your needs, Optimized (Modicon TM3) for just enough architecture, or Performance (Modicon TM5) with high resolution, hot swap capability, etc.

Schneider

Logic/Motion controller – Modicon M262

IIoT-ready for performance machines

General overview

Modicon M262, the IIoT-ready controller for Logic and Motion machines

Efficiency

Through smart engineering design

Modicon M262 Motion controller, Optimized local I/O with Modicon TM3

Modicon TM5 safety logic controller, Modicon TM5 Sercos interface module, Modicon TM5 safety I/O, Modicon TM7 safety I/O

Sercos/EtherNet/IP (up to 6 devices)

















Optimized I/O with Modicon TM3: Distributed

I/O on Ethernet with TM3 bus coupler

Lexium LXM32S

Altivar Machine ATV340S

TeSys Island: connected load management system

Performance I/O with Modicon TM5: Distributed I/O on Ethernet with TM5 interface module

- > Benefit from real-time automation fieldbus with Sercos for fast motion control, safety functions, and openess to other devices
- One cable simplifies the architecture and fieldbus wiring. Manage EtherNet/IP > and Sercos devices on the same cable



> Simplified commissioning and diagnostics without software installation -"Machine Assistant"

Protection

Embedded safety and security functions: Help to protect people, machines, data, and the environment



> Meet safety regulations with > embedded safety: Motion controller and safety logic controller





> Green Premium certified, our ecolabel compliant with environmental regulations. Find more information on our website

IIoT-ready for performance machines Modicon M262 Logic/Motion controllers



Food & Beverage applications



Packaging applications



Material handling applications



Textile applications



Semiconductor



Hoisting applications

Modicon M262 Logic/Motion controllers Presentation

The Modicon M262 Logic/Motion controller offer is made for performancedemanding machines; M262 controllers are IIoT-ready (MQTT, HTTP, OPC UA, TLS, etc.) and combine logic, motion, and safety control applications.

- > TM262L for the logic control of multiple input and output arrangements
- > TM262M for the motion control of up to 16 synchronized axes, embedding a safety control application capable of attaining SIL3

Targeted applications

Modicon M262 Logic/Motion controllers are the ideal solution for industrial control processes in many fields of application, including the following:

- > Food & Beverage: From compact to modular complete automation solutions for food and beverage machinery including robotics
- Packaging: Schneider Electric has automated more than 100,000 machines worldwide with benchmark Modicon controllers and PacDrive platforms
- Material handling: Complete solutions far beyond basic technologies from logic, motion, and drive controllers to cartesian and delta picker solutions
- Textile: Proven technology for automating high-speed processes in textile production
- > Hoisting: Proven architectures according to EN ISO 13849-1 and technologyspecific function blocks enhance productivity in industrial and construction cranes
- > Semiconductor: A wide range of automation and digitization solutions enables machine builders to develop new machines and lines faster and with more flexibility
- > General purpose: For machines requiring IIoT embedded connectivity or encrypted communication

Embedded I/O

- Modicon M262 Logic/Motion controllers embed 4 fast digital inputs and 4 fast digital outputs, connected to the controller via screw terminals on the controller front face (1):
- Input types:
 - Sink/Source, 24 VDC, 8.1 mA, filtered
 - Digital: Raise an event task in 20 µs on rising or falling edge or both, latch, capture position on encoder
 - Output types:
 - Source, 24 VDC, 50 to 200 mA, 3 µs
 - Fallback
- All inputs and outputs have status LEDs.
- Modicon M262 motion controllers (TM262M •) embed an encoder input (SSI or incremental)
 - 5 VDC or 24 VDC configurable power supply, 150 mA
 - SSI100 or 200 kHz, 5 VDC

Extended I/O with modular I/O systems

Modicon M262 Logic/Motion controllers can be combined with Modicon TM3, Modicon TM5, and Modicon TM7 offers, allowing:

- An increased number of I/O: with the Modicon TM3 expansion module offer, in local and remote I/O configurations

- Extended I/O on communication networks:
 - Optimized distributed I/O islands on Ethernet with Modicon TM3
- Performance distributed I/O islands with Modicon TM5 and Modicon TM7 on Ethernet or Sercos III

Equipment

Modicon M262 Logic/Motion controllers are equipped with:

- an integrated RTC
- a Run/Stop switch
- a NO alarm relay contact 24 VDC/2 A

(1) Removable screw terminals are supplied with the controllers.





