

SoMachine Software

4.3

Release Notes



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Table of contents

1.	SYSTEM REQUIREMENTS	3
1.1.	Supported Operating Systems	3
1.2.	PC Software Requirement	3
1.3.	PC Hardware Requirement	3
1.4.	Restrictions on 32 Bit systems	4
2.	IMPORTANT INFORMATION	5
2.1.	Installation	5
2.2.	Registration	5
2.3.	Improvements in SoMachine V4.3	5
2.3.1.	M241 / M251	5
2.3.2.	Support of variable speed drives Altivar ATV6•• and ATV9•• ranges	5
2.3.3.	New TVDA Device Modules	6
2.3.4.	New Device Templates	6
2.3.5.	Improved SQLGateway	6
2.3.6.	Improved and new Libraries	6
2.3.7.	New project examples	7
2.4.	Documentation changes for Altivar71_control	8
2.5.	Limitations and Restrictions	9
2.5.1.	SoMachine Central	9
2.5.2.	LogicBuilder	9
2.5.3.	DTM	9
2.5.4.	Altivar Devices	10
2.5.5.	Modbus TCP Altivar devices	11
2.5.6.	IO-Scanner	12
2.5.7.	Conversion	12
2.5.8.	Compatibility and Migration	12
2.5.9.	Controller assistant	12
2.5.10.	ATV-IMC	12
2.5.11.	Lexium 32 position gear mode	12
2.5.12.	LMC058 / M258	12
2.5.13.	M241 & M251	13
2.5.14.	M221	13
2.5.15.	ATV32 & LXM32	13
2.5.16.	LMC078	13
2.5.17.	Hoisting	15
2.5.18.	Pumping library	15
2.5.19.	Conveying Library	15
2.5.20.	FTPRemoteFileHandling library	15
2.5.21.	EMailHandling library	15
2.5.22.	TcpUdpCommunication library	16
2.5.23.	QUICK Key	16
2.5.24.	Vijeo Designer	16
2.5.25.	SoMachine Basic	17
2.6.	Web visualization	17
2.6.1.	Scope	17
2.6.2.	System Requirements	17
2.6.3.	Best Practices	18
2.6.4.	Programming	19
2.6.5.	Download of Application using FTP	19
2.6.6.	Controller	19
2.6.7.	Network	19
3.	APPENDIX	20
3.1.	Migrating an ATV32 to an ATV320.	20
3.1.1.	As a preliminary step, you need the configuration file corresponding to the ATV32 device to convert.	20
3.1.2.	The conversion can be performed according to the following procedure:	20

3.1.3. The converted ATV320 device configuration can be imported in SoMachine as described in the following procedure.....	20
3.2. Replacing an ATV32 by an ATV320 without changing SoMachine project. Here is the procedure to replace an ATV32 device by an ATV320 device	21
3.2.1. How to check if the compatibility mode "ATV32" must be activated	21
3.2.1.1. On CANopen	21
3.2.1.2. On EtherNet/IP	22
3.2.1.3. On Modbus TCP	23
3.2.2. How to activate the compatibility mode "ATV32" in the ATV320	23
3.2.2.1. Using a Modbus SL client software	23
3.2.2.2. Using a CANopen client software	24
3.2.2.3. Using the graphical keypad of the ATV320	24
3.3. LIST OF INTEGRATED COMPONENTS.....	26

1. SYSTEM REQUIREMENTS

1.1. Supported Operating Systems

This software can be installed on the following operating systems:

- Microsoft Windows 7 SP1 Professional Edition 32 Bit / 64 Bit
- Microsoft Windows 8.1 Professional Edition 32 Bit / 64 Bit
- Microsoft Windows 10 Professional Edition 32 Bit / 64 Bit

SoMachine V4.3 is optimized for a 64 Bit Operating system
(see 1.4. for details on 32 Bit systems).

An Outdated Windows 7 is the reason for C++ Redistributable 2015 Installation getting stuck. After Installing KB2999226 the installation of C++ Redist. can be done.

This KB is available at:

<https://www.microsoft.com/en-us/download/confirmation.aspx?id=49093>

1.2. PC Software Requirement

This software requires the following system components to run properly:

- Microsoft .NET Framework 4.6.1
- For the use of DTM you will also need an installation of Microsoft .NET Framework 3.5. (On Windows 8.1 or Windows 10 you will have to install this framework before installing SoMachine. There are different ways to do this with and without an online connection. Please refer following link for additional information: [https://msdn.microsoft.com/en-us/library/hh506443\(v=vs.110\).aspx](https://msdn.microsoft.com/en-us/library/hh506443(v=vs.110).aspx))

1.3. PC Hardware Requirement

EQUIPMENT	MINIMUM	RECOMMENDED
Processor	Intel® Core™ 2 Duo* or equivalent	Intel® Core™ i7 or equivalent
RAM	3 GB	8 GB
Free Hard Disk Space	8 GB including the memory space for the typical software installation, temporary space for execution and space for saving applications	15 GB for the full software installation, temporary space for execution and space for saving applications
Display	Resolution: 1280 x 1024 pixel	Resolution: 1680 x 1050 pixel
Peripherals	A mouse or compatible pointing device	
Peripherals	USB interface	USB 3.x
Web Access	Web registration requires internet access system	

*Might run with less performance CPUs, but with restrictions.

Virtual Machine usage

- When using a VM running SoMachine V4.3, be sure to fulfill the minimal requirements especially for RAM, hard disk space and number of Cores inside the VM. Otherwise unexpected errors may occur (e.g. out of memory exception when installing SoMachine V4.3).

1.4. Restrictions on 32 Bit systems

SoMachine is able to cope with large projects regarding the memory consumption. Nevertheless, there is a technical limit of memory usage by 32bit operating systems. You can encounter this technical limit with a large SoMachine project.

For more details please have a look at “Troubleshooting and FAQ” in SoMachine Programming Guide.

2. IMPORTANT INFORMATION

2.1. Installation

SoMachine V4.3 is an independent version.

It will not replace any of SoMachine V4.2, V4.1 SP1, V4.1 SP1.1, V4.1 SP1.2, V4.1 SP2.

The SoMachine Installation may require a reboot after the first installation step is done.

A popup will be shown where you should confirm the reboot. Afterwards, start the SoMachine Configuration Manager manually and continue the installation.

The installation of SoMachine V4.3 requires administrator privileges to start.

Installation of several versions of SoMachine on the same computer

If you intend to install multiple versions of SoMachine on a PC, they need to be installed in consecutive order, starting with the lowest version first.

2.2. Registration

You can use the software for 21 days after installation without restrictions. After this trial period you have to register SoMachine to run the software for an unlimited period.

Please refer to SoMachine Central's Help Center → Registration Menu for information on how to register.

2.3. Improvements in SoMachine V4.3

All changes (features and bug fixes) implemented in SoMachine V4.2, V4.1 SP1.1, SoMachine V4.1 SP1.2, V4.1 SP2 are also included in SoMachine V4.3.

2.3.1. M241 / M251


- TM241 references with CANopen (TM241CEC24T/U and TM241CEC24R) support EtherNet/IP scanner services.
- Management of I/O resource allocation were optimized for High Speed Counter and Pulse Train Output, to provide more configuration capacities. It is possible to configure up to 4 HSC main or 4 PTO.
- An OPC UA server is embedded inside the controllers which allows exchanging up to 1000 variables refreshed at 200 ms. In SoMachine, a new device editor tab allows accessing the configuration and a new application object allows defining variables to exchange
- The Post Configuration can be edited from the SoMachine

2.3.2. Support of variable speed drives Altivar ATV6•• and ATV9•• ranges

New devices for CANopen, ModbusTCP, EtherNet/IP

2.3.3. New TVDA Device Modules


Six new TVDA Device Modules are available for the new Altivar Process integrated in SoMachine. Device Modules are provided for each supported field bus, CANopen, ModbusTCP, and EtherNet/IP.

