



# Modicon MC80

Programmable logic controllers

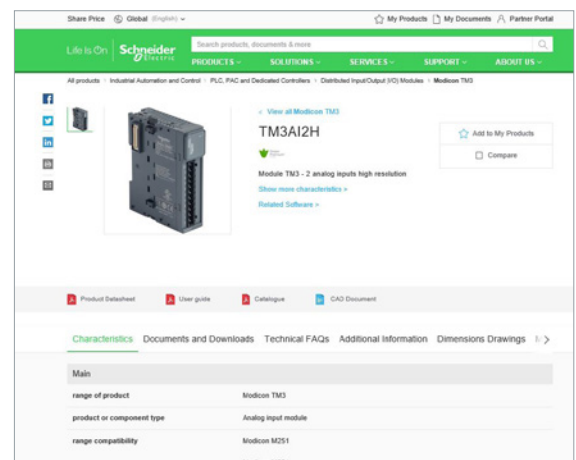
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## Get technical information about your product

References

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

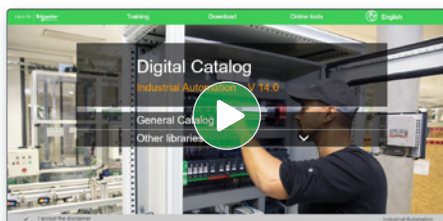
Number and type of channels	Input range	Output range	Resolution	Input terminal (Modicon)	Reference	Weight
2 enhancement inputs	-10...+10 VDC 0...20 mA, 4...20 mA	10 mA or 10 mA + sign	12 bits or 12 bits + sign	TER312	TM3AI2H	0,110
4 enhancement inputs	-10...+10 VDC 0...20 mA, 4...20 mA	10 mA or 10 mA + sign	12 bits or 12 bits + sign	TER312	TM3AI4H	0,130
4 enhancement or temperature inputs	-10...+10 VDC 0...20 mA, 4...20 mA PT100, RTD, Ni100, Ni200, Ni500, Ni1000, Pt100, Pt200	10 mA or 10 mA + sign	12 bits or 12 bits + sign	TER312	TM3AI4T	0,130
4 differential temperature inputs	-10...+10 VDC 0...20 mA, 4...20 mA	10 mA or 10 mA + sign	12 bits or 12 bits + sign	TER312	TM3AI4D	0,130
2 enhancement	-10...+10 VDC	10 mA or 10 mA + sign	12 bits or 12 bits + sign	TER312	TM3AI2H	0,110



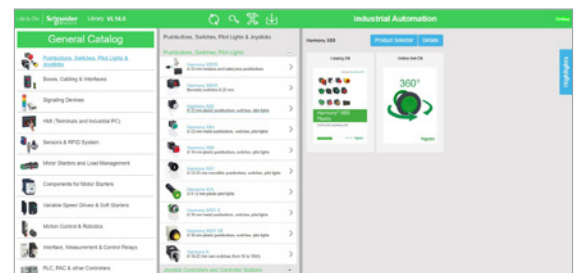
Each commercial reference presented in a catalog contains a hyperlink. Click on it to obtain the technical information of the product:

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

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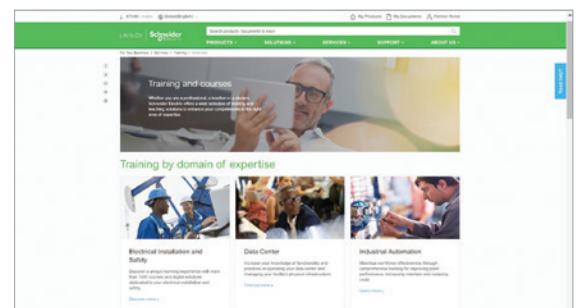


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# Modicon

## Discover Modicon

Industrial Edge control for IIoT

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

## Explore our offer

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

Life Is On



# General contents

## Modicon MC80 programmable logic controllers

■ General presentation.....	page 2
<i>Selection guide</i> .....	page 4
■ Presentation.....	page 6
■ Description.....	page 7
■ Communication .....	page 8
■ Architectures .....	page 8
■ References .....	page 9
■ Standards and certifications .....	page 12
■ Environment tests .....	page 13
■ Automation product certifications and EC regulations .....	page 16
■ Product reference index.....	page 18

# Modicon MC80 programmable logic controllers

Robustness and reliability, “all-in-one” controller, versatility and scalability

## Modicon MC80 The compact PLC

The MC80 is a compact PLC (Programmable Logic Controller) with cost-effective TCO (Total Cost of Ownership).

It provides optimized operation, withstanding extreme conditions with high reliability and performance. It also includes special features to simplify diagnostics and automate maintenance tasks in order to reduce downtime.



## Robustness and reliability

### Robustly built for extreme operation

- > Fit for purpose as a local controller
- > Built to withstand extreme temperatures (- 25°C to + 70°C/- 13°F to + 158°F) to increase system availability
- > Scalability, high availability, cybersecurity and data exchanges native to MC80, easy to adapt to the plant specific's characteristics
- > Completely integrated with the other Modicon controllers, programmed and commissioned with EcoStruxure Control Expert

## “All-in-one” controller

### Compact controller with

- > A high-performance processor **1** with 64-bit calculation capability
- > Dual Ethernet port with embedded switch to create flexible and scalable architectures without external switches **2**
- > Integrated I/Os to interface with hard-wired devices and sensors **3**
- > A Modbus Serial link master/slave port for easy integration of local instrumentation or a portable HMI **4**
- > A CANopen master port for easy connection of devices such as encoders or variable speed drives **5**



#### Processor

+  
communication  
+  
I/O  
=  
“All-in-one”  
controller

## Versatility and scalability

### Flexibility in design

- > Fully distributed, scalable architecture based on an open standard that accommodates diverse topologies
- > Fully integrated in Schneider Automation Platform, including EcoStruxure Control Expert configuration software
- > Excellent ability to integrate external devices such as encoders and variable speed drives via I/O cards or communication ports
- > Scalable and open architectures for thousands of devices



Ethernet Modbus  
TCP

**+** Reduced installation time thanks to a compact “all-in-one” PLC





## Cybersecurity

### Cybersecurity ready

- > Access to the PLC is password-protected. Additionally, only selected devices are allowed to connect to Modicon MC80 controllers
- > Firmware upgrading is password-protected
- > Memory protection mode is available via physical inputs or software configuration. The applications and user data are protected in this mode
- > Run/Stop protection mode is available via physical inputs or software configuration