Logic/Motion controller – Modicon M262

IIoT-ready for performance machines Modicon M262 Logic/Motion controllers

EtherNet/IP and Modbus TCP devices								
Logic/Motion controller	EtherNet/IP Max. number of devices	RPI (ms)	Modbus TCP Max. number of devices	EtherNet/IP + Modbus TCP Max. number of devices				
TM262L10	64	40	64	96				
TM262L20	64	20	64	128				
TM262M15	64	40	64	96				
TM262M25	64	20	64	128				
TM262M35	64	20	64	128				

Sercos, sy	Sercos, synchronized axes, motion, and one-cable devices								
Motion controller	No. of sync. axes	Sercos cycle time (ms)	Additional Sercos slaves	Total Sercos slaves	Additional EtherNet/IP slaves over Sercos	RPI (ms)			
TM262M15	4	1	4	8	6	10			
	4	2	12	16	6	10			
TM262M25	8	2	8	16	6	6			
	8	4	16	24	6	6			
TM262M35	16	2	8	24	6	6			
	16	4	24	40	6	6			



EcoStruxure Machine Expert software



Modicon M262 Logic/Motion controllers

Performance

- > The Modicon M262 Logic/Motion controllers have a dual-core processor:
 - Core 1 is dedicated exclusively to managing program tasks and offers maximum resources for real-time execution of the application code.
 Core 2 is dedicated to executing communication tasks, which then have no
 - further impact on the application execution performance.
- They have a minimum cycle time of 500 µs, a 256 MB RAM memory that can store data and applications (32 MB for applications), and a 256 MB Flash memory for application and data backup. An SD card (up to 32 GB) can also be used in addition to embedded memories.
- > Performance of Modicon M262 controllers: 3 to 5 ns/instruction

Certifications and standards

- Modicon M262 controllers meet the requirements of the following certifications:
 C€, cULus, RCM (1), EAC (1), Achilles
 - Modicon M262 controllers conform to the following standards:
 - UL 61010-1, -2-201
 - CSA C22.2 No. 61010-1, CSA C22.2 No. 61010-2-201, CSA C22.2 No. 213 ANSI/ISA 12-12-01
 - EN 61131-2

Environmental characteristics

- Ambient operating temperature:
 - Horizontal mounting: 20...60 °C (-4...140 °F)
 - Vertical mounting: 20...50 °C (-4...122 °F)
 - Flat mounting: 20...45 °C (-4...113 °F)
- Storage temperature: 40...85 °C (- 40...185 °F)
- Relative humidity: 5...95% (non-condensing)
- Operating altitude: 0...2,000 m (0...6,562 ft)
- Storage altitude: 0...3,000 m (0...9,842 ft)

Power supply characteristics

Modicon M262 controllers are powered with a non-isolated 24 V DC power supply, and have built-in overload protection.

- Voltage limit: 20.4.... 28.8 V
- Immunity to micro-cuts (class PS-2): < 10 µs
- Max. consumption of controller during operation is 100 W.