TVDA Device Modules can be accessed from the software catalog , inside the tab “Macros” > Function Template.

2.3.4. New Device Templates

New device templates are available for the devices: Altivar ATV320, Altivar ATV340, Altivar ATV6•• and Altivar ATV9••. Each template contains, in addition to the corresponding Altivar device, the function block **Control_ATV** and, depending on the template version, the corresponding visualization.

Device Templates are available for the supported fieldbuses: CANopen, ModbusTCP, and EtherNet/IP.

They can be accessed from the Hardware catalog , inside the tab Device and Modules > Motor Control. Note that you need to tick the checkbox ☒ **Device Template** to make them visible

2.3.5. Improved SQLGateway

- Support of SSL connections to MySQL and Microsoft SQL Databases
- Export / Import of SQL Gateway Configuration

2.3.6. Improved and new Libraries

FileFormatUtility

- A new library, FileFormatUtility, is introduced with this version. The library implements functions to read and write files of formats XML and CSV.

TimeSync

- The library offers services related to time synchronisation. With the SNTP client, the controller clock can be synchronized with time servers located in the same network via SNTP (Simple Network Time Protocol).

EMailHandling

- The function block FB_SendEmail now supports to send an email with attachment and configurable priority.
- The new function block FB_Pop3EmailClient allows receiving and deleting emails from a server using the Post Office Protocol (POP3)

SnmpManager

- Support of SNMPv1

TcpUdpCommunication

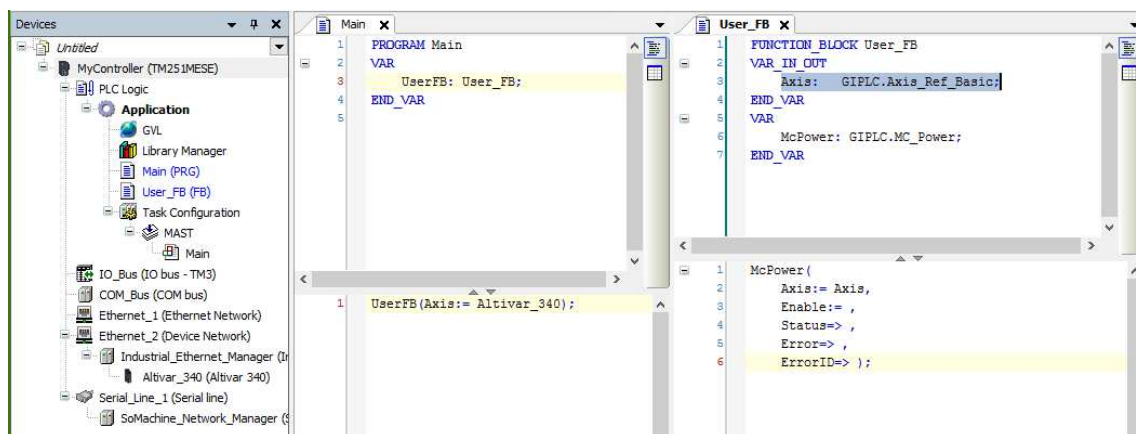
- The TcpUdpCommunication provides the new function block FB_DnsClient to request the resolution of a domain name into an IPv4 address.
- The buffer size of the TCP server sockets is now configurable. (As already available for TCP client sockets)
- The newly created result ET_Result.BufferFull is now reported in case send buffer of the TCP stack is full.

GMC Independent Lexium

- Function block **GearInPos_LXM32**: New Boolean input SyncMode to select the synchronization mode when executing the function block.

GMC Independent PLCOpen library

- The PLCOpen library provides the vendor specific data type Axis_Ref_Basic. This type has to be used to pass the axis reference to PLCOpen function blocks inside user function blocks.



2.3.7. New project examples

Several new programming examples are provided in this version. The examples can be accessed from the Learning Center in the SoMachine Central start screen.

Each example is provided together with an Example Guide. New examples are:

- TcpUdpCommunicationExample
- SqlRemoteAccessExample
- AltivarPLCopenCANopenExample
- AltivarPLCopenEtherNet/IPExample
- LexiumPLCopenCANopenExample
- LexiumPLCopenEtherNet/IPExample

2.4. Documentation changes for Altivar71_control

General Purpose:

The already existing function BRH4 implemented in the Altivar 71 device can help to prevent suspended loads from falling for the rare case when the holding brake fails (see documentation of the Altivar 71 device).

The BRH4 function uses the encoder feedback to detect movement of the axis, after the brake should have been closed. If a movement is detected, the drive applies current to the motor in order to hold the load.

However, when Altivar71 is controlled via communication, the BRH4 function works only, if the drive is in state "Operation Enabled".

Modification of Altivar71_Control Function Block



Normally, the Altivar71_Control function block sets the drive to state "Switched On" as soon as there is no any direction command applied (*i_xFwd* = FALSE and *i_xRev* = FALSE) and the actual velocity and actual current decrease to zero, and thus the BRH4 function does not work.

The improvement of the Altivar71_Control function block consists in a **new input i_xKeepOpEn**, which allows keeping the Altivar 71 in state "Operation Enabled", in order that the BRH4 function can work.

The new behavior becomes active after the first direction command (*i_xFwd* = TRUE or *i_xRev* = TRUE) until the Function Block is disabled with *i_xEn* = FALSE.

The default value for the **new input i_xKeepOpEn** is FALSE, which means the default behavior of the Altivar71_Control FB is the same as in the past.

To get the new behavior (i.e. keeping Altivar71 in state "Operation Enabled" and making use of the BRH4 function) two steps have to be performed:

1. activate the BRH4 function, e.g. HMI, SoMove or within the application
2. set the **new input i_xKeepOpEn** of the Altivar71_Control to TRUE

NOTE: In case you were updating a project, the new input of the Altivar71_Control FB will not be initially visible. To make it visible use the contextual **ResetPins** command on the box in CFC and the **UpdateParameters** command in FBD/LD respectively.

2.5. Limitations and Restrictions

2.5.1. SoMachine Central

- When the Windows operating system is configured to use large fonts, SoMachine or Vijeo Designer can have unintended behavior.
To correct this, the screen resolution of a PC running SoMachine must be set to 100% (96 dpi).
 - Within Windows 7, classic theme should not be used. Aero theme should be used.
 - When opening a project archive file from Central, the "Options" that might be part of the archive should not be selected for extraction. Otherwise, Central might not open the project archive successfully.
 - To avoid problems when opening an archive, the LogicBuilder should be launched before opening the archive. (If the LogicBuilder has already been used during the current session, it is not necessary to open it again.)
There are the following alternatives to do this:
 - Create a new project, open the LogicBuilder, switch to Central, close the project (no need to save it) and then open the archive
 - Open an existing project, open the LogicBuilder, switch to Central, close the project and then open the archive
- The same preparation is needed before uploading a project from a controller, as uploaded projects are always archives.

