

Modicon M171/M172 logic controllers for HVAC solutions

Catalog



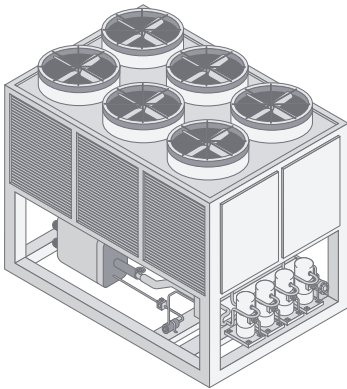
Solutions overview

Application solutions for HVAC

Air/Water cooled chillers

Air/Water cooled chillers: Flexible solution (incorporating TVDA)

2



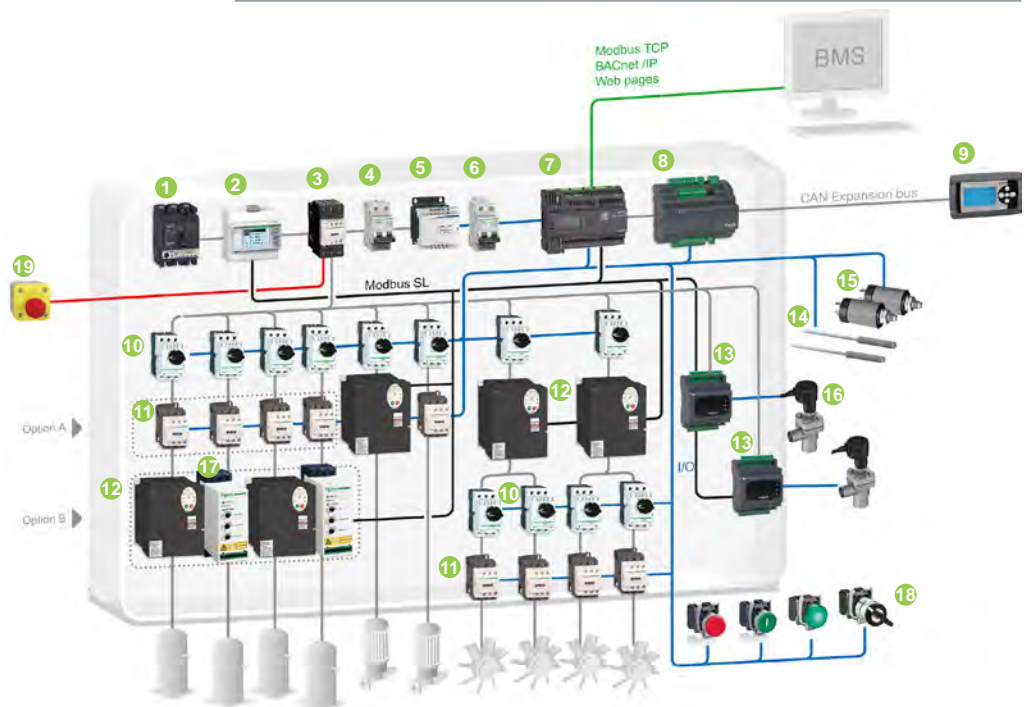
Challenges

- > Your business is producing air-cooled and water-cooled chillers. Your machine development efforts involve both mechanical aspects and control requirements. You need a flexible control system that is compatible with the various types of machine you build. Connectivity with higher-level systems and the ability to adapt the control application to future requirements is a must.
- > Time-to-market is key. You are looking for a supplier who offers smart solutions that optimize installation and commissioning time, and who has a high level of expertise in HVAC machine control.
- > You also need comprehensive worldwide technical support for your machine control system throughout the entire machine lifecycle, from development to regular operation.

Solution

- > Schneider Electric offers flexible Tested, Validated, and Documented Architectures (TVDA) designed specifically for air-cooled and water-cooled chillers. This is a flexible solution for all types of chiller that can be customized to your specific machine applications, with pre-designed control functions.
- > The solution combines a logic controller, an operating panel, a motor starter, a circuit breaker, and a variable speed drive controlled via Modbus SL fieldbus. Optional I/O modules provide a high level of flexibility to optimize your control system.
- > Schneider Electric also provides related functions to support your engineering efforts, and can quickly implement a large assortment of machine subfunctions. Dedicated energy efficiency functions deliver innovative solutions to enhance energy efficiency.
- > Connectivity to various BMS networks is provided through optional communication modules (BACnet MS/TP, BACnet IP, Modbus TCP, and others).

