EcoStruxure Machine Expert - HVAC

Release Notes

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www.se.com

Schneider Electric

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About the Book

Schneider Electric technical manuals must follow a common look for both internal and external customers and provide consistent and recognizable content. Manuals must be produced in A4, letter, hybrid, half-legal or A5 page for output sizing. This document focuses on output to PDF or printed material.

At a Glance

Document Scope

This document contains important information about the hardware/firmware/software delivery of product EcoStruxure Machine Expert - HVAC. Read the complete document before you use the product or products described herein.

Validity Note

The information in this Release Notes document is applicable only for EcoStruxure Machine Expert – HVAC compatible products. This document has been updated for the release of EcoStruxure Machine Expert – HVAC V1.6.0.

The characteristics of the products described in this document are intended to match the characteristics that are available on www.se.com. As part of our corporate strategy for constant improvement, we may revise the content over time to enhance clarity and accuracy. If you see a difference between the characteristics in this document and the characteristics on www.se.com, consider www.se.com to contain the latest information.

Cybersecurity Note

For information on cybersecurity go to Recommended Cybersecurity Best Practices.

Safety Information

Important Information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

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Product Information

Overview

Maintenance release of EcoStruxure Machine Expert – HVAC, with implementation of new features and bug fixing

Product Identification

Reference	Description	Version	Note
TM173O●●●●●	Modicon M173 Optimized Logic Controllers	Firmware msk: 825.02	NEW
TM172SIP	Modicon M172 Secure interface Plug-in	Firmware msk: 815.03	updated
TM172SIG	Modicon M172 Secure interface Gateway	Firmware msk: 816.03	
TM172EVEV1U	Modicon M172 Expansion 1 EEV Unipolar	Firmware msk: 772.01	NOT updated
TM172EVEV●B	Modicon M172 Expansion 1 or 2 EEV Bipolar	Firmware msk: 766.01	NOT updated
TM171PDM27●	Modicon M171 Performance Logic Controllers 27 I/OS	Firmware msk: 423.29	NOT updated
TM171PBM27R	Modicon M171 Performance Logic Controllers 27 I/OS	Firmware msk: 477.29	NOT updated
TM171EP27R	Modicon M171 Performance expansion 27 I/Os	Firmware msk: 460.04	NOT updated
TM171PFE03	Modicon M171 Flush mounting Performance Controllers	Firmware msk: 489.23	NOT updated
TM171DGRP	Remote Display HMI	Firmware msk: 476.23	NOT updated
TM172DGRP	Remote Display HMI		NOT updated
TM172P●●28●●/ TM172P●●42●● TM172O●●28●/ TM172O●●42●/	Modicon M172 Optimized and Performance Logic Controllers 28 and 42 I/OS	Firmware msk: 596.14	updated
TM172P●●07●/ TM172P●●18● TM17O●●18●	Modicon M172 Optimized and Performance Logic Controllers 7 and 18 I/Os	Firmware msk: 668.14	updated
TM172DCLW●●●/ TM172DCLF●	Modicon M172 Display Color TouchScreen, Temperature (Humidity) built-in sensor(s) Modicon M172 Display Color TouchScreen Flush Mounting	Firmware msk: 659.09	NOT updated
TM171O●●●●	Modicon M171 Optimized Logic Controllers	Firmware msk: 542.10	NOT updated
TM171O●●●●	Modicon M171 Optimized Logic Controllers	Firmware msk: 412.21	NOT updated
TM172E●●R	Modicon M172 Opt. & Perf. Expansion 12 and 28 I/Os	Firmware msk: 640.04	NOT updated
TM171VEV●●	Modicon M171 EEV Driver	Firmware msk: 497.13 (obsolete) 589.20	NOT updated

Release History

Version	Release Date	Description
1.6.0	November 2023	EcoStruxure Machine Expert – HVAC 1.6.0
1.5.0	November 2022	EcoStruxure Machine Expert – HVAC 1.5.0
1.4.0	July 2021	EcoStruxure Machine Expert – HVAC 1.4.0
1.3.0	January 2021	EcoStruxure Machine Expert – HVAC 1.3.0
1.2.1	May 2020	EcoStruxure Machine Expert – HVAC 1.2.1
1.2	March 2020	EcoStruxure Machine Expert – HVAC 1.2
1.1	June 2019	EcoStruxure Machine Expert – HVAC 1.1
1.0	October 2018	EcoStruxure Machine Expert – HVAC 1.0

System Requirements

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

Operative System

- Windows 11 64 Bit
- Windows 10 64 Bit

Hardware requirements

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

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

For further information, contact your Schneider Electric support center.

Compatibility

All Modicon M171-M172-M173 Optimized and Performance Logic Controllers

Installation Instructions

EcoStruxure Machine Expert - HVAC software can be downloaded from our website www.se.com.

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

Follow setup wizard and refer to EcoStruxure Machine Expert – HVAC Operating Guide

Hardware / Firmware Information

New Features

NEW PRODUCT TM173O TM173ODM22R- TM173OBM22R – TM173ODM22S (FIRMWARE MSK 825.02)

Introducing a new product in our HVAC portfolio, designed to not only replace the TM171O Optimized Logic Controller family but also provide functionalities comparable to the TM172P Optimized and Performance Logic Controllers family. With features like CAN and USB connectivity, this product is ideal for controlling small Air Handler Units, Dryers, Boilers, and Process Chillers.

NEW FEATURES IN TM172P●●●●●●/TM172O●●●●● (FIRMWARE MSK 596.14 AND MSK 668.14)

- Improve BACnet MSV to have 10 states.
- Add the forwarding of message MODBUS 06 in the bridge.
- Connection password to enable for added security.
- Additional Modbus Functions (@200).

Mitigated Anomalies

TM172P●●●●●●/TM172O●●●●● (FIRMWARE MSK 596.14 AND MSK 668.14)

Solved the following issues:

- Modbus recovery communication
- IP conflict not detected
- Improve date BACnet side with sysclock error
- sysMbMTCP_FC06 close the socket also for Configuration
- Descreasing ARP broadcast messages
- CanOpen_IEC – Bug in sysDBase_LocalRead()
- Problem with BACNET weekly scheduler
- SysWD_Timed gives an unexpeted reset in BIOS13(596-668)
- Alignment IEC Object Identifier to stack BACnet, not for software calculation
- BACnet Calendar issue after a Date_List change

Firmware downgrade

Limited to TM171P●●●●● , TM171EP27R and TM17●DGRP references, a firmware downgrade to a version earlier than the factory default may cause the device to malfunction, due to incompatibility of old firmware with some electronic components used at the time of production.

Based on Firmware Version printed on product label (in SV field), following tables show the earliest FW version to which products can be downgraded:

Production FW version (TM171PDM27R)	**Earliest downgradable version**
423.29 or greater	MSK423.29
423.27 to 423.28	MSK423.27
423.16 to 423.26	MSK423.16
423.15 or earlier	Any version

Production FW version (TM171PBM27R)	**Earliest downgradable version**

477.29 or greater	MSK477.29
477.27 to 477.28	MSK477.27
477.16 to 477.26	MSK477.16
477.15 or earlier	Any version

Production FW version (TM17●DGRP)	**Earliest downgradable version**
476.22 or greater	MSK476.22
476.20 to 476.21	MSK476.20
476.11 to 476.19	MSK476.11
476.10 or earlier	Any version

Production FW version (TM171PFE03)	**Earliest downgradable version**
489.22 or greater	MSK489.22
489.20 to 489.21	MSK489.20
489.11 to 489.19	MSK489.11
489.10 or earlier	Any version

Production FW version (TM171EP27R)	**Earliest downgradable version**
460.04 or greater	MSK460.04
460.03 or earlier	Any version

Software Information

Mitigated Anomalies

Solved the following issues:

- Bug reserved word for IEC text variable declaration
- Array declaration with size with a costant
- Wrong behaviour of D&D of a varibale in ST code
- Real parameters are not exported in a right way
- Bug wrong result of complex logical operation in FBD
- Bug in simulator for Aix:
- Bug for simulator: Diff code even if code no change
- Bug for Multiple Add of Strings
- Disable autorefresh mode duirng download all
- Use manual settings not work for web
- Simulator doesn't manage param USINT correctly
- Wrong EDE files creation

Known Operational Anomalies

NONE

Security Updates

The following third-party components have been updated to address cybersecurity vulnerabilities