Outstanding durability and integrated cybersecurity



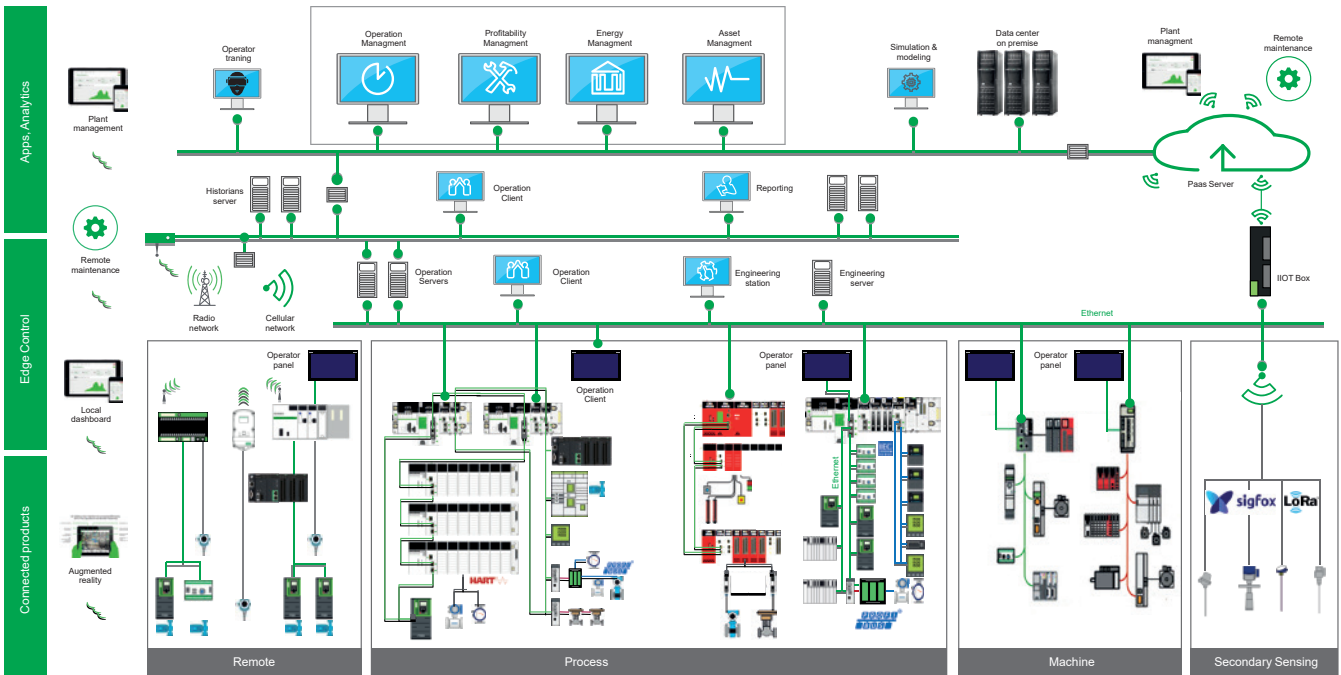
## High network availability

### Operational intelligence thanks to


- > Full Ethernet architectures with access to data from anywhere: immediate insight into the process
- > Native support of RSTP (Rapid Spanning Tree Protocol) ring topology for network redundancy in the event of link failure

Extend your process or application easily with flexible Modicon MC80 architectures or with Ethernet transparency

Real-time data access from any location enables timely action



# Modicon MC80 programmable logic controllers

<b>Type of Modicon MC80</b>		<b>Programmable logic controller</b>
		
<b>Power supply</b>	Nominal power supply Voltage range	24 V $\overline{\text{---}}$ isolated power supply module 20.4...28.8 V $\overline{\text{---}}$
<b>Internal memory capacity</b>	Internal user RAM Program, constants and symbols Located/unlocated data Memory retention	3840 KB 3590 KB 128 KB Yes, without battery
<b>Number of Kinstructions executed per ms</b>	100% Boolean 65% Boolean + 35% fixed arithmetic	16.7 Kinstructions/ms 12.5 Kinstructions/ms
<b>Embedded real-time clock</b>		Yes
<b>Communication</b>	Serial link CANopen Ethernet USB	1 RJ45 port in Modbus Serial link master/slave mode or in Character mode (non-isolated RS 232/RS 485, 0.3...19.2 Kbps) 247 devices maximum 1 9-way SUB-D port (16 slaves, 20 Kbps...1 Mbps) 2 RJ45 10BASE-T/100BASE-TX ports (FDR client, SNMP, RSTP, FTP server, Modbus TCP) 1 mini-B programming port (PC terminal)
<b>High-speed counter</b>		–
<b>Integrated analog inputs</b>	Number of channels Voltage range Current range	4 channels (voltage and current), 16 bits $\pm 10\text{ V}$ , 0...10 V, 0...5 V, 1...5 V, $\pm 5\text{ V}$ 0...20 mA, 4...20 mA, $\pm 20\text{ mA}$
<b>Integrated discrete inputs</b>	Number of channels Voltage range	8 channels 19...30 V $\overline{\text{---}}$ sensor power supply
<b>Integrated discrete outputs</b>	Number of channels Voltage range Current	12 channels 19...30 V $\overline{\text{---}}$ pre-actuator power supply 2 A per channel, maximum 10 A per group
<b>Software</b>		Requires EcoStruxure Control Expert / Unity Pro version $\geq 8.1$ with MC80 Hotfix
<b>Environmental</b>	Operation temperature Storage temperature Relative humidity Vibration	- 25...+ 70°C/- 13...+ 158°F - 40...+ 85°C/- 40...+ 185°F < 95% 3 g
<b>References</b>		<b>BMKC8020301</b>
<b>Page</b>		9

<b>Programmable logic controller</b>	
 	
24 V $\overline{\text{---}}$ isolated power supply module 20.4...28.8 V $\overline{\text{---}}$	
3840 KB 3590 KB 128 KB Yes, without battery	
16.7 Kinstructions/ms 12.5 Kinstructions/ms	
Yes	
1 RJ45 port in Modbus Serial link master/slave mode or in Character mode (non-isolated RS 232/RS 485, 0.3...19.2 Kbps) 247 devices maximum 1 9-way SUB-D port (16 slaves, 20 Kbps...1 Mbps) 2 RJ45 10BASE-T/100BASE-TX ports (FDR client, SNMP, RSTP, FTP server, Modbus TCP) 1 mini-B programming port (PC terminal)	
2 channels (12 inputs and 4 outputs, 60 KHz) with one shot counter, modulo loop counter, free large counter, frequency meter, event counter, period measurement and ration meter functions	
–	4 channels (voltage and current), 16 bits
–	$\pm 10\text{ V}$ , 0...10 V, 0...5 V, 1...5 V, $\pm 5\text{ V}$
–	0...20 mA, 4...20 mA, $\pm 20\text{ mA}$
8 channels 19...30 V $\overline{\text{---}}$ sensor power supply	
8 channels	12 channels
19...30 V $\overline{\text{---}}$ pre-actuator power supply 0.5 A per channel, maximum 5 A per group	
2 A per channel, maximum 10 A per group	
Requires EcoStruxure Control Expert / Unity Pro version $\geq 8.1$ with MC80 Hotfix	
- 25...+ 70°C/- 13...+ 158°F - 40...+ 85°C/- 40...+ 185°F < 95% 3 g	
<b>BMKC8020310</b>	<b>BMKC8030311</b>
9	

# Modicon MC80 programmable logic controllers

## Composition and software configuration

### Presentation

The Modicon MC80 controller is an automated platform processor which manages the entire PLC station made up of discrete I/O functions, analog input functions, counter functions and communication functions.

The MC80 PLCs are available in 3 different variants:

- **BMKC8020301** controller with 8 discrete inputs, 12 discrete outputs and 4 analog inputs
- **BMKC8020310** controller with 8 discrete inputs, 8 discrete outputs and 2 highspeed counter channels
- **BMKC8030311** controller with 8 discrete inputs, 12 discrete outputs, 2 highspeed counter channels and 4 analog inputs

The communication buses and networks available in MC80 controllers are:

- CANopen
- Serial link
- Ethernet

The processors in this range have different features such as the number of I/Os or the number of high-speed counter channels.