Programming

- EcoStruxure Machine Expert V1.1 is the machine builder's solution software for developing, configuring, and commissioning machine controllers such as Modicon M262 and the entire machine in a single software environment, including logic control, motion control, remote I/O systems, safety control, motor control, HMI design, and related network automation functions.
- > This software environment covers the entire engineering life-cycle with:
 - Collaborative team work and version management
 - IIoT and standard libraries integration
 - Automatic testing (ETEST) and simulation
 - Code quality control (Machine Code Analysis)
 - Deployment and commissioning
 - Diagnostics and remote services
- In addition, EcoStruxure Machine Expert interacts with various engineering tools via open interfaces.
 - IEC 61131-3 programming languages: Instruction List (IL), Ladder Diagram (LD), Function Block Diagram (FBD), Sequential Function Chart/Grafcet (SFC), Structured Text (ST), and CFC (Continuous Function Chart)
 - Integrated fieldbus configurators
 - Expert diagnostic and debugging functions
 - Motion design, according to PLCopen Motion Control, as well as multiple
 - capabilities for commissioning, maintenance, and visualization

(1) Pending

Logic/Motion controller – Modicon M262

IIoT-ready for performance machines Modicon M262 Logic/Motion controllers

Modicon M262 Logic/Motion controllers

Housing

- With their compact dimensions, Modicon M262 Logic/Motion controllers optimize the size of wall-mounted and floor-standing control system enclosures. Format (w x d x h): 125 x 90 x 100 mm (4.92 x 3.54 x 3.93 in.)
- > Modicon M262 Logic/Motion controllers can be mounted on DIN rail (<u></u>) or panel (1).
- > A QR code, printed on the front face of controllers and smart communication modules, gives a link to the product's SE maintenance page and and its unique serial number (S/N).
- For easier identification in the field, the product's commercial reference is printed on the front of the controller.
- A slot for an industrial memory card is available on the controller's front face: SD card up to 2 GB or SDHC card up to 32 GB. **TMASD** industrial SD memory cards are available for backing up and transferring applications, data logging, and firmware updates.

Connecting a Modicon M262 controller to devices

- > There is a USB Mini-B isolated port for programming (with Machine Expert, FTP, HTTP and Modbus protocols).
- A smart communication bus allows connection of up to three smart communication modules, assembled by simple interlocking on the left-hand side of the controller. The smart communication bus embeds the power supply for the smart communication modules. Two types of smart communication module are available for CANopen and Ethernet connections.



- 1 TMSCO1 CANopen smart communication module
- 2 TMSES4 Ethernet smart communication module
- 3 M262 Logic/Motion controller

Maximum installation: A maximum of one TMSCO1 with two TMSES4 smart communication modules is allowed. TMSCO1 is always the last module on the left. Alternatively, a maximum of three TMSES4 smart communication modules can be connected.

Connecting a Modicon M262 controller to the Modicon TM3 I/O system

- > A TM3 bus port located on the right-hand side of the Modicon M262 controller allows connection of any of the TM3 expansion modules for local, remote, or distributed I/O configurations:
 - Local I/O: 7x Modicon TM3 expansion modules (max. configuration)
 - Remote I/O: + 7x remote modules (equals 14x TM3 modules: 7x local + 7x remote)
 - Distributed I/O: up to 64x TM3 bus coupler (EtherNet/IP or Modbus TCP), allowing 14x TM3 I/O modules by bus coupler (EtherNet/IP)



Schneider Electric

IIoT-ready for performance machines Modicon M262 Logic/Motion controllers



Logic/Motion controller – Modicon M262

IIoT-ready for performance machines

Embedded communication, Additional communication



Serial line (RS232/RS485) TM3 communication bus - I/O Ethernet 1

Ethernet 2

Smart communication bus Modicon M262L logic controller



Serial line (RS232/RS485) TM3 communication bus I/O Ethernet 1 (Sercos III)

Ethernet 2 Encoder

Smart communication bus Modicon M262M motion controller





Machine to Device

Modicon M262L logic controller with 3x TMSES4 smart communication modules (maximum configuration)



Modicon M262L logic controller with 3 smart communication modules: 2x TMSES4, and one TMSCO1 (always the last module on the left)