Component	ID
OpenSSL	CVE-2023-0286 CVE-2022-4304 CVE-2022-4203 CVE-2023-0215 CVE-2022-4450 CVE-2023-0216 CVE-2023-0217 CVE-2023-0401

Component	ID
libWebp	CVE-2023-4863

Additional Information

Release Notes History

Release Notes EcoStruxure Machine Expert – HVAC v1.5.0

Sixth Release

Release Notes EcoStruxure Machine Expert – HVAC v1.4.0

Fifth Release

Release Notes EcoStruxure Machine Expert – HVAC v1.3.0

Fourth Release

Release Notes EcoStruxure Machine Expert – HVAC v1.2.1

Third Release

Release Notes EcoStruxure Machine Expert – HVAC v1.2

Second Release

Release Notes EcoStruxure Machine Expert – HVAC v1.1

First Release

New Hardware/Firmware v1.5.0 Features

NEW PRODUCT TM172SIP/TM172SIG
(FIRMWARE MSK 815.02 AND MSK 816.02)

- TM172SIP can be recognized as PlugIn by M172P Logic Controller starting from firmware MSK 596.13 and MSK 668.13

NEW FEATURES IN TM172P●●●●●●/TM172O●●●●●
(FIRMWARE MSK 596.13 AND MSK 668.13)

- Added capability to recognize TM172SIP (M172 Secure Interface PlugIn) as PlugIn. Added bit 7 in PlugIn _Identification Target Variables too

- Bridge function: added support to Modbus Messages 1 (Read Coils) ,2 (Read Discrete Inputs) ,4 (Read Input Registers),15 (Write Multiple Coils). The maximum number of consecutive Registers/Inputs/Coils which can be read/write is limited to 20 (as for Modbus Message 3,16 already available).
- Added Modbus TCP Client at event in IEC61131-3 programming.

  Modbus TCP Client functions can be used only if Client(for field)/Server is enabled in the Ethernet Configuration Node (Configuration Perspective). This means that MbMTcp_OpenChn and MbMTcp_Start functions must be present in the CONNEC.PAR loaded by the controller.

  These functions can work together with Modbus TCP Client nodes defined in the Configuration Perspective (listed in the CONNEC.PAR). They can also send messages to servers with IP address not defined in the Ethernet Configuration: in this case connection is opened when sending and then closing at receiving the response, but the maximum number of servers defined in Configuration il limited to 7 instead of 8.

  UnitID used by the Modbus TCP Client functions can be changed runtime.

  The maximum number of consecutive Registers/Inputs/Coils which can be read/written is limited to 20.
  Here below the added embedded functions:

sysMbMTCP_FC01

Function: sysMbMTCP_FC01 (ver.1.0.0, EMBEDDED)

Creation date: ...
Last modified date: ...

Return Value: UINT

Input:

Name	Type	Description
ip	@BYTE	Ip address of the target server
unitID	USINT	UnitID of the target server
base	UINT	Address of the first coil to read
no	UINT	Number of contiguous coils to read [1..20]
object	@BOOL	Coils array pointer
timeout	UINT	Timeout [ms]

Description:

Send 0x01 command.

The function returns a UINT which could have the following meanings:
0 = No error occurred
1 = Exception code Illegal function
2 = Exception code Illegal data address
3 = Exception code Illegal data value
4 = Exception code Slave device failure
5 = Exception code Acknowledge
6 = Exception code Slave device busy
7 = Exception code Memory parity error
8 = Communication channel configuration error
10 = Exception code Gateway path unavailable
11 = Exception code Gateway target device failed to respond
14 = Invalid response message
16 = Timeout reached
17 = Function not executed due to try to call it in Timed
18 = Number of object out of range
20 = Function not executed because Address of the first coil to read must be greater then 0

sysMbMTCP_FC02

Function: sysMbMTCP_FC02 (ver.1.0.0, EMBEDDED)

Creation date: ...
Last modified date: ...

Return Value: UINT

Input:

Name	Type	Description
ip	@BYTE	Ip address of the target server
unitID	USINT	UnitID of the target server
base	UINT	Address of the first Input to read
no	UINT	Number of contiguous Inputs to read [1..20]
object	@BOOL	Discrete Inputs array pointer
timeout	UINT	Timeout [ms]

Description:

Send 0x02 command.

The function returns a UINT which could have the following meanings:
0 = No error occurred
1 = Exception code Illegal function
2 = Exception code Illegal data address
3 = Exception code Illegal data value
4 = Exception code Slave device failure
5 = Exception code Acknowledge
6 = Exception code Slave device busy
7 = Exception code Memory parity error
8 = Communication channel configuration error
10 = Exception code Gateway path unavailable
11 = Exception code Gateway target device failed to respond
14 = Invalid response message
16 = Timeout reached
17 = Function not executed due to try to call it in Timed
18 = Number of object out of range
20 = Function not executed because Address of the first Input to read must be greater then 0

sysMbMTCP_FC03

Function: sysMbMTCP_FC03 (ver.1.0.0, EMBEDDED)
Creation date: ...
Last modified date: ...

Return Value: UINT

Input:

Name	Type	Description
ip	@BYTE	Ip address of the target server
unitID	USINT	UnitID of the target server
base	UINT	Address of the first Holding Register to read
no	UINT	Number of contiguous Holding Registers to read [1..20]
object	@INT	Holding Register array pointer
timeout	UINT	Timeout [ms]

Description:

Send 0x03 command.

The function returns a UINT which could have the following meanings:
0 = No error occurred
1 = Exception code Illegal function
2 = Exception code Illegal data address
3 = Exception code Illegal data value
4 = Exception code Slave device failure
5 = Exception code Acknowledge
6 = Exception code Slave device busy
7 = Exception code Memory parity error
8 = Communication channel configuration error
10 = Exception code Gateway path unavailable
11 = Exception code Gateway target device failed to respond
14 = Invalid response message
16 = Timeout reached
17 = Function not executed due to try to call it in Timed
18 = Number of object out of range
20 = Function not executed because Address of the first Holding Register to read must be greater then 0

sysMbMTCP_FC04

Function: sysMbMTCP_FC04 (ver.1.0.0, EMBEDDED)
Creation date: ...
Last modified date: ...

Return Value: UINT

Input:

Name	Type	Description
ip	@BYTE	Ip address of the target server
unitID	USINT	UnitID of the target server
base	UINT	Address of the first Input Register to read
no	UINT	Number of contiguous Input Registers to read [1..20]
object	@INT	Input Register array pointer
timeout	UINT	Timeout [ms]

Description:

Send 0x04 command.

The function returns a UINT which could have the following meanings:
0 = No error occurred
1 = Exception code Illegal function
2 = Exception code Illegal data address
3 = Exception code Illegal data value
4 = Exception code Slave device failure
5 = Exception code Acknowledge
6 = Exception code Slave device busy
7 = Exception code Memory parity error
8 = Communication channel configuration error
10 = Exception code Gateway path unavailable
11 = Exception code Gateway target device failed to respond
14 = Invalid response message
16 = Timeout reached
17 = Function not executed due to try to call it in Timed
18 = Number of object out of range
20 = Function not executed because Address of the first Input Register to read must be greater then 0

sysMbMTCP_FC05

Function: sysMbMTCP_FC05 (ver.1.0.0, EMBEDDED)

Creation date: ...
Last modified date: ...

Return Value: UINT

Input:

Name	Type	Description
ip	@BYTE	Ip address of the target server
unitID	USINT	UnitID of the target server
base	UINT	Address of the coil to write
object	@BOOL	Coil pointer
timeout	UINT	Timeout [ms]

Description:

Send 0x05 command.

The function returns a UINT which could have the following meanings:
0 = No error occurred
1 = Exception code Illegal function
2 = Exception code Illegal data address
3 = Exception code Illegal data value
4 = Exception code Slave device failure
5 = Exception code Acknowledge
6 = Exception code Slave device busy
7 = Exception code Memory parity error
8 = Communication channel configuration error
10 = Exception code Gateway path unavailable
11 = Exception code Gateway target device failed to respond
14 = Invalid response message
16 = Timeout reached
17 = Function not executed due to try to call it in Timed
20 = Function not executed because Address of the coil to write must be greater then 0

sysMbMTCP_FC06

Function: sysMbMTCP_FC06 (ver.1.0.0, EMBEDDED)

Creation date: ...
Last modified date: ...

Return Value: UINT

Input:

Name	Type	Description
ip	@BYTE	Ip address of the target server
unitID	USINT	UnitID of the target server
base	UINT	Address of the Register to write
object	@INT	Register pointer
timeout	UINT	Timeout [ms]

Description:

Send 0x06 command.

