

Modicon M171/M172

For HVAC control solutions

Logic controllers and Configuration software

Catalog

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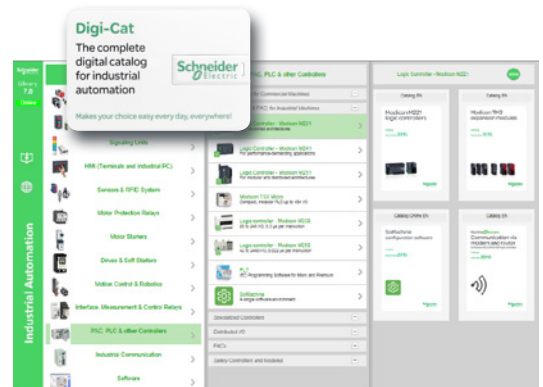
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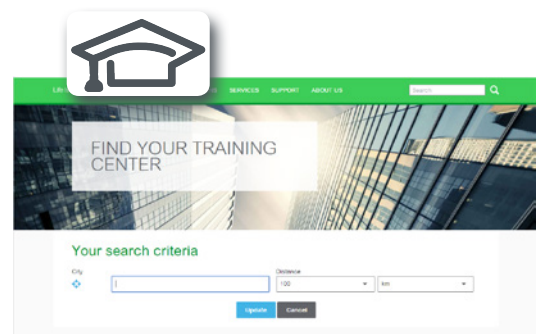
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Modicon M171/M172 for HVAC control solutions Logic controllers and configuration software

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Empowering industrial OEMs for the digital era

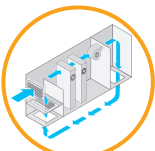
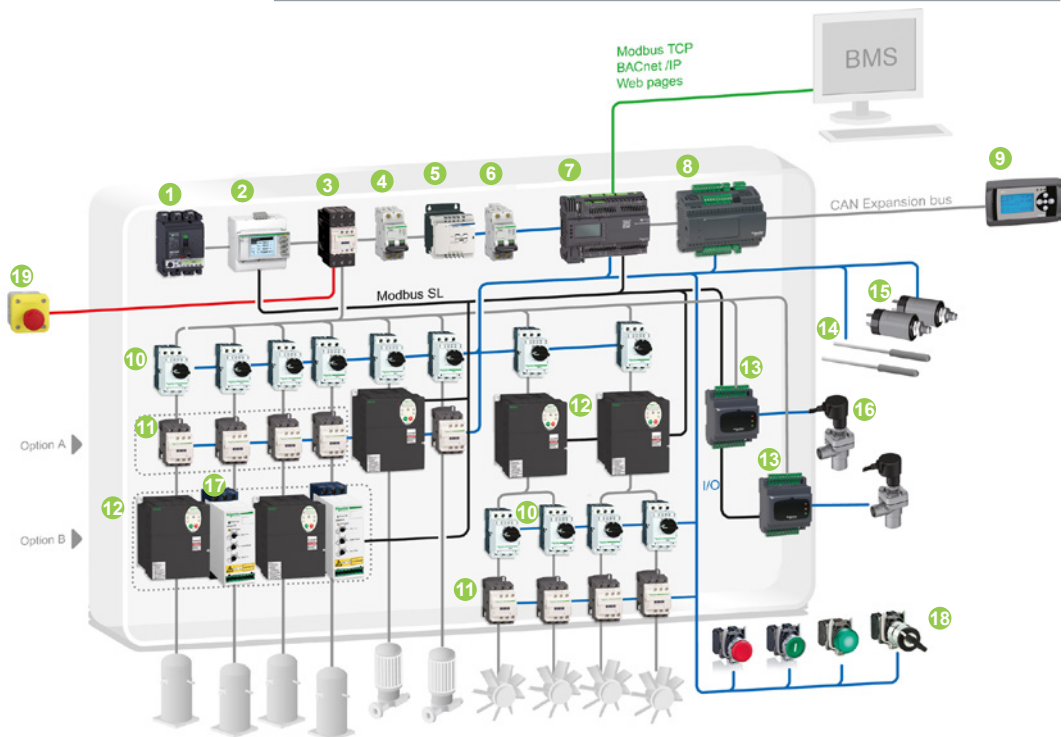
To be competitive in today's digital era, machine builders must be innovative. Smart machines, those that are better connected, more flexible, more efficient, and safe, are enabling machine builders to innovate in ways never before possible.

- > 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

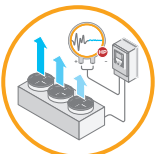
Ready-to-use architectures and function blocks

- > Tested, Validated, and Documented Architectures (TVDA)s 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.

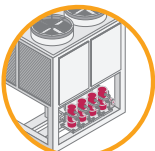
Modicon M171/M172 is part of EcoStruxure Machine



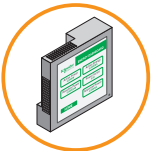
Fan management



Floating High Pressure control



Compressor management



Energy management

Application Function Blocks (AFBs)

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

Solution breakdown

- | | |
|---|---|
| 1 Compact NSX circuit breaker | 12 Altivar 212 variable speed drive, for 0.75 to 75 kW (1.0 to 100 hp) motors |
| 2 iEM3000 energy meter | 13 Modicon M171 electronic expansion valve driver |
| 3 TeSys D contactor | 14 Modicon TM1S humidity and temperature probes |
| 4 C60L-MA modular circuit breaker | 15 Telemecanique sensors: XMLP pressure transmitters |
| 5 Phaseo switch mode power supply | 16 Electronic expansion valve |
| 6 C60L-DC DC circuit breaker | 17 Altistart 01 soft starter |
| 7 Modicon M172 performance logic controller | 18 Harmony XB4/XB5 signaling units |
| 8 Modicon M172 I/O module | 19 Harmony XALK Emergency stop push button |
| 9 Modicon M171 remote display | |
| 10 TeSys GV2L magnetic circuit breaker | |
| 11 TeSys D contactor | |

Flexible

Flexible and scalable performance

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

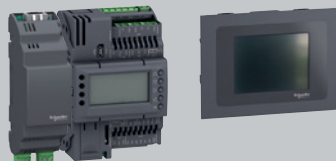
With the range of Modicon M171/M172 logic controllers, EcoStruxure™ Machine is well positioned.

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.

Modicon M172 performance logic controllers



Modicon M172 optimized logic controllers



Modicon M171 optimized logic controllers



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.
- > **Modicon M171 performance logic controller** for complex and BMS connectable machines, can be adapted to virtually any application.