Modicon M262 Logic/Motion controllers

Embedded communication

Modicon M262 Logic/Motion controllers embed:

- Two Ethernet-based networks:
- Ethernet 1 with one RJ45 connector: 100 Mbps with EtherNet/IP, Modbus TCP; plus Sercos III on motion controllers
- Ethernet 2 with 2x RJ45 connectors: 1 GB/s with EtherNet/IP and Modbus TCP

One isolated serial port with one RJ45, 0.3 to 115 kBauds, RS232 or RS485, with Modbus, ASCII, and Machine Expert protocols

One smart communication bus, for TMS smart communication modules (Ethernet and CANopen)

- One TM3 communication bus
- One I/O port

Modicon M262 Motion controllers embed one encoder connector.

Ethernet services

Services are available on Modicon M262 controllers and on the Ethernet smart communication module.

- Scanner manager on EtherNet/IP and Modbus TCP
- EtherNet/IP Adapter
- **DHCP** Client/Server
- Data exchange IEC VAR ACCESS
- Modbus TCP Client/Server and Modbus TCP Client device
- SNMP Client/Server
- FTP Client/Server
- SQL Client
- Send/receive email based on TCP/UDP Lib
- Web server and Web visu
- **OPC UA Server**
- **DNS** Client
- MQTT, HTTP
- SNTP
- TLS
- Machine Assistant

For connection cables and accessories for Ethernet network, please consult our catalog ref. DIA3ED2160105EN.

Additional communication

With the use of two smart communication modules, the controllers benefit from optional connections:

- One CANopen connection
- Up to three Ethernet connections

> TMSCO1 smart communication module - adds a CANopen port for CANopen master communication.

- The link can be configured between 20 kbps and 1 Mbps and supports up to 63 slaves.
- Architectures based on CANopen are used to distribute I/O modules as close to the sensors and actuators as possible, thus reducing wiring costs and times, and to communicate with different devices such as variable speed drives, servo drives, etc.
- The CANopen configurator is integrated in the EcoStruxure Machine Expert software and can also be used to import standard description files in EDS format.
- For CANopen connection cables and accessories, please consult our catalog ref. DIA3E D2160104EN
- TMSES4 smart communication module allows up to 3 additional Ethernet networks
 - 4x RJ45 switched ports as hub
 - lloT-ready
 - Network isolation
 - Ethernet Gigabyte exchange
 - Cybersecurity Achilles L1

Certifications and standards

- > TMS smart communication modules meet the requirements of the following certifications: C€, cULus, RCM (1), EAC (1)
- TMS smart communication modules conform to the following standards: UL 61010-1, UL 61010-2-201
 - CSA C22.2 No. 61010-1, CSA C22.2 No. 61010-2-201, CSA C22.2 No. 213
 - ANSI/ISA 12-12-01
 - EN 61131-2

(1) Pending

Schneider Electric

Logic/Motion controller – Modicon M262

IIoT-ready for performance machines Embedded safety

Modicon M262 Logic/Motion controllers

Modicon TM5CSLC safety logic controller

Embedded safety









Modicon TM262M •• motion controllers embed the Sercos protocol on their Ethernet 1 port, so that they can manage Modicon TM5CSLC safety logic controllers, set as slave on Sercos, Modicon TM5 safety I/O modules, and

Modicon TM262Meee controlling TM5CSLC logic controller, TM5S safety I/O modules, and TM7 safety I/O blocks on Sercos III

Modicon TM3 functional safety modules

> Modicon M262 Logic/Motion controllers embed a TM3 bus for managing Modicon TM3 functional safety modules.