Architecture

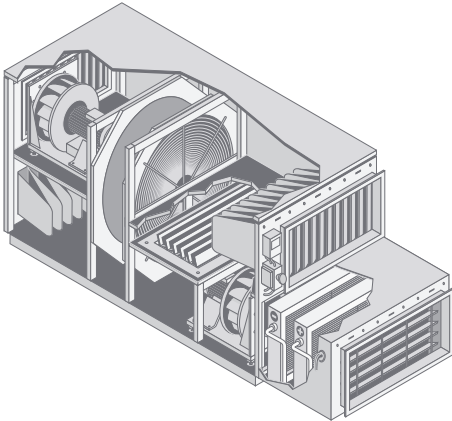


HVAC/Chiller/Modbus SL/Modicon M172 performance logic controller

Solution breakdown

- | | |
|---|---|
| <ul style="list-style-type: none"> 1 Compact NSX circuit breaker 2 iEM3000 energy meter 3 TeSys D contactor 4 C60L-MA modular circuit breaker 5 Phaseo switch mode power supply 6 C60L-DC DC circuit breaker 7 Modicon M172 performance logic controller 8 Modicon M172 I/O module 9 Modicon M171 remote display 10 TeSys GV2L magnetic circuit breaker 11 TeSys D contactor | <ul style="list-style-type: none"> 12 Altivar 212 variable speed drive, for 0.75 to 75 kW (1.0 to 100 hp) motors 13 Modicon M171 electronic expansion valve driver 14 Modicon TM1S humidity and temperature probes 15 Telemecanique XMLP pressure transmitters 16 Electronic expansion valve 17 Altistart 01 soft starter 18 Harmony XB4/XB5 signaling units 19 Harmony XALK Emergency stop push button |
|---|---|

Air Handling Units:
Flexible solution (incorporating TVDA)



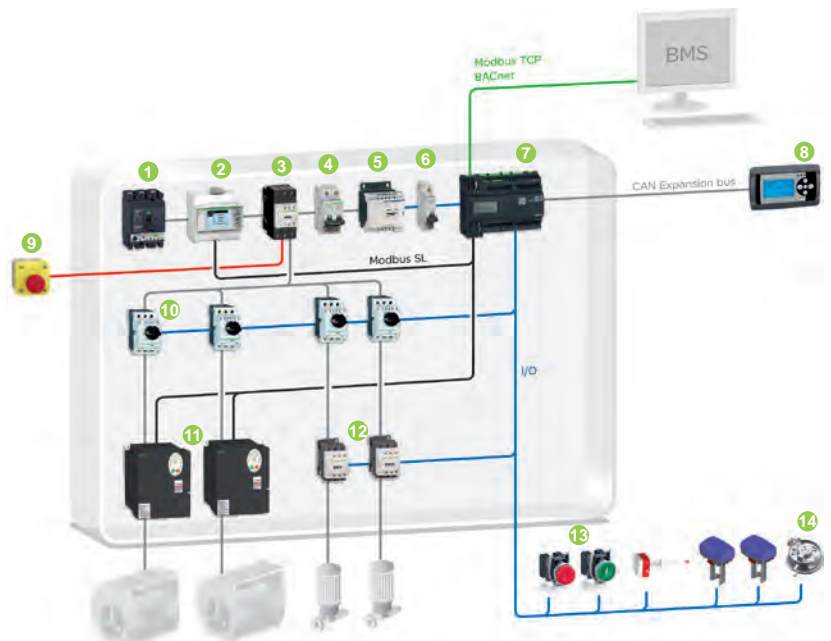
Challenges

- > Your business is producing Air Handling Units (AHUs). Your machine development efforts involve both mechanical aspects and control requirements. You need a flexible control system that is compatible with the various types of machine you build. Connectivity with higher-level systems, the ability to integrate mobile machine access, and the adaptability of the control application to future requirements is a must.
- > Time-to-market is key. You are looking for a supplier who offers smart solutions that optimize installation and commissioning time, and who has a high level of expertise in HVAC machine control.
- > You also need comprehensive worldwide technical support for your machine control system throughout the entire machine lifecycle, from development to regular operation.

Solution

- > Schneider Electric offers flexible Tested, Validated, and Documented Architectures (TVDA) designed specifically for Air Handling Units (AHU). This is a flexible solution for all types of AHU that can be customized to your specific machine applications, with pre-designed control functions.
- > Schneider Electric offers a flexible, fully-tested, complete control system designed specifically for Air Handling Units. This is an optimized solution for AHUs that can be customized to your specific machine applications, with pre-designed control functions.
- > The solution combines a controller, an operating panel, a motor starter, a circuit breaker, and a variable speed drive controlled via Modbus SL field bus. Optional I/O modules provide a high level of flexibility for optimizing your control system.
- > Schneider Electric also provides related functions to support your engineering efforts and quickly implement a large assortment of machine subfunctions. Dedicated energy efficiency functions deliver innovative solutions to enhance energy efficiency.
- > Connectivity to various BMS networks is provided through native Modbus SL connectivity and optional communication modules (BACnet MS/TP, BACnet/IP, Modbus TCP, and others).