### Cybersecurity

The Modicon MC80 is a cyber-secure platform thanks to its advanced built-in cybersecurity features and its robustness under both extreme and common Ethernet conditions.

To meet cybersecurity requirements, the Modicon MC80 controller offers:

- Protection against unauthorized remote connections via an online editable control access list
- Protection against remote programming changes via a password
- An option to enable or disable the FTP service for firmware changes
- An option to enable or disable remote Run/Stop commands
- An option to enable or disable remote write commands
- Authentication and integrity of the firmware

Also, unnecessary services are disabled by default and security features are enabled by default.

### Design and setup of Modicon MC80 applications

EcoStruxure Control Expert (renamed from previous Unity Pro) programming software ≥ V8.1 (Small, Large and Extra Large versions) is required to set up the Modicon MC80 controller. It is mandatory to install the MC80 hotfix in addition to the software in the earlier versions. The MC80 hotfix version depends on the software version.

*Note: For further information on Control Expert, please consult our "EcoStruxure Control Expert and OPC software" catalogue available on our website [www.se.com](http://www.se.com).*

### Companion software

The Unity Loader is also available for MC80 controllers. It provides global management functions for the firmware, the application and the user data.

Depending on requirements, you may also need Unity EFB Toolkit software for developing EF and EFB libraries in C language and Unity Loader software for updating Control Expert projects and firmware.

*Note: For further information on Unity Loader and EFB Toolkit, please consult our "PlantStruxure Control Expert and OPC software" catalogue available on our website [www.schneider-electric.com](http://www.schneider-electric.com).*

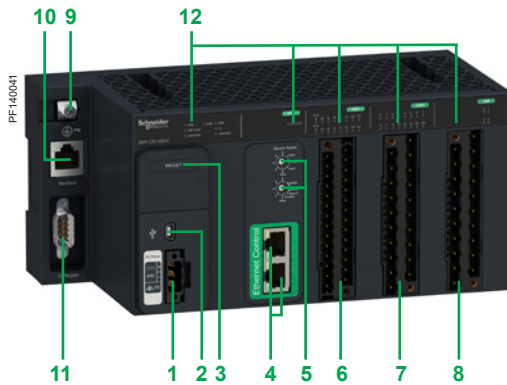


Unity Loader



# Modicon MC80 programmable logic controllers

## Controllers



BMKC8030311

### Description

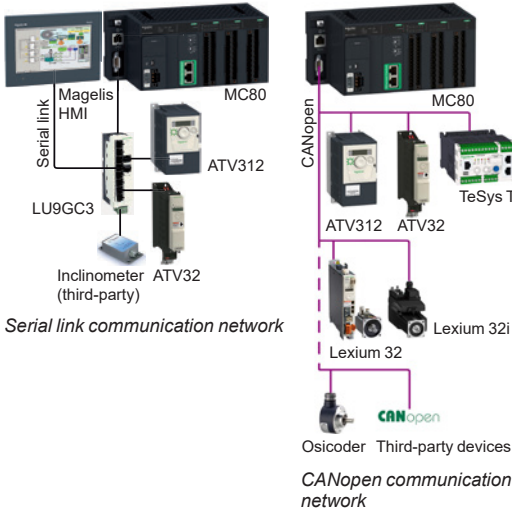
Modicon MC80 programmable controllers have the followings on the front panel:

- 1 A galvanic isolated 24 V  $\bar{\text{---}}$  power supply on the PLC to supply the whole module
- 2 A mini-B USB port (type 2.0). The USB port is a default terminal connection for application download/upload, programming tools connection, etc.
- 3 A reset button
- 4 2 Ethernet ports with an embedded Ethernet switch dedicated to Ethernet communication
- 5 2 rotary switches which enable IP addressing
- 6 2 high-speed counter channels with 6 discrete inputs and 2 discrete outputs per channel (available with **BMKC8020310** and **BMKC8030311** controllers)
- 7 8 discrete inputs and 8/12 discrete outputs
- 8 4 analog inputs (available with **BMKC8020301** and **BMKC8030311** controllers)
- 9 A grounding screw
- 10 An RJ45 connector for Modbus serial link, Character mode link, Modbus slave or Modbus RTU/ASCII master bus (RS232/RS485, 300...19200 bps). The serial link can be used for connecting the HMI and other serial devices.
- 11 A 9-way SUB-D connector for the integrated CANopen master bus, supports up to 16 devices
- 12 Display blocks comprising between 28 and 44 LEDs, depending on the model:
  - PWR (green): indicates the power supply status
  - RUN (green): indicates the module operating status
  - ERR (red): indicates the module's detected errors
  - SER COM (yellow): indicates the communication activity of the serial link
  - IO (red): indicates a detected error on the I/O ports
  - CAN RUN (green): indicates the CANopen operating status
  - CAN ERR (red): indicates detected errors on CANopen
  - ETH STS (green): indicates the Ethernet port operating status
  - CH0 and CH1: IA, IB, IS, IE, IP, IC, Q0, Q1 (green): indicate the state of the high-speed counter channels (**BMKC8020310** and **BMKC8030311** controllers only)
  - 0 to 7 (green): indicate the state of the discrete inputs
  - 16 to 27 (green): indicate the state of the discrete outputs
  - 0 to 3 (green): indicate the state of the analog inputs (**BMKC8020301** and **BMKC8030311** controllers only)

# Modicon MC80 programmable logic controllers

## Communication network and local controller cabinet architectures

### Communication



#### CANopen

The embedded CANopen master on Modicon MC80 controllers is available for connecting Schneider Electric devices and other third-party devices. The following devices are compatible with MC80 controllers:

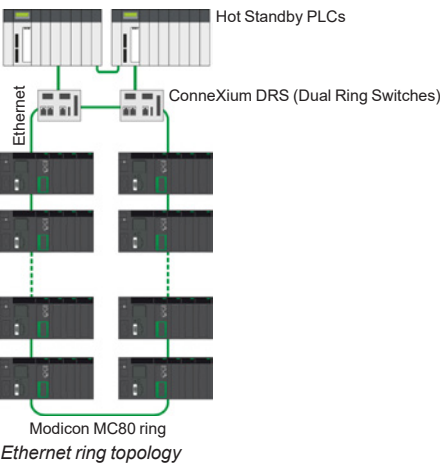
- Altivar variable speed drives, Lexium servo drives and Osicoder
- Other third-party servo drives, variable speed drives or sensors

In addition, the MFB (Motion Function Block) integrated in Control Expert is able to set up motion control in the architectures with drives and servo drives for axis control. In compliance with PLCopen specifications, the MFB library makes motion programming with Control Expert, as well as axis diagnosis, both easy and flexible.

#### Serial link

Modicon MC80 controllers integrate a serial link which can be used with the Modbus RTU/ASCII master/slave protocol or with the Character mode protocol.

In Modbus mode, MC80 controller can be configured either in master mode or in slave mode for connecting with HMI or with serial field devices.



