

Modbus serial link for Machines

Catalog

June 2019



MODBUS
MODBUS

Schneider
Electric

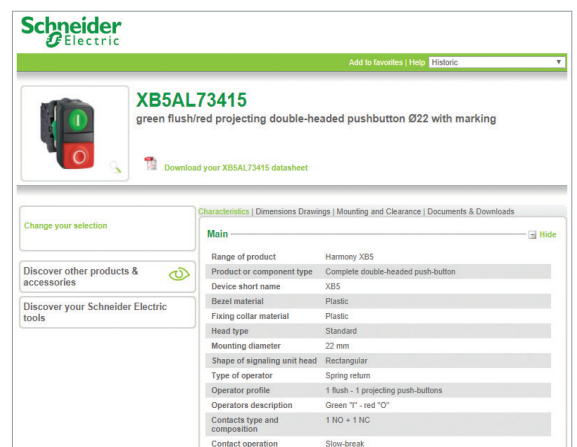
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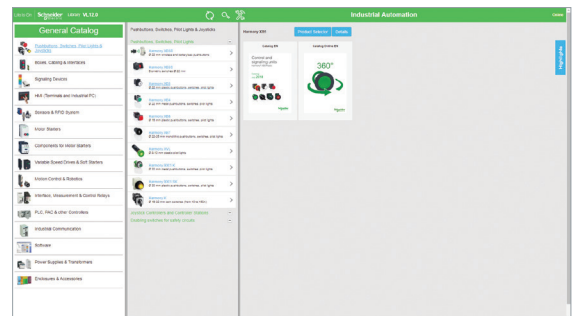
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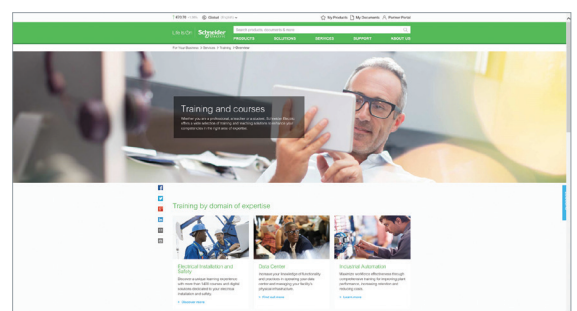


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To be competitive in today's digital era, machine builders must be innovative. Smart machines, those that are better connected, more flexible, more efficient, and safe, are enabling machine builders to innovate in ways never before possible.

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

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

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

- Connected products
Our connected products for measuring, actuating, device level monitoring, and control adhere to open standards to provide unmatched integration opportunities and flexibility
- Edge Control
We are IIoT-ready with a proven set of tested and validated reference architectures that enable the design of end-to-end open, connected, and interoperable systems based on industry standards. Ethernet and OPC UA facilitates IT/OT convergence meaning machine builders reap benefits from web interfaces and cloud.

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

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

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

- Evolving workforce
- Reducing costs
- Dynamic markets
- Shorter life cycles
- Prioritizing 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



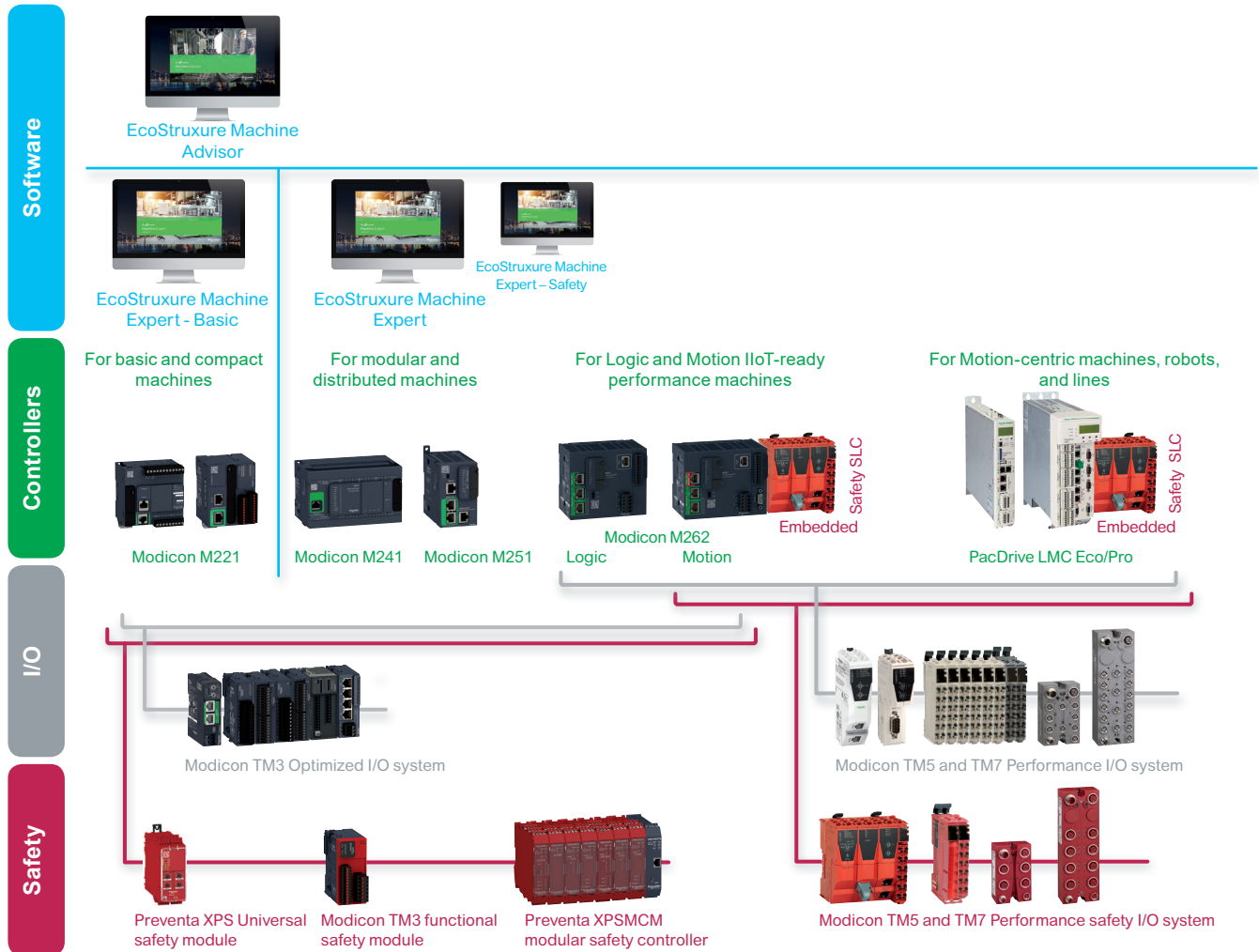
* The Schneider Electric industrial software business and AVEVA have merged to trade as AVEVA Group plc, a UK listed company. The Schneider Electric and Life is On trademarks are owned by Schneider Electric and are being licensed to AVEVA by Schneider Electric.