Architecture



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

Solution breakdown

- | | |
|---|---|
| 1 Compact NSX circuit breaker | 10 TeSys GV2L magnetic circuit breaker |
| 2 iEM3000 energy meter | 11 Altivar 212 variable speed drive, for 0.75 to 75 kW (1.0 to 100 hp) motors |
| 3 TeSys D contactor | 12 TeSys D contactor |
| 4 C60L-MA modular circuit breaker | 13 Harmony XB4/XB5 control & signaling units |
| 5 Phaseo switch mode power supply | 14 Differential pressure switch |
| 6 C60L-DC DC circuit breaker | |
| 7 Modicon M172 performance logic controller | |
| 8 Modicon M171 remote display | |
| 9 Harmony XALK Emergency stop push button | |

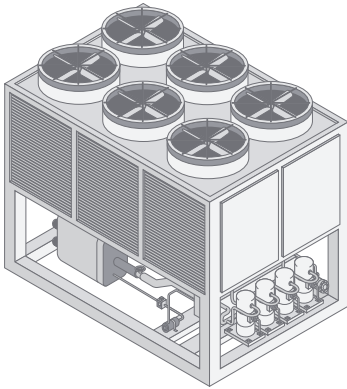
Solutions overview

Application solutions for HVAC

Air/water cooled chillers, chillers, rooftop units, Air Handling Units, HVAC machines

Customized solution

2



Challenges

- > You need to reduce the overall cost of your machine control panels, and achieve optimal sizing of all electrical components. Building control panels is not part of your core business.
- > You want to reduce the cost of your stock of electrical components.
- > You are looking for expertise in the engineering, design, and manufacture of control solutions. You expect fully customizable turnkey control panel solutions with a minimum number of component suppliers.

Solution

- > Schneider Electric provides manufacturers of HVAC machines with fully customizable turnkey control panel solutions. We deliver solutions quickly and offer a complete logistical management service.
- > Our experts will design your specific control panel based upon your specifications, and optimize it in terms of size and components.
- > In order to optimize the energy consumption of your HVAC machine, our experts provide the right solution to build an energy efficient machine.
- > Based upon your needs, we can design your control solution in compliance with national standards in the countries where your machine is delivered.

Benefits

The main advantages offered by our customized solutions are:

Expertise in panel building and HVAC control

- > Our experts have a high level of expertise in control panel design and HVAC control solutions.

A turnkey solution

- > A control panel solution for a pre-assembled solution based upon your specific needs.

Increased profitability

- > Optimized and standardized “repetitive” solutions for highly cost-efficient control panels.

Worldwide compliance

- > We design your electrical cabinet in compliance with national standards, wherever you deliver.

Flexibility and openness

- > Large choice of system configuration options. Features can be added to your machines as needed. Expert support for system adaptations.

A single supplier

- > Complete control system architecture, including all installation components, completely assembled and delivered by a single supplier.
- > A single provider of solutions, from machine controls and building management systems to large automation and management installations.

Your automation partner

- > Our experts, our application centers, and our worldwide service provide you with comprehensive support throughout the entire machine lifecycle.