Modicon M262 Logic/Motion controller controlling TM3 functional safety modules: local l/O connected to the TM3 bus

Safety offers by Schneider electric Preventa XPSMCM modular safety controllers

> Preventa XPSMCM modular safety controllers on EtherNet/IP network (or Modbus RTU, Modbus/TCP, EtherCat, CANopen and ProfibusDP fieldbus)



Modicon TM262M••• controlling Preventa XPSMCM modular safety controllers on Ethernet network

Selection guide

Logic/Motion controller – Modicon M262 IIoT-ready for performance machines

Modicon M262 controllers

Applications		Logic control			Motion control				
Applications		Logic control			model contor				
Embedded I/O		4 fast digital inputs	4 fast digital inputs		4 fast digital inputs	4 fast digital inputs	4 fast digital inputs		
E contrato da la		4 fast digital outputs	4 fast digital outputs		4 fast digital outputs	4 fast digital outputs	4 fast digital outputs		
Encoder input		-	-		Incremental/SSI, 5 VDC/24 VDC	Incremental/SSI, 5 VDC/24 VDC	Incremental/SSI, 5 VDC/24 VDC		
Performance		5 ns/inst	3 ns/inst		5 ns/inst	3 ns/inst	3 ns/inst		
0.00									
Standards		CE, CULUS, RCM (1), EAC (1), Achilles			CE, CULUS, RCM (1), EAC (1), Achilles				
Standards		CSA C22.2 No. 61010-1, CSA C22.2 No. 61010-2-201, CSA C22.2 No. 213 ANSI/ISA 12-12-01 EN 61131-2			CSA C22.2 No. 61010-1, CSA C22.2 No. 61010-2-201, CSA C22.2 No. 61010-2-201, CSA C22.2 No. 213 ANSI/ISA 12-12-01 EN 61131-2				
Ambient air temp	erature for operation	 Horizontal mounting: - 20 °C60 °C (- Vertical mounting: - 20 °C50 °C (-4.) Flat mounting: - 20 °C45 °C (-411) 	4140 °F) .122 °F) 3 °F)		 Horizontal mounting: - 20 °C60 °C (-414 Vertical mounting: - 20 °C50 °C (-4122 ° Flat mounting: - 20 °C45 °C (-4113 °F) 	0 °F) F)			
Embedded communication	Ethernet	 Ethernet 1 with one RJ45 port : 100 Mbps with EtherNet/IP and Modbus TCP Ethernet 2 with two RJ45 ports: 1 Gbps with EtherNet/IP and Modbus TCP 			 Ethernet 1 with one RJ45 port : 100 Mbps with EtherNet/IP, Modbus TCP, and Sercos III Ethernet 2 with two RJ45 ports: 1 Gbps with EtherNet/IP and Modbus TCP 				
	Services	Scanner manager on EtherNet/IP and Modbus TCP, EtherNet/IP Adapter, DHCP Client/Server, Data exchange - IEC VAR ACCESS, Modbus TCP Client/Server, Modbus TCP Client device, SNMP Client/Server, FTP Client/Server, Web server and Web visu, SQL Client, Send/receive email based on TCP/UDP Library, Web server, OPC UA Server, DNS Client, MQTT, HTTP, SNTP, TLS, Machine Assistant		Scanner manager on EtherNet/IP and Modbus TCP, EtherNet/IP Adapter, DHCP Client/Server, Data exchange - IEC VAR ACCESS, Modbus TCP Client/Server, Modbus TCP Client device, SNMP Client/Server, FTP Client/Server, Web server and Web visu, SQL Client, Send/receive email based on TCP/UDP Library, Web server, OPC UA Server, DNS Client, MQTT, HTTP, SNTP, TLS, Machine Assistant					
	USB	1x USB Mini-B isolated (programming, vi	rtual port, FTP, HTTP, Modbus)		1x USB Mini-B isolated (programming, virtual p	ort, FTP, HTTP, Modbus)			