Modbus serial link for Machines
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	IIoT ready for performance machines	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	0.5...2 ns/inst		
Memory		640 KB RAM, 2 MB Flash	64 MB RAM, 128 MB Flash		64 MB RAM, 128 MB Flash	256 MB RAM, 256 MB Flash	128 KB to 256 KB NV RAM 512 MB DDR2 to 1 GB DDR3L		
Supply voltage		24 V  or 100...240 V 	24 V  or 100...240 V 		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) and SAE J1939 Serial link USB mini-B programming port	EtherNet/IP Sercos III Modbus TCP Serial link USB mini-B programming port	EtherNet/IP Sercos III CANopen Profibus Profinet EtherCAT		
	Optional	1 Serial Line	Ethernet Profibus DP		Ethernet Profibus DP	Ethernet CANopen	CANopen Profibus DP RT-Ethernet		
Embedded I/O	Input types	Up to 40 logic inputs Up to 2 analog inputs	Up to 24 logic inputs		–	4 fast digital inputs	Up to 20 digital inputs Up to 16 touch probe inputs Up to 4 interrupt inputs Up to 2 analog inputs		
	Output types	Up to 16 relay outputs Up to 16 transistor outputs	Up to 16 transistor outputs		–	4 fast digital outputs	Up to 16 digital outputs Up to 2 analog outputs		
Synchronized axes		–	–		–	Up to 16 synchronized axes	Up to 130 synchronized axes		
Configuration software		EcoStruxure Machine Expert-Basic (1)	EcoStruxure Machine Expert V1.1 (2)		EcoStruxure Machine Expert V1.1 (2)	EcoStruxure Machine Expert V1.1	EcoStruxure Machine Expert V1.1 (2)		
Compatible expansion I/O module ranges (consult the catalog)									
Local I/O Remote I/O Distributed I/O on Ethernet Distributed I/O on CANopen Distributed I/O on Sercos Safety I/O	Modicon TM3 (DIA3ED2140109EN) Modicon TM3 (DIA3ED2140109EN) Modicon TM3 (DIA3ED2140109EN)	Modicon TM3 (DIA3ED2140109EN) Modicon TM3 (DIA3ED2140109EN) Modicon TM3 (DIA3ED2140109EN) Modicon TM5 (DIA3ED2131204EN)		Modicon TM3 (DIA3ED2140109EN) Modicon TM3 (DIA3ED2140109EN) Modicon TM3 (DIA3ED2140109EN) Modicon TM5 (DIA3ED2131204EN)	Modicon TM3 (DIA3ED2140109EN) Modicon TM3 (DIA3ED2140109EN) Modicon TM3 (DIA3ED2140109EN) Modicon TM5 (DIA3ED2131204EN)	–	–		
	–	–	–	–	–	Modicon TM5 (DIA3ED2131204EN) Modicon TM7 (DIA3ED2140405EN)	Modicon TM5 (DIA3ED2131204EN)		
	–	–	–	–	–	Modicon TM5 (DIA3ED2131204EN)	Modicon TM5 (DIA3ED2131204EN)		
	Modicon TM3 (DIA3ED2140109EN)	Modicon TM3 (DIA3ED2140109EN)		Modicon TM3 (DIA3ED2140109EN)	Modicon TM3 (DIA3ED2140109EN) Modicon TM5 (DIA3ED2131204EN) Modicon TM7 (DIA3ED2140405EN)	Modicon TM3 (DIA3ED2140109EN) Modicon TM5 (DIA3ED2131204EN) Modicon TM7 (DIA3ED2140405EN)	Modicon TM5 (DIA3ED2131204EN) Modicon TM7 (DIA3ED2140405EN)		
	Controller range		Modicon M221/M221 Book	Modicon M241		Modicon M251	Modicon M262	LMC Eco, LMC Pro2	
	More details in catalog		DIA3ED2140106EN	DIA3ED2140107EN		DIA3ED2140108EN	DIA3ED2180503EN	DIA7ED2160303EN	

