



Modicon M171/M172

Logic controllers for HVAC solutions



Modicon

Discover [Modicon](#)

Edge control for Industrial IoT

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

Explore our offer

- [Modicon HVAC Controllers](#)
- [Modicon PLC](#)
- [Modicon Motion Controllers](#)
- [Modicon PAC](#)
- [Modicon I/O](#)
- [Modicon Networking](#)
- [Modicon Power Supply](#)
- [Modicon Wiring](#)
- [Modicon Safety](#)

Life Is On

Schneider
Electric

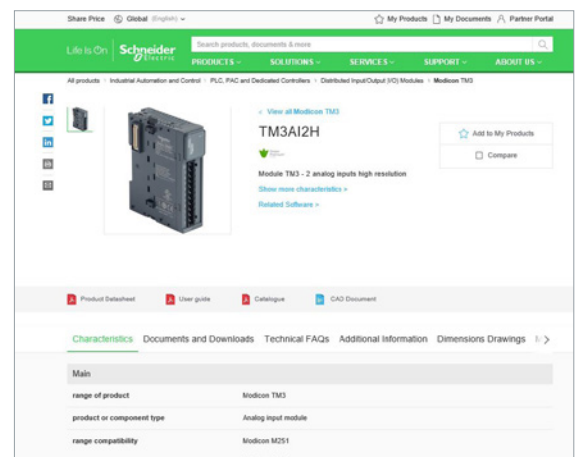
Quick access to product information

Get technical information about your product

References

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

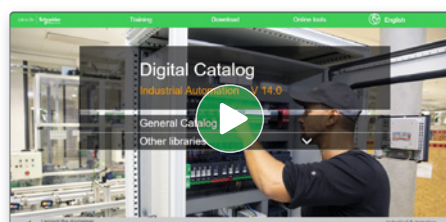
Module and type of channel	Input range	Resolution	Output range	Resolution	Input terminal block (V)	Output terminal block (V)	Reference	Weight (g)
2 refrigerant inputs	-10...+10 VDC 0...20 mA, 4...20 mA	10 bits or 10 bits + sign	0...20 mA 0...20 mA	10 bits or 10 bits + sign	3-pin 2	3-pin 2	TM3AI2H	5,100
4 refrigerant inputs	-10...+10 VDC 0...20 mA, 4...20 mA	10 bits or 10 bits + sign	0...20 mA 0...20 mA	10 bits or 10 bits + sign	3-pin 2	3-pin 2	TM3AI4H	5,100
4 refrigerant or temperature inputs	-10...+10 VDC 0...20 mA, 4...20 mA	10 bits or 10 bits + sign	0...20 mA 0...20 mA	10 bits or 10 bits + sign	3-pin 2	3-pin 2	TM3AI4H	5,100
4 differential temperature inputs	-10...+10 VDC 0...20 mA, 4...20 mA	10 bits or 10 bits + sign	0...20 mA 0...20 mA	10 bits or 10 bits + sign	3-pin 2	3-pin 2	TM3AI4H	5,100



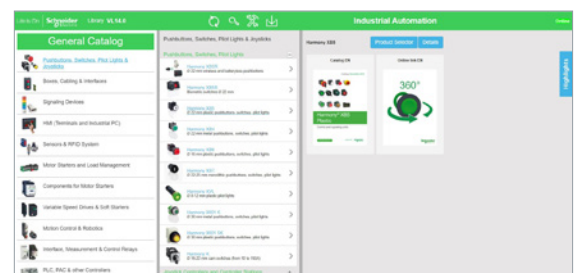
Each commercial reference presented in a catalog contains a hyperlink. Click on it to obtain the technical information of the product:

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

Find your catalog



- > With just 3 clicks, you can access the Industrial Automation and Control catalogs, in both English and French
- > Consult digital automation catalogs at [Digi-Cat Online](#)

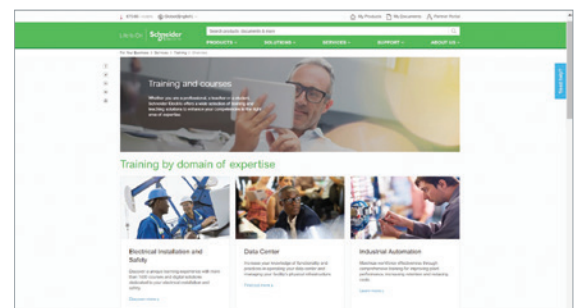


- Up-to-date catalogs
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- Optimized search by commercial references

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General content

Modicon M171/M172

Logic controllers for HVAC control solutions

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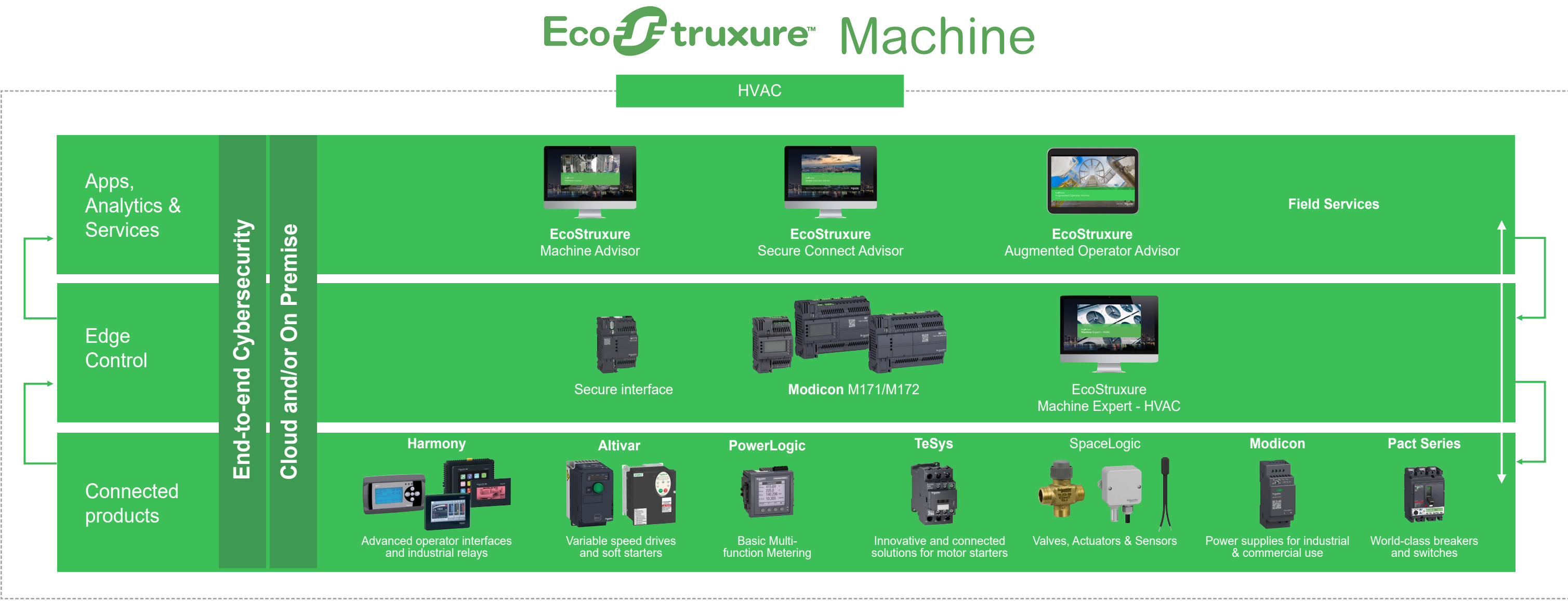
■ EcoStruxure™ Machine Expert – HVAC programming software

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Our solution for Smart HVAC Control Systems

EcoStruxure™ Machine, our open, interoperable, IoT-enabled system architecture, helps OEMs quickly build smarter cost-optimized HVAC control systems with onboard energy-efficiency solutions while reducing maintenance and improving reliability. EcoStruxure Machine encompasses key technologies for product technology and edge control on premises, using cloud technologies to provide analytics and digital services.



Modicon M171/M172 logic controllers for HVAC solutions

Maximize business and machine performance
with EcoStruxure™ Machine

Maximize business and machine performance with EcoStruxure™ Machine

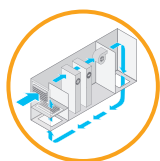
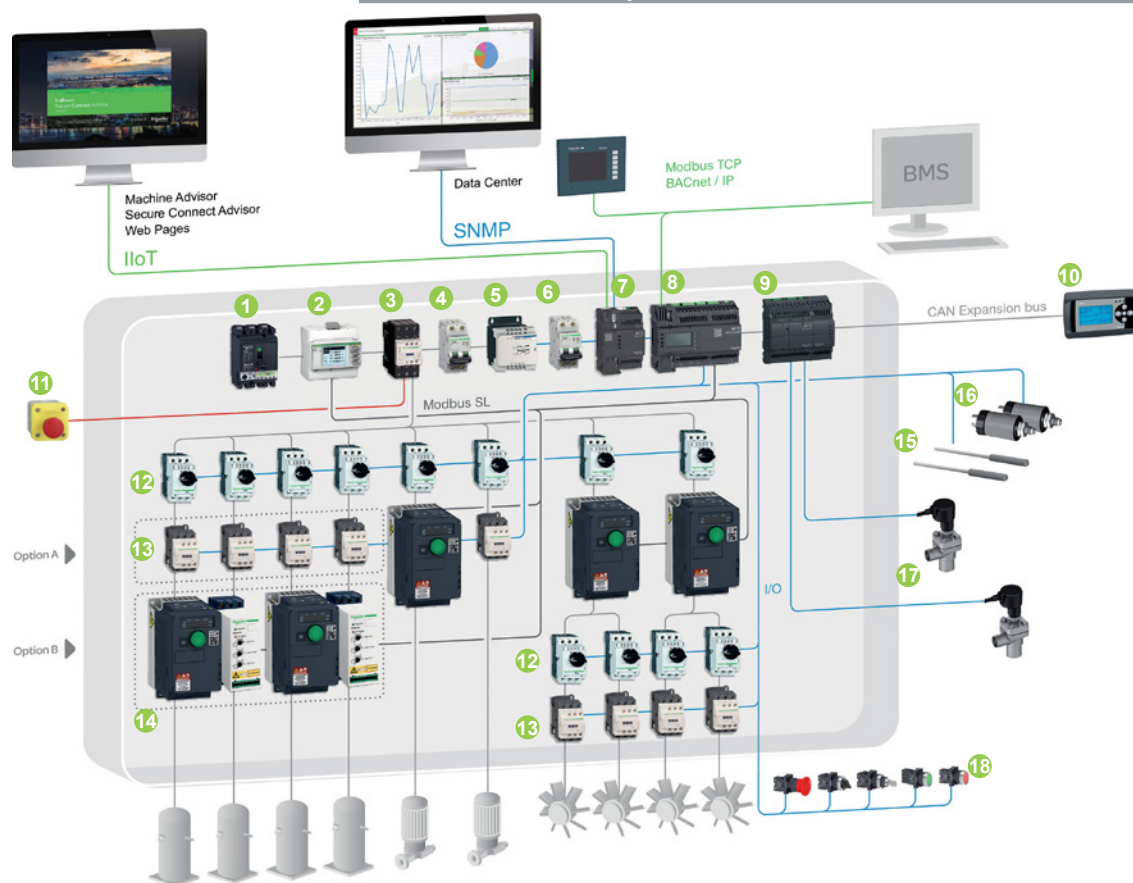
To be competitive in today's digital era, machine builders must be innovative. Smart machines, those that are better connected, more flexible, more efficient, and safe, are enabling machine builders to innovate in ways never before possible.

- > EcoStruxure™ Machine, our open, interoperable, IoT-enabled system architecture helps you build smarter machines and equipment faster, making your business more efficient, profitable, and sustainable.
- > 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

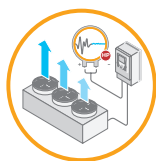
Ready-to-use architectures and function blocks

- > Tested, Validated, and Documented Architectures (TVDAs) are just one of the ways we help to reduce design time.
- > Whether machines are simple or complex, Application Function Blocks (AFBs) make system design fast and easy.

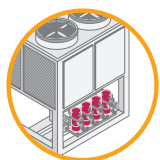
Modicon M171/M172 is part of EcoStruxure Machine



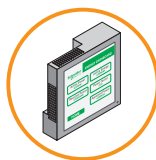
Fan management



Floating High Pressure control



Compressor management



Energy management

HVAC/Chiller/Modbus SL/Modicon M172 Performance logic controller

Solution breakdown

- 1 **Compact NSX** circuit breaker
- 2 **iEM3000** energy meter
- 3 **TeSys D** contactor
- 4 **C60L-MA** modular circuit breaker
- 5 **Modicon** switch mode power supply
- 6 **C60L-DC DC** circuit breaker
- 7 **Modicon M172** IloT Secure Interface
- 8 **Modicon M172 performance** logic controller
- 9 **Modicon M172** Electronic expansion valve driver module for single valve
- 10 **Modicon M171** remote display
- 11 **Harmony XALK** Emergency stop push button
- 12 **TeSys GV2L** magnetic circuit breaker
- 13 **TeSys D** contactor
- 14 **Altivar 212** variable speed drive, for 0.75 to 75 kW (1.0 to 100 hp) motors
- 15 **Modicon TM1S** humidity and temperature probes
- 16 **Telemecanique XMLP** pressure sensors
- 17 Electronic expansion valve
- 18 **Harmony XB4/XB5** signaling units

Flexible

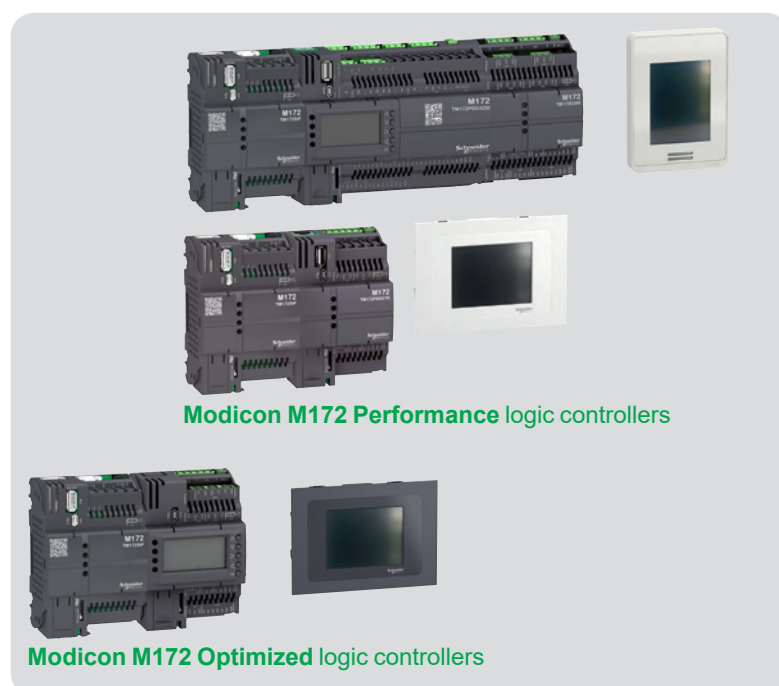
Flexible and scalable Performance

Whether you specialize in chillers, Air Handling Units for commercial buildings, residential, or industrial applications, etc.

With the range of Modicon M171/M172 logic controllers, EcoStruxure™ Machine is well positioned.

Multiple BMS (Building Management System) connectivity, embedded or as an option, and an embedded web server make remote control and remote access simple to implement, while a unique software environment supports the development of algorithms and functions that can be used on any platform.

Scalability



Performance and connectivity



- > Best-in-class versatility and compact size
- > Best-in-class Performance

- > **Modicon™ M172 logic controllers** for any size of connectable or connected HVAC machine.
 - With **Modicon M172 Optimized**, manage small to large HVAC machines, connectable to BMS or the cloud.
 - Or use **Modicon M172 Performance** to have native connectivity for connected HVAC machines.
- > **Modicon M171 Optimized logic controller** for simple and compact machines is one of the smallest programmable controllers on the market. Available also for flush mounting, it requires minimal installation time and offers tremendous versatility.

Efficient

Everything needed is embedded

The high degree of flexibility makes it very easy to install additional modules and still keep everything in just one configuration:

- > IIoT Edge unit (1)
- > Controllers
- > Remote displays
- > Expansion modules
- > Communication modules
- > Wide range of humidity and temperature probes

IIoT Secure Interfaces



IIoT Plug-in



IIoT Gateway

Logic controllers



Modicon M172, for any size of connectable or connected machine

Remote displays



Expansion modules



Communication modules Measurement accessories



Humidity and temperature sensors

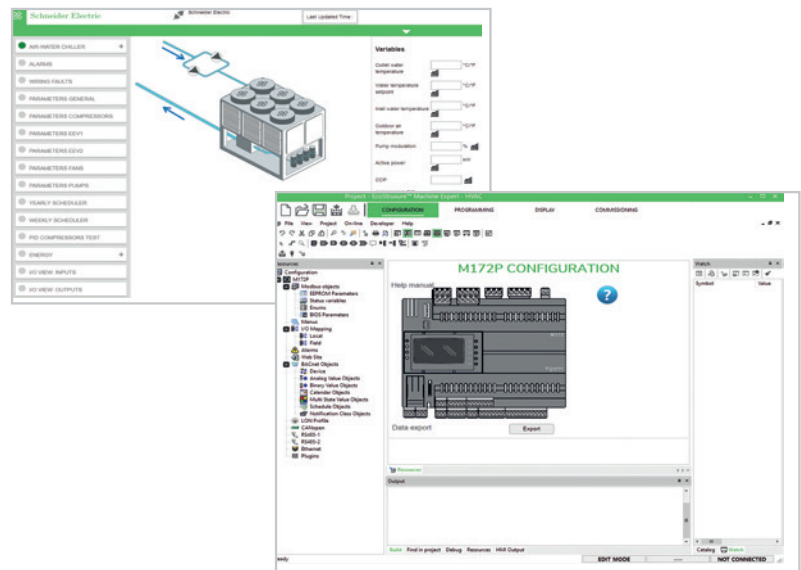


Modicon M171 Optimized, for simple and compact machines



Intuitive automation with EcoStruxure Machine Expert - HVAC

- > **EcoStruxure Machine Expert - HVAC** is the universal programming software for machines automated by Modicon M171/M172 logic controllers.
- > Simplified navigation that requires only a few clicks delivers a more efficient engineering process.