2.5.2. LogicBuilder

- For limitations please have also have a look at FAQ in SoMachine Programming Guide
- CAA File, sysFile and sysDir library must not be used as user libraries in SoMachine. These libraries are intended for internal purposes only, and therefore are not fully documented in SoMachine. Usage of the Function Blocks and functions located inside these libraries may provoke unintended consequences.
- As part of SoMachine V4.3, two versions of the "CAA File" library are installed: V3.5.3.132 is dedicated for usage with LMC078 controller, V3.5.3.0 is dedicated for the other controllers. As for this library a placeholder is existing (and also not a FCL library), the recommended way is to add the library (via the Library Manager) to your device as placeholder. Thus, SoMachine will add the right library version to your device (This is in sync with the procedure described in chapter "Adding Libraries to a SoMachine Project" of Online Help.).
- The hardware catalog is not updated nor is the new device visible until you restart SoMachine after import of an eds file
- Disable device is only supported on CANopen devices.

2.5.3. DTM

- The tab "CANopen Configuration" is displayed when opening the DTM of the TM5 or TM7 CANopen Interface. This editor allows you to configure CANopen parameters. It is intended for use only by CANopen experts.
- When using Altivar 32 and Altivar 71 DTMs, the Command Panel should be deactivated before closing the DTM Editor. If the user decides to force the closing of the Editor while the Command Panel is still active, the DTM internal state will be unreliable. In this case, reopen the project.
- After Uploading parameters on the Altivar 32, 71 and 320 DTMs, if the hardware configuration changes (e.g. Option Board), the changes might be incompatible with the current DTM configuration. In such a case, the user will receive an information message, "The configuration file is not compatible with this drive". Add a new 'Advanced Settings' device and execute the 'Upload Parameters' command to get the current Hardware Configuration
- Oscilloscope: Lexium 32M: Selecting an empty Slot in the Channel select dialog may lead to unresponsive equipment either hardware or software.
- Sporadic connection loss may occur due to incorrect timing behavior of USB to RS485 dongles

2.5.4. Altivar Devices

Altivar Configuration

When using certain configurations in Modbus TCP and EtherNet/IP, it will not be possible to control the motor of an Altivar using a DTM. The motor status will show Freewheel. The behavior is as designed so that the Function Blocks have full control of the motor.

To acquire control of the motor it is necessary to change the following parameters:

- For Altivar 320, the RFC parameter value "C314" to the default value
- For Altivar 340, 6xx, 9xx, the RFC parameter value "CMD514" to the default value

Altivar DTMs in CANopen

It is recommended to use Altivar DTMs on Ethernet-based protocols (Modbus TCP and EtherNet/IP). When used on CANopen, the Altivar DTMs will be slower.

Altivar DTMs in EtherNet/IP

For this fieldbus, when the PLC is stopped an error will be set on the Drive which can only be reset from the PLC itself. In this case, if PLC is in stop functions from the Command Panel cannot be executed. This works as design and starting the PLC will solve this point.

Altivar 340 FDR

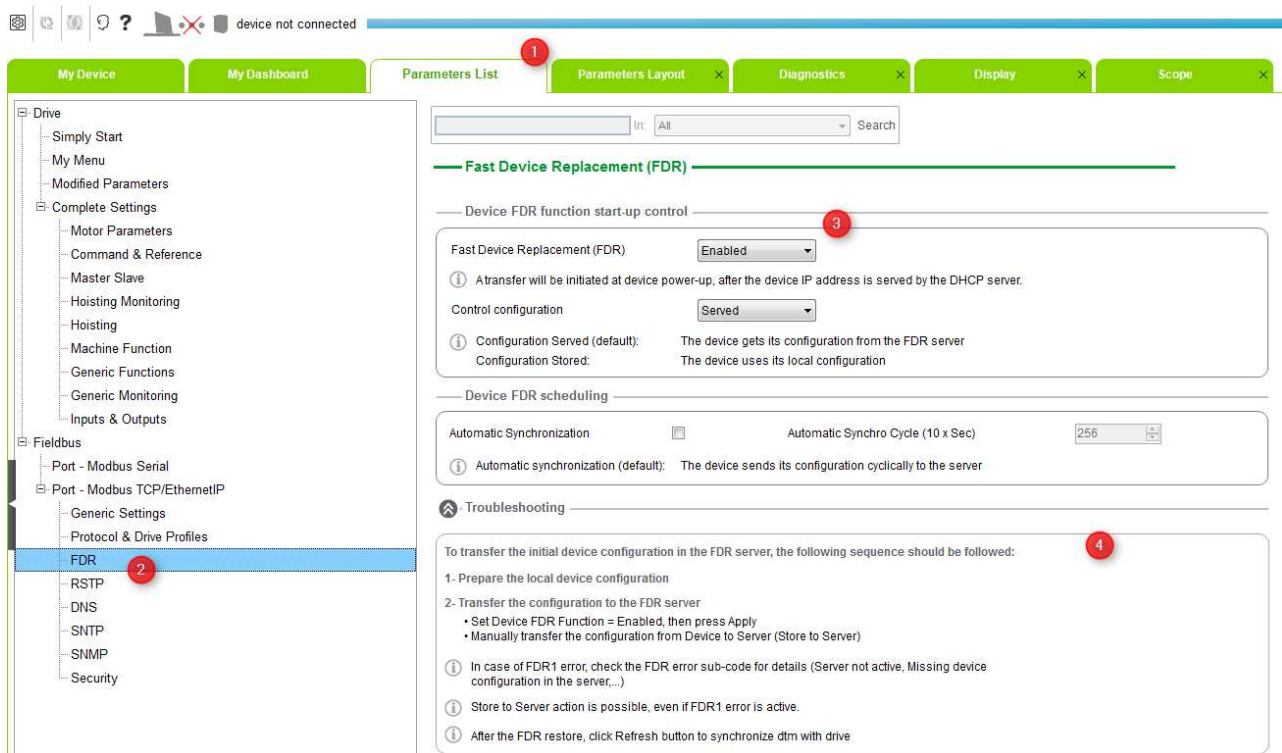
The ATV340 is by default (out of the box) configured in DHCP mode, with a FDR restore automatic trigger. As a consequence, as soon as the device name is set, within an Ethernet architecture, the device automatically will get its configuration from the FDR server.

If the device configuration has not been previously transferred into the FDR server, this will trigger a configuration fault in the device.

In order to prevent triggering the fault, in the DTM you can modify the FDR Server settings, prior setting the Device Name (1).

In the Parameter List tab, select Fieldbus > Port - Modbus TCP/EthernetIP > FDR from the tree view (2). Set FDR Disabled, transfer to the device, and restart the device (3).

To transfer the initial device configuration in the FDR server, refer to the Troubleshooting section on the DTM screen (4).



ATV6xx/9xx and M241/M251 FDR issue

The first attempt to push a FDR configuration file results in an error message. The ATV6xx/9xx first tries to use the TFTP protocol which is not supported on the M241/M251. After several retries (it takes about 90 seconds), it will switch to the FTP protocol and the operation will succeed.

Altivar 312 Migration to Altivar 320

The following document shows how to transfer the configuration from an Altivar 312 device to a new Altivar 320 device:

ATV312 TO ATV320 MIGRATION MANUAL

<http://www.schneider-electric.us/en/download/document/QGH39563/>

ATV312 TO ATV32/ATV320 CANOPEN MIGRATION NOTE

<http://www.schneider-electric.us/en/download/document/EAV11212/>

Altivar 32 Migration to Altivar 320

Please have a look at [Migrating an ATV32 to an ATV320](#).

