



# Modicon M171/M172

Logic controllers for HVAC solutions,  
Configuration software



# Modicon

## Discover Modicon

Industrial Edge control for IIoT

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

## Explore our offer

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

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# 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

Number and type of channels	Input range	Resolution	Aperture time (typical)	Reference	Weight (kg)
2 voltage/current inputs	-15...+10 VDC 0...20 mA r.t. 20 mA	16,000 or 10,000 r.s.g.	0.005 s 0.005 s	TM3AI2H TM3AI2HG	0.110 0.100
4 voltage/current inputs	-15...+10 VDC 0...20 mA r.t. 20 mA	12,000 or 10,000 r.s.g.	0.005 s 0.005 s	TM3AI4 TM3AI4G	0.100 0.090
4 voltage/current or temperature inputs (T)	-15...+10 VDC 0...20 mA r.t. 20 mA	16,000 or 10,000 r.s.g.	0.005 s 0.005 s	TM3AI4T TM3AI4TG	0.110 0.100
4 differential temperature inputs (T)	Thermopile or RTD (Pt100, Ni1000, Pt1000, Pt100)	16,000 or 10,000 r.s.g.	0.005 s 0.005 s	TM3AI4D TM3AI4DG	0.100 0.090
4 differential temperature inputs (T)	Thermopile or RTD (Pt100, Ni1000, Pt1000, Pt100)	16,000 or 10,000 r.s.g.	0.005 s 0.005 s	TM3AI4D TM3AI4DG	0.100 0.090
8 voltage/current	-15...+10 VDC	12,000 or 10,000 r.s.g.	0.005 s 0.005 s	TM3AI8 TM3AI8G	0.110 0.100

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**TM3AI2H**

Module TM3 - 2 analog inputs high resolution

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Product Datasheet User guide Catalogue CAD Document

Characteristics Documents and Downloads Technical FAQs Additional Information Dimensions Drawings >

Main

range of product Modicon TMI

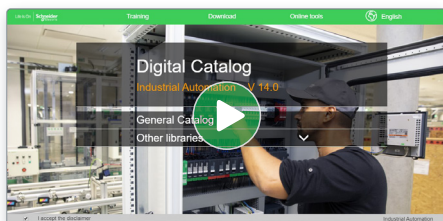
product or component type Analog input module

range compatibility Modicon M251

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

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

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Signaling Devices

HMI (Terminals and Industrial PC)

Sensors & RFID System

Motor Starters and Load Management

Components for Motor Starters

Variable Speed Drives & Soft Starters

Motor Control & Robotics

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### Logic controllers for HVAC control solutions

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# Modicon M171/M172 logic controllers for HVAC solutions

Maximize business and machine performance with EcoStruxure™ Machine

Maximize business and machine performance with EcoStruxure™ Machine

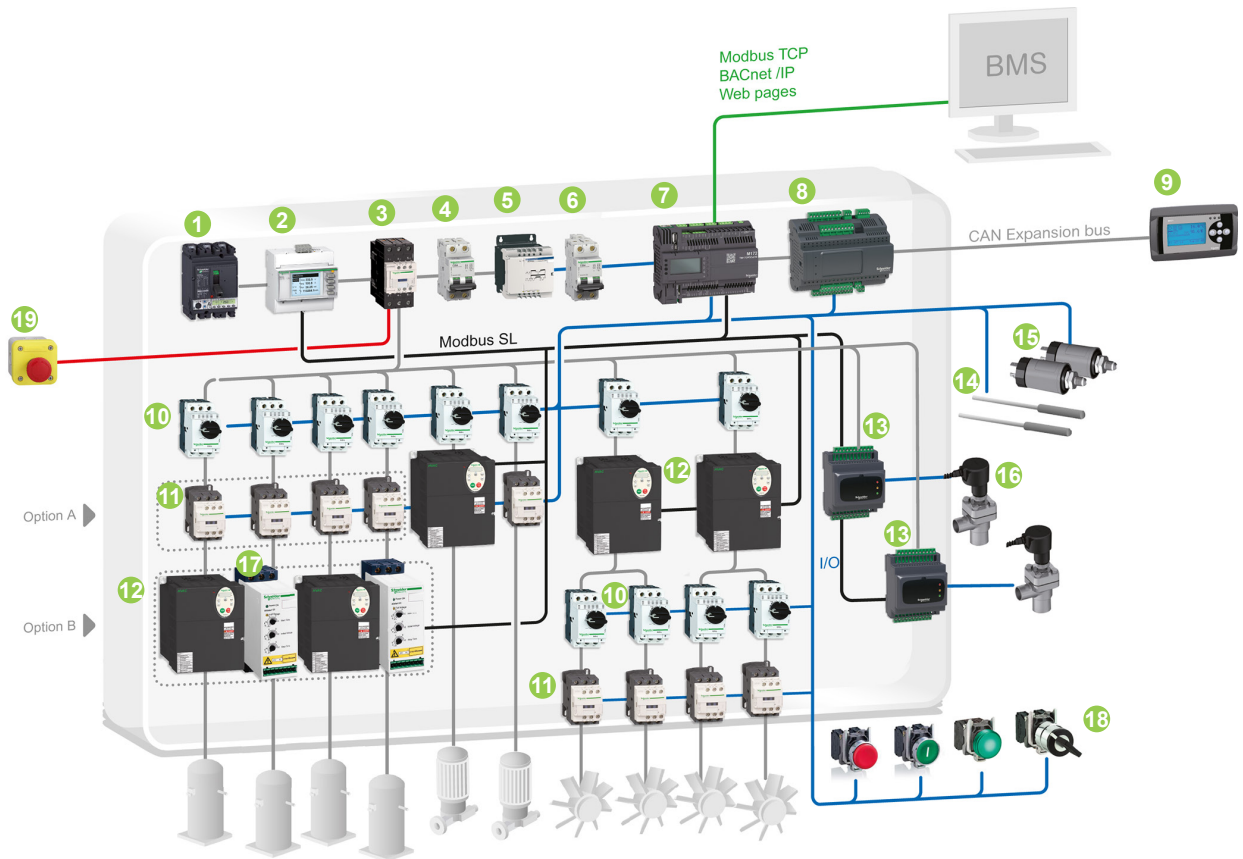
To be competitive in today's digital era, machine builders must be innovative. Smart machines, those that are better connected, more flexible, more efficient, and safe, are enabling machine builders to innovate in ways never before possible.

- > 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 (TVDA) 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.

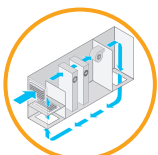
### Modicon M171/M172 is part of EcoStruxure Machine



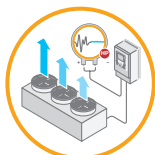
### HVAC/Chiller/Modbus SL/Modicon M172 Performance logic controller

#### Solution breakdown

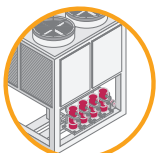
- |   |   |
|---|---|
| 1 Compact NSX circuit breaker               | 12 Altivar 212 variable speed drive, for 0.75 to 75 kW (1.0 to 100 hp) motors |
| 2 iEM3000 energy meter                      | 13 Modicon M171 electronic expansion valve driver                             |
| 3 TeSys D contactor                         | 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                        |   |



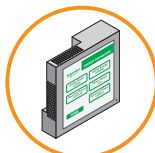
Fan management



Floating High Pressure control



Compressor management



Energy management

Application Function Blocks (AFBs)

Flexible

Flexible

Flexible and scalable Performance

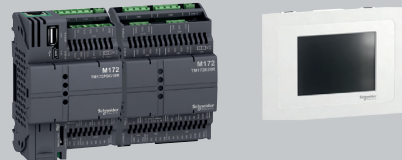
Whether you specialize in chillers, Air Handling Units for commercial buildings, residential, or industrial applications, etc.

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 \*

### Modicon M172 Performance logic controllers



### Modicon M172 Optimized logic controllers



### Modicon M171 Optimized logic controllers



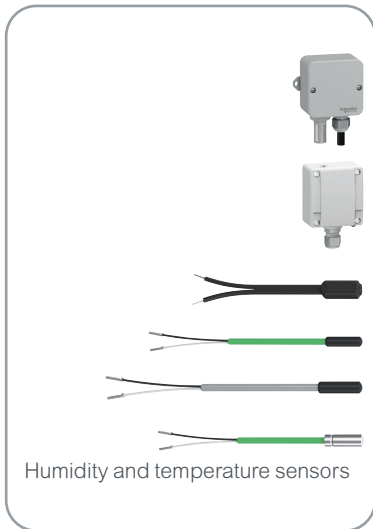
Performance and connectivity

- > 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

### Efficient



Humidity and temperature sensors

### 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

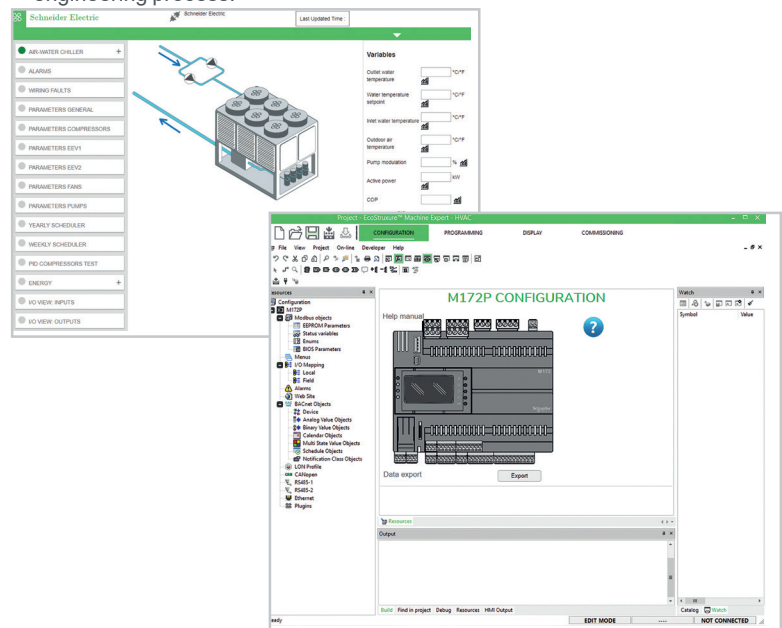
Expansion modules



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**) 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, white list, SNTTP