The function returns a UINT which could have the following meanings:
0 = No error occurred
1 = Exception code Illegal function
2 = Exception code Illegal data address
3 = Exception code Illegal data value
4 = Exception code Slave device failure
5 = Exception code Acknowledge
6 = Exception code Slave device busy
7 = Exception code Memory parity error
8 = Communication channel configuration error
10 = Exception code Gateway path unavailable
11 = Exception code Gateway target device failed to respond
14 = Invalid response message
16 = Timeout reached
17 = Function not executed due to try to call it in Timed
20 = Function not executed because Address of the Register to write must be greater then 0

sysMbMTCP_FC15

Function: sysMbMTCP_FC15 (ver.1.0.0, EMBEDDED)
Creation date: ...
Last modified date: ...

Return Value: UINT

Input:

Name	Type	Description
ip	@BYTE	Ip address of the target server
unitID	USINT	UnitID of the target server
base	UINT	Address of the first Coil to write
no	UINT	Number of contiguous Coils to write [1..20]
object	@BOOL	Coils array pointer
timeout	UINT	Timeout [ms]

Description:

Send 0x0F command.

The function returns a UINT which could have the following meanings:
0 = No error occurred
1 = Exception code Illegal function
2 = Exception code Illegal data address
3 = Exception code Illegal data value
4 = Exception code Slave device failure
5 = Exception code Acknowledge
6 = Exception code Slave device busy
7 = Exception code Memory parity error
8 = Communication channel configuration error
10 = Exception code Gateway path unavailable
11 = Exception code Gateway target device failed to respond
14 = Invalid response message
16 = Timeout reached
17 = Function not executed due to try to call it in Timed
18 = Number of object out of range
20 = Function not executed because Address of the first Coil to write must be greater then 0

sysMbMTCP_FC16

Function: sysMbMTCP_FC16 (ver.1.0.0, EMBEDDED)
Creation date: ...
Last modified date: ...

Return Value: UINT

Input:

Name	Type	Description
ip	@BYTE	Ip address of the target server
unitID	USINT	UnitID of the target server
base	UINT	Address of the first Holding Register to write
no	UINT	Number of contiguous Holding Registers to write [1..20]
object	@INT	Holding Register array pointer
timeout	UINT	Timeout [ms]

Description:

Send 0x10 command.

0 = No error occurred
1 = Exception code Illegal function
2 = Exception code Illegal data address
3 = Exception code Illegal data value
4 = Exception code Slave device failure
5 = Exception code Acknowledge
6 = Exception code Slave device busy
7 = Exception code Memory parity error
8 = Communication channel configuration error
10 = Exception code Gateway path unavailable
11 = Exception code Gateway target device failed to respond
14 = Invalid response message
16 = Timeout reached
17 = Function not executed due to try to call it in Timed
18 = Number of object out of range
20 = Function not executed because Address of the first Holding Register to write must be greater then 0

- IP settings by parameter of the Modbus/TCP Server nodes defined in the Configuration Perspective.

Introduced new BIOS parameters:

16146 MbMTcp_ServerIp4thOctet_Node0

...

16153 MbMTcp_ServerIp4thOctet_Node7.

Here below the rules to fill the field “IP address:” of a Modbus/TCP server node:

<ip1>, <ip2>, <ip3>, <ip4>

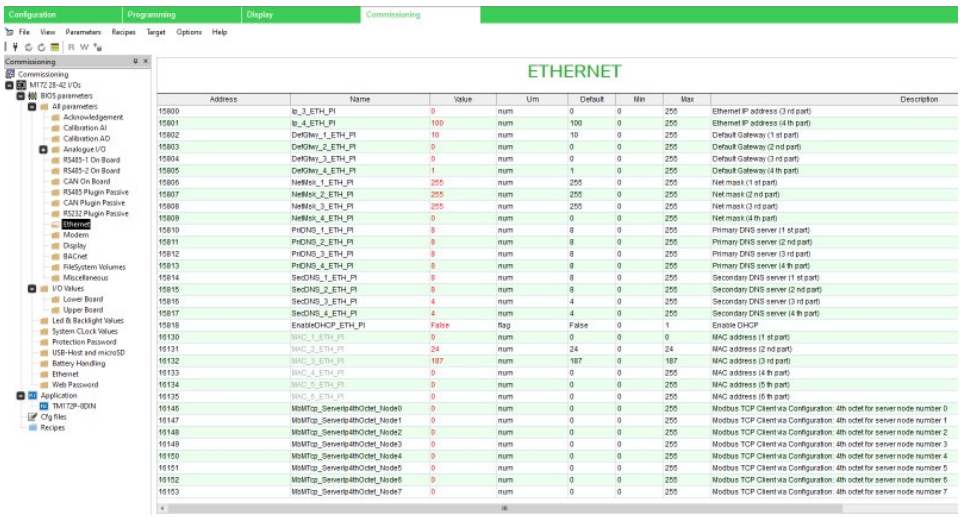
Which results in the following function in CONNEC.PAR:

MbMTcp_SlaveAssign,<node>, <ip1>, <ip2>, <ip3>, <ip4>

- <node> : field “Node number” defined in the Client node
- <ip1> : if ip1 is equal to 15798 then ip1 is loaded with the value of ip_1_ETH_PI parameter else it maintains its value (the one written in the file)
- <ip2> : if ip2 is equal to 15799 then ip2 is loaded with the value of ip_2_ETH_PI parameter else it maintains its value (the one wrote in the file)
- <ip3> : if ip3 is equal to 15800 then ip3 is loaded with the value of ip_3_ETH_PI parameter else it maintains its value (the one wrote in the file)
- <ip4> : if ip4 is equal or great than 16146 and equal or less than 16153 then ip4 is loaded with the value of the BIOS parameter that has that Modbus address otherwise it maintains its value (the one wrote in the file)

A PLC reboot is required to update the IP settings of the Server Nodes.

Below the new parameters in BIOS parameters\All parameters\Ethernet folder



- Implementation of SDO read in IEC61131-3 programming: added the following embedded function:
    - sysCOPM_Sdo_UploadRequest

Function: sysCOPM_Sdo_UploadRequest (ver.1.0.0, EMBEDDED)

Creation date: ...

Last modified date: ...

Return Value: UDINT

Input:

Name	Type	Description
hdlr	UDINT	SDO Handle
node	USINT	CanOpen Address Node
index	UINT	Object index
sindex	USINT	Object sub-index
data	UDINT	memory address of read data buffer
len	UINT	Object data len 1...4 [byte]
to	UDINT	Time out [ms]

Description:

Send a SDO read object to a remote CanOpen node.

This function has to be invoked in the Background task.
It can be used only if controller is configured as CanOpen Master.

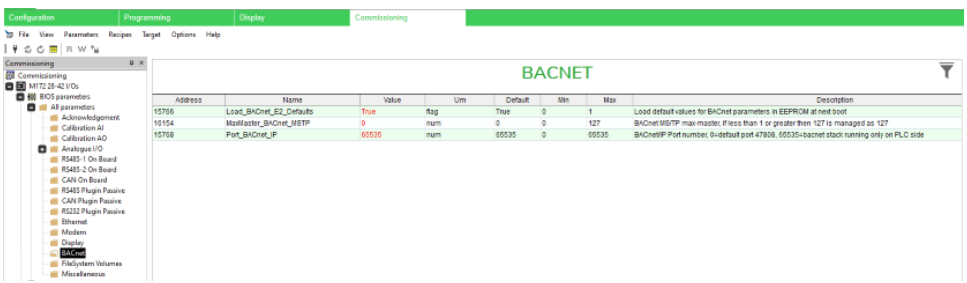
Note: hdlr input is the output of the function sysCOPM_Sdo_OpenChn().