Altivar 32 Replacement by Altivar 320

Please have a look at [Replacing an ATV32 by an ATV320 without changing SoMachine project. Here is the procedure to replace an ATV32 device by an ATV320 device](#)

2.5.5. Modbus TCP Altivar devices

Modbus TCP Altivar devices use resources shared by the PLCcommunication library during the establishment of the communication. If you encounter errors such as "Target system resource is missing" or "Request has not been processed" while using function

blocks from the PLCCommunication library, retry after connections with the Altivar devices have been established.

2.5.6. IO-Scanner

- Lexium32 IO-Scanner slave may not get reconnected after a Lexium power cycle: If the LXM32MU45M2 FW VERSION 1.12.XX, and if you are using the Ethernet accessory VW3A3616 labeled “Made in Sweden”, the connection may not restart after power cycle. Use VW3A3616 labeled V1.07 IE03 (Made in China).

2.5.7. Conversion

- In case where Python API is used to convert a device, you must take care to update this device if needed, before starting any conversion operation.

2.5.8. Compatibility and Migration

- Please refer to the “SoMachine Compatibility and Migration” guide for more details.

2.5.9. Controller assistant

- Controller assistant “Write on controller” functionality is not available for all M258/LMC058 firmware versions. The controller assistant will pop up a message to notify you of the incompatibility. You must then use a USB key to perform the firmware update (the USB key can be generated using “Write to” functionality of controller assistant).

2.5.10. ATV-IMC

- In the Devices tree location: Local --> Drive--> I/O Mapping, the column ‘Default Value’ is not taken into account for fallback mode, i.e., when behavior for outputs in Stop = ‘Set all outputs to default’.

2.5.11. Lexium 32 position gear mode

- The output `InGear` of the function block `GearInPos_LXM32` is not implemented in the present version, and therefore should not be used. The Lexium32 is synchronized to the master encoder as long as the output `Busy` of the function block is `TRUE`.

2.5.12. LMC058 / M258

- When upgrading application from SoMachine V3.1 or SoMachine V4.0 to SoMachine V4.3, if the jerk configuration parameter was used together with \sin^2 ramp velocity, then this jerk parameter is suppressed and is automatically set to 0. To use this jerk parameter for \sin^2 ramp, use the jerk input of SoftMotion Function Block (like in `MC_Stop`, `MC_MoveVelocity` ...). Refer to “*SoftMotion*” documentation in the online help of SoMachine for further information about jerk and \sin^2 ramp.
- When a M258 with PCI slots configured is converted to another M258 or LMC058 reference with PCI slots, the result is incorrect when the PCI module is inserted in the second slot and the first slot is empty. After the conversion, the PCI module moves from the second to the first position. So when you download the application and go online, a red triangle appears in front of the

module. To fix this issue, after the conversion you should move the modules to the converted position.

2.5.13. M241 & M251

- There is no verification that TM2 modules connected to Advantys OTB Distributed I/O modules match those configured in the IOScanner. Therefore, it is possible to write data incorrectly in case of a configuration mismatch.
- The FBs IOSCN_Start and IOSCN_Stop are synchronous calls. In some cases they can block the IEC calling task until the next repetitive rate fires. In the case that of all the repetitive rates are slow (for example, on the order of 500ms), the IEC calling task can stay locked for 500ms, and this could trigger a watchdog exception.
- The FBs IOSCN_Start and IOSCN_Stop must not be used in the first cycle of a task.
- An Advantys OTB Distributed I/O module may not reconnect after a M251MESE power cycle. To remedy this issue, you should always power cycle the OTB after the power cycling the M251.
- The NVL-GVL service in mode "Unpacked Variables" may not work as expected, and may generate a controller exception or otherwise make for degraded performance.
- The HSC/PTO editors propose multiple tabs to configure these functions. When you want configure a new channel, you should select on the right, the tab with a '+'. Now if you decide to unconfigure a configured channel, this tab is free and instead of shift on the right, as it should be according to Windows standard, but at current position.
- OPC UA Client option 'Data filter' is not supported with OPC UA Data type uint64.
- ATV 630/930 and FDR save or restore may take 90s to complete (fixed with Altivar firmware versions ATV6**: V1.6IE12/ ATV9**: V1.3IE04)
- FileFormatUtility 1.0.1.0 library : XML parser doesn't work with xml file size larger than 4MB
- Pin Output of Move_Relative and State of PTO isn't consistency for position near limit
- Symbol are never generated again when project is saved with controller in simulation mode (WebDataConfig; OPC UA Symbolconf, Symbolconf...)

Workaround : Deactivate the simulation mode, save and reopen the project

2.5.14. M221

Refer to the SoMachine Basic Release Notes

2.5.15. ATV32 & LXM32

- To be able to use the web server of the Ethernet module VW3A3616 of the ATV32 or LXM32 drives with Java version 1.8, you need at least firmware version 1.11IE01 of the Ethernet module VW3A3616.
- For an ATV32 configured as an Ethernet/IP slave do not use a RPI (Requested Packet Interval) time lower than 10ms. (Otherwise not all parameters will be sent to the device during a following transition of the PLC from STOP to RUN).

2.5.16. LMC078

- When an USB memory key is inserted in the connector CN2 of the LMC078 controller and the controller is booting, the boot is unsuccessful. The controller will present the message "!ERR: SD-Card" in the display. To avoid this issue, please remove USB memory key before rebooting the controller.
- When resetting the user rights on an LMC078 with the operation "reset origin", it is necessary to reboot the controller for the action to be affected. To avoid this issue, please reboot the controller after resetting the user rights to complete the operation.
- The documented function FC_PrgResetAndStart is not available in this version of the LMC078.

- The LMC078 only allows to configure its IP address mode in SoMachine on the ethernet connector object. To switch between DHCP, BOOTP and fixed IP address (default), please:
 1. select the ethernet connector object inside SoMachine
 2. change the setting
 3. download the project to your controller
- When converting a LMC058 project to LMC078, the ethernet connector can contain configuration data for the IP address in grayed out fields.

After the conversion those fields are not editable. The data shown in the fields has no effect. The IP address is configured using the process communication settings command in the controller selection tab on the LMC078 object. Only the IP mode (DHCP/BOOTP/fixed IP Address) is set in the on the ethernet connector. Ignore the displayed values.

- When LMC078s Ethernet connection is configured as DCHP it does not activate the gateway address it receives from the DHCP server. Instead it operates with the gateway address configured on the SD card. This does not affect communication between the controller and devices in the same subnet (e.g. on the same switch).

Workaround:

- for devices in same subnet (e.g. PC attached to same switch): no action necessary
- for communication with devices in other subnets (e.g. maintenance via remote PC): set gateway address via the process communication settings command in the controller selection tab on the LMC078 object.
- By default the LMC 078 (via USB) is turned off by Gateway Management console.
- When activating LMC 078 (via USB) the port specified by "Device name starts with:" is reserved for LMC078 communication. If other non SoMachine applications try to use the same USB Port it will lead to conflicts.
- Sercos phase up is unsuccessful if any unconfigured LXM32S are present on the Sercos network (ring/line). The Sercos master (LMC078) shows the diagnosis code 8506 "SERCOS Master comm. not possible" with the extended diagnosis "Err:0x00020021". The LXM32S does not support inactive participation in the Sercos network. To resolve the issue either:
 1. physically remove unconfigured LMX32S from the Sercos network by rewiring the Sercos cables
 - or
 2. configure all LXM32S connected to the Sercos network in your application so that the master actively communicates with them
- The switching of the Operation mode between the Velocity mode and the Position mode may lead to a small, rapid movement of the motor.