- > **EcoStruxure Machine Expert - HVAC** simplifies each of the steps in machine design and commissioning

(1) IIoT: Industrial Internet of Things.

Connected



Connected everywhere

Depending on your connectivity needs, select the right product

> **M172 Secure Interfaces:**

- FTPs
- HTTPs
- SMTPs
- SNMT
- MQTT
- Cybersecure VPN

> **M172 for any size of connectable (M172 Optimized) or connected (M172 Performance) HVAC machines**

- Modbus RTU
- Modbus TCP
- BACnet MS/TP (B-AAC Profile certified BTL)
- BACnet /IP (B-AAC Profile certified BTL)
- ASCII support for GSM Modem
- CAN Expansion Bus
- LonWorks (FFT-10)
- Webserver, FTP Client/Server, Email, Proxy management, AllowList, SNTP

> **M171 Optimized for simple and compact machines**

- Modbus RTU
- LAN Expansion Bus:

Customization and services

Our experts help you every step of the way, from perfecting machine design to on-site servicing of the finished machine

- > Global support, 24/7 hotline services, and replacement parts centers around the world enable you to deliver superior customer support and satisfaction

Fully customized solution and co-design with our Application Design Experts (ADE)

- > Design an Optimized solution for your machine to create added value, with the help of our experienced ADEs

Turnkey control panel

- > Engineering expertise for codes and standards compliance
- > Custom engineering to provide the optimum solution and meet specific needs

Collaboration from design to commissioning

- > Recruited directly from the industries they serve, ADEs collaborate with you from design through to programming, as well as in the commissioning of turnkey installations

Expert support throughout your system's life cycle

- > A dedicated team of Schneider Electric application design experts provides worldwide support for your HVAC solution

Cybersecurity



Cybersecurity for HVAC systems

IIoT-enabled systems are exposed to other devices and networks, which potentially increases the risk of cyberattacks and data privacy breaches.

HVAC machine builders need to implement mechanisms and cybersecurity best practices

- > Ensure data protection: Authentication - Authorization - Encryption
- > Prohibit unauthorized access: violations logging and notification
- > Comply with evolving regulations: IEC 62443 standard for cybersecure control system components

Our cybersecurity solutions

- > Secure Development Life cycle process (SDL)
- > A framework for secure product design
- > Allows the controller to connect to secured networks

VPN (Virtual Private Network)

- > Enables secure connection to the cloud
- > Alternative to more complex and expensive gateway

Modicon M171/M172 logic controllers for HVAC solutions

M171/M172 range

Modicon M171/M172 range

The Modicon M171/M172 logic controller range has been developed to manage digital and analog inputs and outputs for controlling HVAC machines and to offer numerous possibilities for connection to different Building Management System communication networks.

- The range of Modicon M171/M172 logic controllers is a consistent offer made up of:
 - several types of controller depending on the requested Performance and connectivity
 - a variety of communication modules to connect them to the BMS
 - Secure Interfaces (Plug and Use IIoT Gateway) to perform Cybersecure communications based on HTTPs and TLS
 - a choice of expansion modules to increase and adapt the number and type of I/O
 - monochrome and color displays
 - EcoStruxure Machine Expert - HVAC, the dedicated software used to program, commission and debug applications
 - and a set of sensors
- The M171/M172 range is suitable for customized applications designed to control HVAC machines such as:
 - Air/water-cooled chiller
 - Rooftop unit
 - Heat pump
 - Compressor rack
 - Ventilation unit
 - Precision air conditioner
 - Heat recovery unit
 - Air handling unit
- The offer is flexible and scalable, depending on the application requirements. Any existing controller can evolve later as all M171/M172 controllers are programmed with the same EcoStruxure Machine Expert - HVAC software.
 - M171 Optimized controllers are designed for simple and compact machines when only Modbus SL is needed with less than 44 I/O.
 - M172 controllers are designed for any size of connectable (M172 Optimized) or connected (M172 Performance) machines, from 7 to 238 I/O and can be used with expansion modules. M172 Performance controllers embed connectivity, and M172 Optimized controllers offer optional connectivity.



HVAC



Heat pump



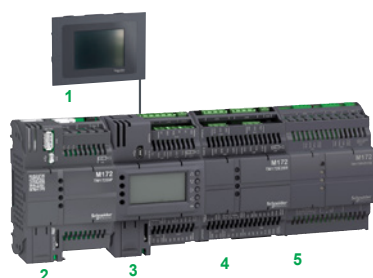
Chiller



Air handling unit



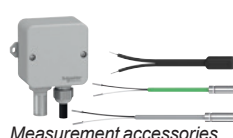
- 1 Remote flush mounting display (1)
- 2 Remote wall mounting display (1)
- 3 LAN-RS485 Communication adaptor
- 4 M171 Optimized logic controller
- 5 I/O expansion module



- 1 Color touch screen display
- 2 Secure Interface (Plug-in version)
- 3 M172 Optimized logic controller
- 4 I/O expansion module
- 5 Electronic expansion valve driver



- 1 Color touch screen display
- 2 Electronic expansion valve driver
- 3 M172 Performance logic controller



Measurement accessories



Pressure transmitters

System components

Each family of M171 and M172 controllers, is available in both an Optimized and Performance version, and comprises several types of product sorted by function and compatibility.

Modicon M171/M172 logic controllers are available with or without an embedded display, with or without SSE output depending on the base product.

I/O expansion modules are mixed digital and analog I/O types.

M172 Optimized and Performance logic controllers

- **TM172O●●●●** Optimized and **TM172P●●●●** Performance logic controllers, see [page 16](#)
- and **TM172E●●R** I/O expansion module, see [page 22](#)
- and **TM172DC●●●●** remote color touch screen displays, see [page 24](#)

M171 Optimized logic controllers

- **TM171O●●●●** Optimized logic controllers, see [page 26](#)
- and **TM171EO●●R** I/O expansion modules, see [page 30](#)
- and **TM171D●●●●** remote displays, see [page 31](#)

M171 Performance logic controllers

- **TM171P●●●●** Performance logic controllers, see [page 32](#)
- and **TM171EP●●R** I/O expansion modules, see [page 35](#)

Secure Interfaces

- **TM172SI●** Secure Interfaces, designed to establish secure internet connections with Plug-in and Gateway versions, see [page 36](#)

Communication modules

- **TM171A●●●●** communication modules (BMS fieldbus Interfaces) provide the **TM171P●●●●** Performance, **TM172O●●●●** Optimized and **TM172P●●●●** Performance logic controllers with a connection to:

- BACnet MS/TP (B-AAC profile) or IP
- Modbus SL (Serial Link)
- Modbus TCP
- LonWorks (FFT-10)
- Profibus
- CAN bus

See [page 38](#)

Electronic expansion valve drivers

- **TM172EVEV●●**: electronic expansion valve drivers compatible with Modicon M172 logic controller range and also with third party controllers and electronic expansion valves, see [page 40](#)
- **TM171VEVM4**: An autonomous expansion valve driver compatible with the entire Modicon M171/M172 logic controller range and also with third party controllers and electronic expansion valves, see [page 40](#)

Measurement accessories

- Specific measurement accessories **TM1S●●●●**: humidity and temperature probes, see [page 42](#)
- Pressure transmitters from our partner Telemecanique sensors, see [page 44](#)

Software

- EcoStruxure Machine Expert - HVAC programming software, and programming accessories, see [page 46](#)

Connection accessories

- Adapted connection accessories: I/O connectors and cables, see [page 31](#)

(1) Remote display can also be used with M171 Optimized with embedded display.

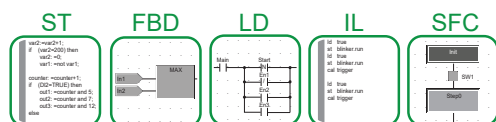
Configuration software

Modicon M171/M172 logic controllers are supported by an intuitive software package: EcoStruxure Machine Expert - HVAC, see [page 46](#).

This software follows a simple drag-and-drop function block approach to configuration and is completed with a library of Application Function Blocks (AFBs) and logic functions.

EcoStruxure Machine Expert - HVAC uses five languages compliant with IEC 61131-3.

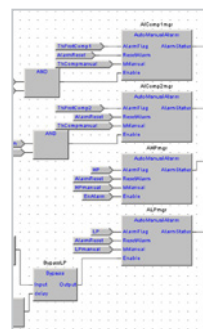
Examples:



5 languages compliant with IEC 61131-3



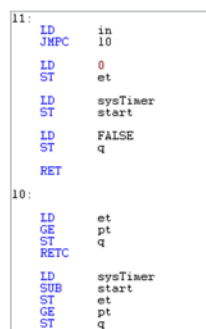
Structured Text language (ST)



Function Block Diagram language (FBD)



Ladder Diagram language (LD)



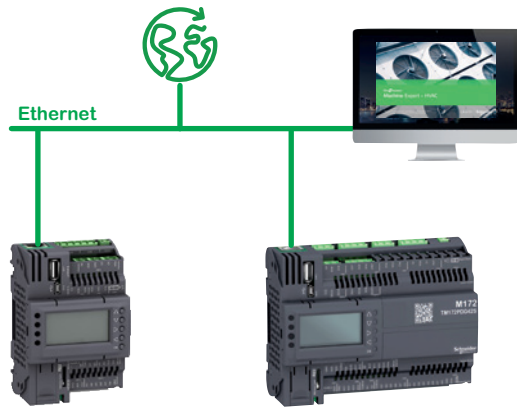
Instruction List language (IL)



Sequential Function Chart language (SFC)

Available resources on logic controllers for IEC programming

	Logic controller type		
	M172 Optimized and M172 Performance	M171 Optimized	M171 Performance
CPU	120 MHz, 32 MB RAM	14.7 MHz	72 MHz, 32 MB RAM
Available memory for application	1.0 MB	188 kB	1.0 MB
Available memory for user Interface	1.5 MB	—	1.5 MB
Flash memory data	5 MB	—	126 MB
RAM memory (automatic mapping)	512 kB (256000 word)	2048 B (1024 word)	512 kB (256000 word)
RAM memory (Modbus mapping)	10 kB (5000 word)	1024 B (512 word)	10 kB (5000 word)
EEPROM variables	28 kB (14000 word)	1024 B (512 word)	28 kB (14000 word)



M172 Performance logic controllers linked to Ethernet via the embedded RJ45 ports

Ethernet connection

Ethernet access is available on M171/M172 logic controllers:

- embedded in M172 Performance logic controllers
- optional with M171 Performance and M172 Optimized logic controllers by means of a communication module or Secure Interface

Ethernet access enables several functions such as:

> HTTP Webserver (Webvisu)

> Remote access

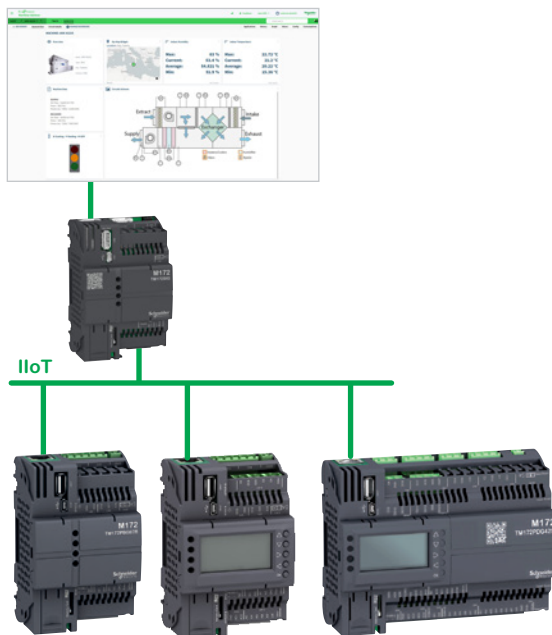
- Download program
- Display program download
- Download, upload parameters
- Download firmware
- Debug
- File management

> Bridge: specific function allowing controllers connected in Modbus SL to the same controller to be programmed via Modbus

> FTP client/server

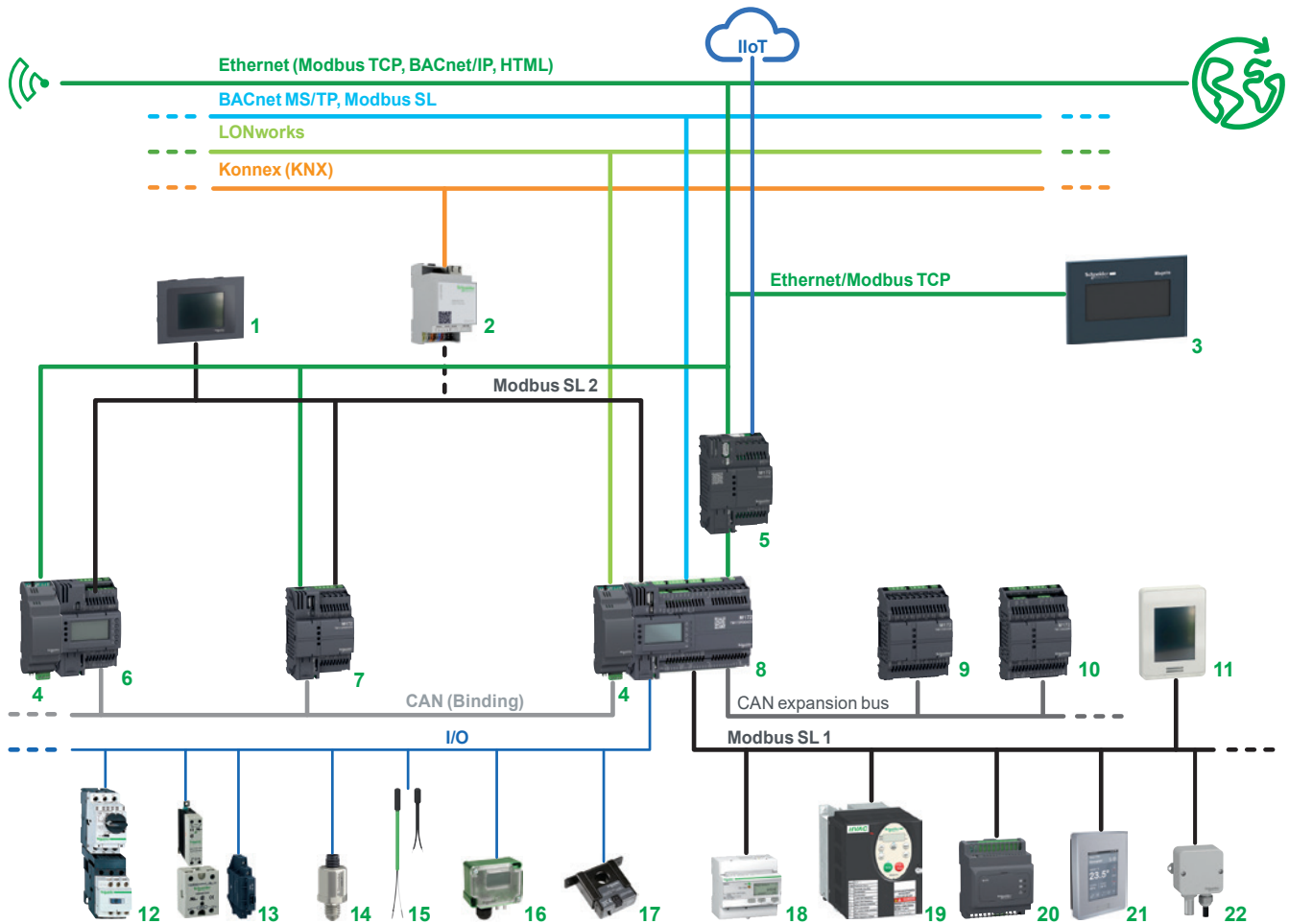
These services are not always available:

- > the service can be enabled or disabled via the controller programming
- > an allowlist is used to provide access (no list defined by default)



M172 Performance logic controllers linked to [Machine Advisor](#) [Secure Connect Advisor](#) via Secure Interface (IIoT gateway)