It returns the len of the received message if SDO has been sent correctly, the error codes are:

SDO_E_TGBIT 0x05030000 Toggle bit not alternated
SDO_E_TMO 0x05040000 SDO protocol timed out
SDO_E_CSC 0x05040001 Client/server command specifier not valid or unknown
SDO_E_BCKS 0x05040002 Invalid block size (block mode only)
SDO_E_SEQN 0x05040003 Invalid sequence number (block mode only)
SDO_E_CRC 0x05040004 CRC error (block mode only)
SDO_E_OUTM 0x05040005 Out of memory
SDO_E_UNACC 0x06010000 Unsupported access to an object
SDO_E_WRONLY 0x06010001 Attempt to read a write only object
SDO_E_RDONLY 0x06010002 Attempt to write a read only object
SDO_E_NOOBJ 0x06020000 Object does not exist in the object dictionary
SDO_E_MAPOBJ 0x06040041 Object cannot be mapped to the PDO
SDO_E_EXCPDO 0x06040042 The number and length of the objects to be mapped would exceed PDO length
SDO_E_PARINC 0x06040043 General parameter incompatibility reason
SDO_E_GENINC 0x06040047 General internal incompatibility in the device
SDO_E_HWERR 0x06060000 Access failed due to an hardware error
SDO_E_OBJLEN 0x06070010 Data type does not match, length of service parameter does not match
SDO_E_TOOHG 0x06070012 Data type does not match, length of service parameter too high
SDO_E_TOOLW 0x06070013 Data type does not match, length of service parameter too low
SDO_E_NOSI 0x06090011 Sub-index does not exist
SDO_E_RANGE 0x06090030 Value range of parameter exceeded
SDO_E_LIMHG 0x06090031 Value of parameter written too high
SDO_E_LIMLW 0x06090032 Value of parameter written too low
SDO_E_HGLW 0x06090036 Maximum value is less than minimum value
SDO_E_GENERIC 0x08000000 General error
SDO_E_TRANSF 0x08000020 Data cannot be transferred or stored to the application
SDO_E_TRANSFLOC 0x08000021 Data cannot be transferred or stored to the application because of local control
SDO_E_TRANSFSTAT 0x08000022 Data cannot be transferred or stored to the application because of the present device state
SDO_E_OBJDICT 0x08000023 Object dictionary dynamic generation fails or no object

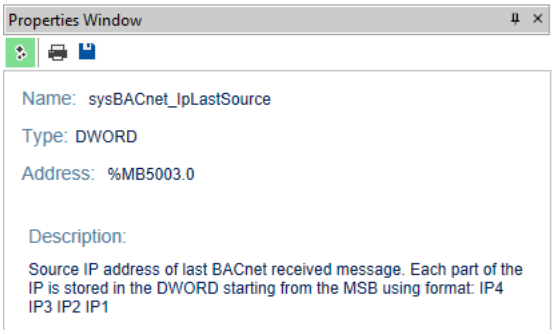
Introduced new BIOS parameters 16154 MaxMaster_BACnet_MSTP to enable BACnet protocol to modify by parameter max-master property. If 16154 value is 0 or greater than 127 then max-master is forced to 127, otherwise max-master is the value of 16154 parameter

Below the new parameter in BIOS parameters\All parameters\BACnet folder

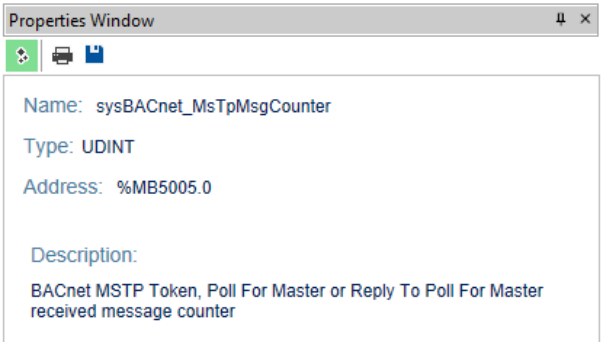


- Introduced Target Data Blocks that counts the number of BACnet IP and BACNet MS/TP messages for the controller. In case of BACnet IP is also stored the IP address of the last message received:
    - sysBACnet_IpLastSource AT %MB5003.0: DWORD;

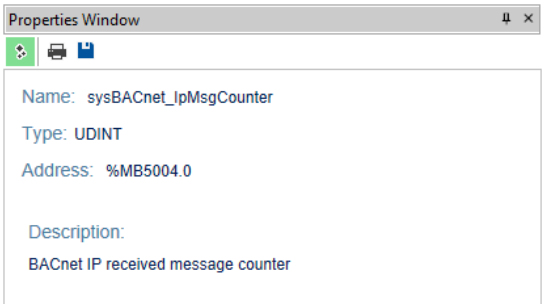
      { DE:"Source IP address of last BACnet received message. Each part of the IP is stored in the DWORD starting from the MSB using format: IP4 IP3 IP2 IP1" }



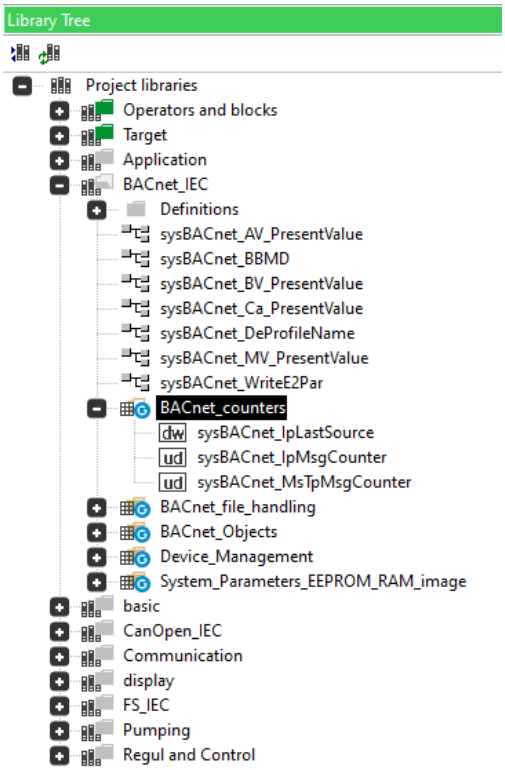
    - sysBACnet_IpMsgCounter AT %MB5004.0: UDINT;
      { DE:"BACnet IP received message counter" }



    - sysBACnet_MsTpMsgCounter AT %MB5005.0: UDINT;
      { DE:"BACnet MSTP Token, Poll for Master or Reply to Poll for Master received message counter" }



Below the new Target Data Blocks folder in BACnet_counters



NEW FEATURES IN TM171EP27R (FIRMWARE MSK 460.04)

Support of new internal memories chipset, no modification in users features.

New Hardware/Firmware v1.4.0 Features

NEW FEATURES IN TM172P●●●●●●/TM172O●●●●●● (FIRMWARE MSK 596.12 AND MSK 668.12)

- TM172P - Make sysUART_Reinit flush the buffer

NEW PRODUCT TM172DGRP (FIRMWARE MSK 476.21)

Mitigated Anomalies Hardware/Firmware v1.5.0

Referred to TM172SIG/TM172SIP (FIRMWARE MSK 815.03 AND MSK 816.03)

TM172SIG/TM172SIP (FIRMWARE MSK 815.03 AND MSK 816.03)

Solved the following issue:

Open SSL Vulnerability fix: CVE-2023-0286 / CVE-2022-4304 / CVE-2023-0215 / CVE-2022-4450

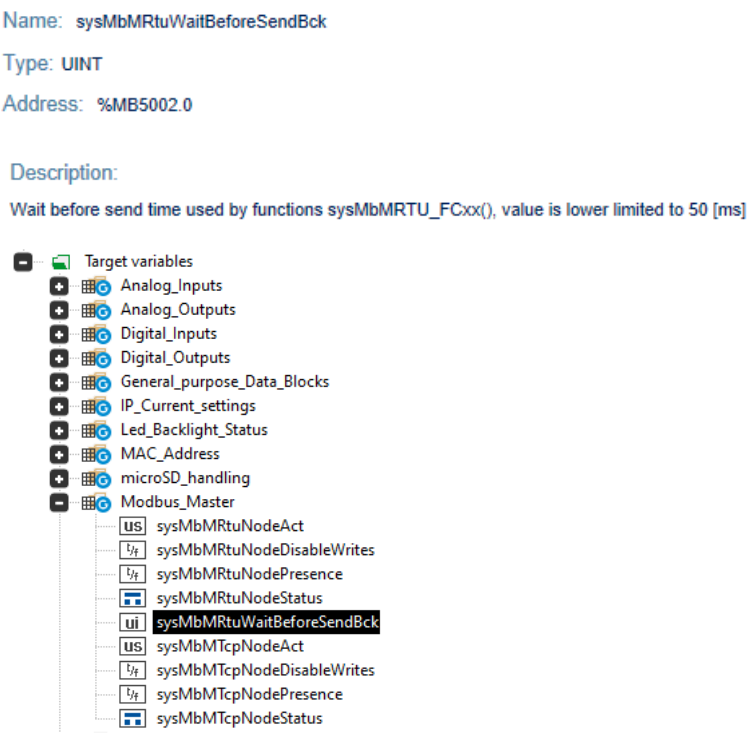
Mongoose Vulnerability fix: CVE-2023-34188