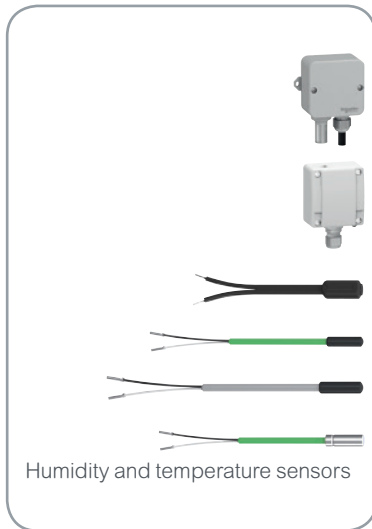
Efficient



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:

- > Controllers
- > Remote displays
- > Expansion modules
- > Communication modules
- > Wide range of humidity and temperature probes



Logic controllers

Remote displays

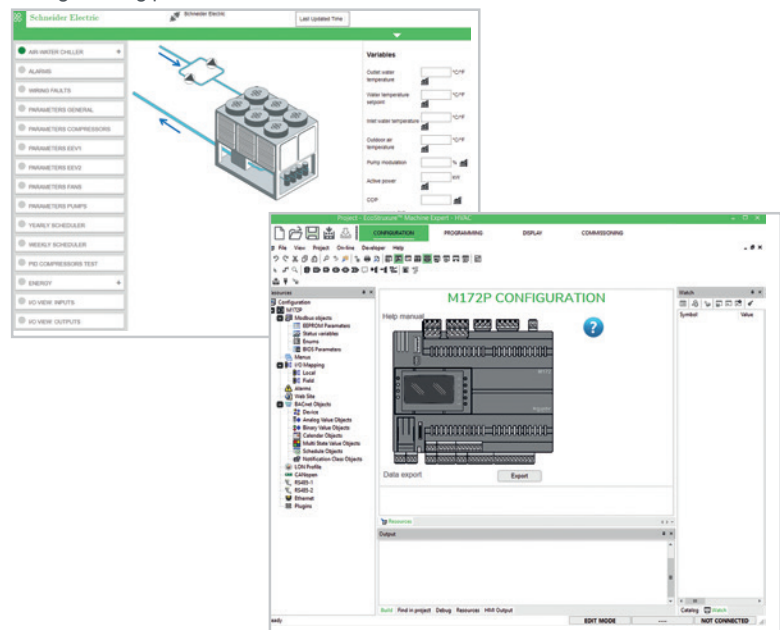
Expansion modules



Communication modules

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

Connected



Connected everywhere

Depending on your connectivity needs, select the right product

- > **M171 optimized** for simple and compact machines
 - Modbus RTU
 - LAN Expansion Bus
- > **M172** for any size of connectable (**M172 optimized**) or connected (**M172 performance**) machine
 - 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, white list, SNMP

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



General presentation

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.

Modicon M171/M172 range

- 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
 - 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



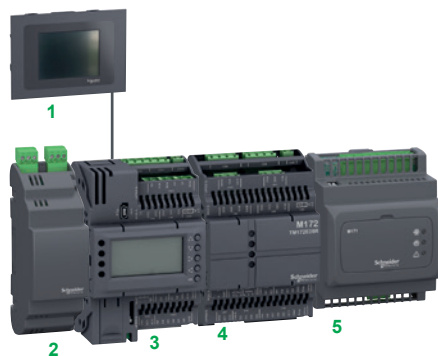
Chiller



Air handling unit



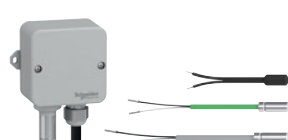
- 1 Remote flush mounting display
- 2 Remote wall mounting display
- 3 M171 optimized logic controller
- 4 I/O expansion module



- 1 Color touch screen display
- 2 Communication module
- 3 M172 optimized logic controller
- 4 I/O expansion module
- 5 Electronic expansion valve driver



- 1 Color touch screen display
- 2 M172 performance logic controller
- 3 I/O expansion module



Measurement accessories



Pressure transmitters

General presentation

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.

M171 optimized logic controllers

- **TM171O●●●●** optimized logic controllers, [see page 22](#)
- and **TM171EO●●●R** I/O expansion modules, [see page 24](#)
- and **TM171D●●●●** remote displays, [see page 26](#)

M171 performance logic controllers

- **TM171P●●●●** performance logic controllers, [see page 28](#)
- and **TM171EP●●●R** I/O expansion modules [see page 30](#)
- and **TM171DGRP** remote displays [see page 29](#)

M172 optimized and performance logic controllers

- **TM172O●●●●** optimized and **TM172P●●●●** performance logic controllers, [see page 14](#)
- and **TM172E●●●R** I/O expansion module, [see page 18](#)
- and **TM172DC●●●●** remote color touch screen displays, [see page 20](#)

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
 - Etc. [see page 32](#).

Electronic expansion valve drivers

- **TM171VEV●●** electronic expansion valve drivers compatible with the entire Modicon M171/M172 logic controller range and also with third party controllers and electronic expansion valves, [see page 34](#)

Measurement accessories

- Specific measurement accessories **TM1S●●●●**: humidity and temperature probes, [see page 36](#).
- Pressure transmitters from our partner Telemecanique sensors, [see page 38](#)

Software

- EcoStruxure Machine Expert - HVAC programming software, and programming accessories, [see page 40](#).

Connection accessories

- Adapted connection accessories: I/O connectors and cables, [see page 27](#).

General presentation (continued)

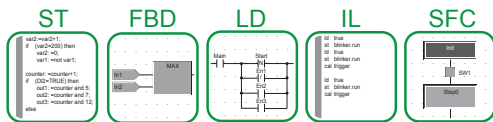
Configuration software

Modicon M171/M172 logic controllers are supported by an intuitive software package: EcoStruxure Machine Expert - HVAC, [see page 40](#).

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:



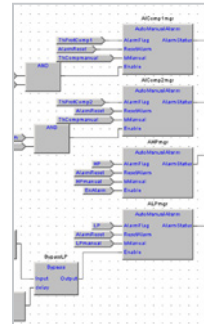
5 languages compliant with IEC 61131-3

```

// Structured Text language (ST)
// Example: Setpoint control
// 1. Setpoint is reached
// 2. Setpoint is not reached
// 3. Setpoint is reached
// 4. Setpoint is not reached
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// 100. Setpoint is not reached

```

Structured Text language (ST)



Function Block Diagram language (FBD)



Ladder Diagram language (LD)

```

// Instruction List language (IL)
// Example: Setpoint control
// 1. Setpoint is reached
// 2. Setpoint is not reached
// 3. Setpoint is reached
// 4. Setpoint is not reached
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// 96. Setpoint is not reached
// 97. Setpoint is reached
// 98. Setpoint is not reached
// 99. Setpoint is reached
// 100. Setpoint is not reached

```

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



M172 optimized logic controller linked to Ethernet via the TM171AETH or TM171AETHRS485 communication module

General presentation (continued)

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, [see page 32](#)

Ethernet access enables several functions such as:

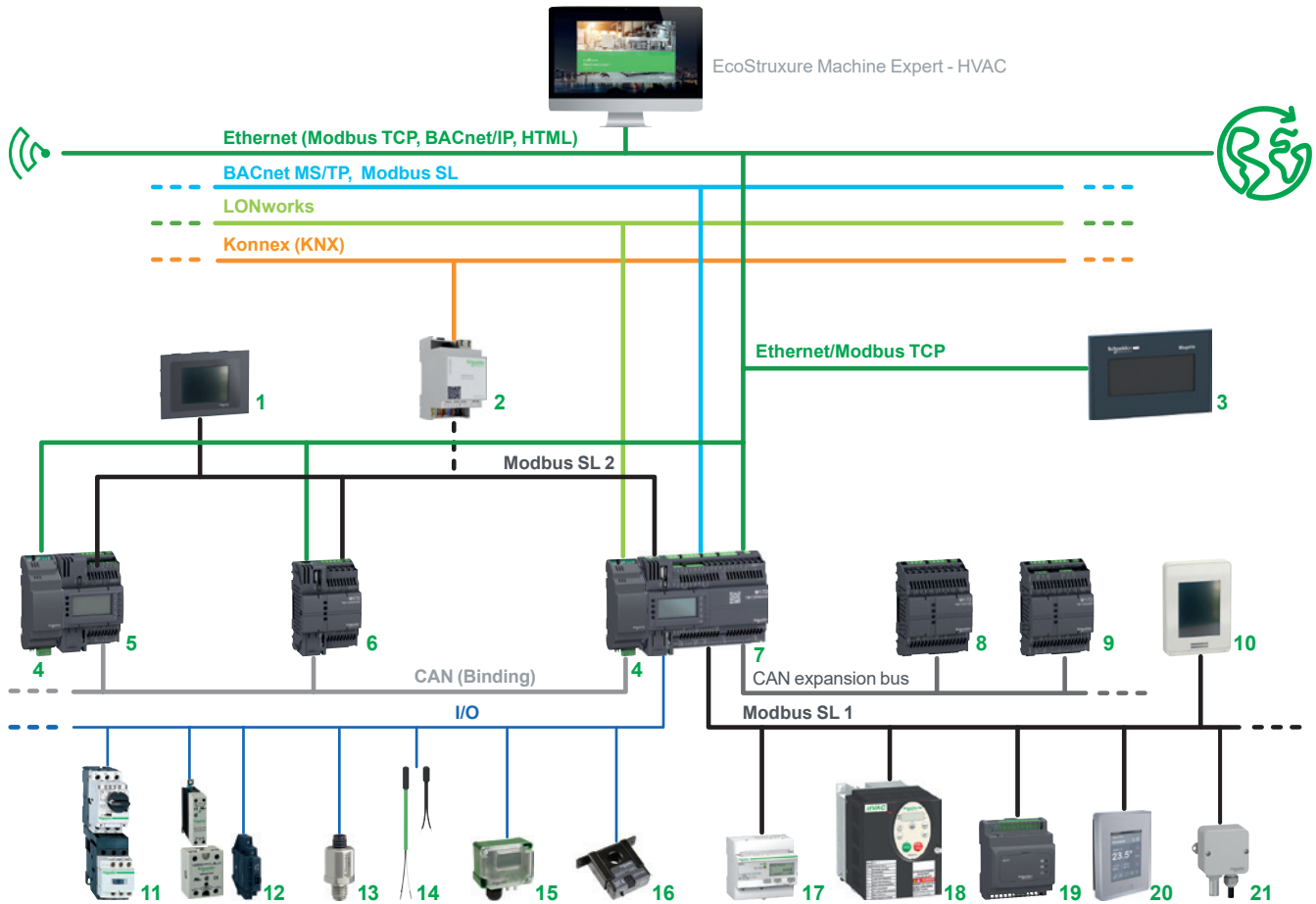
- > HTTP Webserver (Webvisu)
- > Remote access
 - Download program
 - Display program download
 - Download, upload parameters
 - Download firmware
 - Debug
 - File management
- > Bridge: specific function allowing controllers connected in Modbus SL to the same controller to be programmed via Modbus
- > FTP client/server

These services are not always available:

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

General presentation (continued)

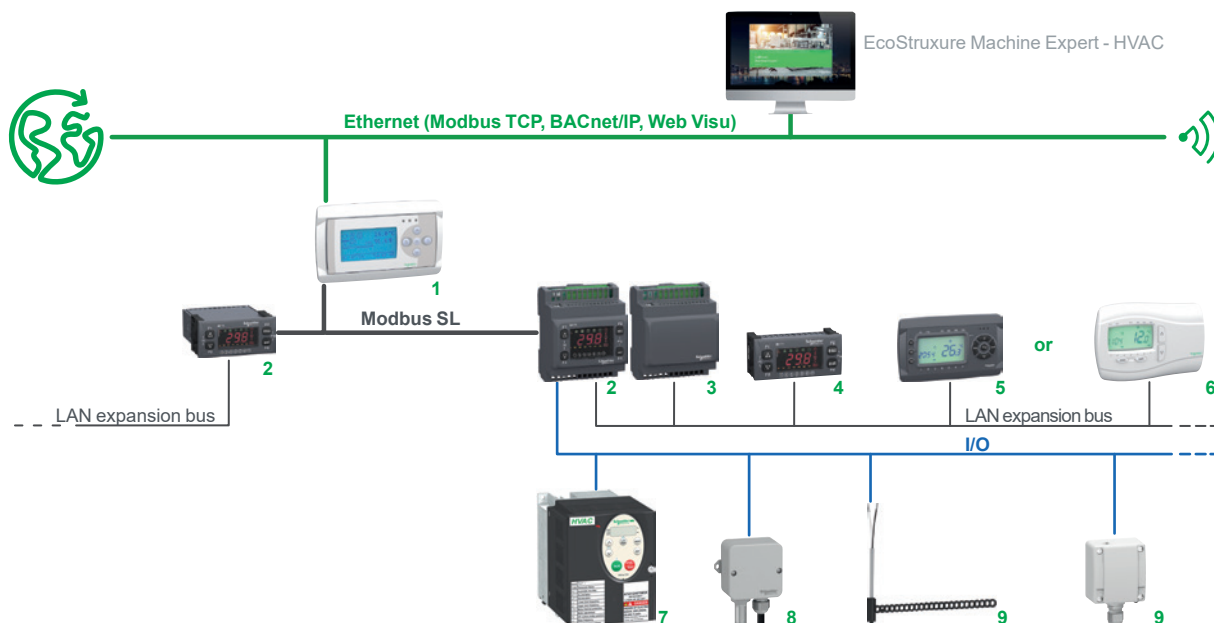
Modicon M172 logic controllers for any size of connectable or connected HVAC machines



- 1 TM172DCLF● flush mounting display, see page 21
- 2 spaceLynk gateway, see on our website www.schneider-electric.com
- 3 Magelis STO/STU HMI, see on our website www.schneider-electric.com
- 4 TM171ALON communication module, see page 32
- 5 TM171OD●●● optimized logic controller (18 I/O in 4 DIN), see page 16
- 6 TM172PB●●● performance logic controller (7 or 18 I/O in 4 DIN), see page 17
- 7 TM172PD●●● performance logic controller (28 or 42 I/O in 8 DIN), see page 14
- 8 TM172E12R I/O expansion module (12 I/O in 4 DIN), see page 18
- 9 TM172E28R I/O expansion module (28 I/O in 4 DIN), see page 18
- 10 TM172DCW● wall mounting remote display, see page 20
- 11 TeSys D motor starter, see on our website www.schneider-electric.com
- 12 Electromechanical relays, solid state relays, see on our website www.schneider-electric.com
- 13 XMLP pressure transmitter, see page 38
- 14 TM1ST●● temperature sensor PT1000 or NTC, see page 37
- 15 SPD310 Differential pressure sensor, see on our website www.schneider-electric.com
- 16 H721LC-S6 current transducer, see on our website www.schneider-electric.com
- 17 IEM 3000 energy meter, see on our website www.schneider-electric.com
- 18 Altivar 212 variable speed drive, see on our website www.schneider-electric.com
- 19 TM171VEV●● electronic expansion valve driver, see page 34
- 20 SE8000 room controller (thermostat), see on our website www.schneider-electric.com
- 21 TM1SH●● humidity sensor, see page 37

General presentation (continued)