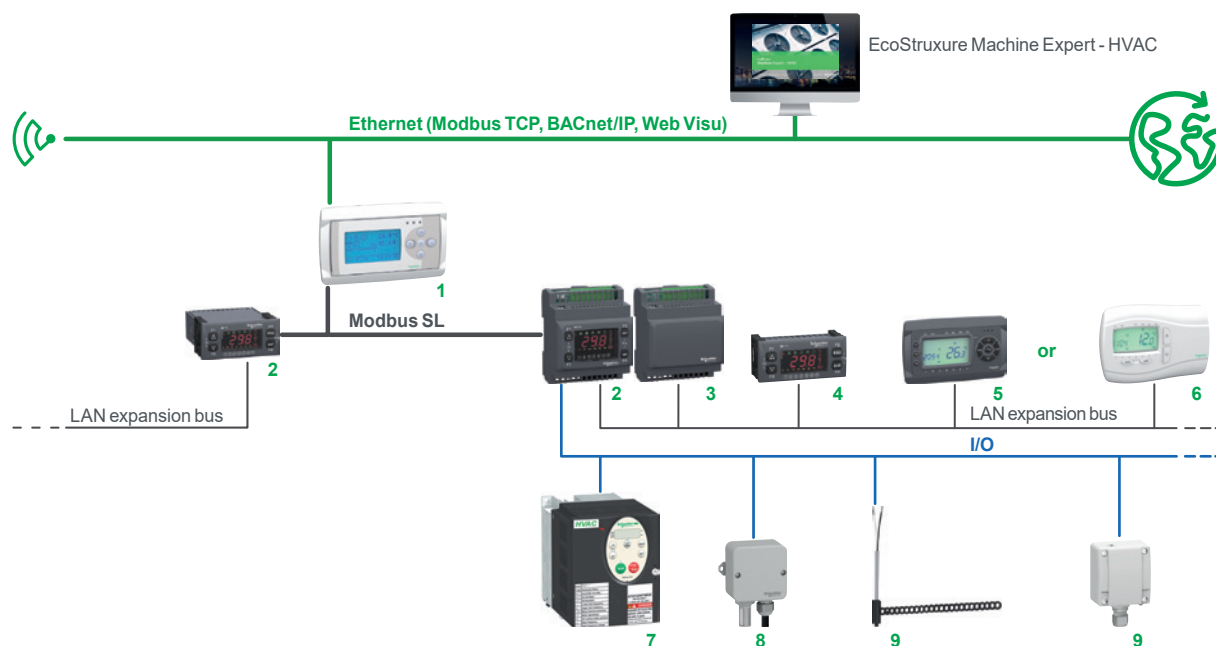
Modicon M172 logic controllers for any size of connectable or connected HVAC machines



- 1 TM172DCLF● flush mounting display, see [page 24](#)
- 2 spaceLYnk gateway (1)
- 3 Harmony STO/STU HMI (1)
- 4 TM171ALON communication module, see [page 38](#)
- 5 TM172SIG Secure Interface see [page 36](#)
- 6 TM171OD●●● Optimized logic controller (18 I/O in 4 DIN), see [page 29](#)
- 7 TM172PB●●● Performance logic controller (7 or 18 I/O in 4 DIN), see [page 21](#)
- 8 TM172PD●●● Performance logic controller (28 or 42 I/O in 8 DIN), see [page 21](#)
- 9 TM172E12R I/O expansion module (12 I/O in 4 DIN), see [page 22](#)
- 10 TM172E28R I/O expansion module (28 I/O in 4 DIN), see [page 22](#)
- 11 TM172DCLWT● wall mounting remote display, see [page 24](#)
- 12 TeSys D motor starter (1)
- 13 Electromechanical relays, solid state relays (1)
- 14 XMLP pressure transmitter, see [page 44](#)
- 15 TM1ST●● temperature sensor PT1000 or NTC, see [page 42](#)
- 16 SPD310 Differential pressure sensor (1)
- 17 H721LC-S6 current transducer (1)
- 18 iEM 3000 energy meter (1)
- 19 Altivar 212 variable speed drive (1)
- 20 TM171VEVM4 electronic expansion valve driver, see [page 40](#)
- 21 SE8000 room controller (thermostat) (1)
- 22 TM1SH●● humidity sensor, see [page 43](#)

(1) Consult this offer on our [website](#).

Modicon M171 Optimized logic controllers for simple and compact machines



- 1 **TM171PFE03** Performance logic controller, see [page 35](#)
- 2 **TM171OFM22R** Optimized logic controller - flush mounting, see [page 29](#)
- 3 **TM171EO●●** I/O expansion module, see [page 30](#)
- 4 **TM171DLED** remote display, see [page 31](#)
- 5 **TM171DLCD2U** remote display, see [page 31](#)
- 6 **TM171DWAL●●** remote wall mounting display, see [page 31](#)
- 7 **Altivar 212** variable speed drive (1)
- 8 **TM1ST●●** temperature sensor PT1000 or NTC, see [page 42](#)
- 9 **TM1SH●●** humidity sensor, see [page 43](#)

(1) Consult this offer on our [website](#).

Modicon M171/M172 logic controllers for HVAC solutions

M171 Optimized, M172 Optimized and Performance logic controllers

Application		Modicon M172 logic controllers for any size of connectable or connected HVAC machines		Modicon M171 Optimized logic controllers for simple and compact machines	
Product name		Modicon M172 Optimized controller		Modicon M171 Optimized controller	
					
Applications	Type	Programmable Logic controller			
	HVAC unit	- Air/water-cooled chiller - Rooftop unit - Heat pump - Shelters - Compressor rack - Ventilation unit - Precision air conditioner - Heat recovery unit - Packaged unit - AHU and many more		- Air/water-cooled chiller - Rooftop unit - Heat pump - Shelters - Compressor rack - Ventilation unit - Precision air conditioner - Heat recovery unit - Packaged unit - AHU and many more	
Programming Software		EcoStruxure Machine Expert - HVAC V1.0 or higher			
Secure communication on the Internet		Yes, - with TM172SIG Gateway Secure Interface - with TM172SIP Plug-in Secure Interface		Yes, with TM172SIG Gateway Secure Interface	
Maximum number of I/O with expansion modules		238		28	44
Power Supply		24 VAC/DC		100...240 VAC, isolated	24 VAC/DC for all, except for TM171O●●22S
Embedded I/Os	Analog Input	8 or 12	2, 8 or 12	5	5
	Digital Input	2, 8 or 12	2, 8 or 12	2	6
	Analog Output	2, 4 or 6	0, 2, 4 or 6	5	5
	Digital Output	6, 8 or 12	3, 6, 8 or 12	4	6
Communication fieldbus and networks	Embedded Communication	- 2 RS485 (Modbus SL or BACnet MS/TP) - 1 CAN expansion bus	- 2 RS485 (Modbus SL or BACnet MS/TP) - 1 CAN expansion bus - RJ45 connector - Ethernet	- 1 RS485 - 1 LAN expansion bus	
	Optional	With TM171A●●● communication modules: - RS485 (Modbus SL or BACnet MS/TP) - CAN bus - RS232 - LonWorks (FFT-10) - Modbus TCP, BACnet /IP, - Ethernet	With TM171A●●● communication modules: - RS485 (Modbus SL or BACnet MS/TP) - CAN bus - RS232 - LonWorks (FFT-10)	None except with a gateway	
	USB port	Yes, 1 USB-Mini-B	Yes, 1 USB-A and 1 USB-Mini-B	No (program can be downloaded with the TM171AMFK programming stick and TM171ADMI programming cable)	
	Services	- Download the program via USB-A or Modbus SL - Optional services depending on the Ethernet communication module	- Download the program through USB-A or Modbus SL - Remote access - HTTP Webserver (Webvisu) - FTP client/server - SNPT	Remote download via Modbus SL	
Display	Built-in	Built-in versions available		Built-in versions available	
	Remote	Yes, - with TM172DGRP display - with TM172DCL●●●● color touch screen displays - with HMI Harmony STU/STO offer, see on our website		Yes, - with TM171DLED, TM171DLCD, and TM171DWAL2● displays - with TM172DCL●●●● color touch screen displays - with HMI Harmony STU/STO offer, see on our website	
Mounting		35 mm (1.38 in) DIN rail, or on panel with TM172AP12PM mounting accessory		35 mm (1.38 in) DIN rail and Flush mounting	
Product certifications		CE, cURus (UL Recognized), CSA, EAC, RCM, RoHS China, BACnet BTL		CE, cURus (UL Recognized), CSA, EAC, RCM, RoHS China	
Reference		TM172O●M18R TM172O●28R TM172O●M42R	TM172P●G07R TM172P●G18● TM172P●G28● TM172P●G28●I TM172P●G42● TM172P●G42●I	TM171O●M14R TM171OD14R	TM171OF22R, TM171OFM22R TM171O●●22●
Page		16		26	

Modicon M171/M172 logic controllers for HVAC solutions

M172 Optimized and Performance logic controllers, Remote displays

Application		Modicon M172 logic controllers for any size of connectable machines																
Product name		Modicon M172 Performance		Modicon M172 Optimized		Modicon M172 Performance		Modicon M172 Optimized		Modicon M172 Performance			Modicon M172 Optimized			Modicon M172 Performance		
																		
Reference		TM172PBG07R (1)	TM172PDG07R (1)	TM172OBM18R (1)	TM172ODM18R (1)	TM172PBG18R (1)	TM172PDG18R (1)	TM172PDG18S (1)	TM172OBM28R (1)	TM172ODM28R (1)	TM172PBG28R, TM172PBG28RI (1)	TM172PDG28R, TM172PDG28RI (1)	TM172PDG28SI (1)	TM172OBM42R (1)	TM172ODM42R (1)	TM172PBG42R, TM172PBG42RI (1)	TM172PDG42R, TM172PDG42RI (1)	TM172PDG42S, TM172PDG42SI (1)
Power supply	24 VAC/DC								24 V AC/DC									
Type of mounting	4 DIN, 35 mm/1.38 in 1/2 rail mounting Performance controllers, and Panel mounting with TM172AP12PM mounting accessory(2)								8 DIN, 35 mm/1.38 in 1/2 rail mounting Performance controllers, and Panel mounting with TM172AP12PM mounting accessory (2)									
Embedded display	No	Built-in display 128x64 LCD with backlight	No	Built-in display 128x64 LCD with backlight	No	Built-in display 128x64 LCD with backlight			No	Built-in display 128x64 LCD with backlight	No	Built-in display 128x64 LCD with backlight	No	Built-in display 128x64 LCD with backlight	No	Built-in display 128x64 LCD with backlight	No	Built-in display 128x64 LCD with backlight
Total I/Os	7		18		18				28		28		42		42			
Total Analog Input	2		8		8				8		8		12		12			
NTC, or PT1000, or PTC, or 0-20 mA, or 4-20 mA, or 0-5 V, or 0-10 V, or hOhm, or daOhm, or digital input	2		8		8				8		8		12		12			
Total Digital Inputs	2		2		2				8		8		12		12			
High speed counter (2 kHz), dry contact	2		2		2				2		2		2		2			
24 VAC/DC	—		—		—				6		6		10		10			
Total Analog Outputs	—		2		2				4		4		6		6			
0-10 V, or 4-20 mA, or PWM (2 kHz, 24 VDC)	—		2		2				2		2		2		2			
0-10 V	—		2		2				2		2		4		4			
Total Digital Outputs	3		6		6				8		8		12		12			
Relay 3 A	3		6		6		4		8		8		12		12		10	
SSR 0,5 A	—		—		—		2		—		—		2		—		2	
Compatible Secure Interface	TM172SIG, TM172SIP								TM172SIG, TM172SIP									
Compatible expansion module	TM172E12R, TM172E28R, TM171EP14R and TM171EP27R (up to 7 I/O expansions max.)								TM172E12R, TM172E28R, TM171EP14R and TM171EP27R (up to 7 I/O expansions max.)									
Compatible expansion valve driver	TM172EVEV1U, TM172EVEV1B, TM172EVEV2B (up to 4 expansion valve drivers max.)								TM172EVEV1U, TM172EVEV1B, TM172EVEV2B (up to 4 expansion valve drivers max.)									
Communication																		
Embedded	Ethernet (Modbus TCP, BACnet IP (B-AAC profile), WebVisu)	1	—		1				—		1		—		1			
	RS485 (Modbus SL or BACnet MS/TP (B-AAC profile))	2	2		2				2		2		2		2			
	CAN expansion bus	1	1		1				1		1		1		1			
	Communication module port	1	1		1				1		1		1		1			
	USB Mini-B	1	1		1				1		1		1		1			
	USB (type A)	1	—		1				—		1		—		1			
	µSD Card slot	1	—		1				—		1		—		1			
Optional	With communication module (see page 38)	- CAN expansion bus - Modbus TCP - Modbus SL(RS485) - BACnet MS/TP (B-AAC profile) - BACnet IP (B-AAC profile) - RS232 Serial link - LonWorks (FFT-10)																
	With Secure InterfaceS (see page 36)	- FTPs - HTTPs - SMTPs - SNMT - MQTT - Cybersecure VPN																

(1) Products equipped with an isolated power supply, and two isolated RS485 ports.

(2) Accessories to be ordered separately.

Application	Remote displays (compatible with each M172 Logic controller)					
						
References	TM172DGRP	TM172DCLWT	TM172DCLWTH	TM172DCLWTHP	TM172DCLFW	TM172DCLFG
Type of mounting	Remote wall	Remote wall	Remote wall	Remote wall	Remote flush	Remote flush
Description	LCD display with backlight	LCD display, Color touchscreen	LCD display, Color touchscreen	LCD display, Color touchscreen	LCD display, Color touchscreen	LCD display, Color touchscreen
		Temperature	Temperature, Relative humidity	Temperature, Relative humidity, Presence PIR	IP65 (front face)	IP65 (front face)
Programming software	EcoStruxure Machine Expert - HVAC V1.0 or higher					
Product certifications	CE, cURus (UL Recognized), CSA, EAC, RCM, RoHS China					
Communication	CAN expansion bus	Modbus SL		Modbus SL		



4 DIN - with display

M172 Optimized logic controller



8 DIN - without display



4 DIN - without display

M172 Performance logic controller



8 DIN - with display

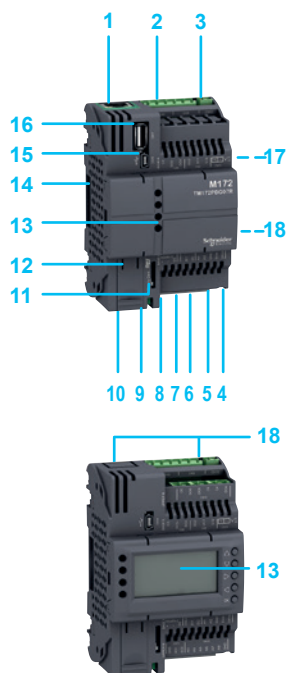
M172 Optimized and Performance logic controllers

The Modicon M172 logic controllers consist of the M172 Optimized and the M172 Performance logic controllers, differentiated by the connectivity: embedded on M172 Performance, optional on M172 Optimized.

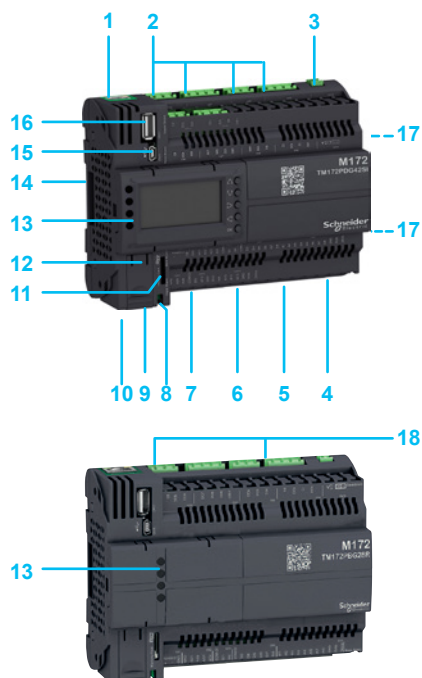
M172 controllers embed 7, 18, 28 or 42 I/O, and can be fitted with a display, with relay outputs, and with SSR outputs, depending on the model.

- The M172 logic controller offer comprises:
 - a M172 model to control from 7 up to 18 embedded I/O (digital and analog), in 4 DIN (controller width is 72 mm / 2.83 in
 - and M172 models to control from 28 up to 42 embedded I/O (digital and analog), in 8 DIN (controller width 144 mm / 5.66 in
- Power supply: 24 V $\sim$
- Two types of housing:
 - with built-in display
 - without display
- Two types of mounting:
 - On 35 mm / 1.38 in $\sqcup$ rail mounting: for M172 controllers to be mounted inside a cabinet
 - On panel with an accessory: for M172 controllers to be mounted on a panel with **TM172AP12PM** fixing accessory
- Communication ports on M172 Optimized logic controllers:
 - Two RS485 for Modbus SL (client/server) (only 1 client) or 1 for BACnet MS/TP (B-AAC profile, BACnet BTL certified)
 - One for CAN expansion bus
 - Plus one communication module connector
- Communication ports on M172 Performance logic controllers: same as M171 Optimized, plus one RJ45 for Modbus TCP, BACnet IP (B-AAC profile, BACnet BTL certified) and Ethernet
- M172 logic controllers can be connected to communication modules, offering another connection to a CAN expansion bus, Modbus SL or LonWorks, etc., see [page 36](#).
- M172 logic controllers are certified CE, cURus (UL Recognized), CSA, EAC, RCM, RoHS China, and BACnet BTL certified.
- Micro SD card: a slot for a micro SD memory card is available on the front face of the M172 Performance controllers (1).
The micro SD card is used for:
 - Data logging
 - Webserver storage
- USB programming ports
 - The USB-A port is available on M172 Performance logic controllers, used to transfer programs with a memory stick.
 - USB mini B is available on M172 Optimized and Performance logic controllers, used to connect to a PC for programming, see [page 47](#).