⚠ WARNING

UNINTENDED MACHINE OPERATION

Do not switch the Operation Mode from Velocity mode to Position mode with the drive in STANDSTILL.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

- Though the probability is low, there is the possibility that, after power cycle, with only one of the single axis (LXM32S) powered on the Sercos bus, the servo drive can stay in Phase 0. To resolve this issue, you need to power on all the servo drives.
- Though the probability is low, there is the possibility that the error B109 (communication error between the Sercos Module and drive) may occur in case of using all LXM32S functionalities with the trace function. To resolve this issue you, need to power off the servo drive.
- Located variables (AT %mw) declared as “retain persistent” are not maintained after a power off. Workaround: For maintaining variables after power off use the persistent variables object. To make sure you collect all variables declared as persistent please use the command “ADD all instance Paths”
- If the "Software limit" is activated and the axis reached the Software limit, the error can be reset by MC_Reset, SMC_ClearFBError, but we keep an error even after the axis is come back in the limit with the MC_Jog.
- The Function block SMC_Limitdynamics does not limit the Acc/dec values in the G-code in all cases.

2.5.17. Hoisting

- Part of the delivery of two of the three Hoisting Templates, which are:
 - i. Hoisting_Industrial Crane_CANOpen_M241
 - ii. Hoisting_Industrial Crane_CANOpen_M241_Safety,
 the project file for the safety controller is to be uploaded to the Preventa XPSMC controller.

The file is called: M241_Safety_XPSMC_V2.mcc.

To be able to load this project to the Preventa XPSMC controller, the corresponding Preventa software XPSMCWIN must be obtained. This software is not a standard part of SoMachine V4.3. You can obtain the XPSMCWIN software from your local Schneider-Electric sales representative or your ADE.

2.5.18. Pumping library

This SoMachine version includes two versions of the Pumping library:

- A new and improved version called: “Booster Pumping Library”. Use this version as it includes improvements and new features but it is not forward compatible with “Pumping Library”.
- The former version called “Pumping Library” was already available in the previous SoMachine version and have to be used for projects based on this library.
- The SoMachine OLH describes “Booster Pumping Library”.

2.5.19. Conveying Library

- Conveying library and related project examples have been removed.

2.5.20. FTPRemoteFileHandling library

- Library shows different behavior for LMC078 Controller in comparison to M2xx Controllers. Attempting to upload (i.e. “Store”) a file to an external FTP server that does not exist in the PLC’s file system produces a 0 Byte file in the external FTP server.
Workaround: In your application, verify the existence of the file in PLC’s file system before executing upload.

2.5.21. EmailHandling library

- The EmailHandling library does not support any encryption. To implement an encryption, use an external tool.

- As the FB_Pop3EMailClient is verified with the free online email provider Outlook.com and the free local email server hMailServer (www.hmailserver.com), it is recommended to use one of them.
- To send an email to the controller configure inside your email client the email format to "plain text only".
- To receive emails correctly on the controller, configure the email server to keep emails in the inbox accessible via POP as long as the function block FB_Pop3EMailClient sends a delete command.
- In case an error occurs while FB_Pop3EMailClient is receiving emails, the function block tries to delete the successfully downloaded emails from the server and to keep them inside the application. If this does not succeed all downloaded emails will be marked as not valid inside the application, but the successfully downloaded attachments will not be automatically deleted from the file system of the controller. With the next function block execution all emails, including all attachments, will be downloaded again. In case the value of i_xOverwriteAttachment inside the credentials is set to False, an error indicating that a file with the same name already exists possibly occurs. To avoid this, enable the overwrite attachment function (at least after an unsuccessful function block execution) or delete all attachments inside your application. Use therefore the paths indicated from the function block inside iq_astInbox.

2.5.22. TcpUdpCommunication library

- The online monitoring of the properties of the function block FB_TcpServer inside SoMachine may lead to an unexpected change of the value for the property FB_TcpServer.Result. This in turn, might lead to unintended behavior during the execution of your program code.

To avoid the monitoring of the properties in online mode consider the following:

- Do not monitor program parts in online mode which implements property calls of the FB_TcpServer.
- Do not expand the instance of the function block in the declaration editor in online mode.
- Do not add the properties of the FB_TcpServer to a Watchlist.
- Use local variables instead of the property calls in your program. Place the assignment of the corresponding properties to these variables at a single point, which is not monitored in online mode.

2.5.23. QUICK Key

- QUICK KEY ref:TM2USBABDEV1
The Quick Key with a FW version \leq V0.08 does not work with M218 and M238 controllers (firmware V4.0.1.xx) when there is no application already present in the controller.

2.5.24. Vijeo Designer

- After downloading the HMI Application and HMI controller Application via "Multiple Download", "COM Port Open Failed" system error message will appear on the HMI screen. Logging into the controller will show that the PLC Communication Library Modbus function block (WRITE_VAR, READ_VAR, WRITE_READ_VAR) is returning Oper Error #2. A reboot will bring the Modbus functionality back to normal.
- For HMI Controllers, the surrounding area of the lamps in the ComboController_for_color ToolChest object may appear in pink on the HMI screen. Other objects using bitmap images with transparent background may also exhibit this symptom.
To solve this issue, you can ungroup the objects and choose Primitive object style for these lamps to avoid the pink color. You can also choose a different background color for the transparent color for any bitmap images used.

- When installing Vijeo Designer Standalone on a PC that already has Vijeo Designer installed as part of SoMachine, if the installation source drive (for example D:) of Vijeo Designer Standalone is not the same as the original installation source drive (for example E:) of SoMachine, the Vijeo Designer Standalone installer will not execute correctly.

There are 2 possible solutions to this issue:

1. Install Vijeo Designer Standalone from the same source drive as that which you installed SoMachine.
 2. If solution #1 above is not possible, you need to perform the following operations:
 - manually uninstall the Vijeo Designer version installed by SoMachine (by going to the Windows Control Panel)
 - install Vijeo Designer Standalone
- HMI targets using the Modbus TCP/IP Slave driver freeze (commands are not taken into account and communication fails) after a STOP command on the Modbus TCP IO-Scanner.
In this situation, the HMI target must be rebooted.

2.5.25. SoMachine Basic

Refer to the SoMachine Basic Release Notes

2.6. Web visualization

2.6.1. Scope

The goal of this chapter is to describe the limitations and restriction of the web visualization.

The CODESYS WebVisu is a client based on a HTML5 and javascript which communicates with the web server integrated in controller and displays the visualization in any given visualization systems.

It can be used if there is a WebVisu object inserted below the visualization manager, in the application.

Then to access to the WebVisu thanks to web browser, the following address should be entered in the web browser:

http://<IP_address of controller>:8080/<webvisu>.htm

<webvisu>.htm is the HTM file defined in the Visualization Manager, as Visualization Entry page - Thereafter the visualization can be operated in the browser.

This document describes the limitation of the WebVisu for the following components since version:

Component	Version
SoMachine	V4.1
M258/LMC058	V4.0.2.32
M241/M251	V4.0.2.36
LMC078	V1.51.10.4

2.6.2. System Requirements

Web browser

- Web visualization is supported on any browser that supports java script and HTML5 (Firefox, Chrome ...).

Controllers

- Only M241, M251, M258 and LMC078 controllers supports this feature.

2.6.3. Best Practices

General Usage

- WebVisu feature should be used to monitor variables in a controller.
- WebVisu should not be used to commission a machine.

Data security

- In order to minimize the risk of data security breaches, consider the following technical and organizational measurements for the system running your applications:
- As far as possible avoid exposing PLCs and PLC networks to public networks and the Internet. For protection, use additional security layers like, for example, VPN for remote access, and install firewall mechanisms. Restrict access to authorized people. If available, please change default passwords at start-up and modify them frequently. Check regularly and frequently the effect of these measurements.