### 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

# Modicon M171/M172 logic controllers for HVAC solutions

## Modicon 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
  - 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



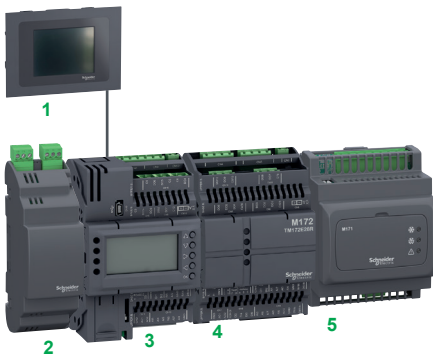
Chiller



Air handling unit



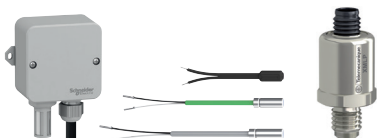
- 1 Remote flush mounting display (1)
- 2 Remote wall mounting display (1)
- 3 LAN-RS485 Communication adaptor
- 4 M171 Optimized logic controller
- 5 I/O expansion module



- 1 Color touch screen display
- 2 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

### 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 14](#) and **TM172E●●●R** I/O expansion module, see [page 20](#) and **TM172DC●●●●** remote color touch screen displays, see [page 22](#)

#### M171 Optimized logic controllers

- **TM171O●●●●** Optimized logic controllers, see [page 24](#) and **TM171EO●●R** I/O expansion modules, see [page 26](#) and **TM171D●●●●** remote displays, see [page 29](#)

#### M171 Performance logic controllers

- **TM171P●●●●** Performance logic controllers, see [page 30](#) and **TM171EP●●R** I/O expansion modules, see [page 31](#) and **TM171PFE03** remote display, see [page 31](#)

#### 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 34](#)

#### 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 36](#)
- **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 36](#)

#### Measurement accessories

- Specific measurement accessories **TM1S●●●●**: humidity and temperature probes, see [page 38](#)
- Pressure transmitters from our partner Telemecanique sensors, see [page 40](#)

#### Software

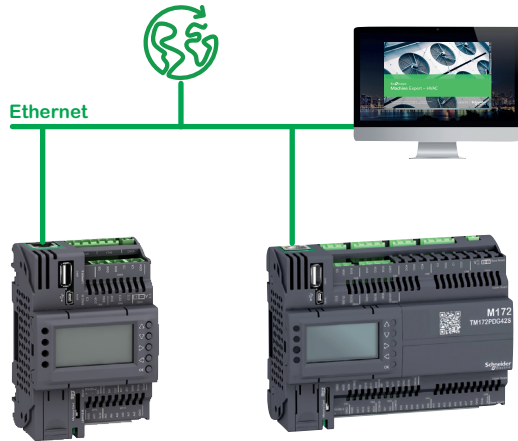
- EcoStruxure Machine Expert - HVAC programming software, and programming accessories, see [page 42](#)

#### Connection accessories

- Adapted connection accessories: I/O connectors and cables, see [page 29](#)

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





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, see [page 34](#)

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

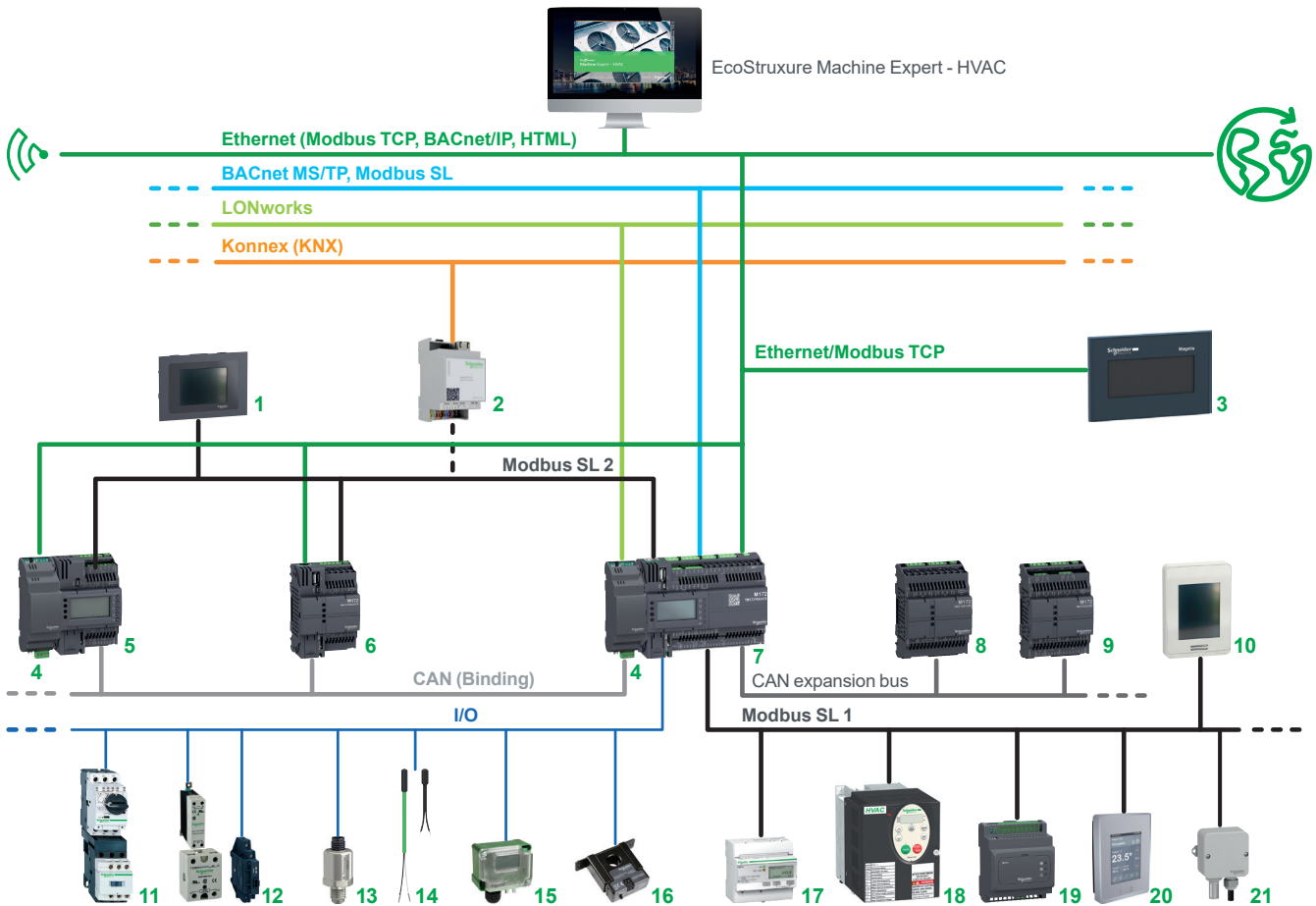
These services are not always available:

- > 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)



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

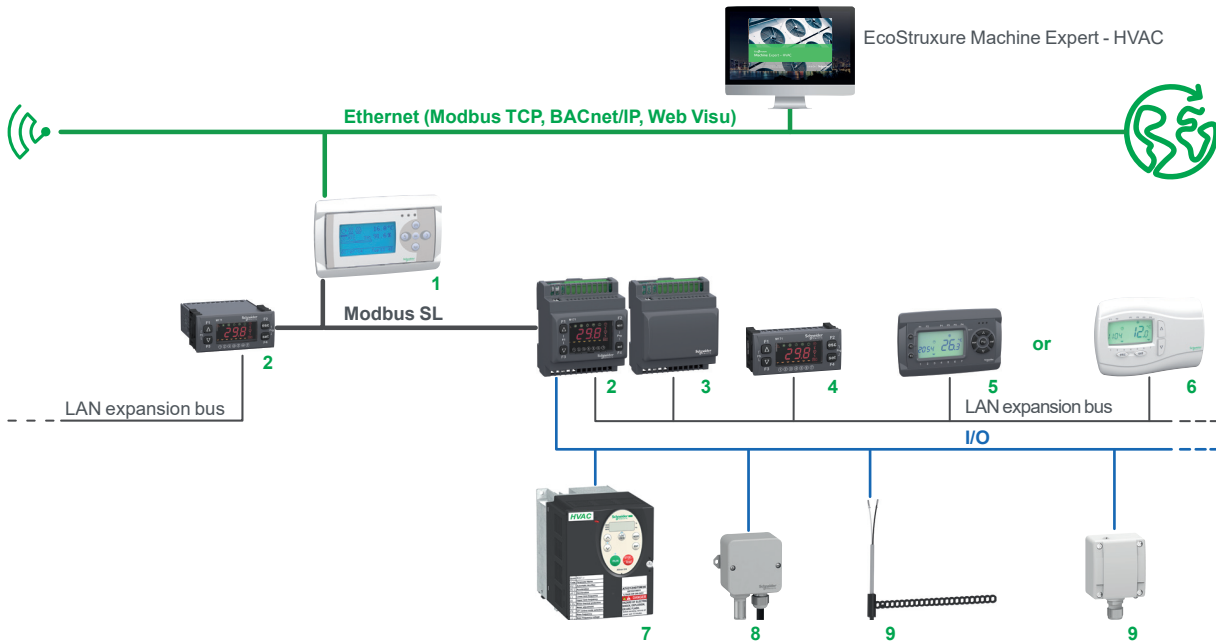
**Modicon M172 logic controllers for any size of connectable or connected HVAC machines**