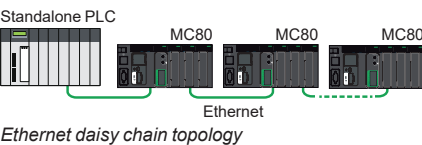
#### Ethernet

Modicon MC80 controllers support Modbus/TCP, a complete open Ethernet protocol. The following communication services are available on MC80 for use in automation applications:

- DHCP
- FTP (for firmware upgrades only)
- Modbus/TCP messaging
- FDR (Fast Device Replacement)
- SNMP (Simple Network Management Protocol) V1
- Bandwidth management
- RSTP (Rapid Spanning Tree Protocol) for ring network

The RSTP function can be easily enabled and disabled in Control Expert for different Ethernet network topologies:

- Ring topology with RSTP enabled
- Daisy chain topology with RSTP disabled

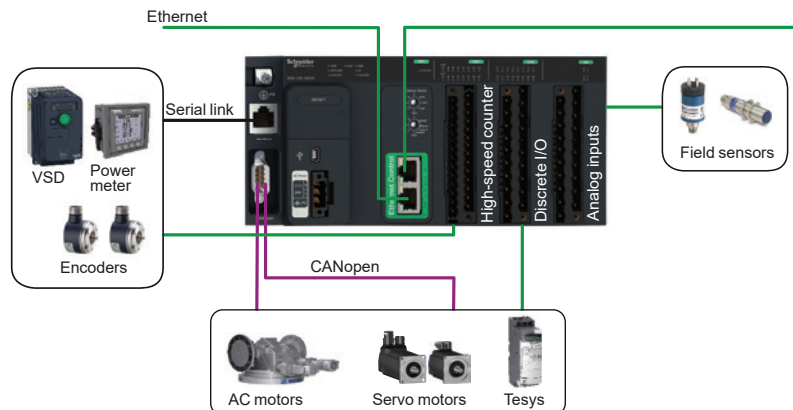


### Example of local controller cabinet architecture

The local controller cabinet architecture example on the right shows the types of devices that can be connected to the Modicon MC80 programmable logic controller.

Modicon MC80 could be used in below use cases:

- Local controller
- Remote IO control unit
- Gateway (Ethernet <-> Modbus Serial/CANopen)



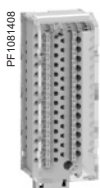
Note: For further information, please consult our "Modicon M580 automation platform", "Modicon M340 automation platform" and "ConneXium - Connecting Ethernet devices" catalogs available on our website [www.se.com](http://www.se.com).

# Modicon MC80 programmable logic controllers

Controllers, removable terminal blocks, grounding accessories and CANopen cabling system



BMKC8030311



BMXFTB2820



STBXSP3000 + STBXSP3020



TSXCANTDM4



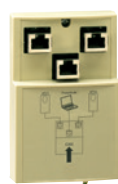
TSXCANKCDF90T



TSXCANKCDF90TP



TSXCANKCDF180T



VW3CANTAP2

## Modicon MC80 controllers

Description	Number of I/O	No. of high-speed counter channels	Reference	Weight kg/lb
Controller	8 discrete inputs 12 discrete outputs 4 analog inputs	–	<a href="#">BMKC8020301</a>	1.050/ 2.310
	8 discrete inputs 8 discrete outputs	2	<a href="#">BMKC8020310</a>	0.980/ 2.160
	8 discrete inputs 12 discrete outputs 4 analog inputs	2	<a href="#">BMKC8030311</a>	1.150/ 2.540

## Removable terminal blocks

Description	Type	Reference	Weight kg/lb
20-way removable terminal blocks	Cage clamp	<a href="#">BMXFTB2000</a>	0.093/ 0.205
	Screw clamp	<a href="#">BMXFTB2010</a>	0.075/ 0.165
	Spring	<a href="#">BMXFTB2020</a>	0.060/ 0.132
28-way removable terminal blocks	Cage clamp	<a href="#">BMXFTB2800</a>	0.111/ 0.245
	Spring	<a href="#">BMXFTB2820</a>	0.080/ 0.176

## Grounding accessories

Description	Use for	Sold in lots of	Reference	Weight kg/lb
Grounding kit	Grounding shielded cables Comprises 1 bar (1 m/3.21 ft long) and 2 lateral supports	–	<a href="#">STBXSP3000</a>	–
Terminal for grounding kit	Fastening analog input module and counter module connection cables, cross-section 1.5...6 mm <sup>2</sup> / AWG 16...10	10	<a href="#">STBXSP3020</a>	–

## Standard tap junctions and connectors

Designation	Description	Reference	Weight kg/lb
IP 20 CANopen tap junction	4 SUB-D ports. Screw terminal block for connecting the trunk cables Line termination	<a href="#">TSXCANTDM4</a>	0.196/ 0.432
IP 20 connectors	90° angled	<a href="#">TSXCANKCDF90T</a>	0.046/ 0.101
	Straight (1)	<a href="#">TSXCANKCDF180T</a>	0.049/ 0.108
	Right-angle with 9-way SUB-D for connecting a PC or diagnostic tool	<a href="#">TSXCANKCDF90TP</a>	0.051/ 0.112
IP 20 CANopen tap junctions for Altivar and Lexium 32	2 RJ45 ports and 1 RJ45 port	<a href="#">VW3CANTAP2</a>	–

# Modicon MC80 programmable logic controllers

## CANopen and serial link cabling systems

IP 20 standard cables and preassembled cordsets					
Designation	Description	Length m/ ft	Reference	Weight kg/ lb	
<b>CANopen cables</b> (AWG 24)	Standard, C€ marking: low smoke emission. Zero halogen. Flame-retardant (IEC 60332-1)	50/164.04	<a href="#">TSXCANCA50</a>	4.930/ 10.869	
		100/328.08	<a href="#">TSXCANCA100</a>	8.800/ 19.401	
		300/984.25	<a href="#">TSXCANCA300</a>	24.560/ 54.145	
	Standard, UL certification, C€ marking: flame-retardant (IEC 60332-2)	50/164.04	<a href="#">TSXCANCB50</a>	3.580/ 7.893	
		100/328.08	<a href="#">TSXCANCB100</a>	7.840/ 17.284	
		300/984.25	<a href="#">TSXCANCB300</a>	21.870/ 48.215	
	For harsh environments (3) or mobile installations, C€ marking: low smoke emission. Zero halogen. Flame-retardant (IEC 60332-1). Oil-resistant	50/164.04	<a href="#">TSXCANCD50</a>	3.510/ 7.738	
		100/328.08	<a href="#">TSXCANCD100</a>	7.770/ 17.130	
		300/984.25	<a href="#">TSXCANCD300</a>	21.700/ 47.840	
	<b>CANopen preassembled cordsets</b> One 9-way female SUB-D connector at each end (AWG 24)	Standard, C€ marking: low smoke emission. Zero halogen. Flame-retardant (IEC 60332-1)	0.3/0.98	<a href="#">TSXCANCADD03</a>	0.091/ 0.201
			1/3.28	<a href="#">TSXCANCADD1</a>	0.143/ 0.315
			3/9.84	<a href="#">TSXCANCADD3</a>	0.295/ 0.650
Standard, UL certification, C€ marking: flame-retardant (IEC 60332-2)		5/16.40	<a href="#">TSXCANCADD5</a>	0.440/ 0.970	
		0.3/0.98	<a href="#">TSXCANCBDD03</a>	0.086/ 0.190	
		1/3.28	<a href="#">TSXCANCBDD1</a>	0.131/ 0.289	
3/9.84		<a href="#">TSXCANCBDD3</a>	0.268/ 0.591		
		5/16.40	<a href="#">TSXCANCBDD5</a>	0.400/ 0.882	