Modicon M171 optimized logic controllers for simple and compact machines



- 1 TM171PFE03 performance logic controller, [see page 28](#)
- 2 TM171OFM22R optimized logic controller - flush mounting, [see page 22](#)
- 3 TM171EO●● I/O expansion module, [see page 24](#)
- 4 TM171DLED remote display, [see page 26](#)
- 5 TM171DLCD remote display, [see page 26](#)
- 6 TM171DWAL remote wall mounting display, [see page 26](#)
- 7 Altivar 212 variable speed drive, [see on our website www.schneider-electric.com](#)
- 8 TM1ST●● temperature sensor PT1000 or NTC, [see page 37](#)
- 9 TM1SH●● humidity sensor, [see page 37](#)

Applications		M172 optimized logic controllers for any size of connectable machines	M172 performance logic controllers for any size of connected machines
		■ Air/water-cooled chiller ■ Rooftop unit ■ Heat pump ■ Precision air conditioner ■ Compressor rack ■ Heat recovery unit	
			
Programming software		EcoStruxure Machine Expert - HVAC V2.4 or higher	EcoStruxure Machine Expert - HVAC V2.4 or higher
Maximum number of I/O with expansion modules		238 (TM172ODM42R + 7 TM172E28R)	238 (TM172PDG42RI + 7 TM172E28R)
Generic programmable inputs	Digital input	2, 8 or 12 digital inputs	2, 8 or 12 digital inputs
	Analog input	8 or 12 analog inputs	2, 8 or 12 analog inputs
Generic programmable outputs	Digital output	6, 8 or 12 digital outputs	3, 6, 8 or 12 digital outputs
	Analog output	2, 4 or 6 analog outputs	0, 2, 4 or 6 analog outputs
Communication	Embedded communication port	■ 2 RS485, Modbus SL master/slave (only 1 master), 1 BACnet MS/TP (B-AAC profile) ■ 1 CAN expansion bus	■ 2 RS485, Modbus SL master/slave (only 1 master), 1 BACnet MS/TP (B-AAC profile) ■ 1 RJ45 connector for Modbus TCP master/slave and BACnet IP (B-AAC profile), Ethernet (Webvisu, FTP, etc.) ■ 1 CAN expansion bus
	Optional communication (see page 32)	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)
	USB port	Yes : 1 USB-Mini-B	Yes: 1 USB-A and 1 USB-Mini-B
	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
Power supply		24 V ~	24 V ~
Display	Built-in	Yes, on TM172ODM controllers	Yes, on TM172PDG controllers
	Remote	Yes, - with TM172DCL color touch screen displays - with TM171DGRP display - with HMI Magelis offer, see on our website www.schneider-electric.com	
Mounting		35 mm / 1.38 in. rail, or on panel with TM172AP12PM mounting accessory	
Product certifications		CE, cURus (UL Recognized), CSA, EAC, RCM, RoHS China, BACnet BTL	
Logic controller reference		TM172O●M18R TM172O●28R TM172O●M42R	TM172P●G07R TM172P●G18● TM172P●G28● TM172P●G28●I TM172P●G42● TM172P●G42●I
Page		16	17
		(1) On the same port at the same time	

M171 optimized logic controllers for simple and compact machines		M171 performance logic controllers for complex and BMS connectable machines	
		■ Air/water-cooled chiller ■ Rooftop unit ■ Heat pump ■ Compressor rack ■ Ventilation unit	■ Air/water-cooled chiller ■ Rooftop unit ■ Heat pump ■ Precision air conditioner ■ Compressor rack ■ Heat recovery unit
			
EcoStruxure Machine Expert - HVAC V1.0 or higher		EcoStruxure Machine Expert - HVAC V1.0 or higher	
44	28	351	327
6 digital inputs	2 digital inputs	9 digital inputs	–
5 configurable analog inputs	5 configurable analog inputs	6 configurable analog inputs	3 configurable analog inputs
6 digital outputs	4 digital outputs	7 digital outputs	–
5 analog outputs	5 analog outputs	5 analog outputs	–
■ 1 wired connector for LAN expansion bus ■ 1 wired connector for Modbus SL master/slave for TM171O●M●●●		■ 1 CAN expansion bus ■ 1 Modbus SL master/slave	■ 1 CAN expansion bus ■ 1 Modbus SL master/slave or BACnet MS/TP (B-AAC profile) ■ 1 RJ45 connector for Modbus TCP and BACnet IP (B-AAC profile) (WebVisu) (1)
None except with a gateway		With TM171A communication modules: ■ Modbus TCP (WebVisu) ■ Modbus SL ■ BACnet MS/TP (B-AAC profile, certified BTL) ■ BACnet IP (B-AAC profile, certified BTL) ■ CAN bus ■ RS 232 ■ Profibus ■ LonWorks (FFT-10)	None except with a gateway
No (program can be downloaded with the TM171AMFK programming stick and TM171ADMI programming cable)		Yes: 1 USB-A and 1 USB-Mini-B	No
Remote download via Modbus SL		■ Remote download ■ File management (virtual FTP) ■ Text e-mail ■ Datalogging	
12-24 V ~ or 24 V ̸ for all, 12-24 V ~ for TM171O●●22S		100...240 V ~, isolated	24 V ~ or 48 V ̸
Yes, on TM171OD●22● controllers	Yes	Yes, on TM171ODM14R controllers	Yes, on TM171PDM27● controllers
Yes, - with TM171DLED, TM171DLCD, and TM171DWAL2● displays - with TM172DCL color touch screen displays - with HMI Magelis offer, see on our website www.schneider-electric.com		Yes, - with TM171DGRP display - with TM172DCL color touch screen displays - with HMI Magelis offer, see on our website www.schneider-electric.com	
35 mm / 1.38 in. rail	Flush mounting	35 mm / 1.38 in. rail	35 mm / 1.38 in. rail
CE, cURus (UL Recognized), CSA, EAC, RCM, RoHS China		CE, cURus (UL Recognized), CSA, EAC, RCM, RoHS China	
TM171O●●22●	TM171OF22R, TM171OFM22R	TM171O●M14R, TM171OD14R	TM171PDM27●, TM171PBM27R
23		29	
		(1) On the same port at the same time	

Presentation

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 
- Two types of housing:
 - with built-in display
 - without display
- Two types of mounting:
 - On 35 mm / 1.38 in.  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 (master/slave) (only 1 master) 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 32](#).
- The M172 logic controllers are certified CÉ, 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 41](#).

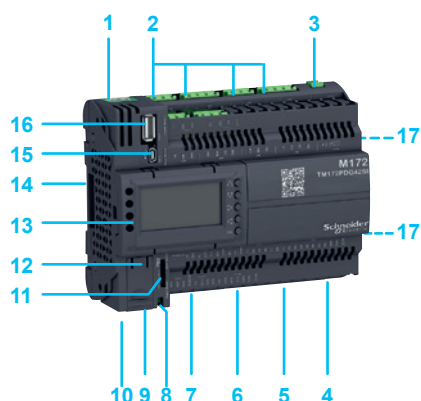
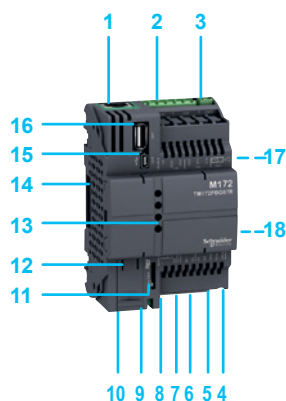
(1) M172 optimized logic controllers do not have a slot for a micro SD card (no slot can be added later).