- 1 **TM172DCLF** flush mounting display, see [page 22](#)
- 2 **spaceLYnk** gateway (1)
- 3 **Harmony STO/STU** HMI (1)
- 4 **TM171ALON** communication module, see [page 34](#)
- 5 **TM171OD** Optimized logic controller (18 I/O in 4 DIN), see [page 27](#)
- 6 **TM172PB** Performance logic controller (7 or 18 I/O in 4 DIN), see [page 19](#)
- 7 **TM172PD** Performance logic controller (28 or 42 I/O in 8 DIN), see [page 19](#)
- 8 **TM172E12R** I/O expansion module (12 I/O in 4 DIN), see [page 20](#)
- 9 **TM172E28R** I/O expansion module (28 I/O in 4 DIN), see [page 20](#)
- 10 **TM172DCLWT** wall mounting remote display, see [page 22](#)
- 11 **TeSys D** motor starter (1)
- 12 Electromechanical relays, solid state relays (1)
- 13 **XMLP** pressure transmitter, see [page 40](#)
- 14 **TM1ST** temperature sensor PT1000 or NTC, see [page 38](#)
- 15 **SPD310** Differential pressure sensor (1)
- 16 **H721LC-S6** current transducer (1)
- 17 **iEM 3000** energy meter (1)
- 18 **Altivar 212** variable speed drive (1)
- 19 **TM171VEVM4** electronic expansion valve driver, see [page 36](#)
- 20 **SE8000** room controller (thermostat) (1)
- 21 **TM1SH** humidity sensor, see [page 39](#)

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



**Modicon M171 Optimized logic controllers for simple and compact machines**



- 1 **TM171PFE03** Performance logic controller, see [page 31](#)
- 2 **TM171OFM22R** Optimized logic controller - flush mounting, see [page 27](#)
- 3 **TM171EO●●** I/O expansion module, see [page 28](#)
- 4 **TM171DLED** remote display, see [page 29](#)
- 5 **TM171DLCD2U** remote display, see [page 29](#)
- 6 **TM171DWAL●●** remote wall mounting display, see [page 29](#)
- 7 **Altivar 212** variable speed drive (1)
- 8 **TM1ST●●** temperature sensor PT1000 or NTC, see [page 38](#)
- 9 **TM1SH●●** humidity sensor, see [page 39](#)

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

# Modicon M171/M172 logic controllers for HVAC solutions







Application		Modicon M171 Optimized logic controllers for simple and compact machines		Modicon M172 logic controllers for any size of connectable or connected HVAC machines	
Product name		Modicon M171 Optimized		Modicon M172 Optimized controller	
					
Applications	Type	Programmable Logic controller			
	HVAC unit	<ul style="list-style-type: none"> <li>- Air/water-cooled chiller</li> <li>- Rooftop unit</li> <li>- Heat pump</li> <li>- Shelters</li> <li>- Compressor rack</li> <li>- Ventilation unit</li> <li>- Precision air conditioner</li> <li>- Heat recovery unit</li> <li>- Packaged unit</li> <li>- AHU and many more</li> </ul>		<ul style="list-style-type: none"> <li>- Air/water-cooled chiller</li> <li>- Rooftop unit</li> <li>- Heat pump</li> <li>- Shelters</li> <li>- Compressor rack</li> <li>- Ventilation unit</li> <li>- Precision air conditioner</li> <li>- Heat recovery unit</li> <li>- Packaged unit</li> <li>- AHU and many more</li> </ul>	
Programming Software		EcoStruxure Machine Expert - HVAC V1.0 or higher			
Maximum number of I/O with expansion modules		28	44	238	
Power Supply		100...240 VAC, isolated	24 VAC/DC for all, except for TM171O●●22S	24 VAC/DC	
Embedded I/Os	Analog Input	5	5	8 or 12	2, 8 or 12
	Digital Input	2	6	2, 8 or 12	2, 8 or 12
	Analog Output	5	5	2, 4 or 6	0, 2, 4 or 6
	Digital Output	4	6	6, 8 or 12	3, 6, 8 or 12
Communication fieldbus and networks	Embedded Communication	<ul style="list-style-type: none"> <li>- 1 RS485</li> <li>- 1 LAN expansion bus</li> </ul>		<ul style="list-style-type: none"> <li>- 2 RS485 (Modbus SL or BACnet MS/TP)</li> <li>- 1 CAN expansion bus</li> </ul>	
	Optional	None except with a gateway		With TM171A●●● communication modules: <ul style="list-style-type: none"> <li>- RS485 (Modbus SL or BACnet MS/TP)</li> <li>- CAN bus</li> <li>- RS232</li> <li>- LonWorks (FFT-10)</li> <li>- Modbus TCP, BACnet /IP,</li> <li>- Ethernet</li> </ul>	
	USB port	No (program can be downloaded with the TM171AMFK programming stick and TM171ADMI programming cable)		Yes : 1 USB-Mini-B	
	Services	Remote download via Modbus SL		<ul style="list-style-type: none"> <li>- Download the program via USB-A or Modbus SL</li> <li>- Optional services depending on the Ethernet communication module</li> </ul>	
Display	Built-in	Built-in versions available		Built-in versions available	
	Remote	Yes, <ul style="list-style-type: none"> <li>- with TM171DLED, TM171DLCD, and TM171DWAL2● displays</li> <li>- with TM172DCL●●●● color touch screen displays</li> <li>- with HMI Harmony STU/STO offer, see on our <a href="#">website</a></li> </ul>		Yes, <ul style="list-style-type: none"> <li>- with TM172 GRP display</li> <li>- with TM172DCL●●●● color touch screen displays</li> <li>- with HMI Harmony STU/STO offer, see on our <a href="#">website</a></li> </ul>	
Mounting		35 mm (1.38 in) DIN rail and Flush mounting		35 mm (1.38 in) DIN rail, or on panel with TM172AP12PM mounting accessory	
Product certifications		CE, cURus (UL Recognized), CSA, EAC, RCM, RoHS China		CE, cURus (UL Recognized), CSA, EAC, RCM, RoHS China, BACnet BTL	
Reference		TM171O●M14R, TM171OD14R	TM171OF22R, TM171OFM22R TM171O●●22●	TM172O●M18R TM172O●28R TM172O●M42R	TM172P●G07R TM172P●G18● TM172P●G28● TM172P●G28●I TM172P●G42● TM172P●G42●I
Page		24		14	

# 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			
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 V AC/DC								24 V AC/DC								
Type of mounting	4 DIN, 35 mm/1.38 in $\perp$ rail mounting Performance controllers, and Panel mounting with TM172AP12PM mounting accessory(2)								8 DIN, 35 mm/1.38 in $\perp$ 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		42	
Total Analog Input	2		8		8			8		8		12		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		12	
Total Digital Inputs	2		2		2			8		8		12		12		12	
High speed counter (2 kHz), dry contact	2		2		2			2		2		2		2		2	
24 VAC/DC	-		-		-			6		6		10		10		10	
Total Analog Outputs	2		2		2			4		4		6		6		6	
0-10 V, or 4-20 mA, or PWM (2 kHz, 24 VDC)	2		2		2			2		2		2		2		2	
0-10 V	2		2		2			2		2		4		4		4	
Total Digital Outputs	3		6		6			8		8		12		12		12	
Relay 3 A	3		6		6			8		8		12		12		12	
SSR 0,5 A	-		-		-			-		-		-		-		-	
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	2	2	2	2	2	2	2	2	2	2
CAN expansion bus	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Communication module port	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
USB Mini-B	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
USB (type A)	1	-	-	-	1	1	-	-	-	1	1	-	-	-	-	1	1
µSD Card slot	1	-	-	-	1	1	-	-	-	1	1	-	-	-	-	1	1
Optional	With communication module (see page 34)	<ul style="list-style-type: none"> <li>- CAN expansion bus</li> <li>- Modbus TCP</li> <li>- Modbus SL(RS485)</li> <li>- BACnet MS/TP (B-AAC profile)</li> <li>- BACnet IP (B-AAC profile)</li> <li>- RS232 Serial link</li> <li>- LonWorks (FFT-10)</li> </ul>															

(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							
Type of mounting	Remote wall	Remote wall	Remote wall	Remote wall	Remote flush	Remote flush	
Description	LCD display 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						
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

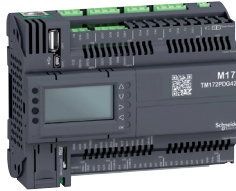


8 DIN - without display



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.

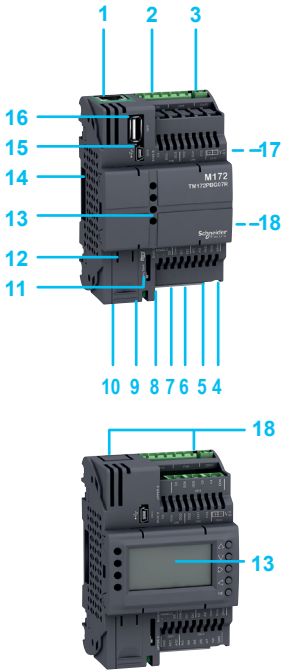
M172 controllers embed 7, 18, 28 or 42 I/O, and can be fitted with a display, with relay outputs, and with SSR outputs, depending on the model.