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

Machine Automation



Machine control

- > 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%

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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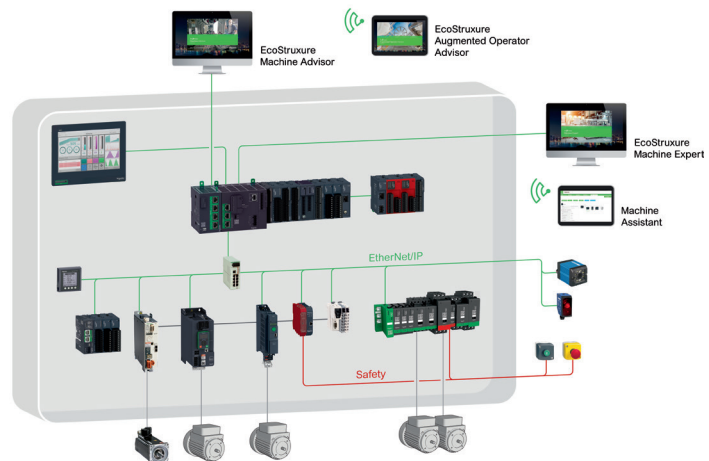


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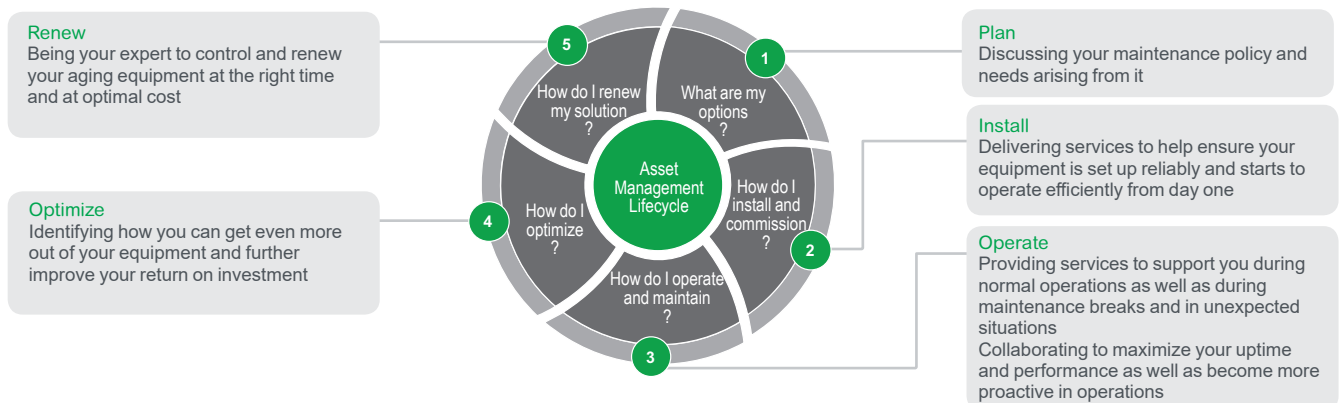


[Steppers Drives & Motors](#)

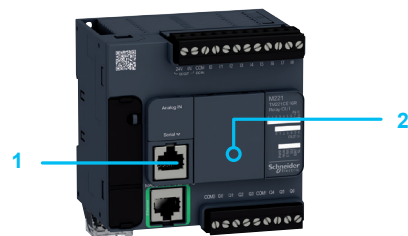
- > The Lexium offer is designed for a broad range of motion-centric machines in applications such as [Packaging](#), [Material Handling](#), [Material Working](#), [Food and Beverage](#), and [Electronics](#)
- > Schneider Electric has developed Tested Validated & Documented Architectures (TVDA) applicable for generic machine control applications as well as for dedicated segment applications such as Packaging, Material Handling, Hoisting, Pumping, or generic [Machine Control applications](#)



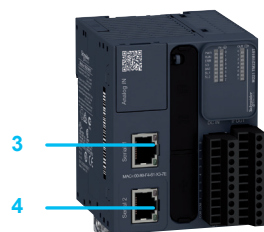
Choose Schneider Electric to help secure your investment and benefit from worldwide services at every step of your project



- > 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.



TM221C●●●●



TM221M16●●
TM221M32●●



TM221ME●●●●

Presentation

RS232/RS485 serial links offer a simple solution to the communication needs of compact machines.

Modbus and ASCII communication protocols are used to connect numerous devices such as HMIs, printers, energy meters, variable speed drives, motor starters, and remote I/O (RIO).

Thanks to the I/O Scanner function, these devices are just as easy to integrate into the application as the local I/O.