	Memory card	Secure Digital card (SD up to 2 GB or SDHC up to 32 GB)			Secure Digital card (SD up to 2 GB or SDHC up	o to 32 GB)			
	Serial line	One isolated serial link (RJ45): RS232 or and Machine Expert protocols	RS485 (configurable), with RTU, Modbus SL, ASCII,		One isolated serial link (RJ45): RS232 or RS485 (configurable), with RTU, Modbus SL, ASCII, and Machine Expert protocols				
Additional communication	Ethernet	Up to three additional Ethernet networks (Smart communication module: - 4 switched RJ45 ports as hub - IIoT-ready - Network isolation with managemen - Ethernet Gigabyte exchange - Cybersecurity Achilles L1	EtherNet/IP Slave and Modbus TCP) with TMSES4		Up to three additional Ethernet networks (EtherNet/IP Slave and Modbus TCP) with TMSES4 smart communication module: - 4 switched RJ45 ports as hub - IIoT-ready - Network isolation with management from M262 - Ethernet Gigabyte exchange - Cybersecurity Achilles L1				
	CANopen	One CANopen port for CANopen master module	communication with TMSCO1 smart communication		One CANopen port for CANopen master communication with TMSCO1 smart communication module				
Compatible I/O systems	For local and remote I/O	 Modicon TM3 (2): Expert modules (upcounting, downcounting, allow event (TM3XFHSC) on 2 first slots) Analog modules Digital modules Embedded safety with TM3 functional safety modules 			 Modicon TM3 (2): Expert modules (upcounting, downcounting, allow event (TM3XFHSC) on 2 first slots) Analog modules Digital modules Embedded safety with TM3 functional safety modules 				
	For distributed I/O on Ethernet network	> Modicon TM3 Ethernet bus coupler	as madula (2)		> Modicon TM3 Ethernet bus coupler				
	on Sercos bus	 Modicon TMS Enternet network international Modicon TMS Sercos bus interface mo logic controllers, Modicon TMS safety Modicon TM7 safety I/O blocks (4) 	odule (3), Embedded safety with TM5CSLC safety //O modules		Modicon TM5 Ethernet network interface module (3) Modicon TM5 Sercos bus interface module (3), Embedded safety with TM5CSLC safety logic controllers, Modicon TM5 safety I/O modules Modicon TM7 safety I/O blocks (4)				
	on CANopen bus	 Modicon TM5 CANopen bus interface Modicon TM7 CANopen interface block 	module (3) k (4)		 Modicon TM5 CANopen bus interface modul Modicon TM7 CANopen interface block (4) 	e (3)			
Configuration sof	ftware	EcoStruxure Machine Expert V1.1 softwa	ire (5)		EcoStruxure Machine Expert V1.1 software (5)				
Type of controller		TM262L10MESE8T	TM262L20MESE8T		TM262M15MESS8T	TM262M25MESS8T	TM262M35MESS8T		
Page		19			19				
 Pending Consult catalog Consult catalog Consult catalog Consult catalog Consult catalog Consult catalog 	ref. <u>DIA3ED2140109EN</u> ref. <u>DIA3ED2131204EN</u> ref. <u>DIA3ED2140405EN</u> ref. <u>DIA3ED2180701EN</u>								
C Mor	e technical information on www.schne	ider-electric.com			More technical information o	n www.schneider-electric.com			

