

EcoStruxure Machine Expert - HVAC v1.0

Release Notes

Software / Firmware Version:

TM171PDM27●	Firmware msk: 423.27
TM171PBM27R	Firmware msk: 477.27
TM171PFE03●●	Firmware msk: 489.20
TM171DGRP	Firmware msk: 476.20
TM172P●●28●●/ TM172P●●42●● TM172O●●28●/ TM172P●●42●	Firmware msk: 596.08
TM172P●●07●/ TM172P●●18●/ TM172O●●07●/ TM172P●●18●	Firmware msk: 668.08
TM172DCLW●●●/TM172DCLF●	Firmware msk: 659.05
TM171O●●●●●	Firmware msk: 542.09
TM171SW (EcoStruxure Machine Expert - HVAC)	v 1.0.0

This document contains important information about the EcoStruxure Machine Expert - HVAC software. Please read the complete document before you run the product.

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1. SYSTEM REQUIREMENTS

Schneider Electric EcoStruxure Machine Expert - HVAC can be installed on a personal computer having the following characteristics:

Operative System

- Windows 7 Home Premium 32 Bit & 64 Bit
- Windows 7 Professional 32 Bit & 64 Bit
- Windows 7 Ultimate 32 Bit & 64 Bit
- Windows 8 / 8.1 64 Bit
- Windows 10 64 Bit

Hardware requirements

- Processor Pentium 1.6 GHz or greater
- RAM Memory 1 GB; 2 GB preferred
- Hard Disk 500 MB of free space
- Peripherals Mouse or compatible pointing device
- Peripherals USB interface
- Web access Web registration requires Internet access

Please note the following information from Microsoft:

Windows XP support has ended

As of April 8, 2014, support and updates for Windows XP are no longer available.

EcoStruxure Machine Expert - HVAC requires Administrator rights to be installed.

For further information, contact your Schneider Electric support center.

2. IMPORTANT INFORMATION

2.1. Provided templates and project examples

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3. NEW FEATURES IN ECOSTRUXURE MACHINE EXPERT - HVAC v1.0.0

The following new features are in comparison with SoMachine HVAC 2.4:

- Improvements and rebranding of the software: EcoStruxure Machine Expert – HVAC
 - Renewed layout and 'look and feel', aligned with EcoStruxure guidelines
 - Improved usability; all operations accessible from one executable program
 - Improved functionalities
 - Improved documentation
- New online help:
 - Integration of all documents related to software, libraries, hardware and TVDAs
 - Improved features with documents in HTML format and search function
 - New Software Operating Guide
- Availability of new TVDA, in addition to four already available in SoMachine HVAC V2.4:
 - Air-water Heat Pump for Large and Connected Machines (Source code, Electrical Diagram and User Guide available inside Software)
- Availability of seven new AFBs:
 - Circuit Management: CircuitMgmt
 - Evaporator Pressure Control: EvapPressCntrl
 - Floating Water Temperature Setpoint: FloatingWaterTempSet
 - Heat Pump Defrost Circuit Priority: HPDefrCircuitPriority
 - Heat Pump Defrost and Reversing: HPDefrostAndRevValve
 - Mode Selection: ModeSelection
 - Quick Response Code Bitmap Generator and Display: QRCodeGenDisplay (User Guide available inside Software)

4. NEW FEATURES IN TM172P●●●●●●/TM172O●●●●●● (FIRMWARE MSK 596.08 AND MSK 668.08)

- Export of PARAM.BIN file with the full image of the not-volatile memory (including BACnet parameters)
- Introduced target function sysFTP_ProtectFiles() to protect filesystem files from read and write operations
- Added management of BINDIN.PAR system file
- Added Modbus registers related to current Ethernet settings: IP address, Default gateway, Net Mask, Primary DNS address and Secondary DNS address
- Introduced target function sysMbSTcp_SocketServerInfo() to monitor number of available and used server sockets
- Modbus Master configured via Configuration Perspective starts only if a PLC application is present and running
- New features of target functions sysUART_getbuff(), sysUART_putbuff() and sysUART_init(). They can be applied also to RS485-1 and the additional baud rate 4800 b/s is available.
- Solved issue with BACnet Intrinsic reporting
- Solved issue with sysMbMRTU_FC06(), sysMbMRTU_FC05(), sysMbMRTU_FC15() and sysMbMRTU_FC16() Modbus Master target functions in case of sending broadcast message
- Solved issue with sysMbMRTU_FC01(), sysMbMRTU_FC02(), sysMbMRTU_FC03() and sysMbMRTU_FC04() Modbus Master target functions in case of sending broadcast message, now returns dedicated error code (19)
- Solved issue with IP conflict detection features when BACnet IP stack is used