Description

■ Modicon M221 Book logic controllers with 16, 24, or 40 I/O have the following on the front panel:

- 1 A serial link port with an RJ45 connector delivering a voltage of 5 V (200 mA) to power an HMI or Bluetooth® adapter
- 2 A slot for a second serial link port (with connection on screw terminals) by inserting the **TMC2SL1** communication cartridge or the **TMC2CONV01** application cartridge (1)

■ Modicon M221 Book logic controllers with 16 or 32 I/O have the following on the front panel:

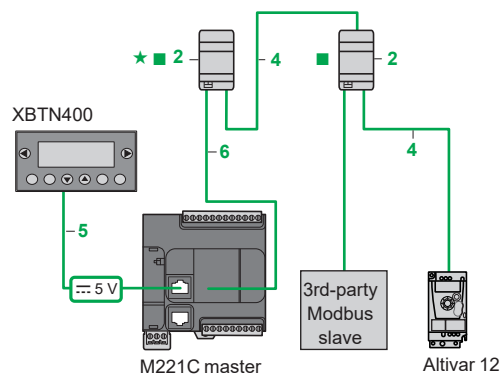
- 3 A serial link port with an RJ45 connector delivering a voltage of 5 V (200 mA) to power an HMI or Bluetooth® adapter
- 4 A second serial port also equipped with an RJ45 connector for **TM221M16●●** and **TM221M32●●** controllers (controllers without embedded Ethernet)

Controller type	Embedded ports		Optional port (1 max. per controller) On TMC2SL1 or TMC2CONV01 option cartridges (connection on screw terminals)
	"Serial 1" or Serial 1" port (RJ45 connector)	"Serial 2" port (RJ45 connector)	
TM221C●●●●	RS232/RS485 with 5 V (200 mA) power supply for HMI or Bluetooth communication adapter (items 1 and 3)	—	RS232/RS485 (item 2)
TM221M●●●●	—	RS485 (item 4)	—
TM221ME●●●●	—	—	—

(1) TM221C40●●●● controllers have 2 slots for a cartridge; only one cartridge, TMC2SL1 or TMC2CONV01, can be used per controller. The other slot remains available for an analog I/O cartridge or an application cartridge.

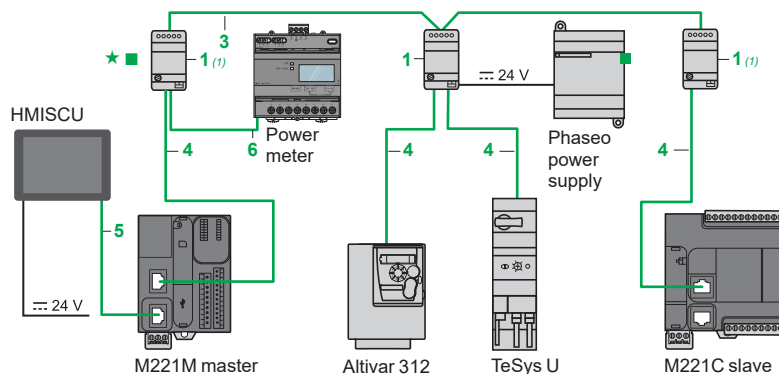
Modbus serial link wiring system

Non-isolated link



- Total length of cables between M221 and ATV 12: ≤ 30 m (98.43 ft)
- Length of cable 4: ≤ 10 m (32.8 ft)
- ★ Active line polarization ■ Line termination

Isolated link (recommended for link > 10 m (32.8 ft))



- Total length of cables between isolation boxes 1: ≤ 1,000 m (3,281 ft)
- Length of drop cables 4 or 5: ≤ 10 m (32.8 ft)
- ★ Active line polarization ■ Line termination
- (1) Box powered by the logic controller

Refer to the catalog below:



DIA3ED2140106EN

Modbus serial link for machines

With Modicon M221 logic controller



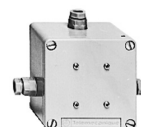
TWDXCAISO



TWDXCAT3RJ



LU9GC3



TSXSCA50



XGSZ24

References						
Designation	Description	Item	Length	Unit reference	Weight kg lb	
Tap-off and adapter components for RS485 serial link						
T-junction box with line isolation Screw terminal block for trunk cable 2x RJ45 for tap-off	☐ Isolation of the RS485 link (1) ☐ Line termination (RC 120 Ω, 1nF) ☐ Line pre-polarization (2 R 620 Ω) ☐ 24 V $\overline{\text{---}}$ power supply (screw terminal block) or 5 V $\overline{\text{---}}$ (via RJ45) ☐ Mounting on 35 mm (1.38 in.) $\perp$	1	—	TWDXCAISO	0.100 0.220	
T-junction box 1x RJ45 for trunk cable 2x RJ45 for tap-off	☐ Line termination (RC 120 Ω, 1nF) ☐ Line pre-polarization (2 R 620 Ω) ☐ Mounting on 35 mm (1.38 in.) $\perp$	2	—	TWDXCAT3RJ	0.080 0.176	
Modbus splitter box Screw terminal block for trunk cable 10x RJ45 for tap-off	☐ Mounting on 35 mm (1.38 in.) $\perp$ on plate or panel	—	—	LU9GC3	0.500 1.102	
T-junctions 2x RJ45 for trunk cable	1 integrated cable with RJ45 connector for tap-off dedicated to Altivar variable speed drive	—	0.3 m 0.98 ft 1 m 3.28 ft	VW3A8306TF03 VW3A8306TF10	— —	
Passive T-junction box	☐ 1-channel line extension and tap-off on screw terminals ☐ Line termination	—	—	TSXSCA50	0.520 1.146	
RS232C/RS485 line converter	☐ Max. data rate 19.2 Kbps, No modem signals ☐ 24 V $\overline{\text{---}}$ /20 mA power supply ☐ Mounting on 35 mm (1.38 in.) $\perp$	—	—	XGSZ24	0.100 0.220	
Cables and cordsets for RS485 serial link						
RS485 double shielded twisted pair trunk cables	Modbus serial link, supplied without connector	3	100 m 328 ft	TSXCSA100	5.680 12.522	
			200 m 656 ft	TSXCSA200	10.920 24.074	
			500 m 1,640 ft	TSXCSA500	30.000 66.139	
Modbus RS485 cordsets	2x RJ45 connectors	4	0.3 m 0.98 ft	VW3A8306R03	0.030 0.066	
			1 m 3.28 ft	VW3A8306R10	0.050 0.110	
			3 m 9.84 ft	VW3A8306R30	0.150 0.331	
	1x RJ45 connector and 1 end with flying leads	6	3 m 9.84 ft	VW3A8306D30	0.150 0.331	
Controller to Magelis HMI cordsets	2x RJ45 connectors Compatible with: ☐ Com port 1 on XBTN200, XBTN400, and XBTR400 (2) ☐ Com port 1 on HMISTO, HMISTU, and HMISCU ☐ Com port 2 on XBTGT2●●0 and HMIGTO	5	2.5 m 8.2 ft	XBTZ9980	0.230 0.507	
			10 m 32.81 ft	XBTZ9982	—	
	1x RJ45 connector and 1x 25-way SUB-D connector Compatible with Com port 1 on XBTN410, XBTR410, and XBTR411	—	2.5 m 8.2 ft	XBTZ938	0.210 0.463	
			2.5 m 8.2 ft	XBTZ9008	0.150 0.331	
TMC2SL1 cartridge to Magelis HMI cordsets	1x RJ45 connector and stripped wires Compatible with: ☐ Com port 1 on HMISTO, HMISTU, and HMISCU ☐ Com port 2 on XBTGT2●●0 and HMIGTO	—	3 m 9.84 ft	VW3A8306D30	0.150 0.331	
Line terminator Sold in packs of 2	For RJ45 connector R = 120 Ω, C = 1 nF	—	—	VW3A8306RC	0.200 0.441	
Cordsets for RS232 serial link						
Cordset for DTE terminal (printer) (3)	Serial link for data terminal equipment (DTE) 1x RJ45 connector and 1x 9-way female SUB-D connector		3 m 9.84 ft	TCSMCN3M4F3C2	0.150 0.331	
Cordset for DCE terminal (modem, converter)	Serial link for data connection equipment (DCE) 1x RJ45 connector and 1x 9-way male SUB-D connector		3 m 9.84 ft	TCSMCN3M4M3S2	0.150 0.331	