Application Function Blocks

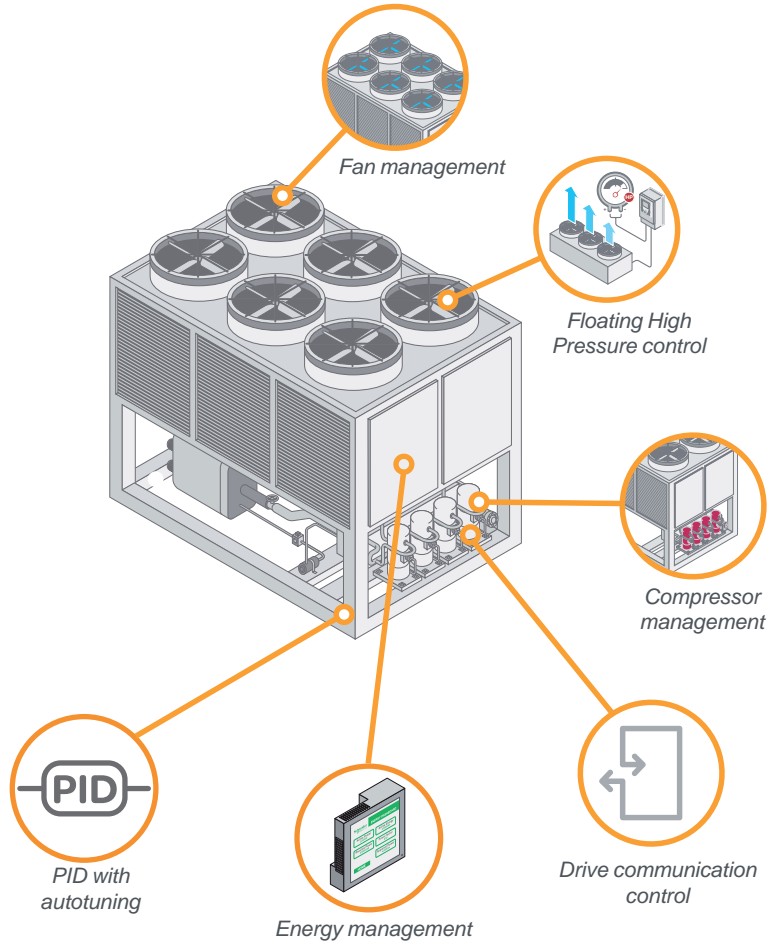
Schneider Electric has also developed a user-friendly tool for customers to design their control systems quickly and efficiently themselves. A set of Application Function Blocks (AFBs) is included in **EcoStruxure Machine Expert - HVAC** software to help, for example:

- > to reduce the development time for new machines
- > to manage your compressors or fans efficiently with a variable speed drive
- > to include floating High Pressure control
- > to control Schneider Electric variable speed drives via Modbus serial line

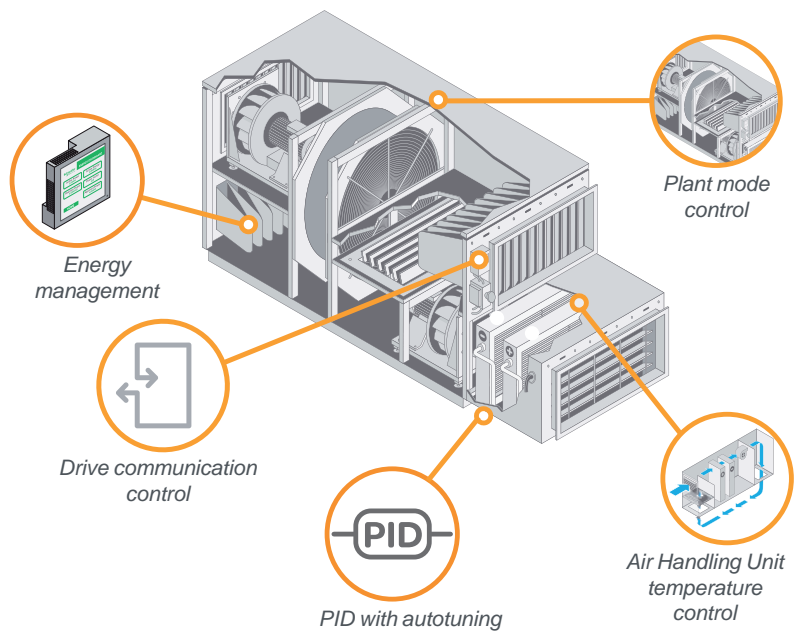
These AFBs have been created to help you reduce your development times and improve the efficiency of your control solutions.

Global overview of related functions

Related functions for HVAC control solutions involving chillers



Related functions for HVAC control solutions involving Air Handling Units (AHU)