(1) M172 Optimized logic controllers do not have a slot for a micro SD card (no slot can be added later).



4 DIN controller



8 DIN controller

M172 Optimized and Performance logic controllers

M172 logic controllers with 7 or 18 I/O (in 4 DIN: controller width is 72 mm / 2.83 in (1))

- 1 RJ45 connector for Ethernet Modbus TCP, BACnet IP (B-AAC profile) (2)
- 2 Connector for removable terminal block for digital outputs
- 3 Connector for removable terminal block for power supply (24 V $\sim$) (3)
- 4 Connector for removable terminal block for analog inputs
- 5 Connector for removable terminal block for digital inputs
- 6 Connector for removable terminal block for fast digital inputs (high speed counter)
- 7 Connector for removable terminal block for analog outputs
- 8 Connector for removable terminal block for RS485-1 (Modbus SL or BACnet MS/TP) (3)
- 9 Connector for removable terminal block for RS485-2 (Modbus SL or BACnet MS/TP) (3)
- 10 Connector for removable terminal block for CAN expansion bus
- 11 Slot for micro SD card (2)
- 12 Slot for battery (behind the front flap)
- 13 On TM172●D●●●: Built-in display, 4 status LEDs and 5 control keys for setting controller parameters
On TM172●B●●●: 4 status LEDs and 5 control keys for setting controller parameters, behind a front panel
- 14 Connector for communication module
- 15 USB mini-B port to link a PC
- 16 USB-A port for USB stick (2)
- 17 Mounting clips for 35 mm / 1.38 in $\sqcap$ rail mounting
- 18 Two slots for the TM172AP12PM fixing accessory

M172 logic controllers with 28 or 42 I/O (in 8 DIN: controller width is 144 mm / 5.66 in (1))

- 1 RJ45 connector for Ethernet Modbus TCP and BACnet IP (B-AAC profile) (2)
- 2 Connector for removable terminal block for digital outputs
- 3 Connector for removable terminal block for power supply (24 V $\sim$) (3)
- 4 Connector for removable terminal block for analog inputs
- 5 Connector for removable terminal block for digital inputs
- 6 Connector for removable terminal block for fast digital inputs (high speed counter)
- 7 Connector for removable terminal block for analog outputs
- 8 Connector for removable terminal block for RS485-1 (Modbus SL or BACnet MS/TP) (3)
- 9 Connector for removable terminal block for RS485-2 (Modbus SL or BACnet MS/TP) (3)
- 10 Connector for removable terminal block for CAN expansion bus
- 11 Slot for micro SD card (2)
- 12 Slot for battery (behind the front flap)
- 13 On TM172●D●●●: Built-in display, 4 status LEDs and 5 control keys for setting controller parameters
On TM172●B●●●: 4 status LEDs and 5 control keys for setting controller parameters, behind a front panel
- 14 Connector for communication modules
- 15 USB mini-B port to connect a PC
- 16 USB-A port for USB stick (2)
- 17 Mounting clips for 35 mm / 1.38 in $\sqcap$ rail mounting
- 18 Two slots for the TM172AP12PM fixing accessory

(1) TM172ASCTB●●● removable terminal blocks to be ordered separately, see [page 19](#).

(2) Only for M172 Performance.

(3) TM172O●●●●, TM172P●G07R, TM172P●G18●, TM172P●G28●I and TM172P●G42●I have an isolated power supply and two isolated RS485 ports.

Modicon M171/M172 logic controllers for HVAC solutions

M172 Optimized logic controllers



TM172OBM18R



TM172ODM18R



TM172OBM28R



TM172QDM28R



TM172OBM42R



TM172ODM42R



TM172ASCTB28



TM172AP12PM

M172 Optimized logic controllers: Power supply: 24 V $\simeq$

35 mm/1.38 in □ rail mounting, and Panel mounting with accessory

No. of I/O	Number and type of channels Inputs	Outputs	Embedded communication port	Display	Reference	Weight kg/lb
18	2 digital inputs: ■ 2 high speed counter (2 kHz), dry contact 8 analog inputs (configurable in pairs): ■ 8 NTC, or PT1000, or PTC, or 0-20 mA, or 4-20 mA, or 0-5 V, or 0-10 V, or hOhm, or daOhm, or digital input	6 digital outputs: ■ 1 SPDT relay 3 A ■ 2 SPST 3 A with the same common ■ 1 SPST 3 A ■ 2 SPST 3 A with independent common 2 analog outputs: ■ 2 x 0-10 V, or 4-20 mA, or PWM (2 kHz, 24 V ---)	■ 1 CAN expansion bus ■ 2 RS485 ■ 1 USB Mini-B ■ 1 Communication module port	Remote display (optional)	TM172OBM18R (1)	0.170/ 0.375
				Built-in display 128x64 LCD with backlight	TM172ODM18R (1)	0.195/ 0.430
28	8 digital inputs: ■ 6 24 V ~ or --- ■ 2 high speed counters, dry contact 8 analog inputs (configurable in pairs): ■ 8 NTC, or PT1000, or PTC, or 0-20 mA, or 4-20 mA, or 0-5 V, or 0-10 V, or digital input	8 digital outputs: ■ 1 SPDT Relay 3 A ■ 3 SPST 3 A with the same common ■ 2 SPST 3 A with the same common ■ 2 SPST 3 A with independent common 4 analog outputs ■ 2 x 0-10 V, or 4-20 mA, or PWM (2 kHz, 24 V ---) ■ 2 x 0-10 V	■ 1 CAN expansion bus ■ 2 RS485 ■ 1 USB Mini-B ■ 1 Communication module port	Remote display (optional)	TM172OBM28R (1)	0.390/ 0.859
				Built-in display 128x64 LCD with backlight	TM172ODM28R (1)	0.390/ 0.859
42	12 digital inputs: ■ 10 24 V ~ or --- ■ 2 high speed counters, dry contact 12 analog inputs (configurable in pairs): ■ 12 NTC, or PT1000, or PTC, or 0-20 mA, or 4-20 mA, or 0-5 V, or 0-10 V, or digital input	12 digital outputs: ■ 2 SPDT Relay 3 A ■ 3 SPST 3 A with the same common ■ 3 SPST 3 A with the same common ■ 2 SPST 3 A with the same common ■ 2 SPST 3 A with independent common 6 analog outputs: ■ 2 x 0-10 V, or 4-20 mA, or PWM (2 kHz, 24 V ---) ■ 4 x 0-10 V	■ 1 CAN expansion bus ■ 2 RS485 ■ 1 USB Mini-B ■ 1 Communication module port	Remote display (optional)	TM172OBM42R (1)	0.480/ 1.058
				Built-in display 128x64 LCD with backlight	TM172ODM42R (1)	0.480/ 1.058

Accessories to be ordered separately

Designation	Use for	Reference	Weight kg/lb
I/O screw terminal blocks	TM172●●●07R logic controllers	TM172ASCTB07	0.025/ 0.055
	TM172●●●18● logic controllers	TM172ASCTB18	0.040/ 0.088
	TM172P●●●28●, TM172P●●●28●I logic controllers	TM172ASCTB28	0.100/ 0.220
	TM172P●●●42●, TM172P●●●42●I logic controllers	TM172ASCTB42	0.150/ 0.331
Fixing accessory: 12 clip-on locks for panel mounting	For mounting M172 logic controllers and M172 expansion modules on panel	TM172AP12PM	0.050/ 0.110

(1) Products equipped with an isolated power supply, and two isolated RS485 ports.

Modicon M171/M172 logic controllers for HVAC solutions

M172 Performance logic controllers



TM172PB07R



TM172PDG18R



TM172PB028RI



TM172PDG028RI



TM172PB042RI



TM172PDG042SI

M172 Performance logic controllers: Power supply: 24 V $\sim$

35 mm/1.38 in rail mounting, and panel mounting with accessory

No. of I/O	Number and type of channels	Outputs	Embedded communication port	Display	Reference	Weight kg/lb
7	2 digital inputs: 2 high speed counter (2 kHz), dry contact 2 analog inputs (configurable in pairs): 2 NTC, or PT1000, or PTC, or 0-20 mA, or 4-20 mA, or 0-5 V, or 0-10 V, or hOhm, or daOhm, or digital input	3 digital outputs: 1 SPDT relay 3 A 2 SPST 3 A with the same common	1 Ethernet 1 CAN expansion bus 2 RS485 1 USB (type A) 1 USB Mini-B 1 Communication module port 1 μSD Card slot	Remote display (optional) Built-in display 128x64 LCD with backlight	TM172PB07R (1) TM172PDG07R (1)	0.175/ 0.386 0.200/ 0.441
18	2 digital inputs: 2 high speed counters, dry contact 8 analog inputs (configurable in pairs): 8 NTC, or PT1000, or PTC, or 0-20 mA, or 4-20 mA, or 0-5 V, or 0-10 V, or hOhm, or daOhm, or digital input	6 digital outputs: 1 SPDT relay 3 A 2 SPST 3 A with the same common 1 SPST 3 A 2 SPST 3 A with independent common - Optional 2 SSR 0.5 A with independent common for TM172PDG18S only 2 Analog outputs: 2 x 0-10 V, or 4-20 mA, or PWM (2 kHz, 24 V $\sim$)	1 Ethernet 1 CAN expansion bus 2 RS485 1 USB (type A) 1 USB Mini-B 1 Communication module port 1 μSD Card slot	Remote display (optional) Built-in display 128x64 LCD with backlight	TM172PB018R (1) TM172PDG018R (1) TM172PDG18S (1)	0.200/ 0.441 0.225/ 0.496 0.225/ 0.496
28	8 digital inputs: 6 24 V $\sim$ or $\sim$ 2 high speed counters, dry contact 8 analog inputs, (configurable in pairs): 8 NTC, or PT1000, or PTC, or 0-20 mA, or 4-20 mA, or 0-5 V, or 0-10 V, or digital input	8 digital outputs: 1 SPDT Relay 1 A or 3 A for TM172P028RI 3 SPST 3 A with the same common 2 SPST 3 A with the same common 2 SPST 3 A with independent common - Optional 2 SSR 0.5 A with independent common for TM172PDG28SI only 4 analog outputs: 2 x 0-10 V, or 4-20 mA, or PWM (2 kHz, 24 V $\sim$) 2 x 0-10 V	1 Ethernet 1 CAN expansion bus 2 RS485 1 USB (type A) 1 USB Mini-B 1 Communication module port 1 μSD Card slot	Remote display (optional) Built-in display 128x64 LCD with backlight Remote display (optional) Built-in display 128x64 LCD with backlight	TM172PB028R (1) TM172PDG028R (1) TM172PB028RI (1) TM172PDG028RI (1) TM172PDG28SI (1)	0.300/ 0.661 0.300/ 0.661 0.390/ 0.859 0.390/ 0.859
42	12 digital inputs: 10 24 V $\sim$ 2 high speed counter, dry contact 12 analog inputs, (configurable in pairs): 12 NTC, or PT1000, or PTC, or 0-20 mA, or 4-20 mA, or 0-5 V, or 0-10 V, or digital input	12 digital outputs: 2 SPDT relay 1 A or 3 A for TM172P042RI 3 SPST 3 A with the same common 3 SPST 3 A with the same common 2 SPST 3 A with the same common 2 SPST 3 A with independent common - Optional 2 SSR 0.5 A with independent common for TM172PDG42S and TM172PDG42SI only 6 analog outputs: 2 x 0-10 V, or 4-20 mA, or PWM (2 kHz, 24 V $\sim$) 4 x 0-10 V	1 Ethernet 1 CAN expansion bus 2 RS485 1 USB (type A) 1 USB Mini-B 1 Communication module port 1 μSD Card slot	Remote display (optional) Built-in display 128x64 LCD with backlight Remote display (optional) Built-in display 128x64 LCD with backlight	TM172PB042R (1) TM172PDG042R (1) TM172PDG42S (1) TM172PB042RI (1) TM172PDG042RI (1) TM172PDG42SI (1)	0.385/ 0.849 0.385/ 0.849 0.385/ 0.849 0.480/ 1.058 0.480/ 1.058

Accessories to be ordered separately

I/O screw terminal blocks, Fixing accessory

See page 23

(1) Products equipped with an isolated power supply, and two isolated RS485 ports.

Modicon M171/M172 logic controllers for HVAC solutions

I/O expansion modules for M172 logic controllers

I/O expansion modules

Two I/O expansion modules are available, dedicated to M172 Optimized and M172 Performance logic controllers.

- They are used to increase the number of I/O up to 238 on M172 logic controllers.
- Expanded I/O types are digital and analog; the mix between inputs and outputs differs according to the module, making it easier to adapt the configuration to each need.
- They are connected via the CAN expansion bus on M172 logic controllers.
- All M172 logic controllers are compatible with all M172E expansion modules. Legacy TM171EP expansion modules are also compatible with M172.
- The maximum number of expansion modules on the CAN expansion bus is 7, in any combination (if more expansions are needed, please contact our Customer Care Centre).
- The M172E expansion modules are equipped with DIP switches which can be used to set the baud rate, the network address and also to incorporate a 120 ohm terminal resistor.
- The I/O can be configured in pairs, like M172 controllers.

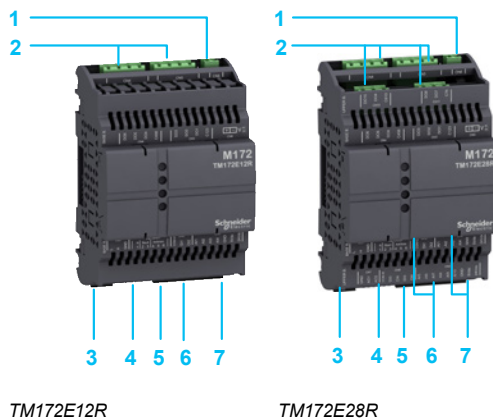
TM172E12R and TM172E28R expansion modules (1)

- 1 Connector for removable terminal block for power supply (24 V $\sim$)
- 2 Removable terminal block for digital outputs
- 3 Connector for removable terminal block for CAN expansion bus
- 4 DIP switches
- 5 Clip for 35 mm/1.38 in rail mounting
- 6 Connector for removable terminal block for digital inputs
- 7 Connector for removable terminal block for analog inputs with 5 V $\sim$ /24 V $\sim$ output power supply

TM172E28R expansion module (1)

- 8 Connector for removable terminal block for analog outputs
- 9 Two slots for TM172AP12PM fixing accessory

(1) Removable terminal blocks to be ordered separately, see [page 21](#).



Modicon M171/M172 logic controllers for HVAC solutions

I/O expansion modules for M172 logic controllers



TM172E12R



TM172E28R



TM172ASCTB12E



TM172ASCTB28E



TM172AP12PM

I/O expansion modules						
35 mm/1.38 in rail mounting						
No. of I/O	Number and type of channels		Compatibility	Embedded communication connection	Reference	Weight kg/lb
	Inputs (1)	Outputs (1)				
12	2 digital inputs: 2 high speed counters, dry contact 4 analog inputs: 4 NTC or PT1000, or PTC, or 0-20 mA, or 4-20 mA, or 0-5 V, or 0-10 V, or hOhm, or daOhm, or digital inputs	6 digital outputs: 3 SPST 3 A with the same common 3 SPST 3 A with the same common	M172 logic controllers	1 CAN expansion bus	TM172E12R	0.140/ 0.308
28	6 digital inputs: 4 ~ or 24 V $\overline{\text{---}}$ 2 high speed counters, dry contact 10 analog inputs: 10 NTC or PT1000, or PTC, or 0-20 mA, or 4-20 mA, or 0-5 V, or 0-10 V, or hOhm, or daOhm, or digital inputs	10 digital outputs: 3 SPST 3 A with the same common 3 SPST 3 A with the same common 2 SPST 3 A with the same common 2 SPST 3 A with the same common 2 analog outputs: 2 x 0-10 V, or 4-20 mA, or PWM (2 kHz, 24 V $\overline{\text{---}}$)	M172 logic controllers	1 CAN expansion bus	TM172E28R	0.190/ 0.418

Accessories to be ordered separately			
Designation	Compatibility	Reference	Weight kg/lb
Screw terminal blocks (inputs, outputs, and communication bus)	TM172E12R expansion module	TM172ASCTB12E	0.070/ 0.154
	TM172E28R expansion module	TM172ASCTB28E	0.100/ 0.220
Fixing accessory: 12 clip-on locks for panel mounting	TM172E●●R expansion modules	TM172AP12PM	0.055/ 0.110

(1) Removable terminal blocks to be ordered separately.

Remote displays

Remote color touch screen displays

Six remote color touch screen displays are dedicated to the M172 Optimized and M172 Performance logic controllers, distinguished by use and type of mounting. These displays can be also used with M171 controllers with Modbus SL or with third-party products equipped via Modbus SL.

They are all programmable with EcoStruxure Machine Expert - HVAC. The remote color touch screen displays have the same firmware, meaning they can be swapped interchangeably.