(1) Line isolation recommended for line distances > 10 m (32.8 ft).

(2) Can only be connected to the controller SL or SL1 ports in order to supply the Magelis terminal with power.

(3) If the terminal is equipped with a 25-way SUB-D connector, you will also need a 25-way female/9-way male SUB-D adapter.

Modbus serial link for machines

With Modicon M241 logic controller, Modicon M251 logic controller, and Modicon M262 Logic/Motion controller

Presentation

RS232/RS485 serial links offer a simple solution to the communication needs of machines.

Modbus and ASCII communication protocols are used to connect numerous devices such as HMIs, printers, energy meters, variable speed drives, motor starters, and remote I/O (RIO).

Description

Modicon M241 logic controllers have the following on their top panel:

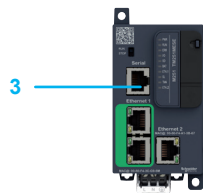
- 1 A "Serial 1" link port with an RJ45 connector for connecting a Magelis HMI, Bluetooth® communication adapter, or other device
- 2 A second serial link port "Serial 2" (with connection on screw terminals)

Controller type	Embedded ports	
	"Serial 1" port (RJ45 connector)	"Serial 2" port (connection on screw terminals)
TM241●●●●	RS232/RS485 with 5V (200 mA) power supply for HMI or Bluetooth communication adapter (item 1)	RS485 (item 2)

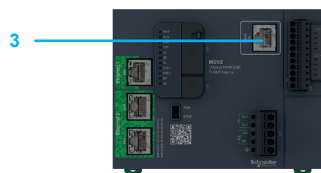
- 3 Modicon M251 logic controllers and **Modicon M262** Logic/Motion controllers have a serial link (SL) port on their front panel (RS232 or RS485, RJ45 connector) for communicating with peripheral devices supporting the Modbus protocol as either a master or slave, ASCII protocol (printer, modem, etc.), and Machine Expert protocol (HMI, etc.).



Modicon M241 logic controller



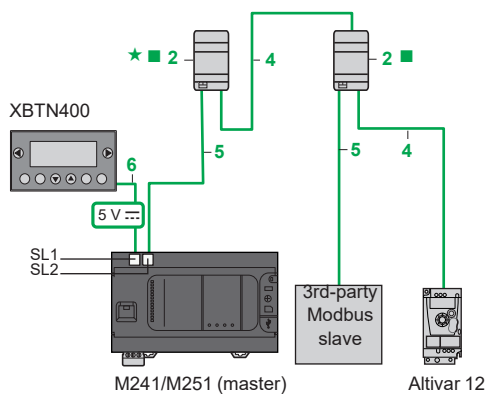
Modicon M251 logic controller



Modicon M262 Logic/Motion controller

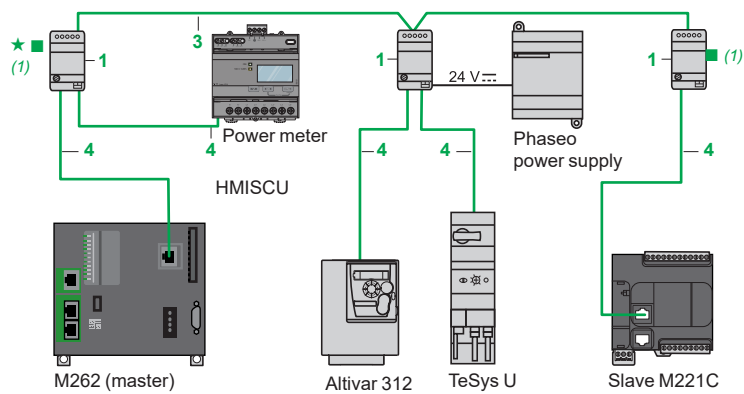
Modbus serial link wiring system

Non-isolated link



- Total length of cables between M241/M251 and ATV12 ≤ 30 m (98.43 ft)
- Length of cable 4: ≤ 10 m (32.8 ft)
- ★ Active line polarization ■ Line termination