Extension and adaptation elements for RS 485 serial link				
Designation	Description	Length m/ ft	Reference	Weight kg/ lb
<b>Modbus splitter box</b>	- 1 screw terminal block for trunk cable: D(A), D(B), $\frac{+}{-}$ and 0V - 8 x RJ45 connectors for tap-off - 2 x RJ45 connectors for series connection of LU9 GC3 splitter boxes Mounting on 35 mm/1.38 in. $\perp$ rail	-	<a href="#">LU9GC3</a>	0.500/ 1.102
<b>T-junction boxes</b> dedicated to Altivar and Lexium	- 2 x RJ45 connectors - 1 integrated cable with RJ45 connector	0.3/0.98	<a href="#">VW3A8306TF03</a>	0.190/ 0.419
		1/3.28	<a href="#">VW3A8306TF10</a>	0.210/ 0.463
<b>Junction box</b> Screw terminal block for trunk cable tap-off 1 x RJ45 connector for tap-off	- Isolation of the RS 485 serial link - Line termination (R = 120 $\Omega$ , C = 1 nF) - Line pre-polarization (1) (2 R = 620 $\Omega$ ) 24 V $\overline{\text{---}}$ power supply (2) Mounting on 35 mm/1.38 in. $\perp$ rail	-	<a href="#">TWDXCAISO</a>	0.100/ 0.220
<b>Tap junction</b> 3 x RJ45 connectors	- Line termination (R = 120 $\Omega$ , C = 1 nF) - Line pre-polarization (1) (2 R = 620 $\Omega$ ) Mounting on 35 mm/1.38 in. $\perp$ rail	-	<a href="#">TWDXCAT3RJ</a>	0.080/ 0.176



LU9GC3



VW3A8306TF03



TWDXCAISO



TWDXCAT3RJ

(1) Line polarization required for connection to the master Twido programmable controller.  
 (2) 24 V  $\overline{\text{---}}$  power supply, or power supply via the serial port integrated in Modicon MC80 processors.

# Modicon MC80 programmable logic controllers

Serial link cabling system, shielded connection cables and USB cordsets



XGSZ24

## Extension and adaptation elements for RS 485 serial link

Designation	Description	Sold in lots of	Reference	Weight kg/ lb
<b>RS 232C/RS 485 line converter without modem signals</b>	24 V $\pm$ 20 mA power supply, 19.2 Kbps Mounting on 35 mm/1.38 in. rail	–	<a href="#">XGSZ24</a>	0.100/ 0.220
<b>Line terminator</b>	For RJ45 connector R = 120 $\Omega$ , C = 1 nF	2	<a href="#">VW3A8306RC</a>	0.200/ 0.441

## Shielded copper connection cables

### EIA/TIA 568 shielded twisted pair cables for C€ market

Description	With connectors at both ends	Type	Length m/ ft	Reference	Weight kg/ lb
<b>Straight-through copper cables</b> C€ compatible	2 x RJ45 connectors For connection to terminal equipment (DTE)	Standard	2/6.56	<a href="#">490NTW00002</a>	–
			5/16.40	<a href="#">490NTW00005</a>	–
			12/39.37	<a href="#">490NTW00012</a>	–
			40/131.23	<a href="#">490NTW00040</a>	–
			80/262.47	<a href="#">490NTW00080</a>	–
		Rugged	1/3.28	<a href="#">TCSECE3M3M1S4</a>	–
			2/6.56	<a href="#">TCSECE3M3M2S4</a>	–
			3/9.84	<a href="#">TCSECE3M3M3S4</a>	–
			5/16.40	<a href="#">TCSECE3M3M5S4</a>	–
<b>Crossover copper cables</b> C€ compatible	2 x RJ45 connectors For connection between hubs, switches, and transceivers	Standard	5/16.40	<a href="#">490NTC00005</a>	–
			15/49.21	<a href="#">490NTC00015</a>	–
			40/131.23	<a href="#">490NTC00040</a>	–



TCSEC3M3M S4

### Shielded twisted pair cables for UL market

Description	With connectors at both ends	Type	Length m/ ft	Reference	Weight kg/ lb
<b>Straight-through copper cables</b> UL compatible	2 x RJ45 connectors For connection to terminal equipment (DTE)	Standard	2/6.56	<a href="#">490NTW00002U</a>	–
			5/16.40	<a href="#">490NTW00005U</a>	–
			12/39.37	<a href="#">490NTW00012U</a>	–
		Rugged	1/3.28	<a href="#">TCSECU3M3M1S4</a>	–
			2/6.56	<a href="#">TCSECU3M3M2S4</a>	–
			3/9.84	<a href="#">TCSECU3M3M3S4</a>	–
			5/16.40	<a href="#">TCSECU3M3M5S4</a>	–

## Standard separate parts

Description	Use		Length m/ ft	Reference	Weight kg/ lb
	From	To			
<b>Terminal port/USB cordsets</b>	Mini B USB port on the Modicon MC80 controller	Type A USB port on PC terminal	1.8/ 5.91	<a href="#">BMXXCAUSBH018</a>	0.065/ 0.143
			4.5/ 14.76	<a href="#">BMXXCAUSBH045</a>	0.110/ 0.243



BMXXCAUSBH018



# Modicon MC80 programmable logic controllers

Standards, certifications and environment conditions

## Standards and certifications

Modicon MC80 PLCs have been developed to comply with the principal national and international standards concerning electronic equipment for industrial automation systems.

- Requirements specific to programmable controllers: functional characteristics, immunity, resistance, safety, etc.: **IEC/EN 61131-2**, UL and CSA standards for industry (**UL 61010-2-201**, **CSA E61131-2**).
- Requirements specific to electricity production automation system: **IEC/EN 61850-3**.
- Compliance with European Directives for CE marking:
  - Low Voltage: 2006/95/EC,
  - Electromagnetic Compatibility: 2004/108/EC.
- Ex areas:
  - For USA and Canada: Hazardous location class I, division 2, groups A, B, C and D
  - Up to date information on which certifications have been obtained are available on our website.

## Characteristics

### Service conditions and recommendations relating to environment

<b>Temperature</b>	Operation	°C	- 25...+ 70
	Storage	°C	- 40...+ 85
<b>Relative humidity</b> (without condensation)	Cyclical humidity	%	+ 5...+ 95 up to 55 °C
	Continuous humidity	%	+ 5...+ 93 up to 60 °C
<b>Altitude</b>	Operation	m	0...2000 (full specification: temperature and isolation) 2000...5000 (temperature derating: 1 °C / 400 m, isolation lost: 150 V ~ / 1000 m)
<b>Supply voltage</b>	Nominal voltage	V	~ 24
	Limit voltages	V	~ 20.4...28.8
	Nominal frequencies	Hz	–
	Limit frequencies	Hz	–

## Protective treatment of Modicon MC80 PLCs

Modicon MC80 PLCs meet the requirements of “TC” treatment (*Treatment for all Climates*).