- TM172DCLWT●● are designed for wall mounting and indoor use, depending on the reference, for controlling temperature, relative humidity and PIR presence with built-in sensor.
- TM172DCLF● are designed for flush mounting, and wall mounting with an accessory, and either indoor or outdoor uses, with a white or dark gray housing. An installation on a wall with TM172ABKP●● accessories, useful for a plant room.
- TM172DCLWT● and TM172DCLF● displays can be mounted vertically (portrait) or horizontally (landscape) (1). They can be configured for Modbus SL as client or server, by means of the software.
 - On Modbus SL Server, up to 8 displays can be installed in the same network.
 - On Modbus SL Client, up to 8 devices can be managed via the display.

Remote monochrome display

- TM172DGRP monochrome display is dedicated to the M172 Optimized and M172 Performance logic controllers. It is designed for flush mounting, and wall mounting with an accessory, and indoor use. It is programmable with EcoStruxure Machine Expert - HVAC.



TM172DCLWT●●



TM172DCLFW



TM172DCLFG



TM172DGRP

TM172DCLWT●●

- 1 3.5" color touch screen LCD (320 x 240 pixels)
- 2 Holes for presence (motion) detection
- 3 Input connector (USB Micro-B port)
- 4 Power Supply (24 V $\approx$)
- 5 RS485 Modbus serial line
- 6 Holes for temperature and humidity measurement

TM172DCLFW, TM172DCLFG

- 1 3.5" color touch screen LCD (320 x 240 pixels)
- 2 Input connector (USB Micro-B port)
- 3 Power Supply (24 V $\approx$)
- 5 RS485 Modbus serial line

TM172DGRP

- 1 Backlight monochrome LCD screen (240 x 140 pixels)
- 2 5 control keys
- 3 CAN bus connector

(1) With landscape mounting, temperature and humidity sensors cannot be used as they are not accurate.

Modicon M171/M172 logic controllers for HVAC solutions

Remote displays for M172 logic controllers



TM172DCLWT●●



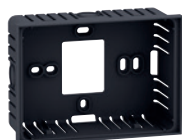
TM172DCLFW



TM172DCLFG



TM172DGRP



TM172ABKPG



TM171ABKPG

Remote displays					
Type	Description	Housing	Built-in sensor for	Reference	Weight kg/lb
Remote color touch screen wall mounting displays	- Power supply: 24 V $\sim$ - Color touchscreen - Size: 3.5" - Resolution: 320 x 240 pixels - IP20 - Communication port: 1 RS485, Modbus SL with terminal blocks	White	Temperature	TM172DCLWT	0.340/0.749
			- Temperature - Relative humidity	TM172DCLWTH	0.340/0.749
			- Temperature - Relative humidity - Presence PIR	TM172DCLWTHP	0.340/0.749
Remote color touch screen flush mounting displays	- Power supply: 24 V $\sim$ - Color touchscreen - Size: 3.5" - Resolution: 320 x 240 pixels - IP65 (front face) - Communication port: 1 RS485, Modbus SL with terminal blocks	White	–	TM172DCLFW	0.205/0.452
		Grey	–	TM172DCLFG	0.205/0.452
Remote display monochrome	5 control keys - Backlit LCD, 240 x 140 pixels, - Monochrome, - With real time clock	Grey		TM172DGRP	0.197/0.430
Accessories to be ordered separately					
Type	Use			Reference	Weight kg/lb
Mounting accessories (1)	White wall support for TM172DCLFW display			TM172ABKPW	0.060/0.132
	Grey wall support for TM172DCLFG display			TM172ABKPG	0.060/0.132
	Wall bracket For TM172DGRP display			TM171ABKPG	0.015/0.030

(1) With the use of TM172ABKP●● accessories, the degree of protection for the TM172DCLF● displays is IP20.

Modicon M171/M172 logic controllers
for HVAC solutions

M171 Optimized logic controllers and Remote
displays

Application	Modicon M171 logic controllers for Simple and compact machines								
Product name	Modicon M171 Optimized								
									
Reference	TM171OBM14R	TM171OD14R	TM171ODM14R	TM171OBM22R	TM171OD22R	TM171ODM22R	TM171ODM22S	TM171OF22R	TM171OFM22R
Power supply	100-240 VAC			24VAC/DC (3) (4)					
Type of mounting	4 DIN, 35 mm/1.38 in rail mounting (1)			4 DIN, 35 mm/1.38 in rail mounting (1)				Flush mounting	
Embedded display	–	Built-in display		–	Built-in display				
Total I/Os	14			22					
Total Analog Inputs	5			5					
NTC, or PT1000, or digital inputs	2			–					
NTC, or 0-20 mA, or 4-20 mA, or 0-10 V, or 0-5 V, or 0-1 V, or digital inputs	2			2					
NTC, or PT1000, or 0-20 mA, or 4-20 mA, or 0-10 V, or 0-5 V, or 0-1 V, or digital input	1			–					
NTC or digital inputs	–			3					
Total Digital Inputs	2			6					
open collector or digital inputs (2)	2			–					
volt-free in 1 group	–			6					
Total Analog Outputs	5			5					
open collector (2) for 12 V PWM/PPM or digital inputs	2			–					
open collector for 12 V PWM/PPM	–			2					
0-10 V	2			3					
4-20 mA	1			–					
Total Digital Outputs	4			6					
Relay 2 A, 230 VAC	4			5		3		5	
open collector	–			1		1		1	
SSR (3 A, 230 VAC)	–			–		2		–	
Maximum I/Os expanded	22			44					
Compatible Secure Interface	TM172SIG	TM172SIG (5)	TM172SIG	TM172SIG	TM172SIG (5)	TM172SIG	TM172SIG	TM172SIG (5)	TM172SIG
Compatible expansion module	TM171EO14R			TM171EO15R, TM171EO22R					
Communication									
Embed RS485	1	–	1	1	–	1	1	–	1
LAN expansion bus	1			1					
Connection accessories references (sold in lots of 5)									
Low voltage connector	–			TM171ACB4OI1M, TM171ACB4OI2M					
Analog output connector	–			TM171ACB4OAO1M, TM171ACB4OAO2M					
Modbus SL connector	–			TM171ACB4ORS485	–	TM171ACB4ORS485	TM171ACB4ORS485	–	TM171ACB4ORS485
LAN expansion bus connector	TM171ACB4OLAN			TM171ACB4OLAN					

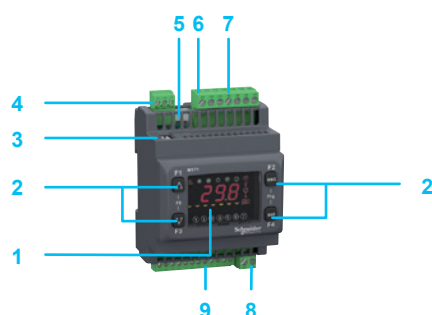
(1) Terminal blocks are supplied with TM171OBM14R, TM171OD14R, and TM171ODM14R.
(2) Both I/O are the same. On the same channel: 2 digital inputs or 2 analog outputs (depending on the configuration).
(3) Except for for TM171ODM22S: 12-24 VAC.
(4) Connectors to be ordered separately, see [page 31](#).
(5) When controller is associated to a TM171AMB Communication module.

Application	Remote Displays (compatible with each M171 Logic controller)								
									
Reference	TM171DLED	TM171DLCD2U	TM171DWAL2U	TM171DWAL2L	TM172DCLWT	TM172DCLWTH	TM172DCLWTHP	TM172DCLFW	TM172DCLFG
Type of mounting	Remote flush	Remote flush	Remote wall	Remote wall	Remote wall	Remote wall	Remote wall	Remote wall	Remote flush
Description	LED display Keyboard: 4 buttons	LCD display Keyboard: 7 buttons	LCD display Keyboard: 4 buttons Without backlight	LCD display Keyboard: 4 buttons With backlight	LCD display Color touchscreen Temperature	LCD display Color touchscreen Temperature, Relative humidity	LCD display Color touchscreen Temperature, Relative humidity Presence PIR	LCD display Color touchscreen IP65 (front face)	LCD display Color touchscreen IP65 (front face)
Programming software	EcoStruxure Machine Expert - HVAC V1.0 or higher				EcoStruxure Machine Expert - HVAC V1.0 or higher				
Product certifications	CE, UL (recognized), cURus, CSA, EAC, RCM, RoHS China.				CE, UL (recognized), cURus, CSA, EAC, RCM, RoHS China.				
Communication	LAN expansion bus				LAN expansion bus	Modbus SL	–	–	–

M171 Optimized controllers

The M171 Optimized logic controllers comprise 10 models that can be used to control from 14 up to 22 embedded I/O (digital and analog).

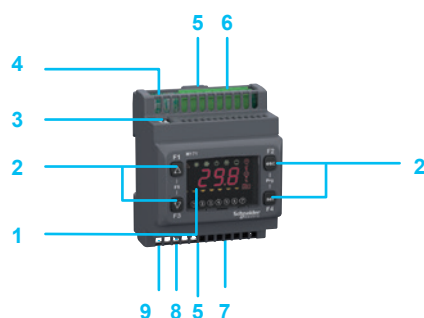
- Two types of power supply are available:
 - 100-240 V ~
 - 12-24 V ~ or 24 V =
- Two types of housing:
 - with built-in display
 - with remote display that can be added by means of the LAN expansion bus
- Two types of mounting:
 - Flush mounting: controllers to be mounted on a cabinet door
 - On 35 mm/1.38 in rail mounting: controllers to be mounted inside a cabinet
- Communication ports on M171 Optimized logic controllers:
 - One optional Modbus SL bus
 - One LAN expansion bus
- The M171 Optimized logic controllers are certified CE, UL (recognized), cURus, CSA, EAC, RCM, RoHS China.



35 mm/1.38 in rail mounting

TM171O●14R Optimized logic controllers

- 1 Display
- 2 Four navigation keys for setting controller parameters
- 3 Programming port (TTL)
- 4 Removable terminal block for RS 485 serial port (**TM171O●M14R**)
- 5 Wired connector for LAN expansion bus
- 6 Mounting clip for 35 mm/1.38 in rail mounting
- 7 Removable terminal block for digital outputs
- 8 Removable terminal block for 100...240 V ~ power supply
- 9 Removable terminal block for I/O



TM171O●22R Optimized logic controllers (1)

- 1 Display
- 2 Four navigation keys for setting controller parameters
- 3 Programming port (TTL)
- 4 Wired connector for RS 485 serial port (**TM171O●M14R**)
- 5 Mounting clip for 35 mm/1.38 in rail mounting
- 6 Removable terminal block for outputs
- 7 Wired connector for 12-24 V ~ or 24 V = power supply, and for low voltage I/O
- 8 Wired connector for analog output
- 9 Wired connector for LAN expansion bus

Flush mounting

TM171OF●22R Optimized logic controllers (1)



(1) Connectors to be ordered separately, see [page 30](#).

Modicon M171/M172 logic controllers for HVAC solutions

M171 Optimized logic controllers



TM171OBM14R



TM171OD14R



TM171ODM14R



TM171OBM22R



TM171OD22R



TM171ODM22R



TM171OF22R



TM171OFM22R

M171 Optimized logic controllers: Power supply: 100-240 V ~					
No. of I/O	Number and type of channels		Embedded communication	Display	Reference
	Inputs	Outputs			Weight kg/lb
35 mm/1.38 in rail mounting (1)					
14	2 digital inputs: 2 open collector or digital inputs (2) 5 configurable analog inputs: 3 NTC, or PT1000, or digital inputs 2 NTC, or 0-20 mA, or 4-20 mA, or 0-10 V, or 0-5 V, or 0-1 V, or digital inputs	4 digital outputs: 3 SPST (2 A, 230 V ~) with the same common 1 SPDT (2 A, 230 V ~) 5 analog outputs: 2 open collector (2) for 12 V PWM/PPM or digital inputs 2 x 0-10 V 1 x 4-20 mA	1 RS485 1 LAN expansion bus	Remote display (optional)	TM171OBM14R 0.190/0.420
			1 LAN expansion bus	Built-in display	TM171OD14R 0.190/0.420
			1 RS485 1 LAN expansion bus	Built-in display	TM171ODM14R 0.190/0.420

M171 Optimized logic controllers: Power supply: 12-24 V ~ or 24 V --- (3) (4)					
35 mm/1.38 in rail mounting					
22	6 digital inputs: 6 volt-free in 1 group 5 configurable analog inputs: 3 NTC or digital inputs 2 NTC, or 0-20 mA, or 4-20 mA, or 0-10 V, or 0-5 V, or 0-1 V, or digital inputs	6 digital outputs: 3 SPST (2 A, 230 V ~) with the same common 2 SPST (2 A, 230 V ~) with independent common 1 open collector 5 analog outputs: 2 open collector for 12 V PWM/PPM 3 x 0-10 V	1 RS485 1 LAN expansion bus	Remote display (optional)	TM171OBM22R 0.190/0.420
			1 LAN expansion bus	Built-in display	TM171OD22R 0.190/0.420
			1 RS485 1 LAN expansion bus	Built-in display	TM171ODM22R 0.190/0.420
		6 digital outputs: 3 SPST (2 A, 230 V ~) with the same common 2 SSR (3 A, 230 V ~) 1 open collector 5 analog outputs: 2 open collector for 12 V PWM/PPM 3 x 0-10 V	1 RS485 1 LAN expansion bus	Built-in display	TM171ODM22S 0.190/0.420

Flush mounting					
22	6 digital inputs: 6 volt-free in 1 group 5 configurable analog inputs: 3 NTC or digital input 2 NTC, or 0-20 mA, or 4-20 mA, or 0-10 V, or 0-5 V, or 0-1 V, or digital inputs	6 digital outputs: 3 SPST (2 A, 230 V ~) with the same common 2 SPST (2 A, 230 V ~) with independent common 1 open collector 5 analog outputs: 2 open collector for 12 V PWM/PPM 3 x 0-10 V	1 LAN expansion bus	Built-in display	TM171OF22R 0.164/0.360
			1 RS485 1 LAN expansion bus	Built-in display	TM171OFM22R 0.164/0.360

Remote display for M171 Optimized logic controllers

Remote displays

See page 31

Connection accessories for M171 Optimized logic controllers

Connectors

Low voltage connector, Analog output connector, Modbus SL connector, LAN expansion bus connector

See page 31

(1) Terminal blocks are supplied with **TM171OBM14R**, **TM171OD14R**, and **TM171ODM14R**.

(2) Both I/O are the same. On the same channel: 2 digital inputs or 2 analog outputs (depending on the configuration).

(3) Except for **TM171ODM22S**: 12-24 V ~.

(4) Connectors to be ordered separately, see page 30.

I/O expansion modules

Three I/O expansion modules are available, dedicated to M171 Optimized logic controllers.

- They are used to increase the number of I/O up to 44 on M171 Optimized logic controllers
- Expanded I/O types are digital and analog
- They are connected via the LAN expansion bus on M171 Optimized logic controllers

Compatibility between logic controllers and I/O expansion modules

Logic controller type	Reference	Compatible I/O expansion module (reference)
M171 Optimized	TM171OBM14R, TM171OD14R, TM171ODM14R	TM171EO14R
	TM171OBM22R, TM171OD22R, TM171ODM22R, TM171ODM22S, TM171OF22R, TM171OFM22R	TM171EO15R, TM171EO22R

TM171EO●●R expansion modules (1)

35 mm/1.38 in rail mounting

- 1 Service port (TTL)
- 2 Wired connector for removable terminal block for Modbus SL
- 3 Connector for removable terminal block for digital outputs
- 4 Wired connector for removable terminal block for power supply (12-24 V ~ or 24 V ---),
- 5 Wired connector for low voltage I/O
- 6 Clip for 35 mm/1.38 in rail mounting
- 7 Wired connector for removable terminal block for analog outputs
- 8 Wired connector for removable terminal block for LAN expansion bus

(1) Removable terminal blocks to be ordered separately, except for **TM171EO14R**.

I/O expansion modules

35 mm/1.38 in rail mounting

No. of I/O	Number and type of channels	Compatibility	Embedded communication connection	Reference	Weight kg/lb
Inputs	Outputs				
14	2 digital inputs: 2 open collector or digital inputs (1) 5 configurable analog inputs: ■ 3 NTC or digital inputs ■ 2 NTC, or 0-20 mA, or 4-20 mA, or 0-10 V, or 0-5 V, or 0-1 V, or digital inputs	■ 4 digital outputs: ■ 3 SPST (2 A, 230 V ~) with the same common ■ 1 SPDT (2 A, 230 V ~) 5 analog outputs: ■ 2 open collector for 12 V PWM/PPM or digital inputs (1) ■ 2 x 0-10 V ■ 1 x 4-20 mA	TM171OBM14R, TM171OD14R, TM171ODM14R	■ 1 LAN expansion bus TM171EO14R	0.190/ 0.420
15	6 digital inputs: volt-free 3 analog inputs: NTC or digital inputs	4 digital outputs: ■ 3 2 A, 250 V ~ ■ 1 open collector 2 analog outputs: open collector (PPM/PWM)	TM171OBM22R, TM171OD22R, TM171ODM22R, TM171ODM22S, TM171OF22R, TM171OFM22R	■ 1 LAN expansion bus TM171EO15R	0.190/ 0.420
22	6 digital inputs: volt-free 5 analog inputs: ■ 3 NTC or digital inputs ■ 2 NTC, or 0-20 mA, or 4-20 mA, or 0-10 V, or digital inputs	6 digital outputs: ■ 5 2 A, 250 V ~ ■ 1 open collector 5 analog outputs: ■ 2 open collector (PPM/PWM) ■ 3 x 0-10 V	TM171OBM22R, TM171OD22R, TM171ODM22R, TM171ODM22S, TM171OF22R, TM171OFM22R	■ 1 LAN expansion bus TM171EO22R	0.190/ 0.420

Accessories for I/O expansion modules

Designation	Description	Cable length (m/ft.)	Unit reference	Weight kg/lb
Accessories to be ordered separately				
Analog output connector (0-10 V outputs) Sold in lots of 5 (item 1)	Cordset equipped with a 4-pin connector at one end	1/3.3	TM171ACB4OAO1M	0.075/ 0.170
		2/6.6	TM171ACB4OAO2M	0.125/ 0.280
Low voltage connector Sold in lots of 5 (item 2)	Screw terminal block and a cordset equipped with a 20-pin connector at one end	1/3.3	TM171ACB4OI1M	0.575/ 1.270
		2/ 6.6	TM171ACB4OI2M	1.120/ 2.470
Accessory – Supplied with each expansion module				
LAN expansion bus connector Sold in lots of 5 (item 3)	Cordset equipped with a 3-pin connector at each end	2/6.6	TM171ACB4OLAN	0.060/ 0.130

(1) On the same channel: 2 digital inputs or 2 analog outputs (depending on the configuration).