Referred to EcoStruxure Machine Expert – HVAC 1.5.0

TM172P●●●●●●/TM172O●●●●● (FIRMWARE MSK 596.13 AND MSK 668.13)

Solved the following issue:

- WD:0 caused by a reading of 125 registers in Modbus TCP/RTU Slave



  mode in some situations
- If controller asks a string from display part with @PLC notation to a slave, the requested frame has only 16 chars not the real length of the string
- To reduce network load on BACnet, the default value of the COV for BACnet Object Analog should be set different from 0. Now it is set to 1.175494351e-38F.
- Increase ARP table dimension. Now it has been extended at 32 devices at same time.
- If there are Modbus RTU Client communication in Configuration and in Background we have some communication lost because wait before send used in Background doesn't take in account messages in Configuration. To solve this a new Target DataBlock has been realized to set a wait-before-send time between this kind of messages.
- sysMbMRtuWaitBeforeSendBck AT %MB5002.0 : UINT;
  { DE: "Wait before send time used by functions sysMbMRTU_FCxx(), value is lower limited to 50 [ms]" }
- located in Target variables\Modbus_Master:

- Handled use case with selection order equal to 0
- Modbus TCP/RTU Client doesn't stop during download.

TM171DGRP/TM172DGRP (FIRMWARE MSK 476.23)

Solved the following issue:

- Push buttons inoperable in diagnostic menu mode

TM171DGRP/TM172DGRP (FIRMWARE MSK 476.22) (Intermediate Release)

Requesting string chars not complete with @ syntax

EcoStruxure Machine Expert – HVAC 1.3.0 - Edit object is showed with # char for %0x

Avoid selection order duplication

Solved the following issues:

- If controller asks a string from display part with @PLC notation to a slave, the requested frame has only 16 chars not the real length of the string
- Edit object is showed with # char for %0x
- Handled use case with selection order equal to 0

TM171PFE03 (FIRMWARE MSK 489.23)

Solved the following issue:

- Push buttons inoperable in diagnostic menu mode

TM171PFE03 (FIRMWARE MSK 489.22) (Intermediate release)

Requesting string chars not complete with @ syntax

EcoStruxure Machine Expert – HVAC 1.3.0 - Edit object is showed with # char for %0x

Avoid selection order duplication

Solved the following issues:

- If controller asks a string from display part with @PLC notation to a slave, the requested frame has only 16 chars not the real length of the string
- Edit object is showed with # char for %0x
- Handled use case with selection order equal to 0

TM171PDM27●/ TM171PBM27R (FIRMWARE MSK 423.29 & MSK 477.29)

Requesting string chars not complete with @ syntax

EcoStruxure Machine Expert – HVAC 1.3.0 - Edit object is showed with # char for %0x

Avoid selection order duplication

Solved the following issues:

- If controller asks a string from display part with @PLC notation to a slave, the requested frame has only 16 chars not the real length of the string
- Edit object is showed with # char for %0x
- Handled use case with selection order equal to 0
- Wrong FDI_Frequency of FDI_counter: FDI_Frequency value is now automatically set at value 0 only if the signal applied to FDI pin is stable (high or low) for at least 10 seconds

TM172DCLW●●●/TM172DCLF● (FIRMWARE MSK 659.09)

Requesting string chars not complete with @ syntax

Solved the following issue:

- If controller asks a string from display part with @PLC notation to a slave, the requested frame has only 16 chars not the real length of the string

TM172EVEV1U (FIRMWARE MSK 772.01)

Solved the following issue:

- Fixed issue in case of short circuit Can Bus alarm
- Correct alarm management

TM172EVEV●B (FIRMWARE MSK 766.01)

Solved the following issue:

- Fixed issue in case of short circuit Can Bus alarm

Mitigated Anomalies Hardware/Firmware v1.4.0

TM172P●●●●●●/TM172O●●●●● (FIRMWARE MSK 596.12 AND MSK 668.12)

Solved the following issue:

- Rebooting reading Modbus address 65535 in Modbus RTU and TCP protocol
- Analog Input (AIx) used like Digital Input (DI) does not ignore calibration parameter Cfg_AIx
- Communication via Modbus RTU Client is lost with a fault using TM171VEV as server
  - Improved Implementation of Modbus Protocol for the management of repeated response from slaves.
- In case of micro-SD corrupted controller resets continuously
  - After a reset for a WDT:8, the device restarts not allowing automatic or manual mounting, until microSD is removed and put back, or replaced. If another corrupted microSD is inserted there will be a WDT:7 error.

TM171DGRP (FIRMWARE MSK 476.21)

Solved the following issues:

- Wrong management of long enumerative with over than 258 items.
- If multiple resets occur due to problems loading the HMI, it is not possible to enter DIAGNOSTIC menu
  - In case of WDT restart, the DIAGNOSTIC menu will be executed. If within ten seconds no actions are done the HMI starts automatically.

TM171PFE03 (FIRMWARE MSK 489.21)

Solved the following issues:

- Wrong management of long enumerative with over than 258 items.
- Analog Input (AIx) used like Digital Input (DI) does not ignore calibration parameter Cfg_AIx
- Wrong BACnet values in EEPROM after a boot
- Not able to manage multiple objects subscribes BACnet MSTP
- Communication issue with BACnet MS/TP (BACnet verifies Tusage_delay and Tusage_timeout)
- After a getEventInformation BACnet command, controller replies with a too long message and then replies to a wrong MASTER
- Controller doesn't send error when trying to change BACnet PA6
- Multiple subscriptions of BACnet objects might lead a WDT reset

TM171PDM27●/ TM171PBM27R (FIRMWARE MSK 423.28 & MSK 477.28)

Solved the following issues:

- Wrong management of long enumerative with over than 258 items.
- Analog Input (AIx) used like Digital Input (DI) does not ignore calibration parameter Cfg_AIx
- Wrong BACnet values in EEPROM after a boot
- Not able to manage multiple objects subscribes BACnet MSTP
- Communication issue with BACnet MS/TP (BACnet verifies Tusage_delay and Tusage_timeout)

- After a getEventInformation BACnet command, controller replies with a too long message and then replies to a wrong MASTER
- Controller doesn't send error when trying to change BACnet PA6
- Multiple subscriptions of BACnet objects might lead a WDT reset

TM172DCLW●●●/TM172DCLF● (FIRMWARE MSK 659.08)

Solved the following issues:

- Sometimes there is a "Download application failure"
- Few installed devices have shown string visualization problem

New Hardware/Firmware v1.3.0 Features

NEW TM172EVEV1U/TM172EVEV●B (FIRMWARE MSK 772.00 AND MSK 766.00)

- New Modicon M172 Expansions to drive 1 Unipolar Electronic Expansion Valve or up to 2 Bipolar Electronic Expansion Valves

NEW FEATURES IN TM172P●●●●●●/TM172O●●●●● (FIRMWARE MSK 596.11 AND MSK 668.11)

- Reconfiguration Master to Slave on RS485-2 from IEC code:
  - if Modbus register 16145 is set different from 0 and MbMRtu_IsDisByPar function is present before MbMRtu_OpenChn function in CONNEC.PAR file then Modbus Master is disabled and Modbus Slave is enabled

- Improvement to decrease boot time due to CAN device missing:
  - if Modbus register 16144 is set different from 0 and COPM_SlavePresenceByPar function is present before COPM_SlaveAssignfunction in CONNEC.PAR file then master controller skips initialization of the CAN expansion indicated in register 16144 as follows:
    - register 16144 bit0 : if 0 the 1st CAN slave in CONNEC.PAR sequence is present otherwise it is not present
    - register 16144 bit1 : if 0 the 2nd CAN slave in CONNEC.PAR sequence is present otherwise it is not present
    - ...
    - register 16144 bit11 : if 0 the 11th CAN slave in CONNEC.PAR sequence is present otherwise it is not present

- Extension to negative value for web select objects:
  - <select> range is now from -999 to 9999

- Improved not changing IP address on fly:
  - Whenever a parameter from 15798 to 15817 is written, a timeout of 30 seconds is loaded. This timeout delays reload of ETH settings