For installations in industrial production workshops or environments corresponding to “TH” treatment (*treatment for hot and humid environments*), Modicon MC80 PLCs must be embedded in envelopes with a minimum IP 54 protection.

Modicon MC80 PLCs themselves offer **protection to IP 20 level** and **protection against pins** (enclosed equipment). They can therefore be installed without an envelope in reserved-access areas which do not exceed **pollution level 2** (control room with no dust-producing machine or activity). The pollution level 2 does not take account of more severe environmental conditions: air pollution by dust, smoke, corrosive or radioactive particles, vapours or salts, attack by fungi, insects, ...

Environment tests		
Name of test	Standards	Levels
<b>Immunity to LF interference (CE) (1)</b>		
Voltage and frequency variations	IEC/EN 61131-2; IEC/EN 61000-6-2; IEC 61000-4-11	0.85...1.10 Un - 0.94...1.04 Fn; 4 steps t = 30 min
Direct voltage variations	IEC/EN 61131-2; IEC 61000-4-29	0.85...1.2 Un + ripple: 5 % peak; 2 steps t = 30 min
Third Harmonic	IEC/EN 61131-2	H3 (10 % Un), 0 ° / 180 °; 2 steps t = 5 min
Voltage interruptions	IEC/EN 61131-2; IEC/EN 61000-6-2; IEC 61000-4-11; IEC 61000-4-29	Power supply immunity: <ul style="list-style-type: none"> <li>■ 1ms for ~ PS1 / 10 ms for --- PS2</li> <li>■ Check operating mode for longer interruptions</li> </ul>
	IEC/EN 61131-2; IEC/EN 61000-6-2; IEC 61000-4-11	For ~ PS2: <ul style="list-style-type: none"> <li>■ 20 % Un, t0: ½ period</li> <li>■ 40 % Un, cycle 10/12</li> <li>■ 70 % Un, cycle 25/30</li> <li>■ 0 % Un, cycle 250/300</li> </ul>
Voltage shut-down and start-up	IEC/EN 61131-2	<ul style="list-style-type: none"> <li>■ Un...0...Un; t = Un/60 s</li> <li>■ Umin...0...Umin; t = Umin/5 s</li> <li>■ Umin...0.9 Udl...Umin; t = Umin/60 s</li> </ul>
Magnetic field	IEC/EN 61131-2; IEC/TS 61000-6-5; IEC 61000-4-8 (for MV power stations: IEC 61850-3)	Power frequency: 50/60 Hz, 100 A/m continuous...1000 A/m; t = 3 s; 3 axes
	IEC 61000-4-10 (for MV power stations: IEC 61850-3)	Oscillatory: 100 kHz...1 MHz, 100 A/m; t = 9 s; 3 axes
Conducted common mode disturbances range 0 Hz...150 kHz	IEC 61000-4-16 (for MV power stations: IEC 61850-3)	For remote systems: <ul style="list-style-type: none"> <li>■ 50/60 Hz and ---, 300 V, t = 1s</li> <li>■ 50/60 Hz and ---, 30 V, t = 1 min</li> <li>■ 5 Hz...150 kHz, sweep 3 V...30 V</li> </ul>

Where:

- PS1 applies to PLC supplied by battery, PS2 applies to PLC energized from ~ or --- supplies
- Un: nominal voltage, Fn: nominal frequency, Udl: detection level when powered

Name of test	Standards	Levels
<b>Immunity to HF interference (CE) (1) (2)</b>		
Electrostatic discharges	IEC/EN 61131-2; IEC/EN 61000-6-2; IEC 61000-4-2	6 kV contact; 8 kV air; 6 kV indirect contact
Radiated radio frequency electromagnetic field	IEC/EN 61131-2; IEC/EN 61000-6-2; IEC 61000-4-3	10 V/m, 80 MHz...3 GHz Sinus amplitude modulated 80 %, 1 kHz + internal clock frequencies
Electrical fast transient bursts	IEC/EN 61131-2; IEC/EN 61000-6-2; IEC 61000-4-4	For --- main supplies: <ul style="list-style-type: none"> <li>■ 2 kV in common mode / 2 kV in wire mode</li> </ul> For --- auxiliary supplies, ~ unshielded I/Os: <ul style="list-style-type: none"> <li>■ 2 kV in common mode</li> </ul> For analog, --- unshielded I/Os, communication and all shielded lines: <ul style="list-style-type: none"> <li>■ 1 kV in common mode</li> </ul>
Surge	IEC/EN 61131-2; IEC/EN 61000-6-2; IEC 61000-4-5	For --- main and auxiliary supplies: <ul style="list-style-type: none"> <li>■ 2 kV in common mode / 1 kV in differential mode</li> </ul> For analog --- unshielded I/Os: <ul style="list-style-type: none"> <li>■ 0.5 kV in common mode / 0.5 kV in differential mode</li> </ul> For communication and all shielded lines: <ul style="list-style-type: none"> <li>■ 1 kV in common mode</li> </ul>
Conducted disturbances induced by radiated electromagnetic fields	IEC/EN 61131-2; IEC/EN 61000-6-2; IEC 61000-4-6	10 V; 0,15 MHz...80 MHz Sinus amplitude 80%, 1 kHz + spot frequencies
Damped oscillatory wave	IEC/EN 61131-2; IEC 61000-4-18	For --- main supplies: <ul style="list-style-type: none"> <li>■ 2.5 kV in common mode / 1 kV in differential mode</li> </ul> For --- auxiliary supplies, analog, --- unshielded I/Os: <ul style="list-style-type: none"> <li>■ 1 kV in common mode / 0.5 kV in differential mode</li> </ul> For communication and all shielded lines: <ul style="list-style-type: none"> <li>■ 0.5 kV in common mode</li> </ul>

(1) Devices must be installed, wired and maintained in compliance with the instructions provided in the manual "Grounding and Electromagnetic Compatibility of PLC Systems".

(2) These tests are performed without a cabinet, with devices fixed on a metal grid and wired as per the recommendations in the manual "Grounding and Electromagnetic Compatibility of PLC Systems".

(CE): tests required by European directives CE and based on IEC/EN 61131-2 standards.