(2) Minimum set for operating controllers.



TM171EO14R



TM171EO15R



TM171EO22R



Connection accessories (2) for expansion modules:
TM171EO15R, M171EO22R



TM171DLED (1)



TM171DLCD2U



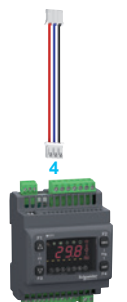
TM171DWAL2U



TM171DWAL2L



Connection accessories (2)
for M171 Optimized logic controller (rail
mounting): TM171OBM22R,
TM171OD22R, TM171ODM22R and
TM171ODM22S
for M171 Optimized logic controller (flush
mounting): TM171OF22R and
TM171OFM22R



Connection accessories (2) for M171
Optimized logic controller (rail mounting):
TM171OBM14R, TM171OD14R,
TM171ODM14R
N.B.: terminal blocks are supplied with
TM171OBM14R, TM171OD14R, and
TM171ODM14R



TM171ALAN

Remote displays for M171 Optimized logic controllers

The four available remote displays for the M171 Optimized logic controller offer are distinguished by technology and type of mounting.

- Technology: LED display or LCD display, with or without backlight
- Mounting: flush mounting or wall mounting

The remote displays are connected to the LAN expansion bus which provides the power supply.

Type	Description	Reference	Weight kg/lb
Remote flush mounting displays With realtime clock	■ LED display: 4 digits, 7 segments	TM171DLED	0.042/ 0.090
	■ Keyboard: 4 buttons		
	■ Communication port: 1 for LAN expansion bus – with wired connector (1) or screw terminal blocks		
	■ LCD display (with segments)	TM171DLCD2U	0.170/ 0.370
	■ Keyboard: 7 buttons		
	■ Flush mounting		
	■ Communication port: 1 for LAN expansion bus – with screw terminal blocks		
	■ 2 analog inputs:		
	- 1 NTC or digital input		
	- 1 NTC or 4-20 mA or digital input		
Remote wall mounting displays With realtime clock	■ Without backlight	TM171DWAL2U	0.143/ 0.320
	■ With backlight	TM171DWAL2L	0.143/ 0.320

Connection accessories for M171 Optimized logic controllers to be ordered separately

Type	Item	Description	Cable length (m/ft.)	Unit reference	Weight kg/lb
Low voltage connector Sold in lots of 5	1	Screw terminal block and a cordset equipped with a 20-pin connector at one end	1/3.3	TM171ACB4OI1M	0.575/ 1.270
			2/6.6	TM171ACB4OI2M	1.120/ 2.470
Analog output connector (0-10 V outputs) Sold in lots of 5	2	Cordset equipped with a 4-pin connector at one end	1/3.3	TM171ACB4OAO1M	0.075/ 0.170
			2/6.6	TM171ACB4OAO2M	0.125/ 0.280
Modbus connector Sold in lots of 5	3	Cordset equipped with a 3-pin connector at one end	1/3.3	TM171ACB4ORS485 (3)	0.052/ 0.110
LAN expansion bus connector Sold in lots of 5	4	Cordset equipped with a 3-pin connector at each end	2/6.6	TM171ACB4OLAN	0.060/ 0.130
LAN Communication adaptor Supplied with removable terminal blocs for bus connections		LAN-RS485 converter (accessory which allows to connect Modbus devices through the LAN connector of the M171 Optimized controller)		TM171ALAN	0.170/ 0.374

(1) Supplied with LAN expansion bus connector TM171ACB4OLAN.

(2) Minimum set for operating controllers.

(3) This product is only compatible for modbus version of M171 Optimized 22 I/Os.

M171 Performance logic controllers

M171 Performance logic controllers comprise 4 models that can be used to control from 3 up to 27 embedded I/O (digital and analog).

■ Power supply: 24 V $\sim$ or 48 V $\sim$

■ Two types of housing:

- with built-in display
- without display

Each controller includes a connection (through the CAN expansion bus or through Modbus SL) for a remote display, available in the catalog.

■ Two types of mounting:

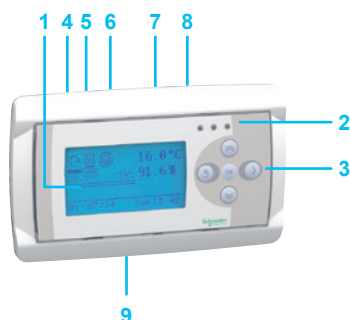
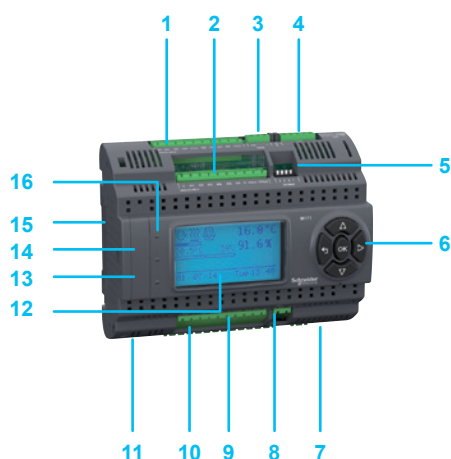
- On 35 mm/1.38 in rail mounting: controllers to be mounted inside a cabinet
- Flush mounting: controllers to be mounted on a cabinet door or wall-mounted using the wall bracket accessory, see [page 33](#).

■ Communication ports on M171 Performance logic controllers:

- One Modbus SL client/server
- Two USB
- One CAN expansion bus
- On flush mounting version:
- One Modbus SL client/server
- One Modbus TCP and BACnet IP (B-AAC profile) (WebVisu)
- One CAN expansion bus

■ M171 Performance logic controllers can be connected to communication modules, adding another connection for the CAN expansion bus, Ethernet network, or Profibus, etc., see [page 38](#).

■ M171 Performance logic controllers are certified CE, cURus (UL Recognized), CSA, EAC, RCM, RoHS China.



35 mm/1.38 in rail mounting

TM171P●M27● Performance logic controllers (1)

- 1 Connector for removable terminal block for digital inputs
- 2 Connector for removable terminal block for analog inputs
- 3 Connector for removable terminal block for Modbus SL
- 4 Connector for removable terminal block for CAN expansion bus
- 5 4-position DIP switches for address selection
- 6 Five control keys for setting controller parameters
- 7 Connector for removable terminal block for power supply (24 V $\sim$, 48 V $\sim$)
- 8 Connector for removable terminal block for fast digital inputs (high speed counter)
- 9 Connector for removable terminal block for digital outputs
- 10 Connector for removable terminal block for analog outputs
- 11 Mounting clips for 35 mm/1.38 in rail mounting
- 12 On **TM171PDM27●**: display
On **TM171PBM27R**: 6- and 10-position DIP switches, behind a front panel

Behind the removable protective cover: 13 and 14

- 13 USB mini-B port to connect a PC
- 14 USB-A port for USB stick
- 15 Connector for communication module
- 16 Three status LEDs

Flush mounting

TM171PFE03R●●● Performance logic controllers (2)

- 1 Display
- 2 Three status LEDs
- 3 Five control keys for setting controller parameters

On the rear side of the controller

- 4 Terminal block for power supply (24 V $\sim$ or 48 V $\sim$)
- 5 Terminal block for CAN expansion bus
- 6 Terminal block for Modbus SL
- 7 Terminal block for analog input
- 8 RJ45 connector for Ethernet
- 9 Built-in NTC sensor (analog)

(1) **TM171ASCTB27** removable terminal blocks to be ordered separately, see [page 33](#).

(2) Terminal blocks supplied with flush mounting version of Performance controllers.

Modicon M171/M172 logic controllers for HVAC solutions

M171 Performance logic controllers



TM171PBM27R



TM171PDM27R



TM171PDM27S

M171 Performance logic controllers: Power supply: 24 V ~, 48 V ---						
35 mm/1.38 in rail mounting						
No. of I/O	Number and type of channels		Embedded communication port	Display	Reference	Weight kg/lb
	Inputs	Outputs				
27	9 digital inputs (8 + 1): 2 groups of 4 digital inputs, 24 V ~ or 48 V --- 1 fast digital input, or high speed counter volt-free	7 digital outputs: 2 SPDT (8 A, 230 V ~) with independent common 5 SPST (5 A, 230 V ~) with independent common	1 RS485 1 CAN expansion bus	Remote display (optional)	TM171PBM27R	0.385/ 0.850
	6 configurable analog inputs: 2 NTC or digital inputs, or 4-20 mA, or 0-5 V, or 0-10 V, or 0-30 kΩ/0-5 kΩ variable resistor, or digital inputs	5 analog outputs: 3 x 0...+10 V or 4-20 mA 2 x 0...+10 V, or 4-20 mA, or digital output open collector		Built-in display 128x64 LCD with backlight	TM171PDM27R	0.385/ 0.850
		7 digital outputs: 2 SPDT (8 A, 230 V ~) with independent common 3 SPST (5 A, 230 V ~) with independent common 2 SSR (1 A, 230 V ~) outputs	1 RS485 1 CAN expansion bus	Built-in display	TM171PDM27S	0.385/ 0.850
		5 analog outputs: 3 x 0...+10 V or 4-20 mA 2 x 0...+10 V, or 4-20 mA, or digital output open collector				

Flush mounting (to be used with the wall bracket accessory – see below)						
No. of I/O	Number and type of channels		Embedded communication port	Display	Reference	Weight kg/lb
	Inputs	Outputs				
3	3 configurable analog inputs: 1 built-in NTC 1 NTC or digital input 1 x 4-20 mA or 0-10 V	–	1 RS485 1 CAN expansion bus 1 RJ45 for Modbus TCP and BACnet IP (B-AAC profile) and MS/TP (B-AAC profile)	Built-in display	TM171PFE03	0.320/ 0.710



TM171PFE03

Accessories for M171 Performance logic controllers to be ordered separately			
Designation	Use	Reference	Weight kg/lb
Screw terminal blocks	For TM171PBM27R , TM171PDM27R , and TM171PDM27S	TM171ASCTB27	0.100/ 0.220
Wall bracket for flush mounting Performance logic controllers	For TM171PFE03	TM171ABKPB	0.015/ 0.030



TM171ASCTB27



TM171ABKPB

Modicon M171/M172 logic controllers for HVAC solutions

I/O expansion modules for M171 Performance logic controllers

I/O expansion modules

Two I/O expansion modules are available, dedicated to M171 Performance logic controllers, and also compatible with M172 logic controllers.

- They are used to increase the number of I/O:
 - up to 351 on M171 Performance logic controllers
 - up to 366 on M172 logic controllers
- Expanded I/O types are digital and analog
- They are connected via the CAN expansion bus on M171 Performance and M172 logic controllers
- They are compatible with either Performance or Optimized logic controllers

Logic controllers	Compatible I/O expansion module (reference)
M172 Optimized logic controllers (TM172O●●●●)	TM171EP14R, TM171EP27R
M172 Performance logic controllers (TM172P●●●●)	TM171EP14R, TM171EP27R
M171 Optimize logic controllers (TM171O●●●●)	—
M171 Performance logic controllers (TM171P●●●●)	TM171EP14R, TM171EP27R

35 mm/1.38 in rail mounting I/O expansion modules

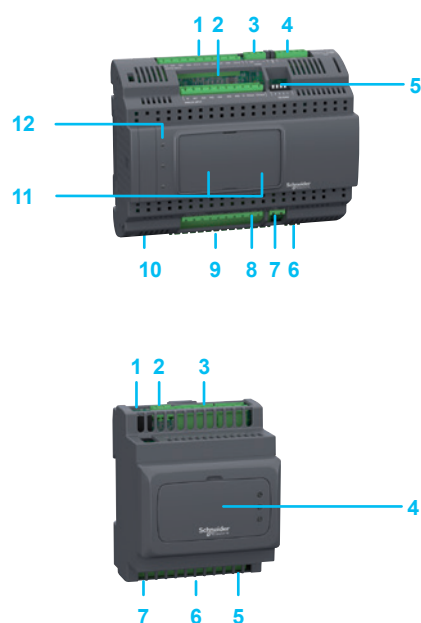
TM171EP27R expansion module (1)

- 1 Connector for removable terminal block for digital inputs
- 2 Connector for removable terminal block for analog inputs
- 3 Connector for removable terminal block for Modbus SL
- 4 Connector for removable terminal block for CAN expansion bus
- 5 4-position DIP switches for address selection
- 6 Connector for removable terminal block for power supply (24 V $\sim$, 48 V ---)
- 7 Connector for removable terminal block for fast digital inputs
- 8 Connector for removable terminal block for digital outputs
- 9 Connector for removable terminal block for analog outputs
- 10 Clip for 35 mm/1.38 in rail mounting
- 11 6- and 10-position DIP switches for address selection
- 12 3 status LEDs

TM171EP14R expansion module (1)

- 1 4-position DIP switches
- 2 Connector for removable terminal block for CAN expansion bus
- 3 Removable terminal block for digital outputs
- 4 Behind the removable protective cover: Service port (TTL)
- 5 Connector for low voltage I/O
- 6 Clip for 35 mm/1.38 in rail mounting
- 7 Connector for removable terminal block for power supply (24 V $\sim$)

(1) Removable terminal blocks to be ordered separately, see [page 35](#).



Modicon M171/M172 logic controllers for HVAC solutions

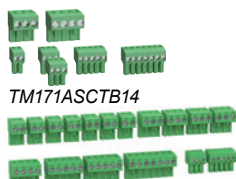
I/O expansion modules for M171 Performance logic controllers



TM171EP14R



TM171EP27R



TM171ASCTB14

TM171ASCTB27

I/O expansion modules

35 mm/1.38 in rail mounting

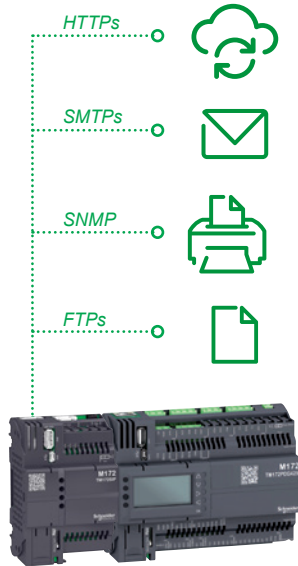
No. of I/O	Number and type of channels	Compatibility with logic controller	Embedded communication connection	Reference	Weight kg/lb
	Inputs	Outputs			
14	4 digital inputs: 4 x 24 V ~ or 24 V = (1) 4 analog inputs: (configurable in pairs) 4 NTC, or PT1000, or PTC, or 4-20 mA, or 0-5 V, or 0-10 V, or digital inputs	4 digital outputs: ■ 1 SPDT (5 A, 230 V ~) with independent common ■ 3 SPST (3 A, 230 V ~) with independent common 2 analog outputs: ■ 2 x 0-10 V (1)	TM171P●●●● TM172●●●● ■ 1 CAN expansion bus	TM171EP14R	0.190/ 0.420
27	9 digital inputs (8 + 1): ■ 2 groups of 4 digital inputs, 24 V ~ or 48 V = ■ 1 fast digital input or high speed counter, volt-free 6 analog inputs: ■ 2 NTC or digital inputs ■ 4 NTC, or 4-20 mA, or 0-10 V, or digital inputs	7 digital outputs: ■ 2 SPDT (8 A, 230 V ~) with independent common ■ 5 SPST (5 A, 230 V ~) with independent common 5 analog outputs: ■ 5 x 0-10 V, or 4-20 mA	TM171P●●●●, TM172●●●● ■ 1 CAN expansion bus	TM171EP27R	0.385/ 0.850

Accessories for I/O expansion modules to be ordered separately

Designation	Description	Unit reference	Weight kg/lb
Screw terminal blocks (inputs, outputs, and communication bus)	14 I/O – For TM171EP14R	TM171ASCTB14	0.050/ 0.110
	27 I/O – For TM171EP27R	TM171ASCTB27	0.100/ 0.220

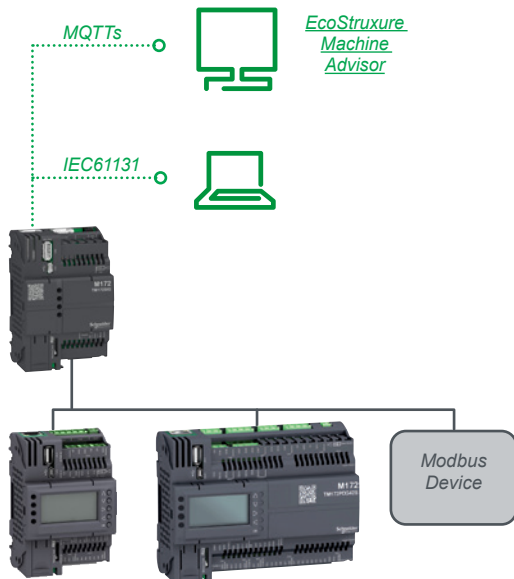
(1) On the same channel: 2 digital inputs or 2 analog outputs (depending on the configuration).