- New target Data Block to prevent reading executable application:
  - introduced BOOL MEMO Data Block 5001.0 : if FALSE then *.COD files can be opened by FTP or virtual FTP otherwise not (*.COD files can't be opened by FTP and virtual FTP)

NEW FEATURES IN TM171O●●●● (FIRMWARE MSK 542.10)

- Modbus protocol available on COM0 (LAN)
- Modbus master available on COM0 (LAN)
- Added parameters CF35, CF36, CF37 to set protocol on COM0
- CF00 change of range to select protocol on COM0
- Added parameter CF39 to select which COM port is enabled for Modbus master
- Preset of parameters CF35, CF36, CF37, CF39 at default values to permit to program old devices without updating EEPROM map

NEW FEATURES IN TM171O●●●● (FIRMWARE MSK 412.21)

- Modbus protocol available on COM0 (LAN)
- Added parameters CF35, CF36, CF37 to set protocol on COM0
- CF00 change of range to select protocol on COM0
- Preset of parameters CF35, CF36, CF37 at default values to permit to program old devices without updating EEPROM map

Mitigated Anomalies Hardware/Firmware v1.3.0

TM172P●●●●●●/TM172O●●●●● (FIRMWARE MSK 596.11 AND MSK 668.11)

Solved the following issues:

- recognize only first USB key plugged after a boot only the first USB key is recognized when plugged in after a boot
- FTP Command Timeout changed from 10 to 30 seconds
- input Web server authentication always active in iOS
- when removing files using FTP, a WDT reset occurs
- Green LED ON before end of download via USB key
- After a getEventInformation BACnet command , controller replies with a too long message
- When a BMS tries to change PA6 for BACnet AV the controller should reply with a write-access denied and not change PA15
- Communication issues with BACnet MS/TP, BACnet verifies Tusage_delay and Tusage_timeout
- TM172P●●●●●● WDT0 resets at power on

TM171O●●●● (FIRMWARE MSK 542.10 AND MSK 412.21)

Solved the following issues:

- Improved serial communication

New Features Hardware/Firmware v1.2.1

NEW FEATURES IN TM172P●●●●●●/TM172O●●●●● (FIRMWARE MSK 596.10 AND MSK 668.10)

- For reasons of Internet security:
  - Modbus TCP / BACnet IP / FTP are disabled by default. Therefore Modbus TCP / BACnet IP / FTP have to be manually enabled.
  - The following Target functions has new added return codes:
    - sysHTTP_AuthentGuest()
    - sysHTTP_Authentication()
    - sysFTP_AuthentGuest()
    - sysFTP_Authentication()
- Increased number of Modbus TCP Client from 3 to 8

- Increased number of registers from 16 to 20 for the following Modbus on event functions:
    - sysMbMRTU_FC03()
    - sysMbMRTU_FC01()
    - sysMbMRTU_FC02()
    - sysMbMRTU_FC04()
    - sysMbMRTU_FC15()
    - sysMbMRTU_FC16()
- Introduced the following Target variables to count the number of Modbus message received on the relate serial port:
    - sysMODBUS_msg_received_USB AT %MD5000.0 :
      UDINT;{ DE:"Counter for modbus message received on USB-device" }
    - sysMODBUS_msg_received_RS485-1 AT %MD5000.1 :
      UDINT;{ DE:"Counter for modbus message received on RS485-1" }
    - sysMODBUS_msg_received_RS485-2 AT %MD5000.2 :
      UDINT;{ DE:"Counter for modbus message received on RS485-2" }
    - sysMODBUS_msg_received_RS485-Plugin AT %MD5000.3 :
      UDINT;{ DE:"Counter for modbus message received on RS485/232 Plugin" }
- Modified in Read Only the MAC address
- Introduced Target function sysLocalADCs_Fast() to read scaled Analog to Digital Converters values to be able to handle a faster read of Analog Inputs configured as Digital Inputs
- Introduced Target function sysUART_Reinit() to modify run-time UARTs settings using sysUART_getbuf() and sysUART_putbuf() Target functions
- Introduced Baud Rate at 2400b/s for sysUART Target functions

NEW FEATURES IN TM171VEV●● (FIRMWARE MSK 589.20)

- Implemented Unipolar Valves driving for Parker-Sporlan CEV models

Mitigated Anomalies Hardware/Firmware v1.2.1

TM172P●●●●●●/TM172O●●●●● (FIRMWARE MSK 596.10 AND MSK 668.10)

Solved the following issue:

- Additional 0xCC character received in sysUART_getbuff() Target function
- After several copy of a file from microSD to USB-host controller reset

TM172DCL●●● (FIRMWARE MSK 659.07)

Solved the following issues:

- sysMbMRTU_FC03() Target function does not include all error cases
- When a page change it is visible a display flickering

TM171VEV●● (FIRMWARE MSK 589.20)

Solved the following issues:

- when change MOP setpoint (SP3) Driver must be reset to have new setting active.

New Features Hardware/Firmware v1.1

NEW FEATURES IN TM172P●●●●●●/TM172O●●●●● (FIRMWARE MSK 596.09 AND MSK 668.09)

- Introduced target functions sysHTTP_AuthentOnOff() and sysFTP_AuthentOnOff() to disable/enable authentication (enabled by default)
- Introduced two new SNVTs for LONWOKS protocol:
  - SNVT_setting
  - SNVT_state
- Introduced target function sysLcd_RotateAt180(mode) to rotate display visualization. Keys work accordingly to mode value: TRUE=rotation at 180°, FALSE=default visualization

Mitigated Anomalies Hardware/Firmware v1.1

TM172P●●●●●●/TM172O●●●●● (FIRMWARE MSK 596.09 AND MSK 668.09)

Solved the following issues:

- microSD mount at startup that lock the controller. Fixed max timeout of 30 seconds to mount a volume
- TM172O●●28●/ TM172O●●42● models continuously reset at power-on if powered only via USB-device.
- Not able to manage multiple objects subscribes BACnet MSTP

TM172DCL●●● (FIRMWARE MSK 659.06)

Solved the following issues:

- Not possible to enter edit mode with Enums
- Bad navigation between different enumerative
- Editing of INT with format XXX.Y doesn't work if you try to enter values between 0.1 and 0.9
- Not possible to send broadcast messages
- String writing by commissioning using USB port is not correct

New Features Software v1.5.0

- Possibility of importing objects Modbus (EEPROM Parameters, Status Variables, etc.) from an Excel file
- Add possibility to select Modbus/Jbus in Modbus Custom Editor
- Add new command line option for "build all" in EWApplication (possibility to BuildAll the project in automatic mode; command line: \BATCHBUILDALL).
- Add an option to select value parameter for Param.bin
- Add pre-compilation options (extension to IEC standard): if this option is checked, IFDEF feature is enabled (you can allow build of portion of code verifying if a certain symbol has been defined).
- Add a filter to export default of BIOS parameter
- Remove Registration License Manager
- Improved code generation and warning handling
- New algorithm for calculation of POU dependencies: better handling of dependencies between POUs and data types, to avoid unnecessary compilation of unused blocks
- Complex conditions (AND, OR, NOT) for IFDEF directive
- Introduced Verbose warning mode
- Possibility to exclude PLC objects from build explicitly
- IEC textual declaration for structures, typedefs, enums, subranges
- Init value of function variables: it is now possible to both explicitly initialize local variables of functions(x86 only), and to initialize them to zero by default with a specific option
- New symbols browser window: New docking window with fast searching and browsing of all the project symbols
- Custom sort of project folders: checking this option will enable Move Up and Move Down command in the context menu of the folder, in the project tree.
- Unused variables reports: An XML report, with dedicated view, to track all unused global variables of the project.
- Use legacy LD editor: the new Ladder Diagram editor is easier to use, by helping you in common operations working on the diagram will be faster and more efficient. Note that, by default, this option is disabled; enabling it will allow the use of the old LD editor.
- Skip duplicate objects in libraries: It is now possible to use a library that has duplicate object names with respect to the current project, they will be automatically skipped
- Libraries directories: Instead of adding libraries one-by-one, a list of folders containing all libraries to load can be specified.
- Operators, standard blocks and target blocks on library view:
  - "Operators and blocks" window has been removed, and its contents are

now shown in the "Library tree" window, in two new folders, called "Operators and blocks" and "Target"

- Support for VAR_EXTERNAL also in functions: As for IEC standard, VAR_EXTERNALs are now also supported in functions (previously only on function blocks).
- PVOID pointer type: New generic PVOID type, to avoid warnings and allow architecture-independent pointers;
- Internal rework of symbol names when "case sensitivity=false": Symbol names are not made all uppercase anymore, so they preserve their original case in watch, output, symbol browser, and so on;
- Bios download: added a control on the target name;
- Added Installer Access Level for parameters and status variable in Configuration;
- Faster data refresh/update from Commissioning and Installer;
- Commissioning:
    - The command “Generate parameters files” now generate a csv file in conjunction with the Param.dat;
    - Added the command “Export parameter file from target to USB” to force the target to create the files Param.dat and Param.bin on the connected USB stick;
    - Added to the command “Import parameters files” the option to create a receipt with the imported parameters;
- Menu Access Level management.