Environment tests (continued)		
Name of test	Standards	Levels
<b>Electromagnetic emissions (CE) (1)</b>		
Conducted emission	IEC/EN 61131-2; FCC part 15; IEC/EN 61000-6-4; CISPR 11 & 22, Class A, Group 1	150 kHz...500 kHz: quasi-peak 79 dB (µV/m); average 66 dB (µV/m) 500 kHz...30 MHz: quasi-peak 73 dB (µV/m); average 60 dB (µV/m)
Radiated emission	IEC/EN 61131-2; FCC part 15; IEC/EN 61000-6-4; CISPR 11 & 22, Class A, Group 1	30 MHz...230 MHz: quasi-peak 40 dB (µV/m) (at 10 m); 50 dB (µV/m) (at 3m) 230 MHz...1 GHz: quasi-peak 47 dB(µV/m) (at 10 m); 57 dB (µV/m) (at 3m)
Name of test	Standards	Levels
<b>Immunity to climatic variations (1) (power on)</b>		
Dry heat	IEC 60068-2-2 (Bb & Bd)	70 °C, t = 16 h
Cold	IEC 60068-2-1 (Ab & Ad)	0 °C...-25 °C, t = 16 h + power on at -25 °C
Damp heat, steady state (continuous humidity)	IEC 60068-2-78 (Cab)	60 °C, 93 % relative humidity, t = 96 h
Damp heat, cyclic (cyclical humidity)	IEC 60068-2-30 (Db)	55 °C...25 °C, 93...95 % relative humidity, 2 cycles t = 12 h + 12 h
Change of temperature	IEC 60068-2-14 (Nb)	-25 °C...70 °C, 5 cycles t = 6 h + 6 h
Name of test	Standards	Levels
<b>Withstand to climatic variations (1) (power off)</b>		
Dry heat	IEC/EN 61131-2; IEC 60068-2-2 (Bb & Bd) IEC/EN 60945	85 °C, t = 96 h
Cold	IEC/EN 61131-2; IEC 60068-2-1 (Ab & Ad)	-40 °C, t = 96 h
Damp heat, cyclic (cyclical humidity)	IEC/EN 61131-2; IEC 60068-2-30 (Db)	55 °C...25 °C, 93...95 % relative humidity, 2 cycles t = 12 h + 12 h
Change of temperature (thermal shocks)	IEC/EN 61131-2; IEC 60068-2-14 (Na)	-40 °C...85 °C, 5 cycles t = 3 h + 3 h

(1) Devices must be installed, wired and maintained in compliance with the instructions provided in the manual "Grounding and Electromagnetic Compatibility of PLC Systems".

(CE): tests required by European directives CE and based on IEC/EN 61131-2 standards.

Environment tests (continued)		
Name of test	Standards	Levels
<b>Immunity to mechanical constraints (1) (power on)</b>		
Sinusoidal vibrations	IEC/EN 61131-2; IEC 60068-2-6 (Fc)	Basic IEC/EN 61131-2: 5 Hz...150 Hz, ± 3.5 mm amplitude (5 Hz...8.4 Hz), 1g (8.4 Hz...150 Hz) Specific profile: 5 Hz...150 Hz, ± 10.4 mm amplitude (5 Hz...8.4 Hz), 3 g (8.4 Hz...150 Hz) For basic and specific, endurance: 10 sweep cycles for each axis
Shocks	IEC/EN 61131-2; IEC 60068-2-27 (Ea)	30 g, 11 ms; 3 shocks/direction/axis (2) 25 g, 6 ms; 100 bumps/direction/axis (bumps) (3)
Free fall during operation	IEC/EN 61131-2; IEC 60068-2-32 (Ed Method 1)	1 m, 2 falls
Name of test	Standards	Levels
<b>Withstand to mechanical constraints (power off)</b>		
Random free fall with packaging	IEC/EN 61131-2; IEC 60068-2-32 (Method 1)	1 m, 5 falls
Flat free fall	IEC/EN 61131-2; IEC 60068-2-32 (Ed Method 1)	10 cm, 2 falls
Controlled free fall	IEC/EN 61131-2; IEC 60068-2-31 (Ec)	30 ° or 10 cm, 2 falls
Plugging / Unplugging	IEC/EN 61131-2	For modules and connectors: Operations: 50 for permanent connections, 500 for non-permanent connections
Name of test	Standards	Levels
<b>Equipment and personnel safety (1) (CE)</b>		
Dielectric strength and insulation resistance	IEC/EN 61131-2; IEC 61010-2-201; UL; CSA	Dielectric: 2 Un + 1000 V; t = 1 min Insulation: Un ≤ 50 V: 10 MΩ, 50 V ≤ Un ≤ 250 V: 100 MΩ
Continuity of earth	IEC/EN 61131-2; IEC 61010-2-201; UL; CSA	30 A, R ≤ 0,1 Ω; t = 2 min
Leakage current	UL; CSA	≤ 3.5 mA after disconnecting
Protection offered by enclosures	IEC/EN 61131-2; IEC 61010-2-201	IP20 and protection against standardized pins
Impact withstand	IEC/EN 61131-2; IEC 61010-2-201; UL; CSA	Sphere of 500 g, fall from 1.30 m (energy 6.8 J minimum)
Stored energy injury risk	IEC/EN 61131-2; IEC 61010-2-201	Non permanent connection: 37 % Un after 1 s Permanent connection: 37 % Un after 10 s
Overload	IEC/EN 61131-2; IEC 61010-2-201; UL; CSA	50 cycles, Un, 1.5 In; t = 1 s ON + 9 s OFF
Endurance	IEC/EN 61131-2; IEC 61010-2-201; UL; CSA	In, Un; 12 cycles: t = 100 ms ON + 100 ms OFF, 988 cycles: t = 1 s ON + 1 s OFF, 5000 cycles: t = 1 s ON + 9 s OFF
Temperature rise	IEC/EN 61131-2; UL; CSA; ATEX; IECEx	Ambient temperature 70 °C

(1) Devices must be installed, wired and maintained in compliance with the instructions provided in the manual "Grounding and Electromagnetic Compatibility of PLC Systems".

(2) In case of using fast actuators (response time ≤ 5 ms) driven by relay outputs: 15 g, 11 ms; 3 shocks/direction/axis.

(3) In case of using fast actuators (response time ≤ 15 ms) driven by relay outputs: 15 g, 6 ms; 100 bumps/direction/axis.

(CE): tests required by European directives CE and based on IEC/EN 61131-2 standards.

# Technical appendices

## Automation product certifications

### EC regulations

Some countries require certain electrical components to undergo certification by law. This certification takes the form of a certificate of conformity to the relevant standards and is issued by the official body in question. Where applicable, certified devices must be labeled accordingly. Use of electrical equipment on board merchant vessels generally implies that it has gained prior approval (i.e. certification) by certain shipping classification societies.









Abbreviation	Certification body	Country
CSA	Canadian Standards Association	Canada
RCM	Australian Communications and Media Authority	Australia, New Zealand
EAC	Eurasian conformity	Russia and customs union
UL	Underwriters Laboratories	USA

Abbreviation	Classification authority	Country
IACS	International Association of Classification Societies	International
ABS	American Bureau of Shipping	USA
BV	Bureau Veritas	France
DNV	Det Norske Veritas	Norway
GL	Germanischer Lloyd	Germany
LR	Lloyd's Register	UK
RINA	Registro Italiano Navale	Italy
RMRS	Russian Maritime Register of Shipping	Russia
RRR	Russian River Register	Russia
CCS	China Classification Society	China
KRS	Korean Register of Shipping	Korea
Class NK	Nippon Kaiji Kyokai	Japan

**Note:** Following the merger of the DNV and GL certification bodies, DNV/GL has been issued as a single certificate since 2016.

The following tables provide an overview of the situation as of December 2018, in terms of which certifications (listed next to their respective bodies) have been granted or are pending for our automation products.