Description

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 Modbus TCP, BACnet IP (B-AAC profile) and Ethernet (2)
- 2 Connector for removable terminal block for digital outputs
- 3 Connector for removable terminal block for power supply (24 V $\approx$) (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 TM17D●●●: Built-in display, 4 status LEDs and 5 command keys for setting controller parameters
On TM17B●●●: 4 status LEDs and 5 command 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. $\perp$ 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 Modbus TCP and BACnet IP (B-AAC profile) and Ethernet (2)
- 2 Connector for removable terminal block for digital outputs
- 3 Connector for removable terminal block for power supply (24 V $\approx$) (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 TM172PDG●●●: Built-in display, 4 status LEDs and 5 command keys for setting controller parameters
On TM172PBG●●●: 4 status LEDs and 5 command 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. $\perp$ rail mounting
- 18 Two slots for the TM172AP12PM fixing accessory

(1) TM172ASCTB●●● removable terminal blocks to be ordered separately, see page 16.

(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.



TM172QBM18R



TM172ODM18R



TM172OBM28R



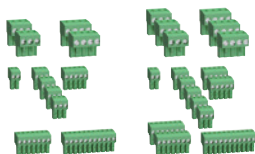
TM172QDM28R



TM172OBM42R



TM172ODM42R



TM172ASCTB28 TM172ASCTB42



TM172AP12PM

References

M172 optimized logic controllers: Power supply: 24 V $\approx$

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

No. of I/O	Number and type of channels	Embedded communication port	Display	Reference	Weight kg/lb	
	Inputs	Outputs				
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



TM172PBG07R TM172PDG18R



TM172PBG28R



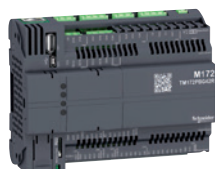
TM172PDG28●



TM172PBG28RI



TM172PDG28●I



TM172PBG42●



TM172PDG42●



TM172PBG42RI



TM172PDG42●I

References

M172 performance logic controllers: Power supply: 24 V ~

35 mm/1.38 in. rail mounting performance controllers, 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	TM172PBG07R (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 ~)	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	TM172PBG18R (1) TM172PDG18R (1) TM172PDG18S (1)	0.200/0.441 0.225/0.496 0.225/0.496
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 1 A or 3 A for TM172P●G28●I 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 TM172PDG28S and TM172PDG28SI only 4 analog outputs: 2 x 0-10 V, or 4-20 mA, or PWM (2 kHz, 24 V ~) 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	TM172PBG28R TM172PDG28R TM172PDG28S	0.300/0.661 0.300/0.661 0.300/0.661
				Remote display (optional) Built-in display 128x64 LCD with backlight	TM172PBG28RI (1) TM172PDG28RI (1) TM172PDG28SI (1)	0.390/0.859 0.390/0.859 0.390/0.859
42	12 digital inputs: 10 24 V ~ or ~ 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 TM172P●G42●I 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 ~) 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	TM172PBG42R TM172PDG42R TM172PDG42S	0.385/0.849 0.385/0.849 0.385/0.849
				Remote display (optional) Built-in display 128x64 LCD with backlight	TM172PBG42RI (1) TM172PDG42RI (1) TM172PDG42SI (1)	0.480/1.058 0.480/1.058 0.480/1.058

Accessories to be ordered separately

I/O screw terminal blocks, Fixing accessory

See page 16

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

Presentation

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.

Description

35 mm/1.38 in.  rail mounting I/O expansion modules (panel mounting with accessory)

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

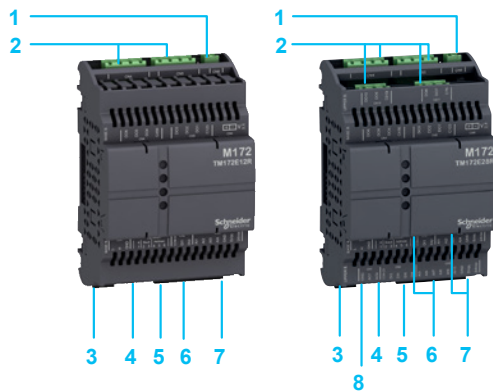
6 Connector for removable terminal block for digital inputs

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



TM172E12R

TM172E28R



TM172E28R

(1) Removable terminal blocks to be ordered separately, see page 19.



TM172E12R



TM172E28R

References

35 mm/1.38 in. rail mounting expansion modules

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.



TM172ASCTB12E



TM172ASCTB28E



TM172AP12PM

Presentation

Remote color touch screen displays

Five 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 V2.4 or higher. The remote color touch screen displays have the same firmware, meaning they can be swapped interchangeably.

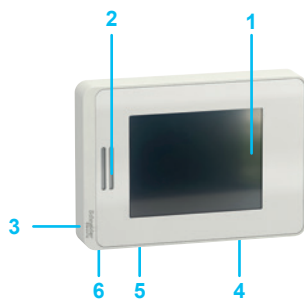
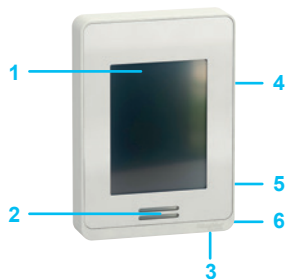
There are two types of remote color touch screen display:

- Three **TM172DCLW●●●** designed for:
 - wall mounting
 - indoor use
 - depending on the reference with temperature, relative humidity and built-in PIR presence sensor
- Two **TM172DCLF●** designed for
 - flush mounting or wall mounting with an accessory
 - indoor or outdoor use
 - white or dark gray housing
 - installing displays 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 master or slave, by means of the software.
 - On Modbus SL Slave, up to 8 displays can be installed in the same network.
 - On Modbus SL Master, up to 8 devices can be managed via the display.

Description

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 $\sim$)
- 5 RS485 Modbus serial line
- 6 Holes for temperature and humidity measurement



TM172DCLWT●●●

TM172DCLF●●

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



TM172DCLF●

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



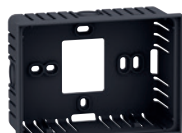
TM172DCLWTHP



TM172DCLFW



TM172DCLFG



TM172ABKPG

References

Remote color touch screen 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
		Gray	–	TM172DCLFG	0.205/ 0.452

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
	Gray wall support for TM172DCLFG display	TM172ABKPG	0.060/ 0.132

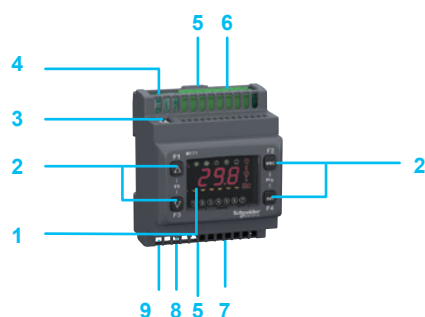
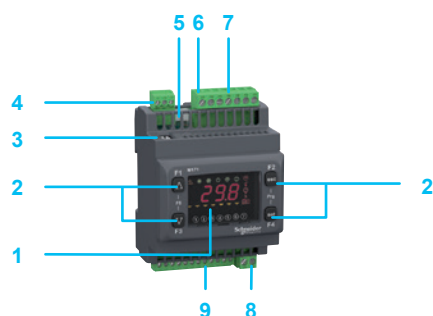
(1) With the use of TM172ABKP●● accessories, the degree of protection for the TM172DCLF● displays is IP20.

Presentation

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.