5. NEW FEATURES IN TM172DCL●●● (FIRMWARE MSK 659.05)

- Increased maximum number of edit control objects per page from 20 to 32
- Removed the maximum number for the objects different from edit control
- The maximum number of controls for each page is 100
- Implemented the Read of strings via Modbus when the device is configured as Master
- Dynamic change of slave address is now allowed
- Improved dynamic visibility of overlapped objects
- Solved wrong handling of dynamic visibility for buttons

6. NEW FEATURES IN TM171PFE03●● (FIRMWARE MSK 489.20)

- Added management of BINDIN.PAR system file
- Modbus Master configured via Configuration Perspective starts only if a PLC application is present and running
- New value for Buzzer_Mode parameter: Value 2 links buzzer status to red LED status
- Capability to disable Ethernet communication by setting the last three MAC address octets to 0
- Controller sends PDO related to its probes on CAN line if its CAN address is 126 or 127 and CONNEC.PAR file does not configure CAN channel (CAN not configured from Configuration Perspective)
- Solved issue with BACnet Intrinsic reporting

7. NEW FEATURES IN TM171DGRP (FIRMWARE MSK 476.20)

- New value for Buzzer_Mode parameter: Value 2 links buzzer status to red LED status

8. NEW FEATURES IN TM171PDM27● (FIRMWARE MSK 423.27)

- Added management of BINDIN.PAR system file
- Modbus Master configured via Configuration Perspective starts only if a PLC application is present and running
- Solved issue with BACnet Intrinsic reporting

9. NEW FEATURES IN TM171PBM27R (FIRMWARE MSK 477.27)

- Added management of BINDIN.PAR system file
- Modbus Master configured via Configuration Perspective starts only if a PLC application is present and running
- Solved issue with BACnet Intrinsic reporting

10. NEW FEATURES IN TM171O●●●●● (FIRMWARE MSK 542.09)

- Fixed issue related to Modbus commands 01 and 02.

11. DOCUMENTATION UPDATE

- Modicon M172 Performance Logic Controller Hardware User Guide has been updated to include the new devices of the offer: TM172P●G28●I/ TM172P●G42●I/ TM172O●M28R/ TM172O●M42R
- Modicon M172 instruction sheet has been created for the new M172 references with isolation: TM172P●G28●I / TM172O●M28R / TM172P●G42●I / TM172O●M42R

Both are available in <http://www.schneider-electric.com/m171-m172> and via the online help of EcoStruxure Machine Expert – HVAC v1.0.0

12. NEW FEATURES DESCRIPTION

12.1. PARAM.BIN file : full image of the EEPROM for TM172P●●●●●●/ TM172O●●●●●●

Now PARAM.BIN file created by the controller into USB memory key includes also the values of the BACnet objects stored into EEprom. The controller can load this file from USB memory key and set the value of the BACnet parameters accordingly.

12.2. target function sysFTP_ProtectFiles() for TM172P●●●●●●/ TM172O●●●●●●

Introduced target function sysFTP_ProtectFiles() to protect filesystem files from read and write operations.

```
FUNCTION sysFTP_ProtectFiles : BOOL
{ DE:" Hide all the files for FTP.
If its parameter is TRUE then all files will be protected, otherwise this protection is
removed.
In any case setting of sysFTP_AuthentGuest() function override sysFTP_ProtectFiles()
protection even if activated.

The function return always TRUE.
" }

VAR_INPUT
toProtect: BOOL; { DE:"if TRUE FTP files will be protected, otherwise not" }

END_VAR

{CODE:EMBEDDED}
END_FUNCTION
```

12.3. BINDIN.PAR file TM172P●●●●●●/ TM172O●●●●●●/ TM171P●●●●●●

The binding settings have been moved from CONNEC.PAR system to the new system file BINDIN.PAR generated by Installer.