If you nevertheless want to publish your Web Visualization, give it at least a simple password protection to prevent access to the functionality of your PLC over the Internet. This can be done by the general User Right configuration of the application.

⚠ WARNING

UNAUTHENTICATED ACCESS AND SUBSEQUENT UNAUTHORIZED MACHINE OPERATION

- Evaluate whether your environment or your machines are connected to your critical infrastructure and, if so, take appropriate steps in terms of prevention, based on Defense-in-Depth, before connecting the automation system to any network.
- Limit the number of devices connected to a network to the minimum necessary.
- Isolate your industrial network from other networks inside your company.
- Protect any network against unintended access by using firewalls, VPN, or other, proven security measures.
- Monitor activities within your systems.
- Prevent subject devices from direct access or direct link by unauthorized parties or unauthenticated actions.
- Prepare a recovery plan including backup of your system and process information.

Web browser

Failure to follow these instructions can cause death, serious injury or equipment damage.

- On Windows PCs, some problems can occur with Internet Explorer and HTML-Canvas 5. Mozilla Firefox or Google Chrome operate normally with HTML-Canvas 5.
- On Android systems, Chrome is the preferred browser.
- Sometimes the web browser can have difficulties to display the visualization. Please flush the cache of your web browser in this case.
- Web browser zoom factor should be set to 100%.

Visualization

- Some scaling problems can appear in your browser. To fix this issue, you can use a rectangle and put the visualization objects inside this rectangle.
- Use less than 50 variables in a visualization page; otherwise it might have an impact on the application load and can provoke a watchdog timeout exception.
- If there are issues concerning the performance of the WebVisu display, try to adjust the "size of memory for Visu" or the "size for Paint Buffer", in the "extended settings" in the visualization manager configuration screen.
- If some photos are used in the visualization, please use photos that are compressed. Uncompressed photos, like bitmap photos, have a negative impact on the performance.
- When building visualization, you should avoid using the zooming feature.

2.6.4. Programming

- A new task VISU_TASK is added automatically when using WebVisu. Please make sure that your application is not overloaded with this new, low priority task. If after adding WebVisu, the PLC application encounters "Exceptions", you should adjust the Cycle time of the applicative tasks.
- The FreeWheeling tasks must not be used together with the WebVisu because freewheeling mode does not leave spare time for WebVisu to run.
- Adding the WebVisu service to the application will significantly increase the size of the application.
- The configured "Maximum number of visualization clients", Visualization Manager/Expert settings must not be over 3

2.6.5. Download of Application using FTP

- When downloading application and WebVisualization files to PLC using FTP, FTP transfer type must be set to binary.

2.6.6. Controller

- In some situations during intensive processing while using WebVisu, SoMachine connection problems can be encountered. It is recommended to quit the browsing of WebVisu when you want to connect SoMachine to the controller.

2.6.7. Network

- The WebVisu connection should be established through local Ethernet network or through reliable Wireless networks. Any connection through the Internet can provoke some difficulties to display the visualization in the web browser.

3. APPENDIX

3.1. Migrating an ATV32 to an ATV320.

It is possible to convert an ATV32 device configuration to an ATV320 device configuration by using the SoMove configuration software. Here is the procedure to migrate an ATV32 device to an ATV320 device.

3.1.1. As a preliminary step, you need the configuration file corresponding to the ATV32 device to convert.

If you have not this file, you can get it directly from the device as described in the following procedure.

Step 1: Launch SoMove

Step 2: Select the proper connection settings by selecting the command "Edit connection/Scan" and matching the ATV32 device you want to convert. For all possible options, refer to the documentation of SoMove (+ link or name or ref of the document)

Step 3: Click "Apply" when ready (Result: Edit connection window is closed)

Step 4: Execute the command "Load from device"

Step 5: Select a file to save the SoMove project to

Step 6: Select the type "SoMove project files (*.psx)"

Step 7: Click "Save" (result the upload process starts)

3.1.2. The conversion can be performed according to the following procedure:

Step 1: Launch SoMove

Step 2: Execute the command "Device Conversion"

Step 3: Select the ATV32 configuration file (*.psx) that you want to convert, and click "Open"

Step 4: Select "ATV320" from the "Select Target" list and click "Convert"

Step 5: Select the option "ATV320 Book" or "ATV320 Compact" according to your requirements. The compatible "Reference", "Firmware Version", "Supply Voltage" and "Nominal Power" parameters are displayed for the selected option.

Step 6: Click "OK"

Step 7: Click "OK" to close the message

3.1.3. The converted ATV320 device configuration can be imported in SoMachine as described in the following procedure.

Step 1: Launch **SoMove**

Step 2: Select the proper connection settings by selecting the command "Edit connection/Scan" and matching the ATV320 device you want to update. For all possible options, refer to the documentation of SoMove (+ link or name or ref of the document)

Step 3: Click "Apply" when ready (Result: the Edit connection window is closed)

Step 4: Execute the command "Store to device"

Step 5: Close **SoMove**

Step 6: Inside the **SoMachine** project, select the ATV320 in the device tree

Step 7: Upload the ATV320 device configuration from the ATV320 device. For more details, refer to the "Device Type Manager (DTM) - User Guide" + link.

3.2. Replacing an ATV32 by an ATV320 without changing SoMachine project. Here is the procedure to replace an ATV32 device by an ATV320 device

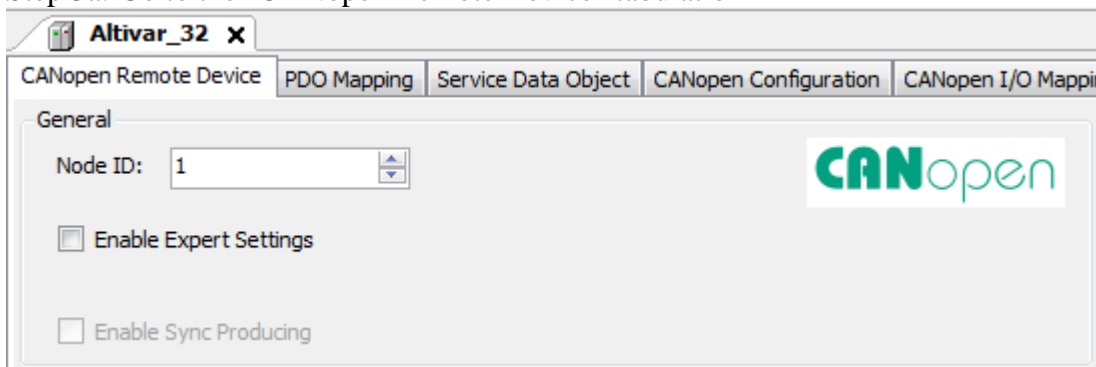
- Step 1: [check](#) if you need to activate the compatibility mode "ATV32" in the ATV320.
- Step 2: convert the ATV32 configuration to an ATV320 configuration
- Step 3: transfer the converted ATV320 configuration to the ATV320 device
- Step 4: replace the ATV32 device by an ATV320
- Step 5: [Activate the compatibility mode "ATV32" in the ATV320](#) if needed (see Step 1)
- Step 6: save the ATV320 to the FDR server if you want to use this feature