- 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  $\sphericalangle$
- 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 (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 34](#).
- 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 43](#).

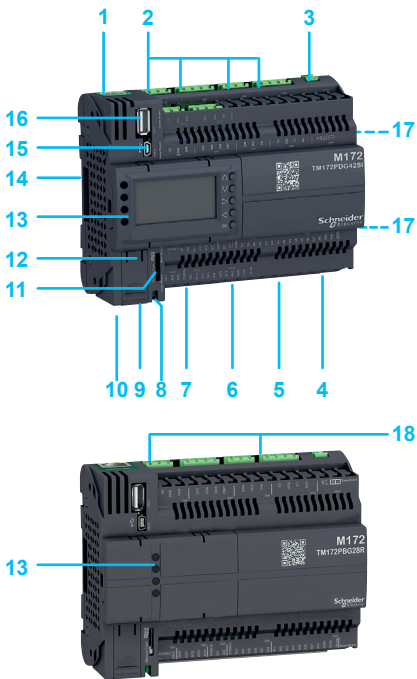
(1) M172 Optimized logic controllers do not have a slot for a micro SD card (no slot can be added later).

# Modicon M171/M172 logic controllers for HVAC solutions

## M172 logic controllers



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  $\sqcup$  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  $\sqcup$  rail mounting
- 18 Two slots for the TM172AP12PM fixing accessory

(1) TM172ASCTB●●● removable terminal blocks to be ordered separately, see page 17.

(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

### M172 Optimized logic controllers: Power supply: 24 V $\sim$

#### 35 mm/1.38 in $\sqsupset$ rail mounting, and Panel mounting with accessory

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

#### Accessories to be ordered separately

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

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



TM172OBM18R



TM172ODM18R



TM172OBM28R



TM172ODM28R



TM172OBM42R



TM172ODM42R



TM172ASCTB28



TM172AP12PM

# Modicon M171/M172 logic controllers for HVAC solutions

## M172 Performance logic controllers

### M172 Performance logic controllers: Power supply: 24 V $\bar{\sim}$

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

No. of I/O	Number and type of channels	Embedded communication port	Display	Reference	Weight kg/lb
7	<b>2 digital inputs:</b> ■ 2 high speed counter (2 kHz), dry contact  <b>2 analog inputs</b> (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	<b>3 digital outputs:</b> ■ 1 SPDT relay 3 A ■ 2 SPST 3 A with the same common	Remote display (optional)  Built-in display 128x64 LCD with backlight	<b>TM172PBG07R</b> (1)  <b>TM172PDG07R</b> (1)	0.175/0.386  0.200/0.441
	<b>2 digital inputs:</b> ■ 2 high speed counters, dry contact  <b>8 analog inputs</b> (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	<b>6 digital outputs</b> ■ 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  <b>2 Analog outputs:</b> ■ 2 x 0-10 V, or 4-20 mA, or PWM (2 kHz, 24 V $\bar{\sim}$ )	■ 1 Ethernet ■ 1 CAN expansion bus ■ 2 RS485 ■ 1 USB (type A) ■ 1 USB Mini-B ■ 1 Communication module port ■ 1 $\mu$ SD Card slot	Remote display (optional)  Built-in display 128x64 LCD with backlight	<b>TM172PBG18R</b> (1)  <b>TM172PDG18R</b> (1)  <b>TM172PDG18S</b> (1)
28	<b>8 digital inputs:</b> ■ 6 24 V $\bar{\sim}$ or $\bar{\sim}$ ■ 2 high speed counters, dry contact  <b>8 analog inputs,</b> (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	<b>8 digital outputs:</b> ■ 1 SPDT Relay 1 A or 3 A for TM172P●G28● ■ 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  <b>4 analog outputs:</b> ■ 2 x 0-10 V, or 4-20 mA, or PWM (2 kHz, 24 V $\bar{\sim}$ ) ■ 2 x 0-10 V	Remote display (optional)  Built-in display 128x64 LCD with backlight  Remote display (optional)  Built-in display 128x64 LCD with backlight	<b>TM172PBG28R</b>  <b>TM172PDG28R</b>  <b>TM172PBG28RI</b> (1)  <b>TM172PDG28RI</b> (1)  <b>TM172PDG28SI</b> (1)	0.300/0.661  0.300/0.661  0.390/0.859  0.390/0.859
	<b>12 digital inputs:</b> ■ 10 24 V $\bar{\sim}$ ■ 2 high speed counter, dry contact  <b>12 analog inputs,</b> (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	<b>12 digital outputs:</b> ■ 2 SPDT relay 1 A or 3 A for TM172P●G42● ■ 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  <b>6 analog outputs:</b> ■ 2 x 0-10 V, or 4-20 mA, or PWM (2 kHz, 24 V $\bar{\sim}$ ) ■ 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 $\mu$ SD Card slot	Remote display (optional)  Built-in display 128x64 LCD with backlight  Remote display (optional)  Built-in display 128x64 LCD with backlight	<b>TM172PBG42R</b>  <b>TM172PDG42R</b>  <b>TM172PBG42RI</b> (1)  <b>TM172PDG42RI</b> (1)  <b>TM172PDG42SI</b> (1)

#### Accessories to be ordered separately

I/O screw terminal blocks, Fixing accessory

See [page 21](#)

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



TM172PBG07R



TM172PDG18R



TM172PBG28RI



TM172PDG28RI



TM172PBG42RI



TM172PDG42SI

# Modicon M171/M172 logic controllers for HVAC solutions

## M172 logic controllers I/O expansion modules

### 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.

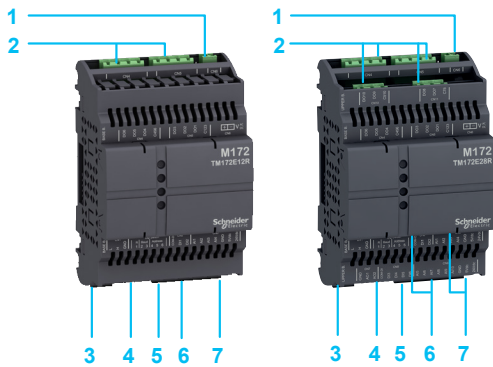
### TM172E12R and TM172E28R expansion modules (1)

- 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 19.



TM172E12R



TM172E28R



TM172E28R

# Modicon M171/M172 logic controllers for HVAC solutions

## M172 logic controllers I/O expansion modules



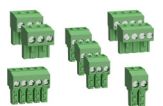
TM172E12R



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	<b>2 digital inputs:</b> <ul style="list-style-type: none"> <li>2 high speed counters, dry contact</li> </ul> <b>4 analog inputs:</b> <ul style="list-style-type: none"> <li>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</li> </ul>	<b>6 digital outputs:</b> <ul style="list-style-type: none"> <li>3 SPST 3 A with the same common</li> <li>3 SPST 3 A with the same common</li> </ul>	M172 logic controllers	<ul style="list-style-type: none"> <li>1 CAN expansion bus</li> </ul>	<a href="#">TM172E12R</a>	0.140/ 0.308
28	<b>6 digital inputs:</b> <ul style="list-style-type: none"> <li>4 ~ or 24 V <math>\overline{\text{DC}}</math></li> <li>2 high speed counters, dry contact</li> </ul> <b>10 analog inputs:</b> <ul style="list-style-type: none"> <li>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</li> </ul>	<b>10 digital outputs:</b> <ul style="list-style-type: none"> <li>3 SPST 3 A with the same common</li> <li>3 SPST 3 A with the same common</li> <li>2 SPST 3 A with the same common</li> <li>2 SPST 3 A with the same common</li> </ul> <b>2 analog outputs:</b> <ul style="list-style-type: none"> <li>2 x 0-10 V, or 4-20 mA, or PWM (2 kHz, 24 V <math>\overline{\text{DC}}</math>)</li> </ul>	M172 logic controllers	<ul style="list-style-type: none"> <li>1 CAN expansion bus</li> </ul>	<a href="#">TM172E28R</a>	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	<a href="#">TM172ASCTB12E</a>	0.070/ 0.154
	TM172E28R expansion module	<a href="#">TM172ASCTB28E</a>	0.100/ 0.220
Fixing accessory: 12 clip-on locks for panel mounting	TM172E●●R expansion modules	<a href="#">TM172AP12PM</a>	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 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.