(2) Minimum set for operating controllers.



M172 Performance logic controller and Plug-in Interface for:

- Secure connection via HTTPs (TLS1.2) to the webserver
- Secure email SMTPs (TLS1.2)
- Secure file transport protocol FTPs (TLS1.2)



M171Optimized / M172 Performance logic controllers and Gateway Interface for cybersecure connection to the cloud for machine monitoring

Secure Interfaces

Modicon TM172SI● Secure Interfaces are designed to establish a secure Internet connection, and to connect unsafe devices to a secure Ethernet network.

Two versions are available to perform different types of secured operations, and compatible with existing machines or installations.

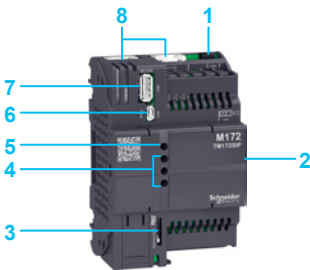
- **TM172SIP:** Plug-in version for M172 controllers
 - to send files to an FTPs server (when related to Secure Interfaces only), to reply to an FTPs client (having an FTPs server)
 - to send e-mails to providers using secure encryption algorithms
 - to manage SNMP protocol, that allows to exchange Object ID information relating to SNMP protocol in an Ethernet network
 - to access the machine via a secure webserver.
- **TM172SIG:** Gateway version for M172 and M171 Optimized controllers, including Modbus devices to ensure a cyberSecure connection.
- It is possible to create programs within TM172SI● Secure Interfaces that allow the PLC to be able to find variables or parameters in connected devices, and to save files through micro SD, USB memory key or in the NAND flash memory of Modicon TM172SI● Secure Interfaces.
- The Secure Interfaces are compatible with either Performance or Optimized logic controllers:

Logic controller type	Reference	Compatible Secure Interface
M172 Optimized	TM172OBM18R, TM172OBM28R, TM172OBM42R	TM172SIG, TM172SIP
	TM172ODM18R, TM172ODM28R, TM172ODM42R	
M172 Performance	TM172PBG07R, TM172PBG18R, TM172PBG28R, TM172PBG28RI, TM172PBG42R, TM172PBG42RI	TM172SIG, TM172SIP
	TM172PDG07R, TM172PDG18R, TM172PDG18S, TM172PDG28R, TM172PDG28RI, TM172PDG28SI, TM172PDG42R, TM172PDG42RI, TM172PDG42S, TM172PDG42SI	
M171 Optimized	TM171OBM14R, TM171ODM14R, TM171OBM22R, TM171ODM22R, TM171ODM22S, TM171OFM22R	TM172SIG
M171 Optimized (when controller is associated to TM171AMB Modbus communication module)	TM171OD14R, TM171OD22R, TM171OF22R	TM172SIG

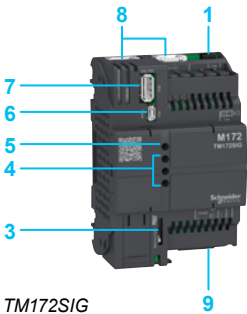
- EcoStruxure Machine Expert - HVAC programming software is available to program and customize applications in association with M171/M172 logic controllers.
- The Secure Interfaces are certified CÉ, UL, CSA, EAC, RCM, UKCA.

Modicon M171/M172 logic controllers for HVAC solutions

Secure Interfaces



TM172SIP



TM172SIG

Secure Interfaces

35 mm/1.38 in rail mounting Secure Interfaces (1)

- 1 Connector for removable terminal block for power supply (24 V $\sim$)
- 2 TTL communication port to logic controller (Only on TM172SIP)
- 3 Memory card slot (Micro SD)
- 4 Programmable LEDs (red, yellow, green)
- 5 Power LED (green)
- 6 USB mini-B port
- 7 USB A port
- 8 Ethernet ports (2x RJ45)
- 9 Serial line port (RS485) (Only on TM172SIG)

Designation	Description	Reference	Weight kg/lb
Secure Interface Plug-in (1)	Size: 4 DIN (2) Double Ethernet port with switch capabilities Equipped with a integrated TTL communication port, to communicate with the controller	TM172SIP	0.165 0.363
Secure Interface Gateway (1)	Size: 4 DIN (2) Double Ethernet port with switch capabilities Equipped with a RS485 serial port used to communicate with a controller via a Modbus RTU connection	TM172SIG	0.165 0.363

(1) Removable screw terminal blocks are included with TM172SIP.

(2) 4 DIN: Interface width is 72 mm (2.83 in).

Communication modules

The communication module offer is dedicated to M171 Performance and M172 logic controllers (1).

The 8 optional modules provide specific connections:

- To fieldbuses, including:
 - CAN bus
 - Modbus TCP
 - Profibus
 - Modbus SL (RS 485)
 - BACnet MS/TP (B-AAC profile)
 - BACnet IP (B-AAC profile)
 - RS 232 serial link
 - LonWorks (FFT-10)
 - Konnex (KNX) via Schneider Electric' spaceLYnk gateway (1)
- To services, including:
 - Ethernet
 - WebVisu and remote download functions
- They are mounted by simply interlocking on the left-hand side of M171 Performance or M172 logic controllers (1). Only one communication module can be added to a logic controller.
- The communication module is powered by the controller.
- Each communication module has its own type of connector, adapted to the bus or communication network, see [page 39](#).
- They are compatible with either Performance or Optimized logic controllers

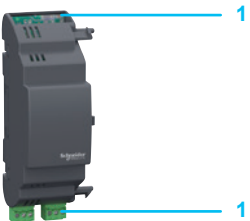
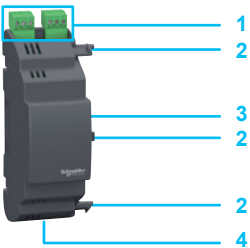
Logic controllers	Compatible Communication modules (reference)
M172 Optimized logic controllers (TM172O●●●●)	TM171ACAN, TM171AMB, TM171ARS485, TM171ARS232, TM171ALON, TM171AETH, TM171AETHRS485
M172 Performance logic controllers (TM172P●●●●)	TM171ACAN, TM171AMB, TM171ARS485, TM171ARS232, TM171ALON
M171 Optimize logic controllers (TM171O●●●●)	–
M171 Performance logic controllers (TM171P●●●●)	TM171ACAN, TM171AETH, TM171APBUS, TM171AMB, TM171ARS485, TM171ARS232, TM171AETHRS485, TM171ALON

TM171A●●● communication modules

- 1 Communication connector (2)
- 2 Locking device
- 3 Expansion connector to the controller
- 4 Clip for 35 mm/1.38 in 1/2 rail mounting

(1) spaceLYnk offer: please consult the offer on its [website](#).

(2) The communication connector type depends on the communication modules, see [page 37](#).





TM171ACAN



TM171AETH



TM171APBUS



TM171AMB



TM171ARS485



TM171ARS232



TM171AETHRS485



TM171ALON

Communication modules

35 mm/1.38 in rail mounting

Fieldbus, services access	Compatibility with logic controller	Communication port	Reference (1)	Weight kg/lb
■ CAN	M172 Optimized, M172 Performance, M171 Performance	■ 2 screw terminal blocks (1)	TM171ACAN	0.077/ 0.170
■ Modbus TCP ■ Ethernet ■ BACnet IP (B-AAC profile) ■ WebVisu and remote download functions	M171 Performance M172 Optimized	■ 1 RJ45	TM171AETH	0.077/ 0.170
■ Profibus	M171 Performance	■ 1 SUB-D 9	TM171APBUS	0.077/ 0.170
■ Modbus SL (RS485)	M172 Optimized, M172 Performance, M171 Performance	■ 2 screw terminal blocks (1)	TM171AMB	0.077/ 0.170
■ Modbus SL or BACnet MS/TP (B-AAC profile)	M172 Optimized, M172 Performance, M171 Performance	■ 2 screw terminal blocks (1)	TM171ARS485	0.077/ 0.170
■ RS 232 serial link ■ Relay output	M172 Optimized, M172 Performance, M171 Performance	■ 1 SUB-D 9 for RS 232 ■ 1 screw terminal block for relay output (1)	TM171ARS232	0.077/ 0.170
■ Modbus TCP and BACnet/IP ■ Modbus SL or BACnet MS/TP (B-AAC profile) ■ WebVisu and remote download functions ■ Ethernet	M171 Performance M172 Optimized	■ 1 RJ45 for Ethernet ■ 2 screw terminal blocks for RS485 (1)	TM171AETHRS485	0.077/ 0.170
■ LonWorks (FFT-10)	M172 Optimized, M172 Performance, M171 Performance	■ 1 screw terminal block for LON bus	TM171ALON	0.077/ 0.170

(1) Removable terminal blocks supplied with communication modules.



Modicon M172 EEVD



Modicon M171 EEVD

Electronic expansion valve drivers

Electronic expansion valves drivers are specifically designed to control electronic expansion valves used in various types of refrigeration systems. They regulate the superheat level by modulating the valve position and can be used with various type of refrigerants and for many applications, from small residential unit to large HVAC systems. The control system optimizes the superheat control and increase the energy savings of the unit.

Two versions of drivers are available:

- Modicon M172 EEVD: Electronic Expansion Valve Drivers that are used in combination of the Modicon M172 controller range. The pressure and temperatures sensors are wired to the Modicon M172 controller which manages the control algorithm. The user has the choice to use preprogrammed superheat functions or to create his own control algorithm. This provides a very optimized and flexible solution.
Several versions are available depending of the valve technology (unipolar or bipolar) and the number of valves to control (single or dual valves). Those drivers are compatible with the battery backup which provides energy to close the valve in case of power failure.
- Modicon M171 EEVD: Superheat Electronic Expansion Valve Driver that can be used independently to any other controller. The temperature and pressure sensors are directly wired to the driver and the embedded control algorithm regulates the superheat. This driver is equipped with Modbus SL communication which allows to communicate with the Modicon M171/M172 or third party Modbus devices for remote monitoring and setting configuration.

Logic controllers	Compatible EEVD	
M172 Optimized logic controllers (TM172O●●●●)	TM172EEVEV1U, TM172EEVEV1B, TM172EEVEV2B	TM171VEVM4
M172 Performance logic controllers (TM172P●●●●)		
M171 Optimized logic controllers (TM171O●●●●)	—	
M171 Performance logic controllers (TM171P●●●●)	—	

- They are certified CE, UL, CSA, EAC, RoHS China

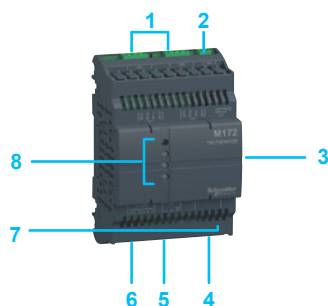
35 mm/1.38 in rail mounting

Modicon M172 EEVD (1)

- 1 Valve Outputs terminal block - CN2, CN3
- 2 Power supply terminal block - CN4
- 3 Battery backup connector
- 4 CAN Expansion bus port terminal block - CN1
- 5 Clip-on lock for 35 mm/1.38 in rail
- 6 Dip switch
- 7 TTL programming port
- 8 Status LEDs



TM172EEVEV1U, TM172EEVEV1B



TM172EEVEV2B



TM171VEVM4

Modicon M171 EEVD (2)

- 1 Output terminal block and power supply connector (24 V ~)
 - 2 Protective cover
 - 3 Status LEDs
- Behind the removable protective cover:
- 4 6-position DIP switches
 - 5 Status LED (for operation with TM171AMFK programming stick)
 - 6 LAN serial port for connecting TM171DLED remote display
 - 7 Terminal block for analog/digital inputs
 - 8 Clip for 35 mm/1.38 in rail mounting
 - 9 Modbus (RS 485) port
 - 10 TTL programming port

(1) Screw terminal blocks are delivered with TM171EEVEV●● electronic expansion valve drivers.
(2) Screw terminal blocks to be ordered separately, see [page 41](#).

Modicon M171/M172 logic controllers for HVAC solutions

Electronic expansion valve drivers



TM172EEV1U



TM172EEV1B



TM172EEV2B



TM171EVM4



TM172EEVBAT

Electronic expansion valve drivers

Modicon M172 EEVD

Application	Communication	Size (3)	Reference	Weight kg/lb
EEVD for single valve unipolar (1) (2)	CAN expansion Bus	2 DIN	TM172EEV1U	0.087/ 0.191

EEVD for single valve bipolar (1) (2)	CAN expansion Bus	2 DIN	TM172EEV1B	0.089/ 0.196
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EEVD for dual valves bipolar (1) (2)	CAN expansion Bus	4 DIN	TM172EEV2B	0.119/ 0.262
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Modicon M171 EEVD

Application	Number and type of channels		Reference	Weight kg/lb
	Inputs	Outputs		
Superheat EEVD RS485 for Modbus SL, for single valve Size: 4 DIN (2) (3)	2 digital inputs: ■ 2 volt-free 4 analog inputs: ■ 2 NTC ■ 2 PT1000, 4-20 mA, or 0-5 V, or 0-10 V	2 digital outputs: ■ 1 open collector (100 mA, 12 V $\overline{\text{---}}$) ■ 1 SPST NO relay contact, 5 A, $\sim$ 250 V	TM171EVM4	0.190/ 0.420

Accessories for electronic expansion valve drivers: to be ordered separately

Designation	Use	To use with	Reference	Weight kg/lb
Battery backup	To provide power when the primary source of power is unavailable.	TM172EEV1U TM172EEV1B TM172EEV2B	TM172EEVBAT	0.157/ 0.346

(1) Compatible with Battery backup TM172EEVBAT.

(2) Removable screw terminal blocks are included with M172/M171 EEVD.

(3) in 2 DIN: controller width is 36 mm (1.41 in) in 4 DIN: controller width is 72 mm / 2.83 in).

Modicon M171/M172 logic controllers for HVAC solutions

Measurement accessories

Measurement accessories						
Designation	Use	Description	Cable length m (ft)	Unit reference	Sold in lots of (1)	Weight kg/ lb
Temperature control						
NTC probes 	Multi-purpose ■ Temperature control: - 50...+110 °C (-122...+230 °F)	- IP 68 - Grey - Equipped with 2 conductor cables for controller side	1.5 (4.92)	TM1STNTCRN52015	8	0.144/0.320
				TM1STNTCRN5201P	100	0.144/0.320
			3 (9.84)	TM1STNTCRN52030	5	0.180/0.400
				TM1STNTCRN5203P	50	0.180/0.400
			5 (16.40)	TM1STNTCRN52050	4	0.228/0.500
				TM1STNTCRN5205P	25	0.228/0.500
NTC probes 	Multi-purpose ■ Temperature control: - 50...+110 °C (-122...+230 °F)	- IP 67 - Black - Equipped with 2 conductor cables for controller side	1.5 (4.92)	TM1STNTCRN61515	8	0.104/0.230
				TM1STNTCRN6151P	100	0.104/0.230
			3 (9.84)	TM1STNTCRN61530	5	0.125/0.280
				TM1STNTCRN6153P	50	0.125/0.280
			5 (16.40)	TM1STNTCRN61550	4	0.164/0.360
				TM1STNTCRN6155P	25	0.164/0.360
NTC probes 	Multi-purpose ■ Temperature control: - 50...+110 °C (-122...+230 °F)	- FAST - IP 67 - Grey - Equipped with 2 conductor cables for controller side	1.5 (4.92)	TM1STNTCSF44015	8	0.144/0.320
				TM1STNTCSF4401P	100	0.144/0.320
			3 (9.84)	TM1STNTCSF44030	5	0.175/0.390
				TM1STNTCSF4403P	50	0.175/0.390
NTC probes 	Multi-purpose ■ Temperature control: - 50...+110 °C (-122...+230 °F)	- IP 68 - Grey - Equipped with 2 conductor cables for controller side	1.5 (4.92)	TM1STNTCSN62015	8	0.144/0.320
				TM1STNTCSN6201P	100	0.144/0.320
			3 (9.84)	TM1STNTCSN62030	5	0.175/0.390
				TM1STNTCSN6203P	50	0.175/0.390
			5 (16.40)	TM1STNTCSN62050	4	0.232/0.510
				TM1STNTCSN6205P	25	0.232/0.510
NTC probes with a strap 	Pipe ■ Temperature control: - 50...+110 °C (-122...+230 °F)	- IP 68 - Grey - Equipped with 2 conductor cables for controller side - Equipped with strap	1.5 (4.92)	TM1STNTCTN62015	8	0.152/0.340
				TM1STNTCTN6201P	100	0.152/0.340
			3 (9.84)	TM1STNTCTN62030	5	0.180/0.400
				TM1STNTCTN6203P	50	0.180/0.400
PT1000 probes 	Multi-purpose ■ Temperature control: - 50...+110 °C (-122...+230 °F)	- IP 68 - Green - Equipped with 2 conductor cables for controller side	1.5 (4.92)	TM1STPTTSN62015	8	0.144/0.320
				TM1STPTTSN6201P	100	0.144/0.320
			3 (9.84)	TM1STPTTSN62030	5	0.175/0.390
				TM1STPTTSN6203P	50	0.175/0.390
			5 (16.40)	TM1STPTTSN62050	4	0.232/0.510
				TM1STPTTSN6205P	25	0.232/0.510
PT1000 probes 	Multi-purpose ■ Temperature control: - 50...+110 °C (-122...+230 °F)	- IP 68 - Green - Equipped with 2 conductor cables for controller side	1.5 (4.92)	TM1STPTTSN52015	8	0.136/0.300
				TM1STPTTSN5201P	100	0.136/0.300
			3 (9.84)	TM1STPTTSN52030	5	0.175/0.390
				TM1STPTTSN5203P	50	0.175/0.390
			5 (16.40)	TM1STPTTSN52050	4	0.232/0.510
				TM1STPTTSN5205P	25	0.232/0.510

(1) The given value is the number of products delivered for one ordered reference.