3.2.1. How to check if the compatibility mode "ATV32" must be activated

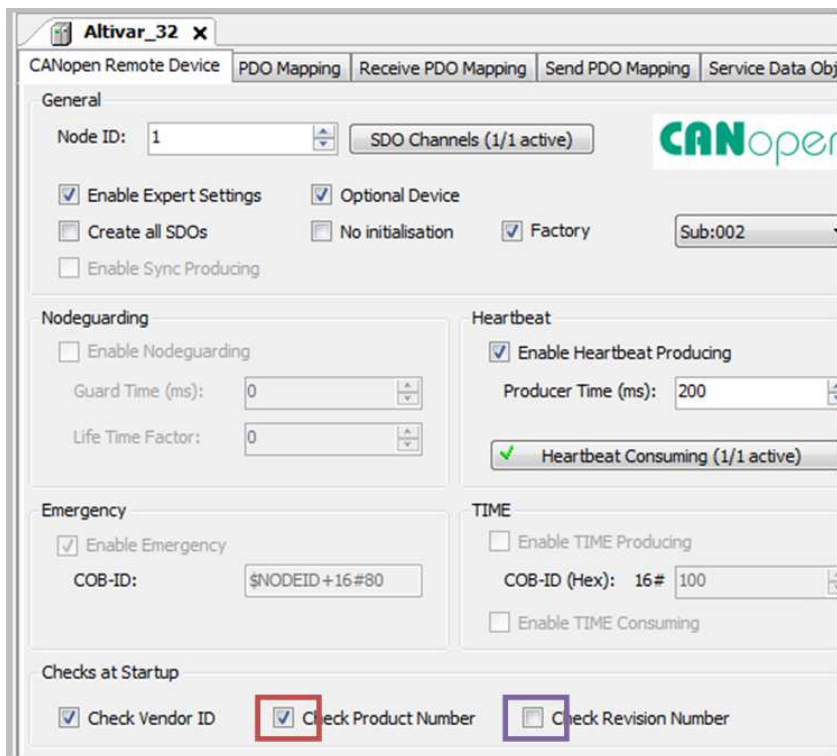
- Step 1: open the SoMachine project and navigate to the concerned ATV32 in the device tree
- Step 2: double click the device node. Result : the device configuration screen is displayed
- Step 3: check the settings as described hereafter

3.2.1.1. On CANopen

- Step 3a: Go to the "CANopen Remote Device" tabulation



- Step 3b: Activate the "Enable Expert Settings" checkbox

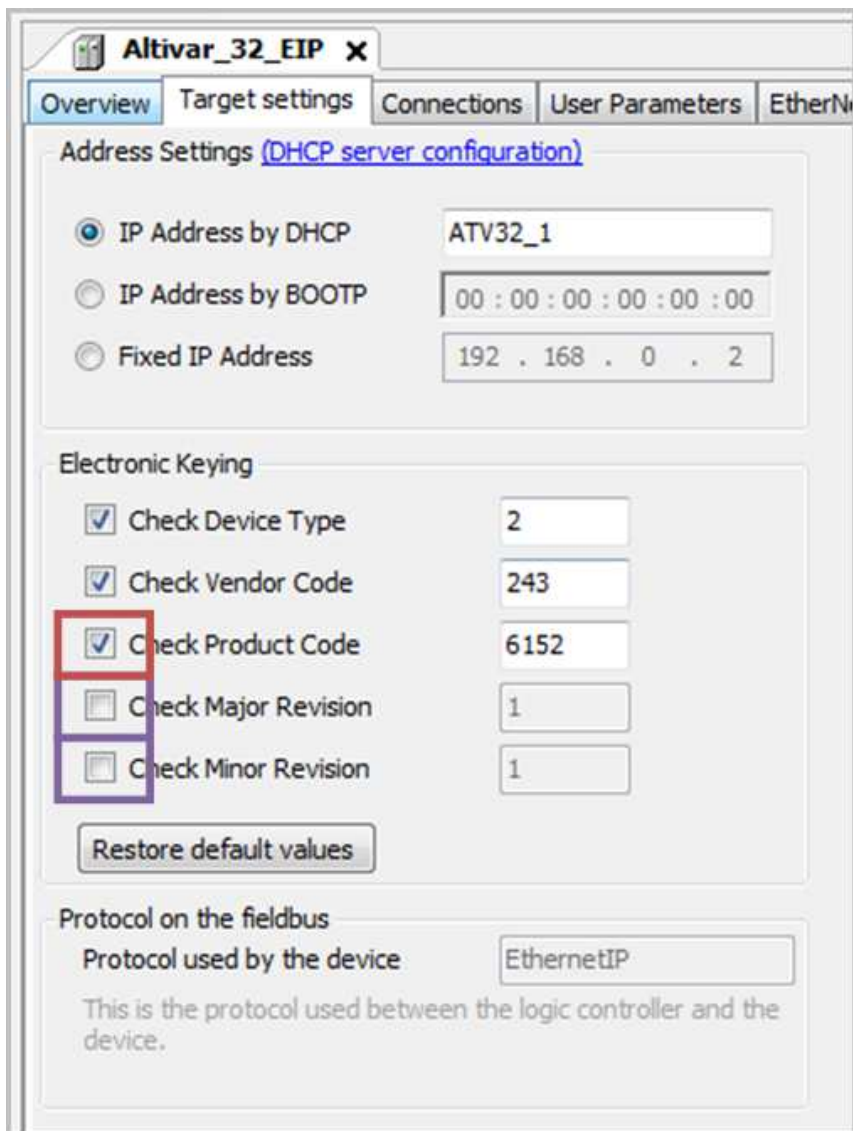


If one of the checkbox surrounded in red here over is activated, then you need to *Activate the compatibility mode "ATV32" in the ATV320.*

If the checkbox surrounded in purple here over is activated, most likely the device replacement won't be possible. You'll need to modify the SoMachine project.

3.2.1.2. On EtherNet/IP

Step 3a: Go to the "Target Settings" tabulation



If one of the checkbox surrounded in red here over is activated, then you need to *Activate the compatibility mode "ATV32" in the ATV320.*

If the checkbox surrounded in purple here over is activated, most likely the device replacement won't be possible. You'll need to modify the SoMachine project.

3.2.1.3. On Modbus TCP

You don't need to *Activate the compatibility mode "ATV32" in the ATV320.*

3.2.2. How to activate the compatibility mode "ATV32" in the ATV320

Note: Not possible with SoMove or local keypad.

3.2.2.1. Using a Modbus SL client software

Step 1: activate the "ATV32" mode by writing over Modbus SL to the ATV320 device the word d#1 to the parameter "AP17" having the address d#8817

Step 2: save the modification in EEPROM by writing the word d#2 to the parameter "CMI" having the address d#8504

Note:

- use d#0 for AP17 in order to have the default ATV320 mode

- use d#1 for AP17 in order to activate the ATV32 mode

3.2.2.2. Using a CANopen client software

Step 1: activate the "ATV32" mode by writing over CANopen to the ATV320 device the word d#1 to the parameter "AP17" having the address (index:subindex) = 16#203A:16#12

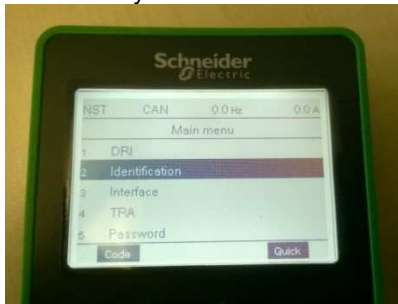
Step 2: save the modification in EEPROM by writing the value d#2 to the parameter "CMI" having the address (index:subindex) = 16#2037:16#5

Note:

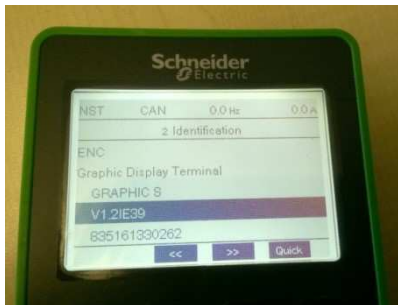
- use d#0 for AP17 in order to have the default ATV320 mode
- use d#1 for AP17 in order to activate the ATV32 mode

3.2.2.3. Using the graphical keypad of the ATV320

1. Select entry "2.IDENTIFICATION".



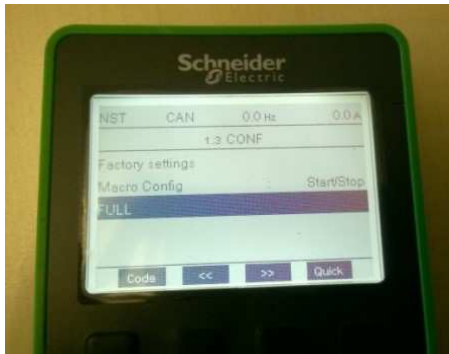
2. Put the cursor on the "GRAPHIC DISPLAY TERMINAL" version.



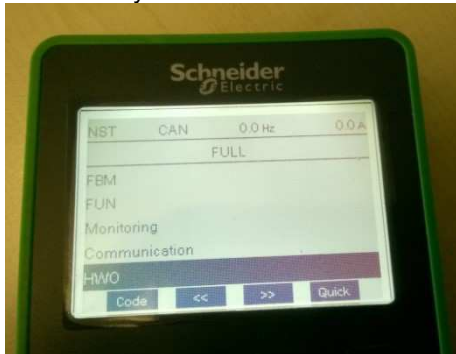
3. Then Push the button "ENTER" for 5s, until the graphic keypad displays again the menu "2.IDENTIFICATION".
4. Select entry "1.3 CONF".



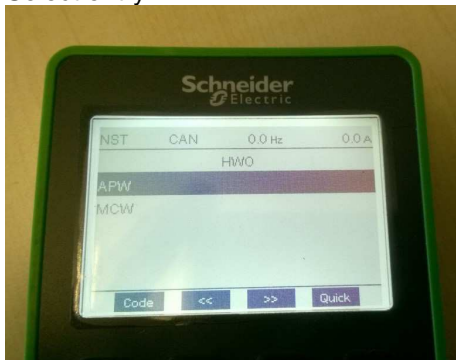
5. Select entry "FULL".



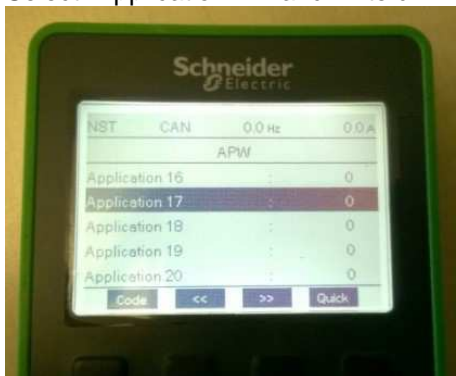
6. Select entry "HWO".



7. Select entry "APW".



8. Select "Application 17" and write d#1.



Note:

- use d#0 for "Application 17" in order to have the default ATV320 mode
- use d#1 for "Application 17" in order to activate the ATV32 mode

3.3. LIST OF INTEGRATED COMPONENTS

Component / SECOs	Version
CoDeSys	3.5SP3Patch8HF5 (Release 3.5SP3Patch8HF5_Modified)
SESUVersion	2.1.0
LMVersion	1.9.9.0
Configuration Manager	4.32.0.0 (14201)
Gateway	16.1.0.0 (17.05.05.01)
GatewayOptionalDrivers	16.1.0.0 (17.05.15.01)
ControllerAssistant	16.1.10.0 (17.05.19.01)
OPC	16.1.0.0 (17.05.05.02)
Central	4.3.0.0 (17.06.20.01)
Core	4.3.0.0 (17.06.20.01)
LogicBuilderExe	4.3.0.0 (17.06.20.01)
LogicBuilder	4.3.0.0 (17.06.20.01)
LogicBuilderLMC078	4.3.0.0 (16.09.13.01)
LogicBuilder M218	4.3.0.0 (17.05.24.03)
LogicBuilderLexium28	4.3.0.0 (16.09.13.01)
OnlineHelp	4.3.0.0 (17.05.31.01)
CoreRepository	4.3.0.0 (17.06.20.01)
OptimizedRepository	4.3.0.0 (17.04.10.01)
PerformanceRepository	4.3.0.0 (17.01.17.01)
LogicBuilder TestManager	4.3.0.0 (17.06.20.01)
Hoisting Library	4.3.0.0 (16.09.13.01)
MaterialWorking Library	4.3.0.0 (16.09.13.01)

Packaging Library	4.3.0.0 (17.06.21.01)
Pumping Library	4.3.0.0 (17.05.02.03)
TVDA	4.3.0.0 (17.06.21.01)
LearningCenter	4.3.0.0 (17.06.21.01)
NetmanageServer	16.1.10.0 (17.05.19.01)
Diagnostics	16.1.10.0 (17.05.19.01)
SoftSPS	16.1.0.0 (17.03.15.03)
M218Repository	4.3.0.0 (17.05.24.03)
Vijeo 6_2_41	6.2.4.1068 (16.11.02.03)
Advantys	8.1.0.0 (16.09.12.02)
Altistart	10.0.0.0 (16.09.13.01)
Modbus	2.2.5.0 (16.09.13.01)
ModbusTcpSlaveHMISCU	4.3.0.0 (17.05.31.01)
TM5 - TM7	1.1.8 (16.09.13.01)
Launcher	16.1.0.0 (17.05.05.01)
Altivar	12.1.0 (16.09.20.04)
AltivarATV320DtmLibrary	1.1.5 (17.05.05.02)
AltivarATV340DtmLibrary	1.2.2 (17.05.15.01)
AltivarATV600DtmLibrary	1.6.6 (17.05.15.01)
AltivarATV900DtmLibrary	1.3.4 (17.05.15.01)
TeSys	2.7.9.0 (16.09.13.01)
Lexium28	1.0.3.20 (16.09.13.01)
Lexium28PLCOpen	4.1.0.1 (16.09.22.03)
Lexium32	1.14.2.00 (16.09.13.01)
Harmony	1.0.24.0 (16.09.13.01)
HMIGXORepository	4.3.0.0 (16.09.13.01)

FDTDTM	4.3.0.0 (16.09.14.03)
HMI Patch for SoMachine V4.2	4.3.0.0 (16.09.13.01)
Schneider Electric LicenseManager	1.9.9.0 (17.01.17.01)
Schneider Electric Software Update	2.1.0.59 (17.05.05.01)
LogicBuilder ETest	4.3.0.0 (17.06.20.01)
CanOpenSlave	4.3.8.1 (16.8.17.1)
FileFormatUtility	4.3.0.0 (17.6.19.520)
InternetProtocolSuite	4.3.0.0 (17.5.10.883)
LMC058	4.3.9.3 (17.5.9.1)
LMC xx8	1.51.15.1 (17.3.28.691)
M221	4.3.2.0 (15.7.30.2802)
M241	4.3.9.7 (17.6.13.1)
M251	4.3.9.7 (17.6.13.1)
M258	4.3.9.3 (17.5.9.1)
SQLLibrary	4.3.0.0 (17.3.21.958)
TM5NS31	1.54.2.0 (15.9.22.260)