##### Remote monochrome display

- TM171DGRP 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



TM171DGRP

#### 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

#### 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  $\sim$ )
- 5 RS485 Modbus serial line

#### TM171DGRP

- 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

## M172 logic controllers Remote displays



TM172DCLWT●●



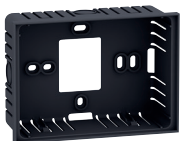
TM172DCLFW



TM172DCLFG



TM171DGRP



TM172ABKPG












TM171ABKPG

Remote displays					
Type	Description	Housing	Built-in sensor for	Reference	Weight kg/lb
Remote color touch screen wall mounting displays	<ul style="list-style-type: none"> <li>Power supply: 24 V <math>\sphericalangle</math></li> <li>Color touchscreen</li> <li>Size: 3.5"</li> <li>Resolution: 320 x 240 pixels</li> <li>IP20</li> <li>Communication port: 1 RS485, Modbus SL with terminal blocks</li> </ul>	White	<ul style="list-style-type: none"> <li>Temperature</li> </ul>	<a href="#">TM172DCLWT</a>	0.340/ 0.749
			<ul style="list-style-type: none"> <li>Temperature</li> <li>Relative humidity</li> </ul>	<a href="#">TM172DCLWTH</a>	0.340/ 0.749
			<ul style="list-style-type: none"> <li>Temperature</li> <li>Relative humidity</li> <li>Presence PIR</li> </ul>	<a href="#">TM172DCLWTHP</a>	0.340/ 0.749
Remote color touch screen flush mounting displays	<ul style="list-style-type: none"> <li>Power supply: 24 V <math>\sphericalangle</math></li> <li>Color touchscreen</li> <li>Size: 3.5"</li> <li>Resolution: 320 x 240 pixels</li> <li>IP65 (front face)</li> <li>Communication port: 1 RS485, Modbus SL with terminal blocks</li> </ul>	White	–	<a href="#">TM172DCLFW</a>	0.205/ 0.452
		Grey	–	<a href="#">TM172DCLFG</a>	0.205/ 0.452
Remote display monochrome	<ul style="list-style-type: none"> <li>5 control keys</li> <li>Backlit LCD,</li> <li>240 x 140 pixels,</li> <li>Monochrome,</li> <li>With real time clock</li> </ul>	Grey		<a href="#">TM171DGRP</a>	0.197/ 0.430
Accessories to be ordered separately					
Type	Use			Reference	Weight kg/lb
Mounting accessories (1)	White wall support for TM172DCLFW display			<a href="#">TM172ABKPW</a>	0.060/ 0.132
	Grey wall support for TM172DCLFG display			<a href="#">TM172ABKPG</a>	0.060/ 0.132
	Wall bracket For TM171DGRP display			<a href="#">TM171ABKPG</a>	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, 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 expansion module	-			TM171EO14R	-			TM171EO15R, TM171EO22R		
Communication										
Embedded	RS485	1	-	1	1	-	1	1	-	1
LAN expansion bus			1					1		
Connection accessories references (sold in lots of 5)										
Low voltage connector	-				-			TM171ACB40I1M, TM171ACB40I2M		
Analog output connector	-				-			TM171ACB40AO1M, TM171ACB40AO2M		
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

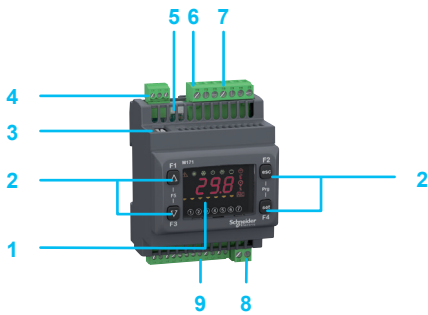
(4) Connectors to be ordered separately, see page 29.

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 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 28.

### M171 Optimized logic controllers: Power supply: 100-240 V ~

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



TM171OBM14R



TM171OD14R



TM171ODM14R

### M171 Optimized logic controllers: Power supply: 12-24 V ~ or 24 V --- (3) (4)

<b>35 mm/1.38 in rail mounting</b>						
22	<b>6 digital inputs:</b> ■ 6 volt-free in 1 group  <b>5 configurable analog inputs:</b> ■ 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	<b>6 digital outputs:</b> ■ 3 SPST (2A, 230 V ~) with the same common ■ 2 SPST (2A, 230 V ~) with independent common ■ 1 open collector  <b>5 analog outputs:</b> ■ 2 open collector for 12 V PWM/PPM ■ 3 x 0-10 V	Remote display (optional)	<b>TM171OBM22R</b>	0.190/ 0.420	
			■ 1 RS485 ■ 1 LAN expansion bus	Built-in display	<b>TM171OD22R</b>	0.190/ 0.420
			■ 1 RS485 ■ 1 LAN expansion bus	Built-in display	<b>TM171ODM22R</b>	0.190/ 0.420
		<b>6 digital outputs:</b> ■ 3 SPST (2A, 230 V ~) with the same common ■ 2 SSR (3A, 230 V ~) ■ 1 open collector  <b>5 analog outputs:</b> ■ 2 open collector for 12 V PWM/PPM ■ 3 x 0-10 V		Built-in display	<b>TM171ODM22S</b>	0.190/ 0.420



TM171OBM22R



TM171OD22R



TM171ODM22R

### Flush mounting

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



TM171OF22R



TM171OFM22R

### Remote display for M171 Optimized logic controllers

Remote displays See page 29

### Connection accessories for M171 Optimized logic controllers

Connectors Low voltage connector, Analog output connector, Modbus SL connector, LAN expansion bus connector See page 29

(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 28.

### 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
	<b>Inputs</b>	<b>Outputs</b>			
14	<b>2 digital inputs:</b> 2 open collector or digital inputs (1)	<b>4 digital outputs:</b> ■ 3 SPST (2 A, 230 V ~) with the same common ■ 1 SPDT (2 A, 230 V ~)	TM171OBM14R, TM171OD14R, TM171ODM14R	■ 1 LAN expansion bus <b>TM171EO14R</b>	0.190/ 0.420
	<b>5 configurable analog inputs:</b> ■ 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	<b>5 analog outputs:</b> ■ 2 open collector for 12 V PWM/PPM or digital inputs (1) ■ 2 x 0-10 V ■ 1 x 4-20 mA			
15	<b>6 digital inputs:</b> volt-free <b>3 analog inputs:</b> NTC or digital inputs	<b>4 digital outputs:</b> ■ 3 2 A, 250 V ~ ■ 1 open collector <b>2 analog outputs:</b> open collector (PPM/PWM)	TM171OBM22R, TM171OD22R, TM171ODM22R, TM171ODM22S, TM171OF22R, TM171OFM22R	■ 1 LAN expansion bus <b>TM171EO15R</b>	0.190/ 0.420
22	<b>6 digital inputs:</b> volt-free <b>5 analog inputs:</b> ■ 3 NTC or digital inputs ■ 2 NTC, or 0-20 mA, or 4-20 mA, or 0-10 V, or digital inputs	<b>6 digital outputs:</b> ■ 5 2 A, 250 V ~ ■ 1 open collector <b>5 analog outputs:</b> ■ 2 open collector (PPM/PWM) ■ 3 x 0-10 V	TM171OBM22R, TM171OD22R, TM171ODM22R, TM171ODM22S, TM171OF22R, TM171OFM22R	■ 1 LAN expansion bus <b>TM171EO22R</b>	0.190/ 0.420

### Accessories for I/O expansion modules

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

## M171 Optimized logic controllers

### Remote displays, Connection accessories



TM171DLED (1)



TM171DLCD2U



TM171DWAL2U



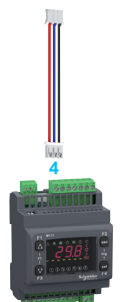
TM171DWAL2L



#### 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	<ul style="list-style-type: none"> <li>■ LED display: 4 digits, 7 segments</li> <li>■ Keyboard: 4 buttons</li> <li>■ Communication port: 1 for LAN expansion bus – with wired connector (1) or screw terminal blocks</li> </ul>	TM171DLED	0.042/ 0.090
	<ul style="list-style-type: none"> <li>■ LCD display (with segments)</li> <li>■ Keyboard: 7 buttons</li> <li>■ Flush mounting</li> <li>■ Communication port: 1 for LAN expansion bus – with screw terminal blocks</li> <li>■ 2 analog inputs:                             <ul style="list-style-type: none"> <li>- 1 NTC or digital input</li> <li>- 1 NTC or 4-20 mA or digital input</li> </ul> </li> </ul>	TM171DLCD2U	0.170/ 0.370
Remote wall mounting displays With realtime clock	<ul style="list-style-type: none"> <li>■ Without backlight</li> </ul>	TM171DWAL2U	0.143/ 0.320
	<ul style="list-style-type: none"> <li>■ With backlight</li> </ul>	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.

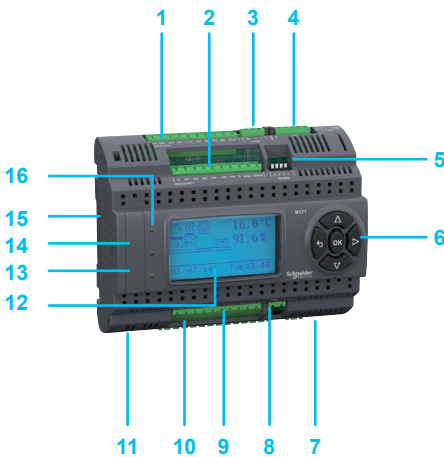
### M171 Performance logic controllers

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  $\text{---}$
- 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  $\text{U}$  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 31](#).
- 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 34](#).
- M171 Performance logic controllers are certified CE, cURus (UL Recognized), CSA, EAC, RCM, RoHS China.



### 35 mm/1.38 in $\text{U}$ 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  $\text{---}$ )
- 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  $\text{U}$  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

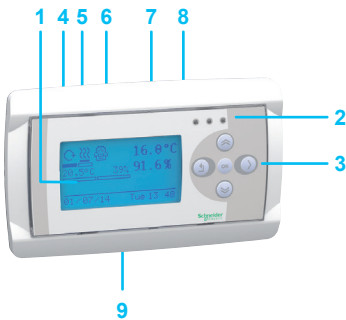
### Flush mounting

**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  $\text{---}$ )
- 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 31](#).  
(2) Terminal blocks supplied with flush mounting version of Performance controllers.