The USB_Host_command register has the new value, 24, which means "load BINDIN.PAR from USBH to PAR_volume".

12.4. Running IP addresses for TM172P●●●●●●/ TM172O●●●●●●

New registers have been added to read current settings IPAddress, Default gateway address, Net Mask, Primary DNS address and Secondary DNS address.

Here below the related list available in Ethernet folder:

Address	Name
8764	Ip_1_CURRENT
8765	Ip_2_CURRENT
8766	Ip_3_CURRENT
8767	Ip_4_CURRENT
8905	DefGtwy_1_CURRENT
8906	DefGtwy_2_CURRENT
8907	DefGtwy_3_CURRENT

8908	DefGtwy_4_CURRENT
8909	NetMsk_1_CURRENT
8910	NetMsk_2_CURRENT
8911	NetMsk_3_CURRENT
8912	NetMsk_4_CURRENT
8913	PriDNS_1_CURRENT
8914	PriDNS_2_CURRENT
8915	PriDNS_3_CURRENT
8916	PriDNS_4_CURRENT
8917	SecDNS_1_CURRENT
8918	SecDNS_2_CURRENT
8919	SecDNS_3_CURRENT
8920	SecDNS_4_CURRENT

12.5. target function sysMbSTcp_SocketServerInfo() for TM172P●●●●●●/ TM172O●●●●●●

```

FUNCTION sysMbSTcp_SocketServerInfo: USINT
  { DE:" The function returns a USINT which indicate the number of current Clients
  connected.
  It also returns the max number of connectable Clients through the variable pointed by
  MaxClientAllowed input.
  To refresh these variables the function can to be called again.
  " }

  VAR_INPUT
    MaxClientAllowed: @USINT; { DE:"Pointer where the Max number of Clients
  allowed is written" }
  END_VAR

  {CODE:EMBEDDED}
END_FUNCTION

```

12.6. sysUART_getbuff(), sysUART_putbuff() and sysUART_init() for TM172P●●●●●●/ TM172O●●●●●●

These functions can be used to also handle RS485-1. The set of baud rates was increased adding 4800 b/s. In details:

```

Serial port allowed:
0=RS485 On-Board 2
1=RS485 or RS232 Plug-In
2=RS485 On-Board 1 <- new

```

```

Baud allowed:
4800 [b/s] <- new
9600 [b/s]
19200 [b/s]
38400 [b/s]
57600 [b/s]
76800 [b/s]
115200 [b/s]

```

12.7. New value for Buzzer_Mode parameter for TM171PFE03●●

Value 2 was added for Buzzer_Mode parameter to link buzzer status to red LED status. In details:

```
0=Always switched off  
1=Active on any key  
2=Active on red LED <- new
```

12.8. CONNEC.PAR no more necessary on TM171PFE03●● to share its probes on CAN field channel

Controller sends PDO related to its probes on CAN line if its CAN address is 126 or 127 and CONNEC.PAR file does not configure CAN channel (CAN not configured from Configuration Perspective).

It is no longer required to download a CONNEC.PAR file into TM171PFE03●● when it is connected through the CAN expansion bus of a TM172 which is using the embedded sensors of TM171PFE03●●.

13. RELEASE HISTORY

13.1. M172P●●●●●

13.1.1. Firmware msk 596.06 and 668.06

- Management of Modbus/RTU Master on event via PLC programming
- Available Address Conflict Detection (ACD) to avoid duplicate TCP-IP address
- Modbus TCP/IP improvements/fixes:
 - Increased from 3 to 4 the number of Modbus/TCP-IP sockets opened by default in listening
 - If Bridge function is not enabled the controller answers to any Unit Identifier
 - Unit Identifier of the request is now copied to the response and not fixed to 255
 - Correct management of “Protocol Identifier” field in Modbus TCP/IP frame. If the “Protocol Identifier” does not correspond to Modbus protocol, target does not answer
- TCP/IP modifications:
 - Delayed ACK has been activated
- Solved the following issues on BACnet stack:
 - continuous creation of COV events when the Present Value of an AI is negative
 - missed creation of the event Fault-to-Normal when the Present Value goes from -32768 to a “normal” value
 - Fixed problems on Object Calendar when writing dates
- Solved the following issues on LONWORKS stack:
 - Target generate the Lonworks XIF with a custom or standard profile (8030, 8040, 8051, 8610) with a wrong indication in the field 3 of line 8 (0 should be 1)
 - Non correct type of nviSpaceRH in 8030 (Rooftop) Lonworks profile, now TEMP_P, must be LEV_PERCENT
- Modified EVO.JS to solve issue with Chrome 64.0.3282.119
- Solved problem in saving EEPROM data referred to BACnet Objects