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Description

Logic/Motion controller – Modicon M262

IIoT-ready for performance machines

Modicon M262 controllers

TMS smart communication modules



Modicon TM262L logic controller



Modicon TM262M motion controller



TMSES4 Ethernet smart communication module



TMSCO1 CANopen smart communication module

Description

Modicon M262 controllers (1)

- 1 SD card slot marked CN4 (behind a protective cover)
- 2 USB Mini-B programming port marked CN5 (behind a protective cover)
- 3 Clip-on lock for 35 mm (1.38 in.) DIN rail
- 4 RJ45 port marked CN6 for Serial line
- 5 Removable spring terminal connector marked CN8 for inputs/outputs
- 6 On right side of the controller: TM3 bus connector
- 7 I/O status LEDs
- 8 On TM262M: Sub-D connector marked CN9 for encoder
- 9 Removable spring terminal connector marked CN7 (provided with the controller) for 24 VDC power supply input/alarm relay
- 10 QR code: link to SE product maintenance page and unique serial number (S/N)
- 11 Run/Stop switch
- 12 MAC addresses written on Modicon M262 front face
- 13 2x Ethernet switched ports (type RJ45) marked CN2 and CN3
- 14 On TM262L logic controllers: 1 Ethernet port (type RJ45) marked CN1 On TM262M motion controllers: 1 Ethernet/Sercos port (type RJ45) marked CN1
- 15 Status LEDs
- 16 On left side of controller: smart communication bus connector

TMS smart communication modules

- 1 Clip-on lock for 35 mm (1.38 in.) DIN rail
- 2 On TMSES4: 4x Ethernet switched ports, type RJ45 (10 BASE-T -100-1000 BASE-TX)
 - On TMSCO1: 1 CANopen port, type Sub-D 9-way
- 3 Functional ground connector
- 4 QR code: link to SE product maintenance page and unique serial number (S/N)
- 5 Status LEDs
- 6 Smart communication bus connector:
 - on both sides of TMSES4 Ethernet smart communication module
 - on right side of TMSCO1 CANopen smart communication module only

(1) Modicon M262 controllers are supplied with removable spring terminal connectors for connecting the I/O and power supply.

Note: It is advisable to use the TM2XMTGB grounding plate, which simplifies connection of the analog sensor and actuator cable shielding. This shielding must be connected to the device's functional ground.

References

Logic/Motion controller – Modicon M262

IIoT-ready for performance machines

Modicon M262 controllers

TMS smart communication modules





DIA3ED2140109EN

Sch

Modicon TM7 EcoStruxure* High-Performance and IP67 Distributed I/O Sy Machine Expert Catalog June 2019 2019 *** DIA3ED2180701EN

References							
Modicon M262 con	ntrollers (1)	24 V — power su	pply				
I/O	Execution speed	Max. no. of synchronized	Embedded communication networks (2)			Reference	Weight kg/lb
	ns/Boleean instructions	axes	Ethernet	Sercos	Serial link	¢	
Logic controllers							
4 fast digital inputs/4 fast digital	5	-	2	-	1	TM262L10MESE8T	0.665 1.466
ouputs	3	-	2	-	1	TM262L20MESE8T	0.665 <i>1.466</i>
Motion controllers							
4 fast digital inputs/4 fast digital	5	4 axes	2	1	1	TM262M15MESS8T	0.670 1.477
+ 1 encoder input (incremental/SSI,	3	8 axes	2	1	1	TM262M25MESS8T	0.670 1.477
5 VDC/24 VDC)	3	16 axes	2	1	1	TM262M35MESS8T	0.670 1.477

TMS smart communication modules for Modicon M262 controllers								
Designation	Description	Reference	Weight kg/lb					
Ethernet smart communication module	For adding an Ethernet network Equipped with 4x RJ45 switched ports: IIoT-ready Network isolation Ethernet Gigabyte exchange Cybersecurity Achilles L1	TMSES4	0.403 0.888					
CANopen smart communication module	For adding a CANopen master network Equipped with a 9-way SUB-D connector	TMSCO1	0.150 <i>0.330</i>					
Spare parts for Modicon M26	2 controllers							
Designation	Use for	Reference	Weight kg/lb					
Set of screw connectors	I/O and power supply	TMA262SET8S						
Set of spring connectors	I/O and power supply	TMA262SET8G						