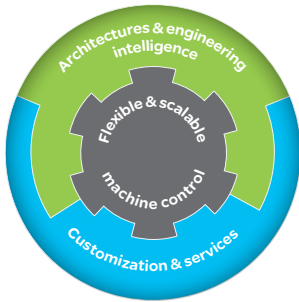


Hardware control platforms

Modicon M171/M172 logic controllers

Maximize business and machine performance with EcoStruxure™ Machine

Maximize business and machine performance with EcoStruxure™ Machine



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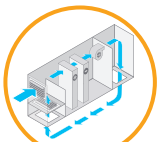
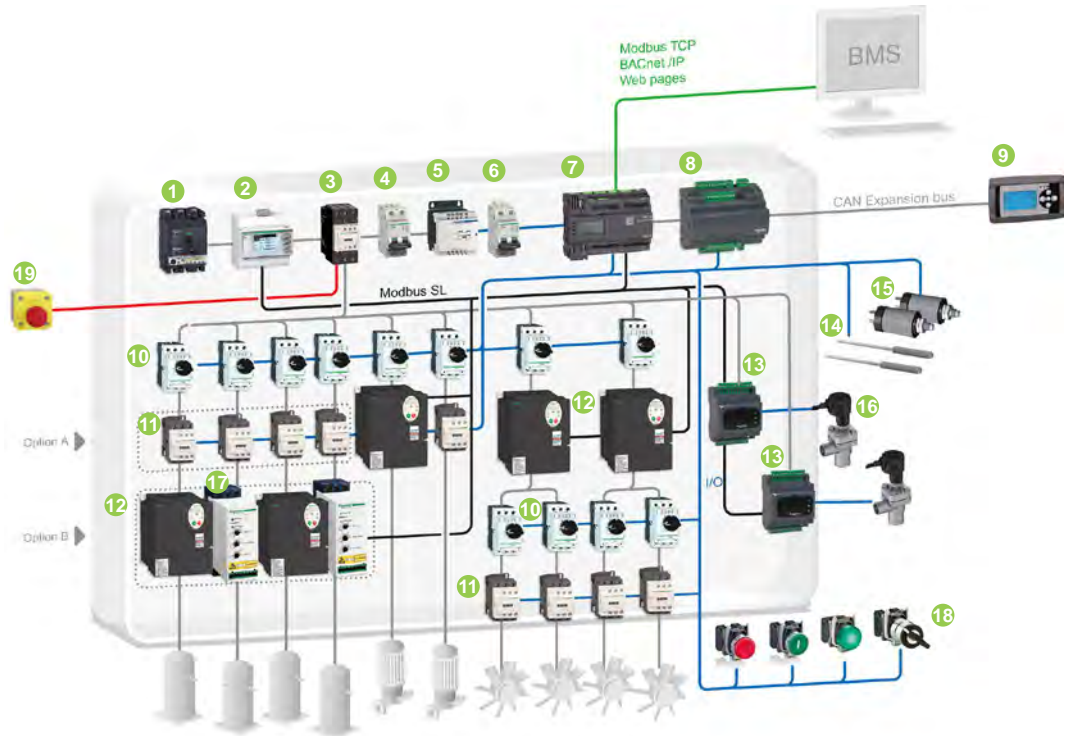
Machine builders are constantly looking for new ways to design and build more innovative machines in less time and at lower cost. EcoStruxure™ Machine can help.

EcoStruxure™ Machine is a complete machine automation solution that provides flexible and scalable machine control, ready-to-use architectures, efficient engineering solutions, and comprehensive customization and engineering support services. It can help meet your challenges for improved efficiency and greater productivity, as well as allowing you to deliver higher added value to your customers throughout the entire machine life cycle.

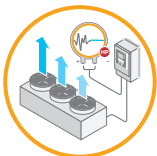
Ready-to-use architectures and function blocks

- > 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.

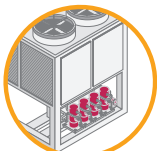
Modicon M171/M172 is part of EcoStruxure Machine



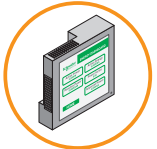
Fan management



Floating High Pressure control



Compressor management



Energy management

Application Function Blocks (AFBs)

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

Solution breakdown

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

Flexible

Flexible and scalable performance

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

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

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

Scalability *

Modicon M172 performance logic controllers



Modicon M172 optimized logic controllers



Modicon M171 optimized logic controllers



Performance and connectivity

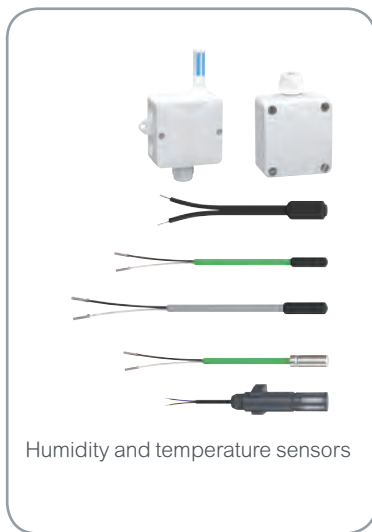
- > Best-in-Class versatility and compact size
- > Best-in-Class performance