Description

35 mm/1.38 in. rail mounting M171 optimized controllers

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 M171 optimized controllers

TM171OF●22R● optimized logic controllers (1)

- 1 Display
- 2 Four navigation keys for setting controller parameters
- 3 Wired connector for RS 485 serial port (TM171OF●M22R)
- 4 Wired connector for analog outputs
- 5 Wired connector for LAN expansion bus
- 6 Programming port (TTL)

(1) Connectors to be ordered separately, see page 25.



TM171OBM14R



TM171OD14R



TM171ODM14R



TM171OB22R



TM171OBM22R



TM171OD22R



TM171ODM22R



TM171ODM22S



TM171OF22R



TM171OFM22R

References

M171 optimized logic controllers: Power supply: 100-240 V ~

35 mm/1.38 in. rail mounting optimized controllers (1)

No. of I/O	Number and type of channels	Embedded communication	Display	Reference	Weight kg/lb
Inputs	Outputs				
14	2 digital inputs: 2 open collector or digital inputs (2) 5 configurable analog inputs: 2 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 1 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	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 optimized controllers

22	6 digital inputs: ■ 6 volt-free in 1 group	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	■ 1 LAN expansion bus	Remote display (optional)	TM171OB22R	0.190/ 0.420
	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	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	■ 1 RS485 ■ 1 LAN expansion bus	Built-in display	TM171ODM22S	0.190/ 0.420
		5 analog outputs: ■ 2 open collector for 12 V PWM/PPM ■ 3 x 0-10 V				

Flush mounting optimized controllers

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 1 RS485 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 26

Accessories for M171 optimized logic controllers

Connectors

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

See page 27

(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 V ~

(4) Connectors to be ordered separately, see page 25.

Presentation

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
	TM171OB22R, TM171OBM22R, TM171OD22R, TM171ODM22R, TM171ODM22S, TM171OF22R, TM171OFM22R	TM171EO15R, TM171EO22R

Description

TM171EO●●R expansion modules (1)

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

- 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**, see page 25.





TM171EO14R



TM171EO15R



TM171EO22R



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

References

I/O expansion modules for Modicon M171 optimized logic controllers

35 mm/1.38 in. rail mounting expansion modules

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: ■ 2 NTC, 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 ■ 1 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	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)	TM171OB22R, 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	TM171OB22R, 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 2/6.6	TM171ACB4OAO1M TM171ACB4OAO2M	0.075/ 0.170 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 2/ 6.6	TM171ACB4OI1M TM171ACB4OI2M	0.575/ 1.270 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.

Presentation

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.

References

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

(1) Supplied with LAN expansion bus connector TM171ACB4OLAN



TM171DLED (1)



TM171DLCD2U



TM171DWAL2U



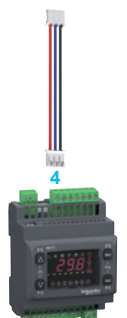
TM171DWAL2L



Connection accessories (1) for M171 optimized logic controller (rail mounting):
TM171OB22R, TM171OBM22R,
TM171OD22R, TM171ODM22R and
TM171ODM22S



Connection accessories (1) for M171 optimized logic controller (flush mounting):
TM171OF22R and TM171OFM22R



Connection accessories (1) for M171 optimized logic controller (rail mounting):
TM171OBM14R, TM171OD14R,
TM171ODM14R
N.B.: terminal blocks are supplied with
TM171OBM14R, TM171OD14R, and
TM171ODM14R

References

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 SL connector Sold in lots of 5	3	Cordset equipped with a 3-pin connector at one end	1/3.3	TM171ACB4ORS485	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

(1) Minimum set for operating controllers.

Presentation

M171 performance logic controllers

M171 performance logic controllers comprise 5 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:

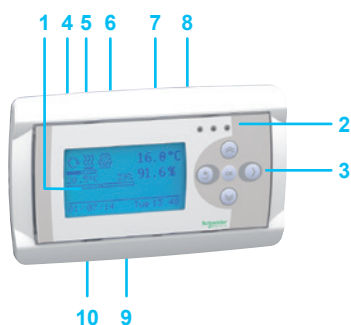
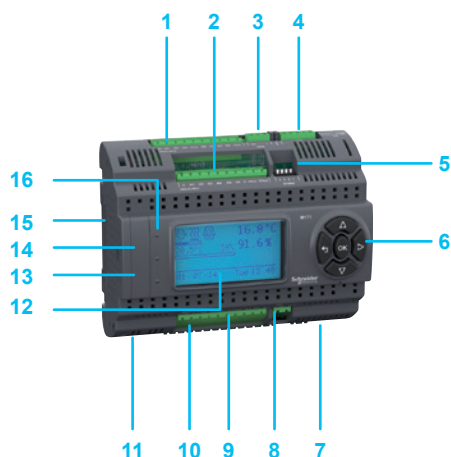
- On 35 mm/1.38 in. $\sqcup$ rail mounting: controllers to be mounted inside a cabinet
- Flush mounting: controllers to be mounted on a cabinet door or wall-mounted using the wall bracket accessory, [see page 29](#).

■ Communication ports on M171 performance logic controllers:

- One Modbus SL master/slave
- Two USB
- One CAN expansion bus
- On flush mounting version:
 - One Modbus SL master/slave
 - 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 32](#).

■ M171 performance logic controllers are certified C ϵ , cURus (UL Recognized), CSA, EAC, RCM, RoHS China.



Description

35 mm/1.38 in. $\sqcup$ rail mounting performance controllers

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 command 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. $\sqcup$ rail mounting
- 12 On **TM171PDM27R**: 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 performance controllers

TM171PFE03R●●● performance logic controllers (2)

- 1 Display
- 2 Three status LEDs
- 3 Five command 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)
- 10 Built-in humidity sensor (analog) (on **TM171PFE03HR**)

(1) **TM171ASCTB27** removable terminal blocks to be ordered separately, [see page 29](#).

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



TM171PBM27R



TM171PDM27R



TM171PDM27S



TM171PFE03



TM171PFE03HR



TM171ASCTB27



TM171ABKPB



TM171ABKPG



TM171DGRP

References

M171 performance logic controllers: Power supply: 24 V $\sim$, 48 V $\sim$

35 mm/1.38 in. rail mounting performance controllers

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 $\sim$ or 48 V $\sim$ 1 fast digital input, or high speed counter volt-free	7 digital outputs: 2 SPDT (8 A, 230 V $\sim$) with independent common 5 SPST (5 A, 230 V $\sim$) 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, 4 NTC, or PT1000, 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 $\sim$) with independent common 3 SPST (5 A, 230 V $\sim$) with independent common 2 SSR (1 A, 230 V $\sim$) 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 performance controllers (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
	3 configurable analog inputs: 1 built-in NTC 1 NTC or digital input 1 built-in humidity sensor	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	TM171PFE03HR	0.350/0.770

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 and TM171PFE03HR	TM171ABKPB	0.015/0.030
		TM171ABKPG	0.015/0.030

Remote display, HMI

Type	Description	Reference	Weight kg/lb
Remote display	128x64 LCD, with backlight Use for M171 performance and M172 logic controllers	TM171DGRP	0.197/0.430
HMI Magelis STU/STO	Please consult our website: www.schneider-electric.com		

Presentation

I/O expansion modules for Modicon M171 and M172 logic controllers

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.