# Modicon M171/M172 logic controllers for HVAC solutions

## M171 Performance logic controllers

### M171 Performance logic controllers: Power supply: 24 V ~, 48 V -

#### 35 mm/1.38 in rail mounting



TM171PBM27R



TM171PDM27R



TM171PDM27S

No. of I/O	Number and type of channels	Embedded communication port	Display	Reference	Weight kg/lb	
27	<b>9 digital inputs (8 + 1):</b> <ul style="list-style-type: none"> <li>2 groups of 4 digital inputs, 24 V ~ or 48 V -</li> <li>1 fast digital input, or high speed counter volt-free</li> </ul> <b>6 configurable analog inputs:</b> <ul style="list-style-type: none"> <li>2 NTC or digital inputs,</li> <li>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</li> </ul>	<b>7 digital outputs:</b> <ul style="list-style-type: none"> <li>2 SPDT (8 A, 230 V ~) with independent common</li> <li>5 SPST (5 A, 230 V ~) with independent common</li> </ul> <b>5 analog outputs:</b> <ul style="list-style-type: none"> <li>3 x 0...+10 V or 4-20 mA</li> <li>2 x 0...+10 V, or 4-20 mA, or digital output open collector</li> </ul>	<ul style="list-style-type: none"> <li>1 RS485</li> <li>1 CAN expansion bus</li> </ul>	Remote display (optional)	<a href="#">TM171PBM27R</a>	0.385/ 0.850
			Built-in display 128x64 LCD with backlight	<a href="#">TM171PDM27R</a>	0.385/ 0.850	
			Built-in display	<a href="#">TM171PDM27S</a>	0.385/ 0.850	
		<b>7 digital outputs:</b> <ul style="list-style-type: none"> <li>2 SPDT (8 A, 230 V ~) with independent common</li> <li>3 SPST (5 A, 230 V ~) with independent common</li> <li>2 SSR (1 A, 230 V ~) outputs</li> </ul> <b>5 analog outputs:</b> <ul style="list-style-type: none"> <li>3 x 0...+10 V or 4-20 mA</li> <li>2 x 0...+10 V, or 4-20 mA, or digital output open collector</li> </ul>				

#### 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
3	<b>3 configurable analog inputs:</b> <ul style="list-style-type: none"> <li>1 built-in NTC</li> <li>1 NTC or digital input</li> <li>1 x 4-20 mA or 0-10 V</li> </ul>	<ul style="list-style-type: none"> <li>1 RS485</li> <li>1 CAN expansion bus</li> <li>1 RJ45 for Modbus TCP and BACnet IP (B-AAC profile) and MS/TP (B-AAC profile)</li> </ul>	Built-in display	<a href="#">TM171PFE03</a>	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 <a href="#">TM171PBM27R</a> , <a href="#">TM171PDM27R</a> , and <a href="#">TM171PDM27S</a>	<a href="#">TM171ASCTB27</a>	0.100/ 0.220
Wall bracket for flush mounting Performance logic controllers	For <a href="#">TM171PFE03</a>	<a href="#">TM171ABKPB</a>	0.015/ 0.030



TM171ASCTB27



TM171ABKPB

### 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

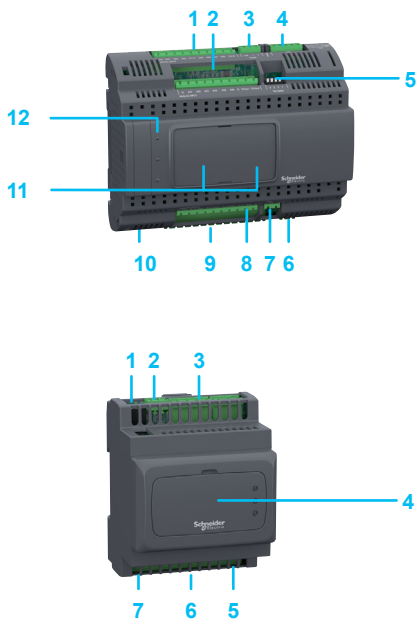
**TM171EP27R** expansion module (1)

- 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  $\text{---}$ )
- 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 33



# Modicon M171/M172 logic controllers for HVAC solutions

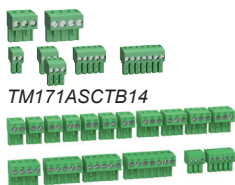
## M171 Performance logic controllers I/O expansion modules



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
14	<b>4 digital inputs:</b> 4 x 24 V ~ or 24V = (1) <b>4 analog inputs:</b> (configurable in pairs) 4 NTC, or PT1000, or PTC, or 4-20 mA, or 0-5 V, or 0-10 V, or digital inputs	<b>4 digital outputs:</b> ■ 1 SPDT (5 A, 230 V ~) with independent common ■ 3 SPST (3 A, 230 V ~) with independent common <b>2 analog outputs:</b> ■ 2 x 0-10 V (1)	■ 1 CAN expansion bus	TM171P●●●● TM172●●●●	TM171EP14R 0.190/ 0.420
27	<b>9 digital inputs (8 + 1):</b> ■ 2 groups of 4 digital inputs, 24 V ~ or 48 V = ■ 1 fast digital input or high speed counter, volt-free <b>6 analog inputs:</b> ■ 2 NTC or digital inputs ■ 4 NTC, or 4-20 mA, or 0-10 V, or digital inputs	<b>7 digital outputs:</b> ■ 2 SPDT (8 A, 230 V ~) with independent common ■ 5 SPST (5 A, 230 V ~) with independent common <b>5 analog outputs:</b> ■ 5 x 0-10 V, or 4-20 mA	■ 1 CAN expansion bus	TM171P●●●●, TM172●●●●	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.

### 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 35](#).
- They are compatible with either Performance or Optimized logic controllers

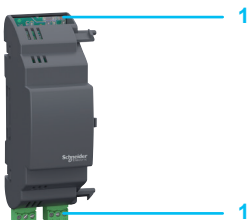
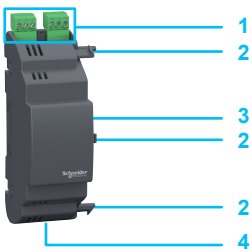
Logic controllers	Compatible Communication modules (reference)
M172 Optimized logic controllers (TM172O●●●●)	TM171ACAN, TM171AMB, TM171ARS485, TM171ARS232, TM171ALON, TM171AETH, TM171AETHRS485
M172 Performance logic controllers (TM172P●●●●)	TM171ACAN, TM171AMB, TM171ARS485, TM171ARS232, TM171ALON
M171 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  $\sqcup$  rail mounting

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

(2) The communication connector type depends on the communication modules, see [page 35](#).



## Communication modules

## 35 mm/1.38 in rail mounting

Fieldbus, services access	Compatibility with logic controller	Communication port	Reference (1)	Weight kg/lb
<ul style="list-style-type: none"> <li>■ CAN</li> </ul>	M172 Optimized, M172 Performance, M171 Performance	<ul style="list-style-type: none"> <li>■ 2 screw terminal blocks (1)</li> </ul>	<b>TM171ACAN</b>	0.077/ 0.170
<ul style="list-style-type: none"> <li>■ Modbus TCP</li> <li>■ Ethernet</li> <li>■ BACnet IP (B-AAC profile)</li> <li>■ WebVisu and remote download functions</li> </ul>	M171 Performance M172 Optimized	<ul style="list-style-type: none"> <li>■ 1 RJ45</li> </ul>	<b>TM171AETH</b>	0.077/ 0.170
<ul style="list-style-type: none"> <li>■ Profibus</li> </ul>	M171 Performance	<ul style="list-style-type: none"> <li>■ 1 SUB-D 9</li> </ul>	<b>TM171APBUS</b>	0.077/ 0.170
<ul style="list-style-type: none"> <li>■ Modbus SL (RS485)</li> </ul>	M172 Optimized, M172 Performance, M171 Performance	<ul style="list-style-type: none"> <li>■ 2 screw terminal blocks (1)</li> </ul>	<b>TM171AMB</b>	0.077/ 0.170
<ul style="list-style-type: none"> <li>■ Modbus SL or BACnet MS/TP (B-AAC profile)</li> </ul>	M172 Optimized, M172 Performance, M171 Performance	<ul style="list-style-type: none"> <li>■ 2 screw terminal blocks (1)</li> </ul>	<b>TM171ARS485</b>	0.077/ 0.170
<ul style="list-style-type: none"> <li>■ RS 232 serial link</li> <li>■ Relay output</li> </ul>	M172 Optimized, M172 Performance, M171 Performance	<ul style="list-style-type: none"> <li>■ 1 SUB-D 9 for RS 232</li> <li>■ 1 screw terminal block for relay output (1)</li> </ul>	<b>TM171ARS232</b>	0.077/ 0.170
<ul style="list-style-type: none"> <li>■ Modbus TCP and BACnet/IP</li> <li>■ Modbus SL or BACnet MS/TP (B-AAC profile)</li> <li>■ WebVisu and remote download functions</li> <li>■ Ethernet</li> </ul>	M171 Performance M172 Optimized	<ul style="list-style-type: none"> <li>■ 1 RJ45 for Ethernet</li> <li>■ 2 screw terminal blocks for RS485 (1)</li> </ul>	<b>TM171AETHRS485</b>	0.077/ 0.170
<ul style="list-style-type: none"> <li>■ LonWorks (FFT-10)</li> </ul>	M172 Optimized, M172 Performance, M171 Performance	<ul style="list-style-type: none"> <li>■ 1 screw terminal block for LON bus</li> </ul>	<b>TM171ALON</b>	0.077/ 0.170

(1) Removable terminal blocks supplied with communication modules.



TM171ACAN



TM171AETH



TM171APBUS



TM171AMB



TM171ARS485



TM171ARS232



TM171AETHRS485



TM171ALON

### 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:

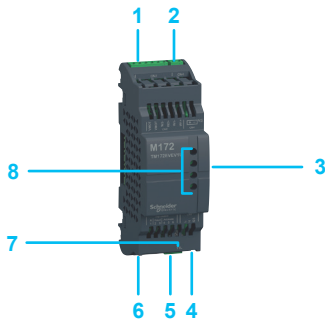
- Modicon M172 EEVD: Electronic Expansion Valve Drivers that are used in combination of the Modicon M172 controller range. The pressure and temperatures sensors are wired to the Modicon M172 controller which manages the control algorithm. The user has the choice to use preprogrammed superheat functions 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.