Isolated link (recommended for link > 10 m (32.8 ft))



- Total length of cables between isolation boxes 1: ≤ 1,000 m (3,281 ft)
- Length of cable 4: ≤ 10 m (32.8 ft)
- ★ Active line polarization ■ Line termination
- (1) Box powered by the logic controller

Refer to the catalogs below:



DIA3ED2140107EN



DIA3ED2140108EN



DIA3ED2180503EN

Modbus serial link for machines

With Modicon M241 logic controller, Modicon M251 logic controller, and Modicon M262 Logic/Motion controller



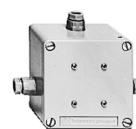
TWDXCAISO



TWDXCAT3RJ



LU9GC3



TSXSCA50



XGSZ24

References

Designation	Description	Item	Length	Reference	Weight kg lb
Tap-off and adapter components for RS485 serial link					
T-junction box with line isolation Screw terminal block for trunk cable 2x RJ45 for tap-off	☐ Isolation of the RS485 link (1) ☐ Line termination (RC 120 Ω, 1nF) ☐ Line pre-polarization (2 R 620 Ω) ☐ 24 V $\overline{\text{---}}$ power supply (screw terminal block) or 5 V $\overline{\text{---}}$ (via RJ45) ☐ Mounting on 35 mm (1.38 in.) $\perp$	1	—	TWDXCAISO	0.100 0.220
T-junction box 1x RJ45 for trunk cable 2x RJ45 for tap-off	☐ Line termination (RC 120 Ω, 1nF) ☐ Line pre-polarization (2 R 620 Ω) ☐ Mounting on 35 mm (1.38 in.) $\perp$	2	—	TWDXCAT3RJ	0.080 0.176
Modbus splitter box Screw terminal block for trunk cable 10x RJ45 for tap-off	☐ Mounting on 35 mm (1.38 in.) $\perp$ on plate or panel	—	—	LU9GC3	0.500 1.102
T-junctions 2x RJ45 for trunk cable	1 integrated cable with RJ45 connector for tap-off dedicated to Altivar variable speed drive	—	0.3 m 0.98 ft 1 m 3.28 ft	VW3A8306TF03 VW3A8306TF10	— —
Passive T-junction box	☐ 1-channel line extension and tap-off on screw terminals ☐ Line termination	—	—	TSXSCA50	0.520 1.146
RS232C/RS485 line converter	☐ Max. data rate 19.2 Kbps, No modem signals ☐ 24 V $\overline{\text{---}}$ /20 mA power supply ☐ Mounting on 35 mm (1.38 in.) $\perp$	—	—	XGSZ24	0.100 0.220
Cables and cordsets for RS485 serial link					
RS485 double shielded twisted pair trunk cables	Modbus serial link, supplied without connector	3	100 m 328 ft 200 m 656 ft 500 m 1,640 ft	TSXCSA100 TSXCSA200 TSXCSA500	5.680 11.023 10.920 24.074 30.000 66.139
Modbus RS485 cordsets	2x RJ45 connectors	4	0.3 m 0.98 ft 1 m 3.28 ft 3 m 9.84 ft	VW3A8306R03 VW3A8306R10 VW3A8306R30	0.030 0.066 0.050 0.110 0.150 0.331
	1x RJ45 connector and 1 end with flying leads	5	3 m 9.84 ft	VW3A8306D30	0.150 0.331
Cordsets for use between M241 (SL1), M251 controllers and Magelis HMI	2x RJ45 connectors Compatible with: ☐ Com port 1 on XBTN200, XBTN400, and XBTR400 (2) ☐ Com port 1 on HMISTO, HMISTU, and HMISCU ☐ Com port 2 on XBTGT2●●0 and HMIGTO	6	2.5 m 8.2 ft	XBZT9980	0.230 0.507
	1x RJ45 connector and 1x 25-way SUB-D connector Compatible with Com port 1 on XBTN410, XBTR410, and XBTR411	6	10 m 32.81 ft	XBZT9982	—
	1x RJ45 connector and 1x 25-way SUB-D connector Compatible with Com port 1 on XBTN410, XBTR410, and XBTR411	—	2.5 m 8.2 ft	XBZT9938	0.210 0.463
	1x RJ45 connector and 1x 9-way SUB-D connector Compatible with Com port 1 on XBTGT2●●0	—	2.5 m 8.2 ft	XBZT9908	—
Cordsets for use between M241 (SL2) controllers and Magelis HMI	1x RJ45 connector and stripped wires Compatible with: ☐ Com port 1 on HMISTO, HMISTU, and HMISCU ☐ Com port 2 on XBTGT2●●0 and HMIGTO	—	3 m 9.84 ft	VW3A8306D30	0.150 0.331
Line terminator Sold in packs of 2	For RJ45 connector R = 120 Ω, C = 1 nF	—	—	VW3A8306RC	0.200 0.441
Cordsets for RS232 serial link					
Cordset for DTE terminal (printer) (3)	Serial link for data terminal equipment (DTE) 1x RJ45 connector and 1x 9-way female SUB-D connector	—	3 m 9.84 ft	TCSMCN3M4F3C2	0.150 0.331
Cordset for DCE terminal (modem, converter)	Serial link for data connection equipment (DCE) 1x RJ45 connector and 1x 9-way male SUB-D connector	—	3 m 9.84 ft	TCSMCN3M4M3S2	0.150 0.331

(1) Line isolation recommended for line distances > 10 m (32.8 ft).