Designation	Description	Reference	Weight kg/lb
Secure Digital card	Application backup and program transfer Capacity: 256 MB	TMASD1	0.004/ <i>0.009</i>
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 ground (FG)	TM2XMTGB	0.045/ 0.099

oonneetton cables					
Designation	Use from	to	Length m (<i>ft</i>)	Reference	Weight kg/lb
Programming cables	USB port on PC	USB Mini-B port on Modicon M262	3 (0.98)	TCSXCNAMUM3P (3)	0.065/ <i>0.143</i>
		controllers	1.8 (5.90	D) BMXXCAUSBH018	0.065/ 0.143
Expansion modules					
Modicon TM3 I/O expansion modu	les			Please consult the caref. DIA3ED2140109	italog <u>EN</u>
Modicon TM5, High-Performance a	and Safe IP20 Mod	lular I/O System		Please consult the ca ref. DIA3ED2131204	italog <u>EN</u>
Modicon TM7, High-Performance a	and Safe IP67 Dist	ributed I/O System	1	Please consult the ca ref. DIA3ED2140405	italog <u>EN</u>
Programming software					
EcoStruxure Machine Expert V1.1				Please consult the caref. DIA3ED2180701	italog EN

(1) Modicon M262 controllers are supplied with removable spring terminal connectors for the I/O and power supply connections.

(2) Ethernet embeds EtherNet/IP and Modbus TCP, only one Master allowed, in combination with Sercos, Eth. 1 allows (2) Enterthet/IP, Modbus TCP, and Sercos on same port and cable (one-cable).
 (3) Unshielded, non-grounded cable. For use on temporary connections only. For permanent connections, use cable

reference BMXXCAUSBH018.

IIoT-ready for performance machines Modicon M262 Logic controller in a TVDA





Solution breakdown (1)

- Magelis iPC: Touchscreen display 1
- Modicon TMSES4 Ethernet smart communication 2 module
- 3 Modicon M262 Logic controller
- 4 Modicon TM3 expansion modules (digital, analog, Expert, and safety I/O)
- 5 Power Meter
- ConneXium Ethernet switch 6
- 7 Modicon TM3 Ethernet bus coupler
- 8 Lexium 32M servo drives and BMH/BSH servo motor



(1) Please refer to our catalogs on Digi-Cat (download Digi-Cat)

- 9 Altivar Machine ATV340S variable speed drive
- 10 Altivar Machine ATV320 variable speed drive
- 11 Preventa XPSMCM modular safety controller
- 12 Modicon TM5 Ethernet interface module 13 TeSys island load management system
- 14 Bar code reader
- 15 Telemecanique Sensors proximity sensors
- 16 Harmony® XB5 plastic pushbutton and Emergency stop



IIoT-ready for performance machines Modicon M262 Motion controller in a TVDA

Modicon M262 Motion controller in a Tested Validated & Documented Architecture (TVDA)



Solution breakdown (1)

- 1 Magelis iPC: Touchscreen display and IIoT Edge Box
- 2 Modicon TMSES4 smart communication module
- 3 Modicon M262 Motion controller
- 4 Modicon TM3 expansion modules (digital, analog, and Expert I/O)
- 5 TeSys island load management system
- 6 Lexium 32S servo drives and BMH/BSH servo motors
- 7 Altivar Machine ATV340S variable speed drives A
- 8 Lexium 28 servo drives and BCH2 servo motors
- 9 Modicon TM3 Ethernet bus coupler
- Digi-Cat Owner Book There Book There Book

(1) Please refer to our catalogs on Digi-Cat (download Digi-Cat)

- **10** ConneXium Ethernet switch
- 11 Modicon TM5CSLC safety logic controller
- 12 Modicon TM5: Sercos interface module and I/O modules (digital, analog, and safety I/O)
- 13 Encoders
- 14 Bar code reader
- 15 Telemecanique Sensors proximity sensors
- 16 Power Meter
- 17 Harmony® XB5 plastic pushbutton and Emergency stop

Logic/Motion controller – Modicon M262 IloT ready for performance machines

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TM262M25MESS8T	19
TM262M35MESS8T	19
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TMA262SET8S	19
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TMSCO1	19
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