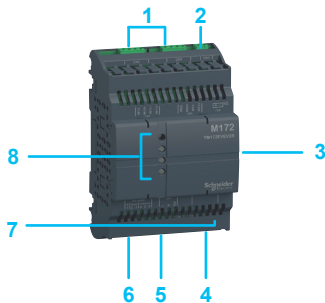
Modicon M172 EEVD



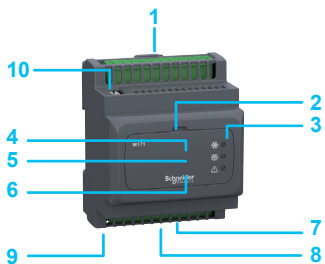
Modicon M171 EEVD



TM172EVEV1U, TM172EVEV1B



TM172EVEV2B



TM171VEVM4

Logic controllers	Compatible EEVD	
M172 Optimized logic controllers (TM172O●●●●)	TM172EVEV1U, TM172EVEV1B, TM172EVEV2B	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

#### 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 , TM171EVEV●● electronic expansion valve drivers.  
(2) Screw terminal blocks to be ordered separately, see page 37.



TM172EVEV1U



TM172EVEV1B



TM172EVEV2B



TM171VEVM4



TM172EVEVBAT



TM171ASCTBVEV

## 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	TM172EVEV1U	0.087/ 0.191
EEVD for single valve bipolar (1) (2)	CAN expansion Bus	2 DIN	TM172EVEV1B	0.089/ 0.196
EEVD for dual valves bipolar (1) (2)	CAN expansion Bus	4 DIN	TM172EVEV2B	0.119/ 0.262

## 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 (3) (Screw terminal blocks to be ordered separately)	<b>2 digital inputs:</b> <ul style="list-style-type: none"> <li>■ 2 volt-free</li> </ul> <b>4 analog inputs:</b> <ul style="list-style-type: none"> <li>■ 2 NTC</li> <li>■ 2 PT1000, 4-20 mA, or 0-5 V, or 0-10 V</li> </ul>	<b>2 digital outputs:</b> <ul style="list-style-type: none"> <li>■ 1 open collector (100 mA, 12 V <math>\overline{\text{DC}}</math>)</li> <li>■ 1 SPST NO relay contact, 5 A, <math>\sim</math> 250 V</li> </ul>	TM171VEVM4	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.	TM172EVEV1U TM172EVEV1B TM172EVEV2B	TM172EVEVBAT	0.157/ 0.346
Screw terminal blocks	For connecting Power supply, sensor power supply, digital and analog I/O, Modbus link	TM171VEVM4	TM171ASCTBVEV	0.050/ 0.110

(1) Compatible with Battery backup TM172EVEVBAT







(2) Removable screw terminal blocks are included with TM172EVEV●● drives.

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

Measurement accessories							
Designation	Use	Description	Cable length m (ft)	Unitreference	Sold in lots of (1)	Weight kg/ lb	
	■ Applications						
<b>Temperature control</b>							
<b>NTC probes</b> 	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)	<a href="#">TM1STNTCRN52015</a>	8	0.144/0.320	
					<a href="#">TM1STNTCRN5201P</a>	100	0.144/0.320
			3 (9.84)	<a href="#">TM1STNTCRN52030</a>	5	0.180/0.400	
				<a href="#">TM1STNTCRN5203P</a>	50	0.180/0.400	
			5 (16.40)	<a href="#">TM1STNTCRN52050</a>	4	0.228/0.500	
	<a href="#">TM1STNTCRN5205P</a>	25	0.228/0.500				
<b>NTC probes</b> 	Multi-purpose ■ Temperature control: - 50...+110 °C (-122...+230 °F)	- IP 67 - Grey - Equipped with 2 conductor cables for controller side	1.5 (4.92)	<a href="#">TM1STNTCRN61515</a>	8	0.104/0.230	
					<a href="#">TM1STNTCRN6151P</a>	100	0.104/0.230
			3 (9.84)	<a href="#">TM1STNTCRN61530</a>	5	0.125/0.280	
				<a href="#">TM1STNTCRN6153P</a>	50	0.125/0.280	
			5 (16.40)	<a href="#">TM1STNTCRN61550</a>	4	0.164/0.360	
	<a href="#">TM1STNTCRN6155P</a>	25	0.164/0.360				
<b>NTC probes</b> 	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)	<a href="#">TM1STNTCSF44015</a>	8	0.144/0.320	
					<a href="#">TM1STNTCSF4401P</a>	100	0.144/0.320
			3 (9.84)	<a href="#">TM1STNTCSF44030</a>	5	0.175/0.390	
				<a href="#">TM1STNTCSF4403P</a>	50	0.175/0.390	
<b>NTC probes</b> 	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)	<a href="#">TM1STNTCSN62015</a>	8	0.144/0.320	
					<a href="#">TM1STNTCSN6201P</a>	100	0.144/0.320
			3 (9.84)	<a href="#">TM1STNTCSN62030</a>	5	0.175/0.390	
				<a href="#">TM1STNTCSN6203P</a>	50	0.175/0.390	
			5 (16.40)	<a href="#">TM1STNTCSN62050</a>	4	0.232/0.510	
	<a href="#">TM1STNTCSN6205P</a>	25	0.232/0.510				
<b>NTC probes with a strap</b> 	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)	<a href="#">TM1STNTCTN62015</a>	8	0.152/0.340	
					<a href="#">TM1STNTCTN6201P</a>	100	0.152/0.340
			3 (9.84)	<a href="#">TM1STNTCTN62030</a>	5	0.180/0.400	
				<a href="#">TM1STNTCTN6203P</a>	50	0.180/0.400	
<b>PT1000 probes</b> 	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)	<a href="#">TM1STPPTSN62015</a>	8	0.144/0.320	
					<a href="#">TM1STPPTSN6201P</a>	100	0.144/0.320
			3 (9.84)	<a href="#">TM1STPPTSN62030</a>	5	0.175/0.390	
				<a href="#">TM1STPPTSN6203P</a>	50	0.175/0.390	
			5 (16.40)	<a href="#">TM1STPPTSN62050</a>	4	0.232/0.510	
	<a href="#">TM1STPPTSN6205P</a>	25	0.232/0.510				
<b>PT1000 probes</b> 	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)	<a href="#">TM1STPPTSN52015</a>	8	0.136/0.300	
					<a href="#">TM1STPPTSN5201P</a>	100	0.136/0.300
			3 (9.84)	<a href="#">TM1STPPTSN52030</a>	5	0.175/0.390	
				<a href="#">TM1STPPTSN5203P</a>	50	0.175/0.390	
			5 (16.40)	<a href="#">TM1STPPTSN52050</a>	4	0.232/0.510	
	<a href="#">TM1STPPTSN5205P</a>	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
<b>Temperature control</b>				
NTC probe 	Outside air	- IP 65 - Wall mounting	TM1STNTCW69755	0.050/ 0.110
	■ Temperature control: -50...100 °C (-58...212 °F)	- NTC 10kOhm /25°C		
NTC probe 	Inside air (room)	- IP 30 - Indoor wall mounting	TM1STNTCWN75750	0.050/ 0.110
	■ Temperature control: -25...40 °C (-13...104 °F)	- NTC 10kOhm /25°C		
<b>Humidity control</b>				
Humidity probe 	Multi-purpose	- IP 65 - Wall mounting	TM1SHC4	0.140/ 0.308
	■ Humidity control: 0...100%	- 4-20 mA		
<b>Humidity &amp; temperature control</b>				
Humidity & temperature probes 	Multi-purpose	- IP 65 - Wall mounting	TM1SHTCN4	0.140/ 0.308
	■ Humidity control: 0...100%	- 4-20 mA, NTC 10kOhm /25°C		
	■ Temperature control: -40...60 °C (-40...140 °F)			
Humidity & temperature probes 	Multi-purpose	- IP 65 - Wall mounting	TM1SHTCC4	0.140/ 0.308
	■ Humidity control: 0...100%	- 2x 4-20 mA		
	■ Temperature control: -40...60 °C (-40...140 °F)			
Humidity & temperature probes 	Multi-purpose	- IP 65 - Wall mounting	TM1SHTM4	0.140/ 0.308
	■ Humidity control: 0...100%	- 2x Modbus ports embedded (RS-485 / Modbus RTU)		
	■ Temperature control: -40...60 °C (-40...140 °F)			



XMLP pressure transmitters

### 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:

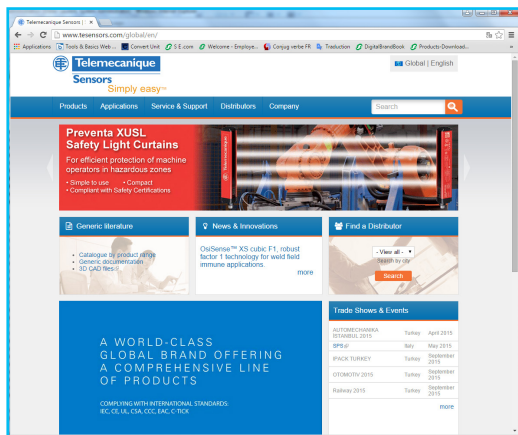
- M12, 4-pin connector
- EN 175301-803-A (ex DIN 43650) connector
- Packard Metri-Pack 150 connector
- 2 m PVC cable

> 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.