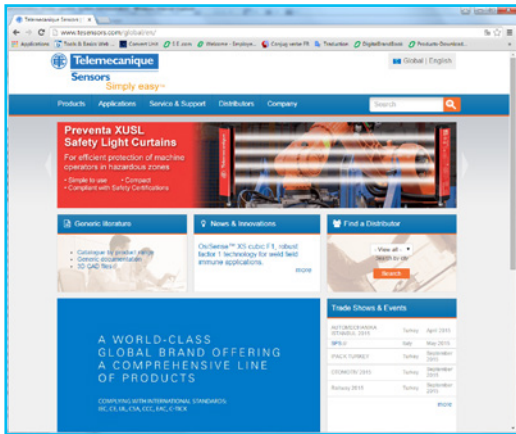
Measurement accessories				
Designation	Use	Description	Reference	Weight kg/ lb
	■ Applications			
Temperature control				
NTC probe	Outside air	- IP 65 - Wall mounting - NTC 10kOhm /25°C	TM1STNTCW69755	0.050/ 0.110
	■ Temperature control: -50...100 °C (-58...212 °F)			
NTC probe	Inside air (room)	- IP 30 - Indoor wall mounting - NTC 10kOhm /25°C	TM1STNTCWN75750	0.050/ 0.110
	■ Temperature control: -25...40 °C (-13...104 °F)			
Humidity control				
Humidity probe	Multi-purpose	- IP 65 - Wall mounting - 4-20 mA	TM1SHC4	0.140/ 0.308
	■ Humidity control: 0...100%			
Humidity & temperature control				
Humidity & temperature probes	Multi-purpose	- IP 65 - Wall mounting - 4-20 mA, NTC 10kOhm /25°C	TM1SHTCN4	0.140/ 0.308
	■ Humidity control: 0...100% ■ Temperature control: -40...60 °C (-40...140 °F)			
	Multi-purpose	- IP 65 - Wall mounting - 2x 4-20 mA	TM1SHTCC4	0.140/ 0.308
	■ Humidity control: 0...100% ■ Temperature control: -40...60 °C (-40...140 °F)			
	Multi-purpose	- IP 65 - Wall mounting - 2x Modbus ports embedded (RS-485 / Modbus RTU)	TM1SHTM4	0.140/ 0.308
	■ Humidity control: 0...100% ■ Temperature control: -40...60 °C (-40...140 °F)			

Modicon M171/M172 logic controllers for HVAC solutions

Pressure transmitters



XMLP pressure transmitters



Discover XMLP offer on [Telemecanique Sensors](#)

XMLP pressure transmitters

Schneider Electric recommends his partner Telemecanique Sensors, which proposes the range of **XMLP** pressure transmitters.

These transmitters integrate a metal pressure measuring cell. This measuring cell, which is welded directly onto the AISI 316L stainless steel transmitter body, offers the following advantages:

- An all-metal pressure chamber, with no elastomer gasket in contact with the fluid
- Compatibility with a large number of fluids: air, fresh water, hydraulic oils, refrigeration fluids, all fluids or gases compatible with AISI 316L stainless steel
- > Pressure transmitters can control fluids ranging in temperature from -30 to 120 °C. (-22 to 248 °F)

General characteristics

- > Made of stainless steel, **XMLP** pressure transmitters are compact and rugged.
- > Their degree of protection varies according to the type of connector:
 - IP 65 for EN 175301-803-A connector versions
 - IP 65 and IP 67 for Packard Metri-Pack connector versions
 - IP 65, IP 67 and IP 69K for M12 connector versions
- > With typical precision better than 0.5% of the rating, **XMLP** transmitters are suitable for industrial applications such as HVAC systems (for ratings greater than or equal to 9 bar or 100 psi only)
- > Their power supply (1) depends on the type of analogue output:
 - 5 V +/- 10% for the 0.5...4.5 V ratiometric output
 - 12 or 24 V (nominal), operating from 7 to 33 V for the 4...20 mA output
 - 24 V (nominal), operating from 12 to 33 V for the 0...10 V output

More information on [catalog](#)

Functions

XMLP pressure transmitters have an analogue output which delivers a signal proportional to the measured pressure.

This output can be one of the following types:

- 4...20 mA
- 0...10 V
- 0.5...4.5 V ratiometric
- > The pressure ranges available are:
 - vacuum measuring
 - -1...0 bar
 - -14.5...0 psi
 - pressure measuring
 - 0...600 bar
 - 0...6,000 psi
 - combined pressure measuring (vacuum and pressure)
 - -1...25 bar
 - -14.5...60 psi
- > The **XMLP** offer is available with four types of electrical connection:
 - M12, 4-pin connector
 - EN 175301-803-A (ex DIN 43650) connector
 - Packard Metri-Pack 150 connector
 - 2 m PVC cable
- > Several types of fluid connection are available:
 - G1/4 A male
 - 1/4"-18NPT male
 - SAE 7/16-20UNF-2A male
 - SAE 7/16-20UNF-2B female (with or without Schrader pin depending on the model)

More information on **XMLP** pressure transmitters [catalog](#)

(1) Use Safety Extra Low Voltage (SELV) or Protected Extra Low Voltage (PELV) power supply.

Application	Type of machine controlled	Compressor		
	Number of phases	3		
	Type of motor	Asynchronous	Asynchronous and Synchronous	Asynchronous and Synchronous for scroll
Compressor size	0.18 kW (0.25 HP)	Altivar 12 Consult catalog Ref. DIA2ED2130101EN	Altivar 320 Consult catalog Ref. DIA2ED2160311EN	—
	0.37 kW (0.5 HP)			—
	0.75 kW (1 HP)			Altivar 212 Consult catalog Ref. DIA2ED2101102EN
	2.2 kW (0.25 HP)			
	4.0 kW (5 HP)			
	7.5 kW (10 HP)	—		
	15 kW (20 HP)	—		
	18.5 kW (25 HP)	—	—	
	22 kW (30 HP)	—	—	
	30 kW (40 HP)	—	—	
	37 kW (50 HP)	—	—	
	45 kW (60 HP)	—	—	
	55 kW (67 HP)	—	—	
	75 kW (100 HP)	—	—	
	90 kW (120 HP)	—	—	—
	110 kW (150 HP)	—	—	—
	315 kW (422 HP)	—	—	—
	355 kW (480 HP)	—	Altivar Process Drive Systems (1) Consult catalog Ref. DIA2ED2140502EN	—
	400 kW (540 HP)	—		—
	450 kW (603 HP)	—		—
	500 kW (670 HP)	—		—
	560 kW (750 HP)	—		—
	630 kW (850 HP)	—		—
	710 kW (950 HP)	—		—
	800 kW (1100 HP)	—		—

Application	Type of machine controlled	Fan	
	Number of phases	3	
Fan size	0.18 kW (0.25 HP)	Altivar 12 Consult catalog Ref. DIA2ED2130101EN	—
	0.37 kW (0.5 HP)		—
	0.75 kW (1 HP)		Altivar 212 Consult catalog Ref. DIA2ED2101102EN
	2.2 kW (0.25 HP)		
	4.0 kW (5 HP)		
	7.5 kW (10 HP)	—	
	15 kW (20 HP)	—	
	75 kW (100 HP)	—	
	> 75 kW (> 100 HP)	—	Altivar Process Drive Systems (1) Consult catalog Ref. DIA2ED2140502EN

Compatible range of variable speed drives

(1) Altivar Process Drive Systems is a customized offer based on Altivar Process ATV600 products.

Modicon M171/M172 logic controllers for HVAC solutions

EcoStruxure Machine Expert - HVAC programming software

Software solution



EcoStruxure Machine Expert - HVAC programming software

EcoStruxure Machine Expert - HVAC programming software is compliant with IEC 61131-3. It can be used to develop, configure, and commission HVAC solution systems.

It includes:

- Programming Modicon M171/M172 logic controllers (Performance and Optimized) and remote display units and Secure Interfaces
- Setting up expansion buses and networks
- Creating the screen of the displays (built-in and displays of the M171/M172 logic controller offer)
- Configuring BMS communication modules on BACnet MS/TP (B-AAC profile), Modbus SL, Modbus TCP, BACnet MS/TP, BACnet IP (B-AAC profile), and LonWorks (FFT-10)
- Dedicated libraries such as:
 - a library of application function blocks
 - a library of Tested, Validated, and Documented Applications (TVDA)
- Full simulation mode

General characteristics

Programming languages	■ ST (Structured Text) ■ FBD (Function Block Diagram) ■ LD (Ladder) ■ IL (Instruction List) ■ SFC (Sequential Function Chart)
Applications	■ Graphical and text-based languages: - Adaptation to each developer background - Library management - Code debugging - Parameter definition - Simulation mode ■ Advanced programming: - Vectors - Pointers
System solutions management	■ Multi-target project ■ Management of Modbus data ■ Data exchange between several Modicon M171/M172 Performance logic controllers
Graphical user interface	■ Graphic display: - Multipage - Buttons - Edit box - Static text - Images - Animations - Bars - Lists of data (parameters/variables/alarms) ■ Configurable buttons ■ Multilanguage ■ Automatic documentation
Communication bus configurators	■ Control networks: Modbus TCP, Modbus SL, Profibus ■ Expansion bus fieldbus: CAN expansion bus ■ BMS connectivity: BACnet MS/TP (B-AAC profile), BACnet IP (B-AAC profile), LonWorks (FFT-10), MQTT, SNMP
Advanced simulation options	■ Full simulation - I/O emulation - HMI - IEC code - Live debug - Triggers - Oscilloscope
Advanced debugging and simulation options	■ Remote control/download: - Modbus SL & TCP - CAN - Modem ■ Parameter management ■ Status monitoring ■ Field test: - Oscilloscope - Debug window - Export to Excel

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Programming software

EcoStruxure Machine Expert - HVAC software is supplied by downloading from our [website](#)

The product version concerned offers the EcoStruxure Machine Expert - HVAC functions associated with logic controllers.

Operative System

- Windows 8/8.1, 64 Bit
- Windows 10, 64 Bit

Hardware requirements

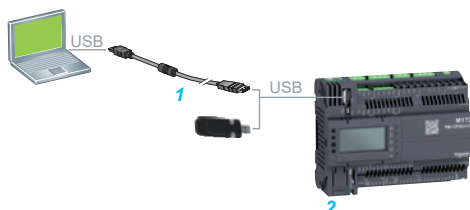
- Processor Intel Pentium 1.6 GHz processor or greater
- RAM 1 GB; 2 GB preferred
- Hard Disk 500 MB hard disk space for a default installation; allow a further 1 GB hard disk space for installing libraries and dedicated applications
- Peripherals mouse or compatible pointing device
- Peripherals USB interface
- Web access Web registration requires Internet access

Designation	Application	Reference
EcoStruxure Machine Expert - HVAC programming software	M171 Optimized logic controllers, M171 Performance logic controllers, M172 logic controllers	Only available as a download from our website

Programming accessories

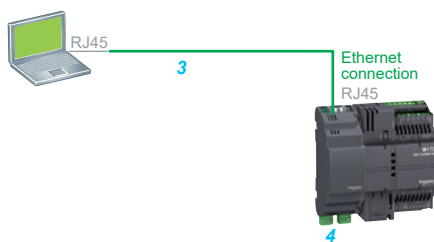
The USB cable is recommended for local programming. An Ethernet port is recommended for remote download or remote programming.

Description	Characteristics and use	Length m/ft.	Reference	Weight kg/lb
Programming cable (1)	From the PC USB-A port to the USB mini-B port on M171 Performance and M172 logic controllers (2)	3/0.98	TCSXCNAMUM3P	0.065/ 0.143



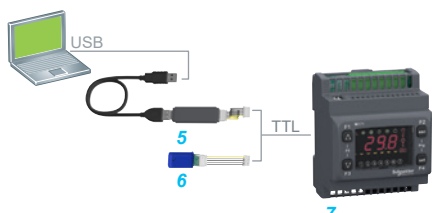
Local programming, download via USB port M171 & M172 Performance

Ethernet connection cable cable - shielded twisted pair straight cord (3)	Equipped with 1 RJ45 connector at each end From the PC RJ45 port to the RJ45 port on TM171AETH communication module and M172 logic controller (4) CE compatible	2/6.56 (1)	490NTW00002	—
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Remote programming via USB port M172 Performance

Programming accessories for M171 Optimized logic controllers				
Description	Characteristics and use	Reference	Weight kg/lb	
Programming cable (5)	To be used between a PC and the TTL programming port of M171 Optimized logic controllers (7)	TM171ADMI	0.157/ 0.350	
Programming stick (6)	To be used to transfer parameters from one M171 Optimized logic controller (7) to another, or to download the program	TM171AMFK	0.010/ 0.020	



Local programming, download via TTL port M171 Optimized

(1) Other lengths available: 5 m/16.40 ft, 12 m/39.37 ft, 40 m/131.23 ft, and 80 m/262.47 ft, see on our [website](#).

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490NTW00002	47	TM171OF22R	29 30
B		TM171OFM22R	29 30
BMXXCAUSBH018	48	TM171PBM27R	33
T		TM171PDM27R	33
TCSXCNAMUM3P	47 48	TM171PDM27S	33
TM171ABKPB	33	TM171PFE03	33
TM171ABKPG	25	TM171VEVM4	41
TM171ACAN	38 39	TM172ABKPG	25
TM171ACB4OAO1M	30 31	TM172ABKPW	25
TM171ACB4OAO2M	30 31	TM172AP12PM	20 23
TM171ACB4OI1M	30 31	TM172ASCTB07	20
TM171ACB4OI2M	30 31	TM172ASCTB12E	23
TM171ACB4OLAN	30 31	TM172ASCTB18	20
TM171ACB4ORS485	31	TM172ASCTB28	20
TM171ADMI	47	TM172ASCTB28E	23
TM171AETH	38 39	TM172ASCTB42	20
TM171AETHRS485	38 39	TM172DCLFG	25
TM171ALAN	31	TM172DCLFW	25
TM171ALON	38 39	TM172DCLWT	25
TM171AMB	38 39	TM172DCLWTH	25
TM171AMFK	47	TM172DCLWTHP	25
TM171APBUS	39	TM172DGRP	25
TM171ARS232	38 39	TM172E12R	23
TM171ARS485	38 39	TM172E28R	23
TM171ASCTB14	35	TM172EVEV1B	41
TM171ASCTB27	33 35	TM172EVEV1U	41
TM171DLCD2U	31	TM172EVEV2B	41
TM171DLED	31	TM172EVEVBAT	41
TM171DWAL2L	31	TM172OBM18R	20
TM171DWAL2U	31	TM172OBM28R	20
TM171EO14R	30	TM172OBM42R	20
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TM171EO22R	30	TM172ODM28R	20
TM171EP14R	34 35	TM172ODM42R	20
TM171EP27R	34 35	TM172PBG07R	21
TM171OBM14	30	TM172PBG18R	21
TM171OBM14R	29	TM172PBG28R	21
TM171OBM22R	29 30	TM172PBG28RI	21
TM171OD14R	29 30	TM172PBG42R	21
TM171OD22R	29	TM172PBG42RI	21
TM171ODM14R	29 30	TM172PDG07R	21
TM171ODM22R	29 30	TM172PDG18R	21
TM171ODM22S	29 30	TM172PDG18S	21
		TM172PDG28R	21
		TM172PDG28RI	21
		TM172PDG28SI	21
		TM172PDG42R	21
		TM172PDG42RI	21
		TM172PDG42S	21
		TM172PDG42SI	21
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		TM172SIP	37
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		TM1SHTCC4	43
		TM1SHTCN4	43
		TM1SHTM4	43
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		TM1STNTCRN5201P	42
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		TM1STNTCRN5203P	42
		TM1STNTCRN52050	42
		TM1STNTCRN5205P	42
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		TM1STNTCRN6151P	42
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		TM1STPTTSN6201P	42
		TM1STPTTSN62030	42
		TM1STPTTSN6203P	42
		TM1STPTTSN62050	42
		TM1STPTTSN6205P	42

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Schneider Electric Industries SAS

Head Office
35, rue Joseph Monier - CS 30323
F-92500 Rueil-Malmaison Cedex
France

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