13.1.2. Firmware msk 596.05

- Features related to HTTP server:
 - a) Service enable/disable: with parameter, or with PLC function;
 - b) White list of up to 3 IP-addresses for clients, settable by PLC function;
 - c) Introduction of 3 additional users besides administrator settable with PLC function, with lower permissions, possibility to change the starting web page displayed by each, and to filter up to 10 files to their access.
- Features related to Modbus Slave TCP/IP
 - a) Service enable/disable by parameter, effective at power-on (reset needed);
 - b) White list of up to 3 IP-addresses for clients, settable with PLC function (different from HTTP list)
- Features related to BACnet IP
 - a) Service enable/disable by parameter, effective at power-on (reset needed)
- Features related to FTP Server
 - a) PLC function for administrator and password setting
 - b) Service enable/disable, with parameter, or with PLC function;
 - c) White list of up to 3 IP-addresses for clients, settable with PLC function (different from lists above)
 - d) Introduction of 3 additional users besides administrator settable with PLC function, with lower permissions, possibility to filter up to 10 files, in read or write, to their access;
- FTP Client: connection to a remote server set in PASSIVE MODE via PLC function.
- Introduction of Modbus/TCP Master, with possibility to change Unit ID of Slaves.
- Modbus Master command 0x05;
- Introduction of SNTP unicast;

- Improvements:
 - in BACnet communication (/IP and MS/TP), resulting in BTL compliance for MSK596.05 and greater versions;
 - Available information on Max time of tasks
- Solved the following issues on BACnet MS/TP stack:
 - Token pass delay out of specification in case of projects with high number of BACnet objects.
 - Network message timeout not managed at boot.
 - Minor fixes: contact your Schneider Electric representative for information.
- Solved an issue occurring on a particular configuration of device: Modicon M172 Performance Logic Controller with a Communication Module connected and an active Vdc digital input at power on, causing a blocking error until the next power cycle. Such issue was revealed in version 596.604 only.

13.1.3. Firmware msk 596.604

- Solved an issue occurring on particular configurations of Modbus/TCP networks, revealed in two typical scenarios:
 - a) PLC Modbus/TCP client which uses several sockets to communicate with a Modicon M172 Performance Logic Controller may cause a blocking communication error until the next power cycle;
 - b) in a binding network of Modicon M172 Performance Logic Controllers on Modbus/TCP, a temporary block of communication on some devices may happen.
- Improvements in BACnet communication (/IP and MS/TP).

13.1.4. Firmware msk 596.04

- Improved communication both on RS485 and TCP/IP.
- Change of Modbus Master RTU settings on the fly.
- Improved font management in embedded HMI.
- Copy of generic files (maximum 256) from a USB stick, both to internal memory and to microSD card.
- Visibility of IP address in DHCP mode.
- Turbo mode linked to TM171DGRP.
- Several improvements in BACnet communication (/IP and MS/TP), deriving from BTL pre-compliance tests.

13.2. TM171PFE03●●

13.2.1.1. Firmware msk 489.19

- Solved the following issues on BACnet stack:
 - continuous creation of COV events when the Present Value of an AI is negative
 - missed creation of the event Fault-to-Normal when the Present Value goes from -32768 to a "normal" value
 - Fixed problems on Object Calendar when writing dates
 - Fixed communications problems in BACnet MS/TP at 76800 b/s
- Modified EVO.JS to solve issue with Chrome 64.0.3282.119
- Solved problem in saving EEPROM data referred to BACnet Objects

13.2.1.2. Firmware msk 489.18

- Improvements in BACnet communication (/IP and MS/TP) for alignment with MSK596.05 and MSK423.25 for BTL compliance;

- Alignment of communication features with MSK596.604 and MSK596.804 (see above at 4.2 and 4.3)
- Solved the following issues on BACnet MS/TP stack:
 - Token pass delay out of specification in case of projects with high number of BACnet objects.
 - Network message timeout not managed at boot.
 - Minor fixes: contact your Schneider Electric representative for information.