Discover XMLP offer on [Telemecanique Sensors](#)

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)	<b>Altivar 12</b> Consult catalog Ref. <a href="#">DIA2ED2130101EN</a>	<b>Altivar 320</b> Consult catalog Ref. <a href="#">DIA2ED2160311EN</a>	–
	0.37 kW (0.5 HP)			–
	0.75 kW (1 HP)			<b>Altivar 212</b> Consult catalog Ref. <a href="#">DIA2ED2101102EN</a>
	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)	<b>Altivar Process Drive Systems (1)</b> Consult catalog Ref. <a href="#">DIA2ED2140502EN</a>	–	
	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	Asynchronous	Asynchronous and Synchronous
Fan size	0.18 kW (0.25 HP)	<b>Altivar 12</b> Consult catalog Ref. <a href="#">DIA2ED2130101EN</a>	–
	0.37 kW (0.5 HP)		–
	0.75 kW (1 HP)		<b>Altivar 212</b> Consult catalog Ref. <a href="#">DIA2ED2101102EN</a>
	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)	–	<b>Altivar Process Drive Systems (1)</b> Consult catalog Ref. <a href="#">DIA2ED2140502EN</a>

**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
- 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

<b>Programming languages</b>	<ul style="list-style-type: none"> <li>■ ST (Structured Text)</li> <li>■ FBD (Function Block Diagram)</li> <li>■ LD (Ladder)</li> <li>■ IL (Instruction List)</li> <li>■ SFC (Sequential Function Chart)</li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>■ Graphical and text-based languages:                             <ul style="list-style-type: none"> <li>- Adaptation to each developer background</li> <li>- Library management</li> <li>- Code debugging</li> <li>- Parameter definition</li> <li>- Simulation mode</li> </ul> </li> <li>■ Advanced programming:                             <ul style="list-style-type: none"> <li>- Vectors</li> <li>- Pointers</li> </ul> </li> </ul>
<b>System solutions management</b>	<ul style="list-style-type: none"> <li>■ Multi-target project</li> <li>■ Management of Modbus data</li> <li>■ Data exchange between several Modicon <b>M171/M172 Performance</b> logic controllers</li> </ul>
<b>Graphical user interface</b>	<ul style="list-style-type: none"> <li>■ Graphic display:                             <ul style="list-style-type: none"> <li>- Multipage</li> <li>- Buttons</li> <li>- Edit box</li> <li>- Static text</li> <li>- Images</li> <li>- Animations</li> <li>- Bars</li> <li>- Lists of data (parameters/variables/alarms)</li> </ul> </li> <li>■ Configurable buttons</li> <li>■ Multilanguage</li> <li>■ Automatic documentation</li> </ul>
<b>Communication bus configurators</b>	<ul style="list-style-type: none"> <li>■ Control networks: Modbus TCP, Modbus SL, Profibus</li> <li>■ Expansion bus fieldbus: CAN expansion bus</li> <li>■ BMS connectivity: BACnet MS/TP (B-AAC profile), BACnet IP (B-AAC profile), LonWorks (FFT-10)</li> </ul>
<b>Advanced simulation options</b>	<ul style="list-style-type: none"> <li>■ Full simulation                             <ul style="list-style-type: none"> <li>- I/O emulation</li> <li>- HMI</li> <li>- IEC code</li> <li>- Live debug</li> <li>- Triggers</li> <li>- Oscilloscope</li> </ul> </li> </ul>
<b>Advanced debugging and simulation options</b>	<ul style="list-style-type: none"> <li>■ Remote control/download:                             <ul style="list-style-type: none"> <li>- Modbus SL &amp; TCP</li> <li>- CAN</li> <li>- Modem</li> </ul> </li> <li>■ Parameter management</li> <li>■ Status monitoring</li> <li>■ Field test:                             <ul style="list-style-type: none"> <li>- Oscilloscope</li> <li>- Debug window</li> <li>- Export to Excel</li> </ul> </li> </ul>

# Modicon M171/M172 logic controllers for HVAC solutions

## EcoStruxure Machine Expert - HVAC programming software



EcoStruxure Machine Expert - HVAC programming software

### 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

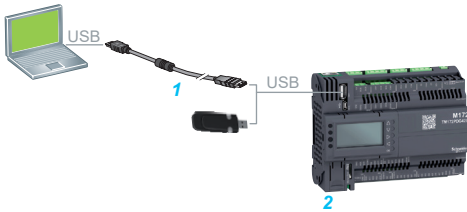
- Processor Intel Pentium 1.6 GHz processor or greater
- RAM 1 GB; 2 GB preferred
- Hard Disk 500 MB hard disk space for a default installation; allow a further 1 GB hard disk space for installing libraries and dedicated applications
- Peripherals mouse or compatible pointing device
- Peripherals USB 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 <a href="#">website</a>

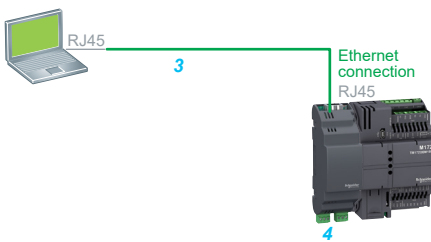
### Programming accessories

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

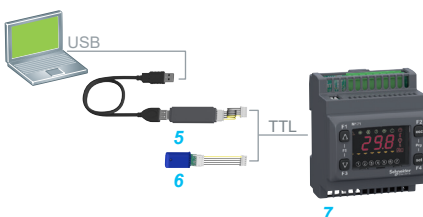


Local programming, download via USB port M171 & M172 Performance



Remote programming via USB port M172 Performance

Ethernet connection 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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Local programming, download via TTL port M171 Optimized

### 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

(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](#).

#			
490NTW00002	43	TM171ODM22S	27
T			28
TCSXCNAMUM3P	43	TM171OF22R	27
TM171ABKPB	31		28
TM171ABKPG	23	TM171OFM22R	27
TM171ACAN	34		28
	35	TM171PBM27R	31
TM171ACB4OAO1M	28	TM171PDM27R	31
	29	TM171PDM27S	31
TM171ACB4OAO2M	28	TM171PFE03	31
	29	TM171VEVM4	37
TM171ACB4OI1M	28	TM172ABKPG	23
	29	TM172ABKPW	23
TM171ACB4OI2M	28	TM172AP12PM	18
	29		21
TM171ACB4OLAN	28	TM172ASCTB07	18
	29	TM172ASCTB12E	21
TM171ACB4ORS485	29	TM172ASCTB18	18
TM171ADMI	43	TM172ASCTB28	18
TM171AETH	34	TM172ASCTB28E	21
	35	TM172ASCTB42	18
TM171AETHRS485	34	TM172DCLFG	23
	35	TM172DCLFW	23
TM171ALAN	29	TM172DCLWT	23
TM171ALON	34	TM172DCLWTH	23
	35	TM172DCLWTHP	23
TM171AMB	34	TM172E12R	21
	35	TM172E28R	21
TM171AMFK	43	TM172EVEV1B	37
TM171APBUS	35	TM172EVEV1U	37
TM171ARS232	34	TM172EVEV2B	37
	35	TM172EVEVBAT	37
TM171ARS485	34	TM172OBM18R	18
	35	TM172OBM28R	18
TM171ASCTB14	33	TM172OBM42R	18
TM171ASCTB27	31	TM172ODM18R	18
	33	TM172ODM28R	18
TM171ASCTBVEV	37	TM172ODM42R	18
TM171DGRP	23	TM172ODM07R	19
TM171DLCD2U	29	TM172PBG07R	19
TM171DLED	29	TM172PBG18R	19
TM171DWAL2L	29	TM172PBG28R	19
TM171DWAL2U	29	TM172PBG28RI	19
TM171EO14R	28	TM172PBG42R	19
TM171EO15R	28	TM172PBG42RI	19
TM171EO22R	28	TM172PDG07R	19
TM171EP14R	32	TM172PDG18R	19
	33	TM172PDG18S	19
TM171EP27R	32	TM172PDG28R	19
	33	TM172PDG28RI	19
TM171OBM14R	27	TM172PDG28SI	19
	28	TM172PDG42R	19
TM171OBM22R	27	TM172PDG42RI	19
	28	TM172PDG42S	19
TM171OD14R	27	TM172PDG42SI	19
	28	TM1SHC4	39
TM171OD22R	27	TM1SHTCC4	39
	28	TM1SHTCN4	39
TM171ODM14R	27	TM1SHTM4	39
	28	TM1STNTRN52015	38
TM171ODM22R	27	TM1STNTRN5201P	38
	28	TM1STNTRN52030	38
		TM1STNTRN5203P	38
		TM1STNTRN52050	38
		TM1STNTRN5205P	38
		TM1STNTRN61515	38
		TM1STNTRN6151P	38
		TM1STNTRN61530	38
		TM1STNTRN6153P	38
		TM1STNTRN61550	38
		TM1STNTRN6155P	38
		TM1STNTCSF44015	38
		TM1STNTCSF4401P	38
		TM1STNTCSF44030	38
		TM1STNTCSF4403P	38
		TM1STNTCSN62015	38
		TM1STNTCSN6201P	38
		TM1STNTCSN62030	38
		TM1STNTCSN6203P	38
		TM1STNTCSN62050	38
		TM1STNTCSN6205P	38
		TM1STNTCTN62015	38
		TM1STNTCTN6201P	38
		TM1STNTCTN62030	38
		TM1STNTCTN6203P	38
		TM1STNTCW69755	39
		TM1STNTCWN75750	39
		TM1STPTTSN52015	38
		TM1STPTTSN5201P	38
		TM1STPTTSN52030	38
		TM1STPTTSN5203P	38
		TM1STPTTSN52050	38
		TM1STPTTSN5205P	38
		TM1STPTTSN62015	38
		TM1STPTTSN6201P	38
		TM1STPTTSN62030	38
		TM1STPTTSN6203P	38
		TM1STPTTSN62050	38
		TM1STPTTSN6205P	38

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DIA3ED2151001EN  
April 2021- V4.1