Compatibility between logic controllers and I/O expansion modules

Logic controller type	Reference	Compatible I/O expansion module (reference)
M171 performance	TM171PBM27R, TM171PDM27R, TM171PDM27S, TM171PFE03, TM171PFE03HR	TM171EP14R, TM171EP27R
M172	TM172OBM18R, TM172ODM18R, TM172PBG07R, TM172PDG07R, TM172PBG18R, TM172PDG18R, TM172PDG18S, TM172PBG28R, TM172PDG28R, TM172PDG28S, TM172PBG42R, TM172PDG42R, TM172PDG42S	

Description

35 mm/1.38 in. 1/2 rail mounting I/O expansion modules

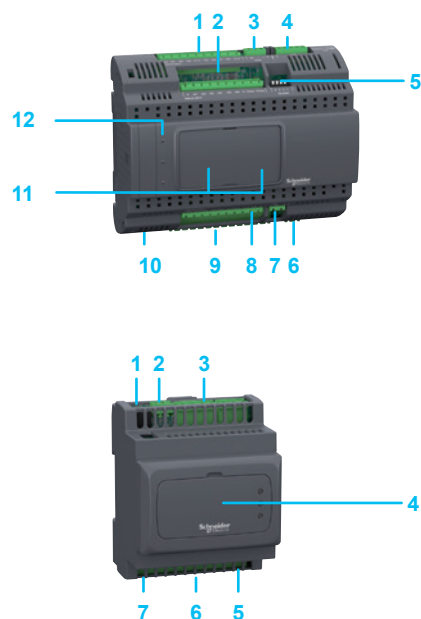
TM171EP27R expansion module (1)

- 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. 1/2 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. 1/2 rail mounting
- 7 Connector for removable terminal block for power supply (24 V $\sim$)

(1) Removable terminal blocks to be ordered separately, see page 31

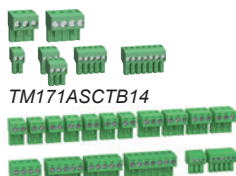




TM171EP14R



TM171EP27R



TM171ASCTB14

TM171ASCTB27

References

I/O expansion modules for Modicon M171 and M172 performance logic controllers

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.

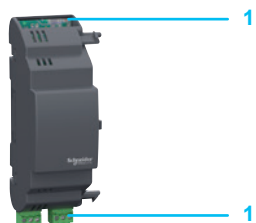
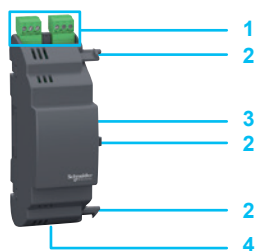
Presentation

Communication modules for M171 performance and M172 logic controllers

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, please consult our website: www.schneider-electric.com
- 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 33](#).



Description

TM171A●●●● I/O communication modules

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

(1) The communication connector type depends on the communication modules, [see page 32](#).
 (2) Compatibility between M172 optimized, M172 performance and M171 performance logic controllers and communication modules, see table below:

Compatibility between logic controllers and communication modules

Logic controllers	Communication modules
M172 optimized logic controllers (TM172O●●●●)	TM171ACAN, TM171AMB, TM171ARS485, TM171ARS232, TM171ALON, TM171AETH, TM171AETHRS485, TM171APBUS
M172 performance logic controllers (TM172P●●●●)	TM171ACAN, TM171AMB, TM171ARS485, TM171ARS232, TM171ALON
M171 performance logic controllers (TM171P●●●●)	TM171ACAN, TM171AETH, TM171APBUS, TM171AMB, TM171ARS485, TM171ARS232, TM171AETHRS485, TM171ALON



TM171ACAN



TM171AETH



TM171APBUS



TM171AMB



TM171ARS485



TM171ARS232



TM171AETHRS485



TM171ALON

References

Communication modules for M171 performance and M172 logic controllers

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 M172 optimized	■ 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.

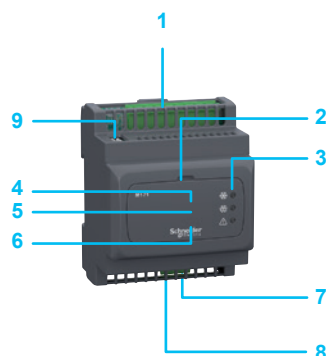
Presentation

Electronic expansion valve drivers

The 3 types of electronic expansion valve drivers are used to control the electronic expansion valve so as to control superheating after the evaporator.

- They are compatible with either performance or optimized logic controllers.
- They operate independently on measurement accessories such as:
 - NTC or PT1000 probes
 - Pressure transducers
- The 3 available electronic expansion valve drivers are compatible with competing valve brands such as those given in the table below:

Electronic expansion valve drivers Brand and type	Expansion valves Brand and type
Schneider Electric TM171VEVA2, TM171VEVD4, TM171VEVM4	ELIWELL™ SXVB
	ALCO™ EX4, EX5, EX6, EX7, EX8
	DANFOSS™ ETS50, ETS100
	SPORLAN™ SER(I) G, J, K, B, C, D SER1.5 to 20, SEI 30,50, SEH



Description

35 mm/1.38 in. rail mounting

TM171V●● electronic expansion valve drivers (1)

- 1 Output terminal block and power supply connector (24 V ~)
 - 2 Protective cover
 - 3 Three 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 TTL programming port

(1) TM171ASCTBVEV screw terminal block to be ordered separately, [see page 35](#)



TM171VEVA2



TM171VEVD4



TM171VEVM4



TM171ASCTBEV

References

Electronic expansion valve drivers

Application	Number and type of channels		Reference	Weight kg/lb
	Inputs	Outputs		
Actuator, convert 0-10 V or 4-20 mA in opening position contact	1 analog input: 1 x 4-20 mA, 0-5 V, or 0-10V	1 digital output: 1 open collector (100 mA, 12 V $\overline{\text{---}}$)	TM171VEVA2	0.190/ 0.420
Autonomous, wired to manage On/Off contact	2 digital inputs: ■ 2 volt-free 4 analog inputs: ■ 2 NTC or PT1000, 4-20 mA, 0-5 V, or 0-10 V ■ 2 NTC or PT1000 (1)	2 digital outputs: ■ 1 open collector (100 mA, 12 V $\overline{\text{---}}$) ■ 1 SPST NO relay contact, 5 A, 250 V $\sim$	TM171VEVD4	0.190/ 0.420
Autonomous, managed by Modbus (RS485)	2 digital inputs: ■ 2 volt-free 4 analog inputs: ■ 2 NTC (-50...+110 °C, -40...+150 °C/ -58...+203 °F, -40...+302 °F), PT1000, 4-20 mA, 0-5 V, or 0-10 V (1) ■ 2 NTC (-50...+110 °C, -40...+150 °C/ -58...+203 °F, -40...+302 °F), or PT1000 (1)	2 digital outputs: ■ 1 open collector (100 mA, 12 V $\overline{\text{---}}$) ■ 1 SPST NO relay contact, 5 A, $\sim$ 250 V	TM171VEVM4	0.190/ 0.420

Accessories for electronic expansion valve drivers to be ordered separately

Designation	For connecting	Reference	Weight kg/lb
Screw terminal block for electronic expansion valve drivers	Power supply, sensor power supply, digital and analog I/O, Modbus link	TM171ASCTBEV	0.050/ 0.110

(1) Two PT1000 (-50...+99.9 °C/-58... + 211.82 °F).