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

Efficient



3



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



Modicon M171 optimized, for simple and compact machines

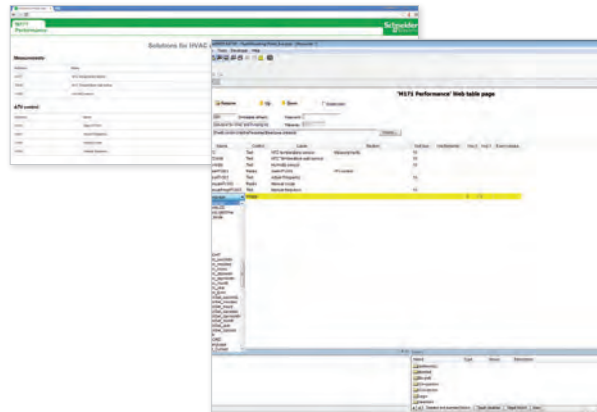


Modicon M172, for any size of connectable or connected machine

Communication modules

Intuitive automation with EcoStruxure Machine Expert - HVAC

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



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

Connected



Connected everywhere

Depending on your connectivity needs, select the right product

- > **M171 optimized** for simple and compact machines
 - Modbus RTU
 - LAN Expansion Bus
- > **M172** for any size of connectable (**M172 optimized**) or connected (**M172 performance**) machine
 - Modbus RTU
 - Modbus TCP
 - BACnet MS/TP (B-AAC Profile certified BTL)
 - BACnet /IP (B-AAC Profile certified BTL)
 - ASCII support for GSM Modem
 - CAN Expansion Bus
 - LonWorks (FFT-10)
 - Webserver, FTP Client/Server, Email, Proxy management, white list, SNTP

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

Hardware control platforms

Modicon M171/M172 logic controllers

Modicon M171/M172 range

3



HVAC



Heat pump



Chiller



Air handling unit

General presentation

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

Modicon M171/M172 range

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



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



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



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



Measurement accessories



Pressure transmitters

General presentation

System components

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

Modicon M171/M172 logic controllers are available with or without an embedded display, with or without SSE output depending on the base product. I/O expansion modules are mixed digital and analog I/O types.

M171 optimized logic controllers

- **TM171O●●●●** optimized logic controllers, [see page 3/22](#) and **TM171EO●●R** I/O expansion modules, [see page 3/24](#) and **TM171D●●●●** remote displays, [see page 3/26](#)

M171 performance logic controllers

- **TM171P●●●●** performance logic controllers, [see page 3/28](#) and **TM171EP●●R** I/O expansion modules [see page 3/30](#) and **TM171DGRP** remote displays [see page 3/29](#)

M172 optimized and performance logic controllers

- **TM172O●●●●** optimized and **TM172P●●●●** performance logic controllers, [see page 3/14](#) and **TM172E●●R** I/O expansion module, [see page 3/18](#) and **TM172DC●●●●** remote color touch screen displays, [see page 3/20](#)

Communication modules

- **TM171A●●●●** communication modules (BMS fieldbus interfaces) provide the **TM171P●●●●** performance, **TM172O●●●●** optimized and **TM172P●●●●** performance logic controllers with a connection to:
 - BACnet MS/TP (B-AAC profile) or IP
 - Modbus SL (Serial Link)
 - Modbus TCP
 - LonWorks (FFT-10)
 - Profibus
 - CAN bus
 - Etc. [see page 3/32](#).

Electronic expansion valve drivers

- **TM171VEV●●** electronic expansion valve drivers compatible with the entire Modicon M171/M172 logic controller range and also with third party controllers and electronic expansion valves, [see page 3/34](#)

Measurement accessories

- Specific measurement accessories **TM1S●●●●**: humidity and temperature probes, [see page 3/36](#).
- Pressure transmitters from our partner Telemecanique sensors, [see page 3/38](#)

Software

- EcoStruxure Machine Expert - HVAC programming software, and programming accessories, [see page 4/2](#).

Connection accessories

- Adapted connection accessories: I/O connectors and cables, [see page 3/27](#).

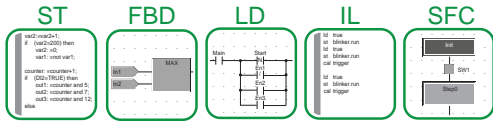
General presentation (continued)

Configuration software

Modicon M171/M172 logic controllers are supported by an intuitive software package: EcoStruxure Machine Expert - HVAC, [see page 4/2](#). This software follows a simple drag-and-drop function block approach to configuration and is completed with a library of Application Function Blocks (AFBs) and logic functions.