13.2.1.3. Firmware msk 489.17

- Improved communication both on RS485 and TCP/IP.
- Introduction of Turbo mode:
 - Faster upload of HMI from CPU, when used with TM172P.
 - Possibility to upload FW from CPU, when used with TM172P .
 - To be functional this function must be present in display and CPU.
- Several improvements in BACnet communication, deriving from BTL pre-compliance tests.
- Fixed in Web Server the truncation of PLC strings longer than 24 characters.

13.3. TM171PDM27●

13.3.1.1. Firmware msk 423.26

- Solved the following issues on BACnet stack:
 - continuous creation of COV events when the Present Value of an AI is negative
 - missed creation of the event Fault-to-Normal when the Present Value goes from -32768 to a "normal" value
 - Fixed problems on Object Calendar when writing dates
- Solved the following issues on LONWORKS stack:
 - Target generate the Lonworks XIF with a custom or standard profile (8030, 8040, 8051, 8610) with a wrong indication in the field 3 of line 8 (0 should be 1)
 - Non correct type of nviSpaceRH in 8030 (Rooftop) Lonworks profile, now TEMP_P, must be LEV_PERCENT
- Modified EVO.JS to solve issue with Chrome 64.0.3282.119
- Solved problem in saving EEPROM data referred to BACnet Objects

13.3.1.2. Firmware msk 423.25

- Improvements in BACnet communication (/IP and MS/TP), resulting in BTL compliance for MSK423.25 and greater versions;
- Alignment of communication features with MSK596.604 and MSK596.804 (see above at 4.2 and 4.3).
- Solved the following issues on BACnet MS/TP stack:
 - Token pass delay out of specification in case of projects with high number of BACnet objects.
 - Network message timeout not managed at boot.
 - Minor fixes: contact your Schneider Electric representative for information.

13.3.1.3. Firmware msk 423.24

- Improved communication both on RS485 and TCP/IP
- Several improvements in BACnet communication, deriving from BTL pre-compliance tests.
- Fixed in Web Server the truncation of PLC strings longer than 24 characters.

13.4. TM171PBM27R

13.4.1.1. Firmware msk 477.26

- Solved the following issues on BACnet stack:
 - continuous creation of COV events when the Present Value of an AI is negative
 - missed creation of the event Fault-to-Normal when the Present Value goes from -32768 to a “normal” value
 - Fixed problems on Object Calendar when writing dates
- Solved the following issues on LONWORKS stack:
 - Target generate the Lonworks XIF with a custom or standard profile (8030, 8040, 8051, 8610) with a wrong indication in the field 3 of line 8 (0 should be 1)
 - Non correct type of nviSpaceRH in 8030 (Rooftop) Lonworks profile, now TEMP_P, must be LEV_PERCENT
- Modified EVO.JS to solve issue with Chrome 64.0.3282.119
- Solved problem in saving EEPROM data referred to BACnet Objects

13.4.1.2. Firmware msk 477.25

- TM171PB Improvements in BACnet communication (/IP and MS/TP) for alignment with MSK596.05 and MSK423.25 for BTL compliance;
- Alignment of communication features with MSK596.604 and MSK596.804 (see above at 4.2 and 4.3).
- Solved the following issues on BACnet MS/TP stack:
 - Token pass delay out of specification in case of projects with high number of BACnet objects.
 - Network message timeout not managed at boot.
 - Minor fixes: contact your Schneider Electric representative for information.

13.4.1.3. Firmware msk 477.24

- Improved communication both on RS485 and TCP/IP
- Several improvements in BACnet communication, deriving from BTL pre-compliance tests.
- Fixed in Web Server the truncation of PLC strings longer than 24 characters.
- Minor fixes

13.5. TM172DCL●●●●

13.5.1.1. Firmware msk 659.04

- Management of Modbus/RTU Master on event via PLC programming

13.6. TM171O●●●●●●●●

13.6.1.1. Firmware msk 542.08

- Minor fixes: contact your Schneider Electric representative for information.

13.7. TM1710●●●●●●

13.7.1.1. Firmware msk 542.07

- Fixed an issue causing occasional block of Modbus RTU communication.