Up-to-date information on which certifications have been obtained by products bearing the Schneider Electric brand can be viewed on our website: [www.schneider-electric.com](http://www.schneider-electric.com)

Product certifications		Certifications						
Certified	Certification pending					Hazardous locations (1) Class I, div 2	  	
		UL	CSA	RCM	EAC		(6)	TÜV Rheinland
		USA	Canada	Australia	Russia	USA, Canada		
Modicon OTB								
Modicon STB						CSA (8)	Zone 2 (2)(5)	
Modicon Telefast ABE 7								
ConneXium						(2)		
Magelis iPC/GTW			(3)		(2)	(3)	Zone 2/22 (2)	
Magelis XBT GT			(3)		(2)	(2) (3)	Zone 2/22 (2)(5)	
Magelis XBT GK			(3)			(3)		
Magelis XBT N/R/RT						CSA	Zone 2/22 (2)(5)	
Magelis HMI GTO			(3)		(2)	(3)	Zone 2/22 (2)	
Magelis HMI STO/STU			(3)		(2)	(2)(3)	Zone 2/22 (2)	
Modicon MC80								
Modicon M340						CSA (8)	Zone 2/22 (2)	
Modicon M580						CSA (8)	Zone 2/22 (2)	
Modicon M580 Safety						CSA (8)	Zone 2/22 (2)	SIL 3, Cat.4, PLe
Modicon X80 I/O						CSA (8)	Zone 2/22 (2)	
Modicon Momentum						CSA (8)		
Modicon Premium					(2)	CSA		
Modicon Quantum					(2)	CSA (8)	Zone 2/22 (2)	
Modicon Quantum Safety					(2)	CSA	Zone 2/22 (2)	SIL 2, SIL 3 (7)
Preventa XPSMF								SIL 3 (7)
Modicon TSX Micro						CSA		
Phaseo		(3)						
Twido		(4)	(4)			CSA/UL (4)		

(1) Hazardous locations: According to ANSI/ISA 12.12.01 and/or CSA 22.2 No. 213, and/or FM 3611, certified products are only approved for use in hazardous locations categorized as Class I, division 2, groups A, B, C, and D, or in non-classified locations.

(2) Depends on product; please visit our website: [www.schneider-electric.com](http://www.schneider-electric.com).

(3) North American certification cULus (Canada and USA).

(4) Except for AS-Interface module TWD NOI 10M3, CE only.

(5) For zones not covered by this specification, Schneider Electric offers a solution as part of the TPP (Technology Partner Program). Please contact our Customer Care Center.

(6) Certified by INERIS. Refer to the instructions supplied with each ATEX and/or IECEx certified product.

(7) According to IEC 61508. Certified by TÜV Rheinland for integration into a safety function of up to SIL 2 or SIL 3.

(8) CSA Hazardous Location according to ANSI/ISA 12.12.01, CSA 22.2 No. 213, and FM 3611.













# Technical appendices

## Automation product certifications

### EC regulations

#### Merchant navy certifications

Certified Certification pending	Shipping classification societies										
											
	USA	France	Norway	Germany	Korea	Great Britain	Italy	Russia	Russia	China	Japan
Modicon OTB											
Modicon STB											
Modicon Telefast ABE 7											
ConneXium											
Magelis iPC/GTW											
Magelis XBT GT											
Magelis XBT GK											
Magelis XBT N/R											
Magelis XBT RT											
Magelis HMI GTO											
Magelis HMI STO/STU											
Modicon MC80											
Modicon M340											
Modicon M580											
Modicon M580 Safety											
Modicon X80 I/O											
Modicon Momentum											
Modicon Premium											
Modicon Quantum											
Modicon TSX Micro											
Phaseo											
Twido											

#### EC regulations

##### European Directives

The open nature of the European markets assumes harmonization between the regulations set by the member states of the European Union. European Directives are texts intended to remove restrictions on free circulation of goods and must be applied within all European Union states.

Member states are obligated to incorporate each Directive into their national legislation, and to simultaneously withdraw any regulations that contradict it.

Directives - and particularly those of a technical nature with which we are concerned - merely set out the objectives to be fulfilled (referred to as "essential requirements"). Manufacturers are responsible for taking the necessary measures to establish that their products conform to the requirements of each Directive applicable to their equipment.

As a general rule, manufacturers certify compliance with the essential requirements of the Directive(s) that apply to their products by applying a CE mark. The CE mark is affixed to our products where applicable.

##### Significance of the CE mark

The CE mark on a product indicates the manufacturer's certification that the product conforms to the relevant European Directives; this is a prerequisite for placing a product that is subject to the requirements of one or more Directives on the market and allowing its free circulation within European Union countries. The CE mark is intended for use by those responsible for regulating national markets.

Where electrical equipment is concerned, conformity to standards indicates that the product is fit for use. Only a warranty by a well-known manufacturer can provide reassurance of a high level of quality.

As far as our products are concerned, one or more Directives are likely to apply in each case; in particular:

- The Low Voltage Directive (2014/35/EU)
- The Electromagnetic Compatibility Directive (2014/30/EU)
- The ATEX CE Directive (2014/34/EU)
- The Machinery Directive (2006/42/EU)

##### Hazardous substances

These products are compatible with:

- The WEEE Directive (2012/19/EU)
- The RoHS Directive (2011/65/EU)
- The China RoHS Directive (Standard GB/T 26572-2011)
- REACH regulations (EC No. 1907/2006)

**Note:** Documentation on sustainable development is available on our website [www.schneider-electric.com](http://www.schneider-electric.com) (product environmental profiles and instructions for use, RoHS and REACH directives).

##### End of life (WEEE)

End of life products containing electronic cards must be dealt with by specific treatment processes.

When products containing backup batteries are unusable or at end of life they must be collected and treated separately. Batteries do not contain a percentage by weight of heavy metals above the limit specified by European Directive 2013/56/EU.

<b>A</b>	<b>TWDXCAT3RJ</b>	10
490NTC00005		11
490NTC00015		11
490NTC00040		11
490NTW00002		11
490NTW00002U		11
490NTW00005		11
490NTW00005U		11
490NTW00012		11
490NTW00012U		11
490NTW00040		11
490NTW00080		11
<b>B</b>	<b>V</b>	
BMKC8020301	VW3A8306RC	11
BMKC8020310	VW3A8306TF03	10
BMKC8030311	VW3A8306TF10	10
BMXFTB2000	VW3CANTAP2	9
BMXFTB2010		
BMXFTB2020		
BMXFTB2800		
BMXFTB2820		
BMXXCAUSBH018		
BMXXCAUSBH045		
<b>L</b>	<b>X</b>	
LU9GC3	XGSZ24	11
<b>S</b>		
STBXSP3000		9
STBXSP3020		9
<b>T</b>		
TCSECE3M3M1S4		11
TCSECE3M3M2S4		11
TCSECE3M3M3S4		11
TCSECE3M3M5S4		11
TCSECU3M3M1S4		11
TCSECU3M3M2S4		11
TCSECU3M3M3S4		11
TCSECU3M3M5S4		11
TSXCANCA50		10
TSXCANCA100		10
TSXCANCA300		10
TSXCANCADD1		10
TSXCANCADD03		10
TSXCANCADD3		10
TSXCANCADD5		10
TSXCANCB50		10
TSXCANCB100		10
TSXCANCB300		10
TSXCANCBDD1		10
TSXCANCBDD03		10
TSXCANCBDD3		10
TSXCANCBDD5		10
TSXCANCD50		10
TSXCANCD100		10
TSXCANCD300		10
TSXCANKCDF90T		9
TSXCANKCDF90TP		9
TSXCANKCDF180T		9
TSXCANTDM4		9
TWDXCAISO		10

Life Is On



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Photos: Schneider Electric

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