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

Examples:

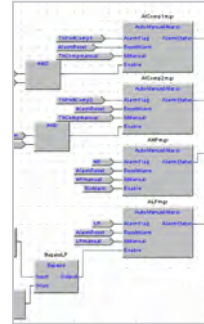


5 languages compliant with IEC 61131-3

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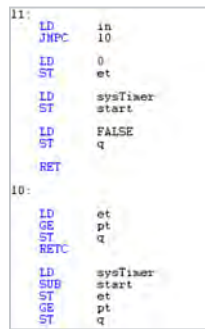
Structured Text language (ST)



Function Block Diagram language (FBD)



Ladder Diagram language (LD)



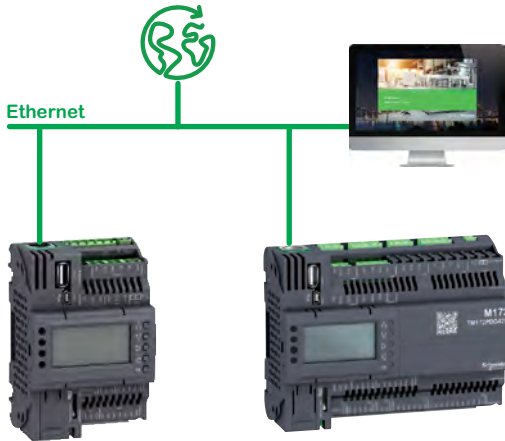
Instruction List language (IL)



Sequential Function Chart language (SFC)

Available resources on logic controllers for IEC programming

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



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



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

General presentation (continued)

Ethernet connection

Ethernet access is available on M171/M172 logic controllers:

- embedded in M172 performance logic controllers
- optional with M171 performance and M172 optimized logic controllers by means of a communication module, [see page 3/32](#)

Ethernet access enables several functions such as:

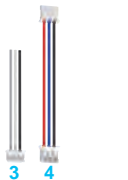
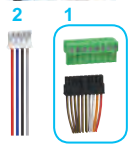
- > HTTP Webserver (Webvisu)
- > Remote access
 - Download program
 - Display program download
 - Download, upload parameters
 - Download firmware
 - Debug
 - File management
- > Bridge: specific function allowing controllers connected in Modbus SL to the same controller to be programmed via Modbus
-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

These services are not always available:

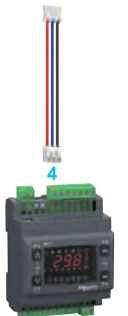
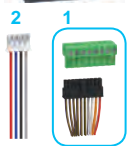
- > the service can be enabled or disabled via the controller programming
- > a white list is used to provide access (no white list defined by default)



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



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



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

References

Connection accessories for M171 optimized logic controllers to be ordered separately

Type	Item	Description	Cable length (m/ft.)	Unit reference	Weight kg/lb
Low voltage connector Sold in lots of 5	1	Screw terminal block and a cordset equipped with a 20-pin connector at one end	1/3.3	TM171ACB4OI1M	0.575/ 1.270
			2/6.6	TM171ACB4OI2M	1.120/ 2.470
Analog output connector (0-10 V outputs) Sold in lots of 5	2	Cordset equipped with a 4-pin connector at one end	1/3.3	TM171ACB4OAO1M	0.075/ 0.170
			2/6.6	TM171ACB4OAO2M	0.125/ 0.280
Modbus SL connector Sold in lots of 5	3	Cordset equipped with a 3-pin connector at one end	1/3.3	TM171ACB4ORS485	0.052/ 0.110
LAN expansion bus connector Sold in lots of 5	4	Cordset equipped with a 3-pin connector at each end	2/6.6	TM171ACB4OLAN	0.060/ 0.130

(1) Minimum set for operating controllers.



Application	Type of machine controlled	Compressor			
		Number of phases			
		1	3		
	Type of motor	Asynchronous	Asynchronous and Synchronous	Asynchronous and Synchronous for scroll	
Compressor size	0.18 kW (0.25 HP)	Altivar 12		–	
	0.37 kW (0.5 HP)			–	
	0.75 kW (1 HP)			Altivar 320	Altivar 212
	2.2 kW (0.25 HP)				
	4.0 kW (5 HP)				
	7.5 kW (10 HP)				
	15 kW (20 HP)				
	18.5 kW (25 HP)				
	22 kW (30 HP)				
	30 kW (40 HP)				
	37 kW (50 HP)				
	45 kW (60 HP)				
	55 kW (67 HP)				
	75 kW (100 HP)	Altivar Process ATV600	Altivar 212		
	90 kW (120 HP)			–	
	110 kW (150 HP)			–	
	315 kW (422 HP)			–	
	355 kW (480 HP)			–	
	400 kW (540 HP)			–	
	450 kW (603 HP)			–	
500 kW (670 HP)	Altivar Process Drive Systems (1)			–	
560 kW (750 HP)				–	
630 kW (850 HP)				–	
710 kW (950 HP)		–			
800 kW (1100 HP)		–			
		–			