Mitigated Anomalies Software v1.5.0

Solved the following issues:

- Better spacing on FBD blocks for long name
- Change variable order watch not run with keyboard command
- In FBD selection should be removed when clicking outside the editor.
- An edit object is showed with # if format is %0x in Display for TM171/TM172 while in TM172P is correct.
- Save all value of IO pin and exported register for a simulator instance in order to have last situation of environment.
- Add EWP2_6x8 chars i, ï.
- Check related the maximum number of EEV driver valve as slave CanOpen (maximum number admitted:4).
- Long press of Simulator keys generate twice press Event.
- CTRL+Z while execution is paused.
- The Drag and Drop for menu doesn't work for M172P 4 DIN.
- Correct Error in compilation for variables used with @notation.

- Bug Icon image in FB not saved when export in library.
- Wrong position of popup input output window in FBD prog.
- No autoscroll during text selection using mouse.
- Wrong concomitants COM connection.
- Disable Download all in Installer with TM171VEV.
- Add recipe command not good for TM171O.
- Crash if simulator is disabled during build.
- Data Export command in configuration doesn't export any menu selected.
- Missing data when a filter is used in a recipe.
- Pointers to Digital Input not always run well.
- Not possible to insert blanks into note field in SV.
- Simulator shows string variables partially.
- In live debug mode when we go inside a function after some value is shown a WDT reset occurs.
- Display: Ctrl+C and Ctrl+V should be work for paste text in Edit.
- If M172●●● ask a string from display part with @PLC notation to a slave, the requested frame has only 16 chars not the real length of the string.
- Add a checking about Modbus message, sending and error if Modbus RTU are over 512 or Modbus TCP are over 128, for M172P controller.
- TelevisGo: HTML pages should be updated with new FSP style
- Bad behaviour of Multiple files project option.
- Error on updating commands of import bitmaps/fonts.
- Correct inizialitazion of a local array inside FB when first element is 0.
- Wrong definition of data if offset is 1.
- In the compilation error of wrong usage of bitwise it is specified data type like BYTE, WORD and DWORD.
- Not possible to un-install application while it is running.
- Un-installation of ESME-HVAC does not remove the directory files completely.
- Setup should check low Disk Space
- Folder Virtual store after un-installation now is empty.
- Setup must check OS version.
- ActiveX Vulnerability fix CVE-2016-4529 and CVE-2022-2988
- Introduced DLL sign check to prevent dll hijacking.
- Removed LMBrick 2.4.0
- New version of HVAC Application library (1.3.4) with updates in the following AFBs due to alignment new algorithm compiler 1.5.0:
    - OperatingHours (1.0.1)
    - COPCalculation (1.0.1)

- CompCntrl_VS (1.1.3)
- EEVDCntrl (1.0.5)
- EEVDSHCntrl (1.0.5)
- EEVDAlarmMgmt (1.0.2)
- EEVDSettingsU (1.1.4)
- EEVDSettingsB (1.1.4)
- AHUTempCntrlStrategy (1.0.2)
- New version of HVAC Regul and Control library (1.1.4) with updates in the following AFBs due to alignment new algorithm compiler 1.5.0:
- WeekSchedule (1.0.2)

- New version of TVDA/Baselines due to alignment new algorithm compiler 1.5.0:
  - Air Handling Unit for Large and Connected Machines (1.2)
  - Air Handling Unit for Simple and Compact Machines (1.3)
  - Air-water Cooled Chiller for Large and Connected Machines (1.1)
  - Air-water Cooled Chiller for Simple and Compact Machines (1.1)
  - Air-water Heat Pump (1.1)
  - ESME_PrecisionAirConditioner (1.1)

Known Operational Anomalies v1.5.0

The navigation through Sets elements on a page with an Edit object with Selection order property equal to 0 doesn't work properly.

New Features Software v1.4.0

- New "Templates" section added to the program landing page and in the File menu
- Improvement of pages navigation for HMI menus created through Display tab. "Close page and back" function is now always available.
- Library of images is now available in Display
- Improved functions to create and configure HMI Project profiles.
- M172P - Reconfiguration Master/Slave RS485-2 from IEC code
- New features in AFB Communication library:
  ATV320ModbusCom
  ATV320ModbusTcpCom
  ATV630ModbusCom
  ATV630ModbusTcpCom

  EBMpapst ModbusCom library:
  EBMFanOperation
  EBMReset
  EBMSetFanAddress
  EBMStatusInfo

EC Blue Basic ModbusCom library:
ECBlueBasicCMODE
ECBlueBasicCOMerrWTD
ECBlueBasicErrorStatus
ECBlueBasicInfoOpCd1
ECBlueBasicLimit
ECBlueBasicMotorReset
ECBlueBasicRampTiming
ECBlueBasicSetFanAddress
ECBlueBasicSetFixedSpeed
ECBlueBasicSetIO
f_ECBlueBasicControlWEn
f_ECBlueBasicControlWFull
f_ECBlueBasicMotorCurrent
f_ECBlueBasicSpeedCtrl

- New baseline Precision Air Conditioner (1.0)
- New baseline Air Handling Unit (1.28.1)

Mitigated Anomalies Software v1.4.0

- Solved the following issues:
  - Added menu “Import Resources from project…” in Display Perspective in order to allow import of Bitmaps, Expressions, Fonts, Sets, Enumerative, Image Lists and Strings from other projects
  - M172EVEV/ESME - BIOS update download failure
  - Hidden unsupported operators in simulation mode
  - M172P - Improvent to decrease boot time due CAN device missing
  - Refactoring is not propagated to display part
  - Wrong IEC code for TM171O and a modbus custom driver
  - Error in sysWritePar*() functions if value input is an Eeprom parameter if value arrive from Eeprom parameter
  - M171DGRP - Bug with a long enumerative (over 258 items)
  - Bug last profile used in display is forgotten
  - CharDimX and CharDimY at 1 like default value
  - Simulator doesn't run in a correct way
  - sys_USBD_Command has been implemented in simulator. An embedded function is used to detect the correct task
    - 2 = Command code non valid (in back/init task)
    - 3 = Command not executed; function called into task timed.
  - TM171SW- Misallignement between AP and DE compilation
  - CanOpen_IEC Library: CanOpen Library properly renamed.
  - Missing CFG_A01 and CFG_AO2 in param.bin for M172P 4DIN if USB key creation files is used
  - Wrong parameters definition result using scale 1 offset 1
  - Write default values does not work
  - Warm restart wrongly triggered
  - Error generating EDS file when the project name contains unicode characters
  - Eeprom parameters are created as read-only with "Add multiple" command.
  - Source code becomes changeable during live debug
  - "Download all" command in Installer from the upper toolbar causes script error in current HTML page
  - A constant cannot be used as array bound on structure field
  - Objects cannot be imported from library if custom workspace is disabled
  - REAL values are truncated in Televis driver generator.
  - Solved the following issues in AFB Application library (1.3.3):
    - CompMgmtVS(1.1.3): Code optimization; internal limitation of rSp based on current available capacity in order to avoid multiple compressor start