(2) Can only be connected to the controller SL or SL1 ports in order to supply the Magelis terminal with power.

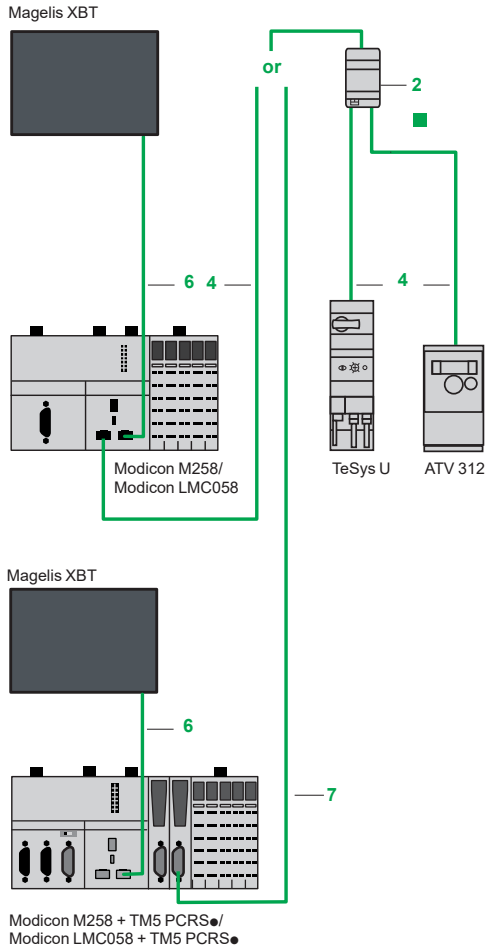
(3) If the terminal is equipped with a 25-way SUB-D connector, you will also need a 25-way female/9-way male SUB-D adapter.

Modbus serial link for machines

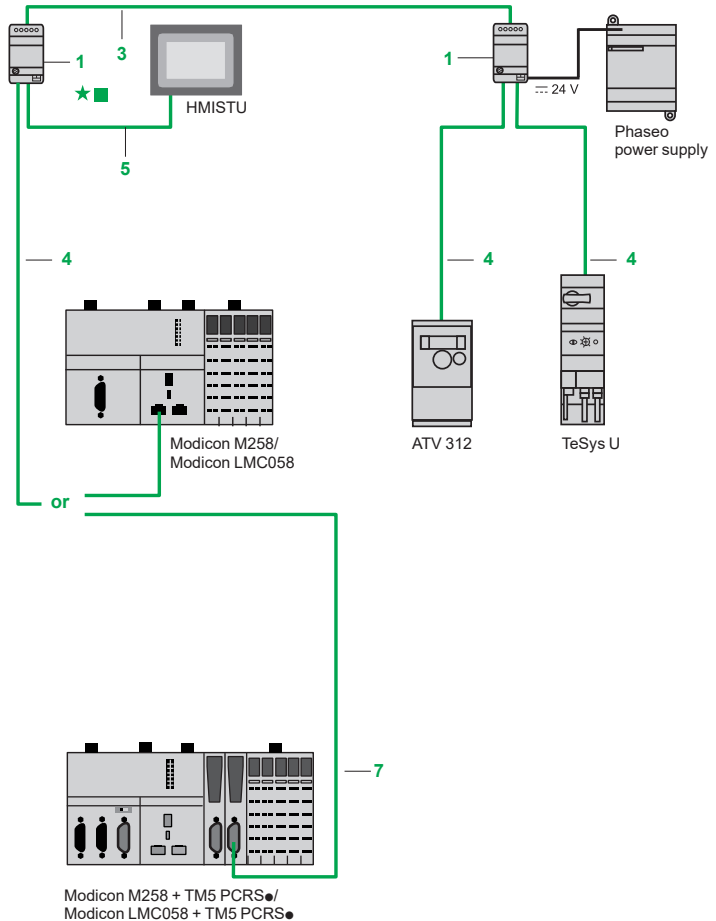
With Modicon M258 logic controller and
Modicon LMC058 motion controller

Modbus serial link wiring system

Non-isolated link



Isolated link



- Length of cables between Modicon M258 and Altivar:
≤ 30 m (98.43 ft)
- ★ Active line polarization
- Line termination

- Total length of cables between isolation boxes 1: ≤ 1,000 m (3,281 ft)
- Length of drop cables 4, 5, or 6 ≤ 10 m (32.8 ft)

Refer to the catalogs below:





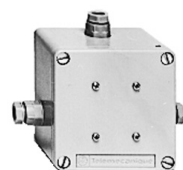
TWD XCA ISO



TWD XCA T3RJ



LU9 GC3



TSX SCA 50



XGS Z24

References

Designation	Description	Item	Length	Unit reference	Weight kg lb
Tap-off and adapter components for RS485 serial link					
Isolation box Screw terminal block for trunk cable 2x RJ45 for tap-off	☐ Isolation of the RS485 link (1) ☐ Line termination (RC 120 Ω, 1nF) ☐ Line pre-polarization (2 R 620 Ω) ☐ 24 V $\pm$ power supply (screw terminal block) or 5 V $\pm$ (via RJ45) ☐ Mounting on 35 mm (1.38 in.) $\perp$	1	—	TWDXCAISO	0.100 0.220
Tap junction box 1x RJ45 for main cable 2x RJ45 for tap-off	☐ Line termination (RC 120 Ω, 1nF) ☐ Line pre-polarization (2 R 620 Ω) ☐ Mounting on 35 mm (1.38 in.) $\perp$	2	—	TWDXCAT3RJ	0.080 0.176
Modbus splitter box Screw terminal block for trunk cable 10x RJ45 for tap-off	☐ Mounting on 35 mm (1.38 in.) $\perp$ on plate or panel	—	—	LU9GC3	0.500 1.102
T-junctions 2x RJ45 for trunk cable	1 integrated cable with RJ45 connector for tap-off dedicated to Altivar variable speed drive	—	0.3 m 0.98 ft 1 m 3.28 ft	VW3A8306TF03 VW3A8306TF10	— —
Passive T-junction box	☐ 1-channel line extension and tap-off on screw terminals ☐ Line termination	—	—	TSXSCA50	0.520 1.146
RS232C/RS485 line converter	☐ Max. data rate 19.2 Kbps, No modem signals ☐ 24 V $\pm$ /20 mA power supply ☐ Mounting on 35 mm (1.38 in.) $\perp$	—	—	XGSZ24	0.100 0.220
Cables and cordsets for RS485 serial link					
RS485 double shielded twisted pair trunk cables	Modbus serial link, supplied without connector	3	100 m 328 ft 200 m 656 ft 500 m 1,640 ft	TSXCSA100 TSXCSA200 TSXCSA500	5.680 12.522 10.920 24.074 30.000 66.139
Modbus RS485 cordsets	2x RJ45 connectors	4	0.3 m 0.98 ft 1 m 3.28 ft 3 m 9.84 ft	VW3A8306R03 VW3A8306R10 VW3A8306R30	0.030 0.066 0.050 0.110 0.150 0.331
	1x RJ45 connector and 1 end with free wires	—	3 m 9.84 ft	VW3A8306D30	0.150 0.331
Cordsets for Modicon M258 (SL1, SL2) to Magelis display unit and terminal	2x RJ45 connectors Compatible with: ☐ Com port 1 on XBTN200, XBTN400, and XBTR400 (2) ☐ Com port 1 on HMISTO, HMISTU, and HMISCU ☐ Com port 2 on XBTGT2●●0 and HMIGTO	6	2.5 m 8.2 ft	XBTZ9980	0.150 0.331
	1x RJ45 connector and 1x 25-way SUB-D connector Compatible with Com port 1 on XBTN410, XBTR410, and XBTR411	5, 6	2.5 m 8.2 ft	XBTZ938	0.210 0.463
	1x RJ45 connector and 1x 9-way SUB-D connector Compatible with Com port 1 on XBTGT2●●0	6	2.5 m 8.2 ft	XBTZ9008	0.150 0.331
Cordset for Magelis Small Panel display unit and terminal	1x RJ45 connector and stripped wires Compatible with: ☐ Com port 1 on HMISTO, HMISTU, and HMISCU ☐ Com port 2 on XBTGT2●●0 and HMIGTO	5	3 m 9.84 ft	VW3A8306R30	0.150 0.331
Line terminator Sold in packs of 2	For RJ45 connector R = 120 Ω, C = 1 nf	—	—	VW3A8306RC	0.200 0.440
Cordsets for RS232 serial link					
Cordset for DTE terminal (printer) (3)	Serial link for data terminal equipment (DTE) 1x RJ45 connector and 1x 9-way female SUB-D connector	7	3 m 9.84 ft	TCSMCN3M4F3C2	0.150 0.331
Cordset for DCE terminal (modem, converter)	Serial link for data connection equipment (DCE) 1x RJ45 connector and 1x 9-way male SUB-D connector	7	3 m 9.84 ft	TCSMCN3M4M3S2	0.150 0.331

(1) Line isolation recommended for line distances > 10 m (32.8 ft).

(2) Can only be connected to the controller SL or SL1 ports in order to supply the Magelis terminal with power.

(3) If the terminal is equipped with a 25-way SUB-D connector, you will also need a 25-way female/9-way male SUB-D adapter.

L	
LU9GC3	9 11 13
T	
TCSMCN3M4F3C2	9 11 13
TCSMCN3M4M3S2	9 11 13
TSXCSA100	9 11 13
TSXCSA200	9 11 13
TSXCSA500	9 11 13
TSXSCA50	9 11 13
TWDXCAISO	9 11 13
TWDXCAT3RJ	9 11 13
V	
VW3A8306D30	9 11 13
VW3A8306R03	9 11 13
VW3A8306R10	9 11 13
VW3A8306R30	9 11 13
VW3A8306RC	9 11 13
VW3A8306TF03	9 11 13
VW3A8306TF10	9 11 13
X	
XBTZ9008	9 11 13
XBTZ938	9 11 13
XBTZ9980	9 11 13
XBTZ9982	9 11
XGSZ24	9 11 13



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