3

Compatible range of variable speed drives

Application	Type of machine controlled	Fan		
		Number of phases		
		1	3	
Fan size	0.18 kW (0.25 HP)	Altivar 12	–	
	0.37 kW (0.5 HP)		–	
	0.75 kW (1 HP)		Altivar 212	
	2.2 kW (0.25 HP)			
	4.0 kW (5 HP)			
	7.5 kW (10 HP)			
	15 kW (20 HP)			
	75 kW (100 HP)			
	> 75 kW (> 100 HP)			–
				Altivar Process ATV600 and Altivar Process Drive Systems (1)

Compatible range of variable speed drives

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

Presentation



Software solution

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

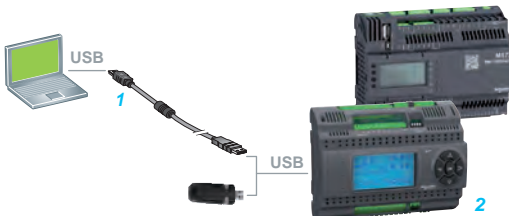
It includes:

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

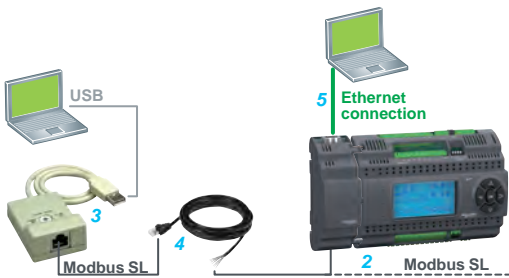
General characteristics

Overview

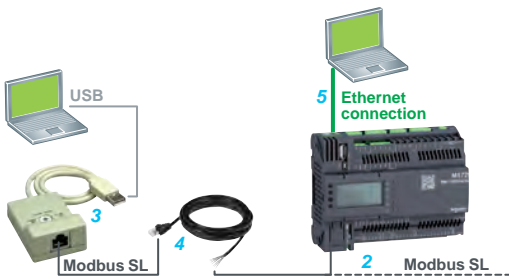
4	Programming languages	<ul style="list-style-type: none"> ■ ST (Structured Text) ■ FBD (Function Block Diagram) ■ LD (Ladder) ■ IL (Instruction List) ■ SFC (Sequential Function Chart)
	Applications	<ul style="list-style-type: none"> ■ Graphical and text-based languages: <ul style="list-style-type: none">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



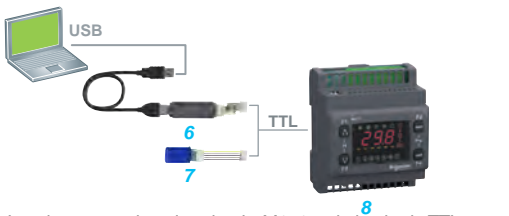
Local programming, download - M171 & M172 performance - through USB port



Remote programming - M171 performance



Remote programming - M172 performance



Local programming, download - M171 optimized - via TTL port



Remote programming - M171 optimized

Product offer

EcoStruxure Machine Expert - HVAC software is supplied on a DVD or can be downloaded from our website www.schneider-electric.com. The product version concerned offers the EcoStruxure Machine Expert - HVAC functions associated with logic controllers.

References

System configuration:

- Processor: Pentium 1.6 GHz or higher
- RAM: 1 GB; 2 GB recommended
- Hard disk: 500 MB minimum
- OS: 32-bit Windows; XP Pro SP3 or Windows 7 (32-bit or 64-bit) or Windows 8
- Drive: DVD drive
- Display: SVGA video card; 800x600, 128 MB; 1024x768, 256 MB recommended
- Peripheral device: A mouse or compatible pointing device
- Peripheral device: USB interface

Programming software

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

Programming accessories for M171 and M172 performance logic controllers

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

Description	Characteristics and use	Length m/ft.	Reference	Weight kg/lb
Programming via USB port				
Programming cables (1)	From the PC USB-A port to the USB mini-B port on M171 (2) and M172 performance logic controllers (2)	3/0.98	TCSXCNAMUM3P (1)	0.065/
		1.8/5.90		0.143
			BMXXCAUSBH018	0.065/
				0.143

Programming via Modbus SL and/or Ethernet

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

Ethernet connection cable

Ethernet Connexium cable - shielded twisted pair straight cord (5)	For connection to terminal devices (DTE). Equipped with 1 RJ45 connector at each end. CE compatible	2/6.56 (2)	490NTW00002	-
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(1) Unshielded cable without grounding. To be used only for temporary connections. For permanent connections, use the reference **BMXXCAUSBH018**.
 (2) Other lengths available: 5 m/16.40 ft, 12 m/39.37 ft, 40 m/131.23 ft, and 80 m/262.47 ft, see page 5/4.

Programming accessories for M171 optimized logic controllers

Programming via TTL programming port

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

Programming via USB port

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