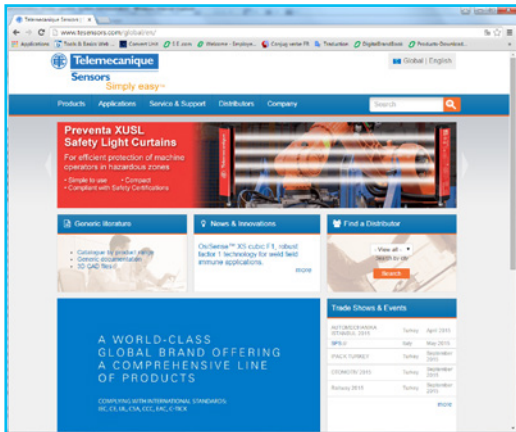
References						
Designation	Use Applications	Description	Cable length m (ft)	Unitreference	Sold in lots of (1)	Weight kg/ lb
Measurement accessories						
Temperature control						
NTC probes 	Multi-purpose ■ Temperature control: - 50...+110 °C (-122...+230 °F)	- IP 68 - Gray - Equipped with 2 conductor 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 - Gray - 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 - Gray - 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 - Gray - 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 - Gray - 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
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.

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



XMLP pressure transmitters



Discover XMLP offer on the web site:

<http://www.tesensors.com/global>

Access to the catalog by product at this URL:

<http://www.tesensors.com/global/en/product/catalog/>

Presentation

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

XMLP pressure transmitters rated greater than or equal to 9 bar or 100 psi

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

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)

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

Application	Type of machine controlled	Compressor		
	Number of phases	1	3	
	Type of motor	Asynchronous	Asynchronous and Synchronous	Asynchronous and Synchronous for scroll
Compressor size	0.18 kW (0.25 HP)	Altivar 12	Altivar 320	—
	0.37 kW (0.5 HP)			—
	0.75 kW (1 HP)			Altivar 212
	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)	—	Altivar Process ATV600	—
	110 kW (150 HP)	—		—
	315 kW (422 HP)	—		—
	355 kW (480 HP)	—	Altivar Process Drive Systems (1)	—
	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)	—		—

Compatible range of variable speed drives

Application	Type of machine controlled	Fan	
	Number of phases	1	3
Fan size	0.18 kW (0.25 HP)	Altivar 12	—
	0.37 kW (0.5 HP)		—
	0.75 kW (1 HP)		Altivar 212
	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 ATV600 and Altivar Process Drive Systems (1)

Compatible range of variable speed drives

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

Presentation



EcoStruxure Machine Expert - HVAC programming software

Software solution

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

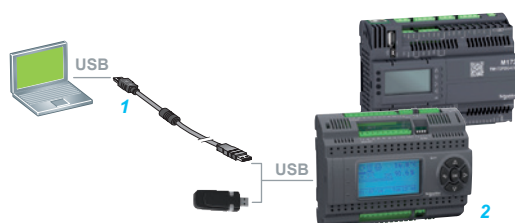
It includes:

- Programming Modicon M171/M172 logic controllers (performance and optimized) and remote display units
- 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

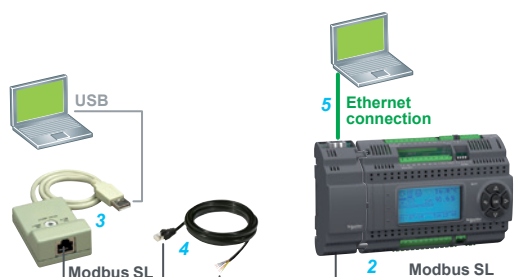
General characteristics

Overview

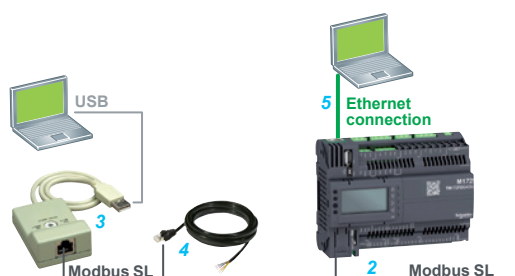
Programming languages	■ ST (Structured Text) ■ FBD (Function Block Diagram) ■ LD (Ladder) ■ IL (Instruction List) ■ SFC (Sequential Function Chart)
Applications	■ Graphical and text-based languages: - Adaptation to each developer background - Library management - Code debugging - Parameter definition - 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)
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



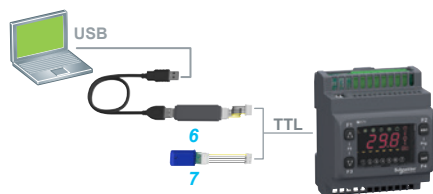
Local programming, download - M171 & M172 performance - through USB port



Remote programming - M171 performance



Remote programming - M172 performance



Local programming, download - M171 optimized - via TTL port



Remote programming - M171 optimized

Product offer

EcoStruxure Machine Expert - HVAC software is supplied on a DVD or can be downloaded from our website www.schneider-electric.com.

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

References

System configuration:

- Processor: Pentium 1.6 GHz or higher
- RAM: 1 GB; 2 GB recommended
- Hard disk: 500 MB minimum
- OS: 32-bit Windows; XP Pro SP3 or Windows 7 (32-bit or 64-bit) or Windows 8
- Drive: DVD drive
- Display: SVGA video card; 800×600, 128 MB; 1024×768, 256 MB recommended
- Peripheral device: A mouse or compatible pointing device
- Peripheral device: USB interface

Programming software

Designation	Application	Reference	Weight kg/lb
EcoStruxure Machine Expert - HVAC programming software	M171 optimized logic controllers,	TM171SW	0.050/ 0.110
	M171 performance logic controllers,		
	M172 optimized logic controllers,		
	M172 performance logic controllers		

Programming accessories for M171 and M172 performance logic controllers

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 cables (1)	From the PC USB-A port to the USB mini-B port on M171 (2) and M172 performance logic controllers (2)	3/0.98	TCSXCNAMUM3P (1)	0.065/ 0.143
		1.8/5.90	BMXXCAUSBH018	0.065/ 0.143

Programming via Modbus SL and/or Ethernet

USB to RS485 converter (3)	To be used on M171 (2) and M172 performance logic controllers (2). Equipped with 1 RJ45 connector at the controller end and 1 USB-A connector at the PC end	0.4/1.31	TSXCUSB485	0.144/ 0.320
Connection cable for Modbus serial link (4)	Equipped with 1 RJ45 connector at one end and flying leads at the other end	3/9.84	VW3A8306D30	0.250/ 0.550

Ethernet connection cable

Ethernet ConneXium cable - shielded twisted pair straight cord (5)	For connection to terminal devices (DTE). Equipped with 1 RJ45 connector at each end. CE compatible	2/6.56 (2)	490NTW00002	—
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(1) Unshielded cable without grounding. To be used only for temporary connections. For permanent connections, use the reference **BMXXCAUSBH018**.

(2) 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 www.schneider-electric.com

Programming accessories for M171 optimized logic controllers

Programming via TTL programming port

Description	Characteristics and use	Reference	Weight kg/lb
Programming cable (6)	To be used between a PC and the TTL programming port of M171 optimized logic controllers (8)	TM171ADMI	0.157/ 0.350
Programming stick (7)	To be used to transfer parameters from one M171 optimized logic controller (8) to another, or to download the program	TM171AMFK	0.010/ 0.020

Programming via USB port

USB to RS485 converter (3)	See above
Connection cable for Modbus serial link (4)	See above

Modicon M171/M172

for HVAC control solutions

Logic controllers and Configuration software

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TM1STNTCRN61550	36	TM171DGRP	29
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Schneider Electric Industries SAS

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