after an alarm reset; extended range of rMinRange (0.0 is now allowed); redefined the way rReqCapacity is calculated (removed the use of ATAN, COS...in order to avoid calculation error with float); improved second tic calculation xlGetSecondTic; added full alarm ordering in order to avoid bug in case multiple alarms and request decrease at the same time
    - FanMgmt(1.0.2): fixed issues with hyst>=minfrequency; division by 0 prevention; offTimer wrong; removed correction in rPowerSP (1.05)
    - CompCntrl_VS(1.1.2): Bug fix: l_uiFreqCalc not updated if l_iSetpoint>=1000 or <= l_uiMinFreq
    - EEVDCntrl(1.0.4): Created array aauiEEVCntrlParamsImp to manage Imperial UM with selection; passed q_iSuperHeat and q_iEvapTemp, instead of q_iSuperHeatSI and q_iEvapTempSI to EEVSHCntrl
    - EEVDCntrl(1.0.4): increased range of i_iSuperHeatSetp, i_iMOPSetp, i_iContModSetp in EEVSHCntrl
    - EEVDCntrl(1.0.4): l_uiSupHeatSetpMax wrong initialization in FB_EEVDDynSetpCalc
    - EEVDSettingsU(1.1.3): Load set of parameters just after xEn = TRUE,
    - EEVDSettingsB(1.1.3): Load set of parameters just after xEn = TRUE
    - FloatingHighPresCntrl(1.1.1): Alarms related to Press2Temp independent from update of refrigerants
    - EvapPresCntrl(1.1.1): Alarms related to Press2Temp independent from update of refrigerants
    - AHUTempCntrlStrategy(1.0.1): fixed warning generated with REAL conversion
- Solved the following issues in AFB Regul and Controls library (1.1.3):
    - PIDAdvanced(1.1.0): Dead band behavior modified, dead band high limit removed; PID low limit moved to -100.0
    - OperatingHours(1.0.1): Fixed hours calculation (in case of use in Timed the error was 10%)
- Solved the following issues in AFB Communication library (1.1.0):
    - ATV12ModbusCom(1.0.1), ATV312ModbusCom(1.0.1), ATV31ModbusCom(1.0.1), ATV32ModbusCom(1.0.1), ATV61ModbusCom(1.0.1), ATV71ModbusCom(1.0.1): Bug fix: in init state, changed if condition to go to 'stopping'

Known Operational Anomalies v1.4.0

NONE

New Features Software v1.3.0

- Integrated new Schneider Electric Software Update (SESU) 2.5.0
- New command line switched included in batch download (for example retries)
- Possibility to open multiple resources-tree at the same time
- Menu folder shown in Global shared, EEPROM and Status Variables
- Added possibility to create multiple EEPROM and Status variables, similarly to local variables
- Added possibility to comment out Ladder/FBD networks to remove them from the compilation process.
- Libraries now available with direct link to target (msk 668.11 and msk 569.11 only)
- New features in AFB Application library (1.3.2):
    - New AFBs EEVDCntrl (1.0.3), EEVSHCntrl (1.0.3), SuperHeatCalc (1.0.1), EEVDAlarmMgmt (1.0.1), CheckCOMAlarm (1.0.1) for EEV application control
    - New AFB EEVDSettingsU (1.1.2) for unipolar EEVD management
    - New AFB EEVDSettingsB (1.1.2) for bipolar EEVD management

- Added new refrigerants from 13 to 26 and custom refrigerant (255) in Press2Temp (1.1.2) and Temp2Press (1.1.2) AFBs

Mitigated Anomalies Software v1.3.0

- Solved the following issues:
  - Integrated new Registration Software mechanism to fix artf214353 vulnerability
  - Integrated new Registration Software mechanism to fix a cybersecurity issue that could allow attackers to redirect Schneider Electric Software Update to a malicious Update server.
  - Added find and replace feature for Configuration tab
  - Added Driver Televis generation also for TM171O
  - Corrected object property description for FB OverwriteLocaldisplay
  - Bug fix in the closure of FTPGateway
  - TM171VEV : fixed description issue for dE25 and integration of SP and MOP values made available through modbus
  - Bug fix in installation folder
  - Bug fix in firmware upgrade via COM on TM172
  - Speed up TM172 boot in case of not connected CAN expansions
  - Bug fix in defining string variable of length 1
  - Bug fix in moving program between tasks
  - Bug fix in window appearance, help online
  - Added dE97 in the catalogue of TM171VEV 3.0
  - Added pre-compilation directive to exclude part of source code from the compilation process
  - Big fix on BIOS Enumerator removal
  - Added Port_FTP_PI in PARAM.BIN file
  - Bug fix on compilation error generation if, with custom modbus editor the number of registers exceed the allowed ones
  - Solved the following issues in AFB Application library (1.3.2):
    - Changed low limit of iFixeVal from 0 to -500 in FloatingWaterTempSet (1.1.0)
    - Default values changed for uiLowNoiseMaxFreq, uiFanFreqMin, uiFanFreqMax, uiHysteresis in FanMgmt (1.0.1)
    - Correction of bug: hysteresis implemented for uiArrFreqLimits in CompCntrl_VS (1.1.1)
    - New inputs for custom refrigerant in Press2Temp for FloatingHighPresCntrl (1.1.0) and EvapPresCntrl (1.1.0)

New Features Software v1.2.1

- Integrated new SESU 2.3.0.
- Ask to select language during installation
- EULA in Japanese.
- Modbus variables can be exported to an Ecostruxure Operator Machine Expert compatible format
- Target RTC alignment during Download All
- Graphical minor changes on logos and icons
- Live debug function for ST language
- Direct bit mapping with physical location
- Support for direct bit access
- Optimization of watch windows
- Support for dynamic array bound using a symbolic constant
- POU can be saved into separate file to facilitate the integration with version control systems

- Improved RS485 configuration form
- Zoom function in Programming Editor
- Bios Parameters → Add full list in Menu
- Change Filter Icon in Commissioning/Installer
- Cybersecurity best practices adoption (force user to change password at first access and unsecure protocols disabled by default)

Mitigated Anomalies Software v1.2.1

- Solved the following issues:
  - Loss of program link when "Multiple files project" is selected
  - Loss of the translation of the enumerative defined within Display which have additional languages with respect to the BaseLanguage
  - Target TM172E●●R do not exit from preoperational status
  - Stop download with TM171ADMI vs Target TM171O●●●●
- Integrated new Registration Software mechanism to fix artf214353 vulnerability
- Solved the following issues in AFB Application library (1.2.2):
  - Correction of calculation of dewpoint when its value is below 0°C in Psychrometric AFB (1.1.0)
  - Correction of Bug in saving EEPROM for ThermalPowerCalculation AFB (1.0.1)
  - Change description for xCntrlMode in properties of CompMgmt AFB (1.1.0) Correction of bug if all compressors go in alarm state and then go out from alarm state, the enable signal needs to do a transition False-True to have a restart of the compressor manager.
  - Correction in CompCntrl_VS AFB (1.1.0) because it was possible to write outside array of Prelimits.
- Anomalies on EcoStruxure Machine Expert HVAC by code
  - Bug in debug mode: A breakpoint in Debug mode on FB TON gives a WDT reset of controller
  - Buttons in raised state are wrongly drawn, exceeding HMI area
  - Init String on M172P
  - ST editor: multiline IEC comments that contains a) is not marked as comment
  - FC - Improvement security vulnerabilities in HTML5 online help
  - Help for application object launch an exception
  - Wrong positioning of table row with TVDA .sitetempl file
  - Column value of parameter not valorized for TM171O
  - Error loading LON Custom profile
  - Missing typedef variables after importing from library (typedef not imported)
  - Batch download without /REBUILDPLC does not work anymore
  - When dragging a new block, it cannot be placed at the right place because the code scrolls too fast
  - Auto creation EDS file

New Features Software v1.1

- Localization on dialog forms is now possible

Mitigated Anomalies Software v1.1

Solved the following issues:

- Function Block QRCodeDisplay launch compiler critical error if used with TM172DCL●●.
- Value for RS-485 set in configuration aren't written like default
- Issue with "Modified" state after a "Refresh current target" command
- "Build all" disabled while the HMI project is loading

- File PARAM.BIN is wrong, string termination is missing
- Switching perspective issue
- Add the possibility to download single PLC, HMI and HMI Remote from EcoStruxure Machine Expert – HVAC Installer as with SoMachine
- EWC.exe: error in the compilation of the project with Chinese characters in the name
- File list (.ini) encoding issue
- Modbus Custom editor: all protocols are not added if driver is modified.
- In Modbus custom editor is not possible to insert modbus register of different type (input, Holding...) with same modbus address
- Code generation error: SFC control variables not found
- Import of TM171P Blind Project with HMI Remote doesn't function.
- Black tabs in Auto Hide Mode. It's difficult read the name of the window
- A program error for a particular configuration of the group policy
- In simulation mode a breakpoint is reached after the CASE OF and after the ELSE
- Error in print on Ladder project
- Breakpoints used inside inner loop

Known Operational Anomalies v1.1

- Minor vulnerability fixed on dll hijacking (internal reference artf270287)

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