# Welcome to ABB Automation Builder 2.6.1

These release notes contain important information about the Automation Builder software.
Please read this file carefully and completely. It contains the latest information and relevant documentation.
The latest version of this document is available at:
https://search.abb.com/library/Download.aspx?DocumentID=3ADR011154&Action=Launch

## Most important changes of Automation Builder 2.6.1

**Automation Builder**
- General performance improvements and bug fixes
- Support of new AC500-eCo PLC PM5082
- Technology preview of pumping library (PS5608-Pump)

**PLC - AC500 V3 Processor Modules (PM5xyz)**
- New firmware version 3.6.2
  - Improved performance of Modbus TCP and Modbus RTU

**CP600**
- Integration of latest Panel Builder version 4.5.0.678 containing quality improvements

**Drive Engineering**
- Integration of latest Drive composer pro version 2.8.2 containing quality improvements

## Most important changes of Automation Builder 2.6.0

**Automation Builder**
- General performance improvements and bug fixes
- Support of side-by-side installations
- Introduction of Automation Builder 64-bit version

**PLC - AC500 V2 Processor Modules (PM5yz)**
- New firmware version 2.8.6 with improved security
- Certified by Achilles level 2

**PLC - AC500 V3 Processor Modules (PM5xyz)**
- New firmware version 3.6.0
- System features
  - **Attention**: Overall improved system behavior might have side effects on Modbus TCP and IEC 61850 communication by generating more load. In case an upgrade to FW 3.6 is required, it is recommended to qualify the application again – especially for systems running at high load values and where this load is mainly due to fast update rates of these protocols.
  - All AC500 libraries are signed with a trusted timestamp, i.e. they will always be shown as trustworthy in the library manager
  - Convenient access from IEC application to I/O channels without mapping of symbol names to individual I/O channels - either PLC wide by using default channel names or via automatically generated and editable data structures
  - Improved IEC 61131 editors
  - Use of communication manager to publish data via the OPC UA server
  - TCI (Tool Calling Interface) conformance class 1 and 2 support for 3rd party PROFINET and PROFIsafe devices
  - Integration of externally created HTML5 objects into web visualization
  - User management of visualization can be combined with PLC user management
- Communication
  - Availability of additional ethernet ports via new communication module CM5640-2ETH(-XC)
  - Availability of Profinet shared device functionality via CM589-PNIO-4(-XC)
  - **Attention**: Mandatory to use new Profinet stack coming with a new library. After project migration manual adaptions in the PLC application are required. Further information is available from the application note AC500 V3 upgrade of projects with PROFINET to Automation Builder 2.6
  - Support of SNMP v2 and v3
  - Support of sending e-mails (SMTP and SMTPS)
- Safety
  - Support of F-Device functionality via SM560-S-FD-1(-XC) and via SM560-S-FD-4(-XC)
  - Improved look&feel of the AC500-S Programming Tool
  - Integration of the AC500-S SCA (Safety Code Analysis) tool into Automation Builder

**CP600**

- Integration of latest Panel Builder version 4.5.0.632

**Drive Engineering**

- Default installation of most common ABB Drives for Ethernet/IP, EtherCAT and CANopen
- Integration of latest Drive composer pro version 2.8.1

## Information to Automation Builder side-by-side installations:

Automation Builder versions can be installed side-by-side starting from version 2.6.0. The different versions are installed in separate installation folders.
For technical reasons there are some shared components across the different Automation Builder versions. Even despite the side-by-side installation of Automation Builder versions, these components will continue to be shared. Examples of shared components are AC500 V2 libraries, Codesys V2 engineering and gateway, Panel Builder or Drive composer pro.Those are excluded from uninstallations as long as there is more than one Automation Builder version installed.
If Automation Builder 2.6.0 is installed, it is strongly recommended to only install Automation Builder 2.5.2 side-by-side. For Automation Builder versions prior to 2.5 please install the version 2.5.2 with the required version profiles.
Each installed Automation Builder version has its own Installation Manager to maintain it, e.g. for modifications and uninstallation. An updated Installation Manager for Automation Builder versions prior to 2.6.0 is installed by default to handle side-by-side installations properly. Please run the Installation Manager for Automation Builder 2.6.0 after any previous Automation Builder versions are uninstalled or modified.
It is not possible to install side-by-side the same Automation Builder AB 2.6.0 version in 32-bit and 64-bit.
Project and library files can be opened via the Windows file explorer “Open with” functionality with the desired Automation Builder version.

## Limitations of Automation Builder 64-bit:

- For technical reasons migration of AC500 V2 libraries to AC500 V3 is not available with the 64-bit version. This has to be done by the 32-bit version.
- Drive Manager for AC500 V2 is not available with Automation Builder 64-bit

## General information

- The installation of the ABB Automation Builder software requires administrator rights.
- Prior to installation, the Automation Builder, Control Builder Plus, CODESYS software and the CODESYS Gateway Server must be shut down.
- Automation Builder 2.6 installs side-by-side with already installed Automation Builder/Control Builder Plus versions. Projects created with previous versions can be upgraded to the latest version easily. If upgrading is not desired, projects can be opened with the matching Automation Builder version.
- Automation Builder 2.6 creates a new device repository. Devices which had been installed additionally in previous versions of Automation Builder/Control Builder Plus can be migrated via menu “Tools” → “Migrate third party devices”.
- The English documentation contains the latest changes for Automation Builder 2.6. Latest documentation packages can be found on the ABB website: www.abb.com/plc → Download Documentation, and then select your language.
- Automation Builder 2.6 includes CODESYS version 3.5 and 2.3. Side-by-side installations of other CODESYS version 2.3 based engineering tools like AC1131 may cause issues or disturb the use of one or both tools. If side-by-side installation cannot be avoided, please install all other tools BEFORE installing Automation Builder.
- Windows Server installations: CoDeSys V2.3 Gateway Service Wrapper or server restart required after installation. For concurrent Gateway access a specific configuration is required, please refer to Automation Builder help for details
- When installing CP600 control panel option the Panel Builder installer may ask for replacing the last installed version of Panel Builder. This question has to be answered with “no”. In case of accidently choosing “yes”, the installer has to be executed again, although it has been finished successfully.
- AC500 V2: After upgrading projects to latest Automation Builder, please check for having the matching firmware installed before doing a download from CoDeSys.
- Availability of online activation of licenses might be affected by local IT security settings. In case the online activation of licenses is failing please use the offline activation.
- Latest cyber security information is always available on the ABB cyber security alerts and notifications website. We strongly recommend to subscribe to e-mail notifications!

## System Requirements

- 8 GB RAM
- 5-18 GB free available hard disk space depending on the selected feature set
- Supported operating systems:
  - Windows 11 (32/64 Bit) Professional / Enterprise
  - Windows 10 (32/64 Bit) Professional / Enterprise
  - Windows Server 2012 R2 64 bit (all devices have to be directly accessible by the server; requires enabled .Net Framework 3.5)
  - Windows Server 2019 (all devices have to be directly accessible by the server; requires enabled .Net Framework 3.5)

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# Changes in Automation Builder 2.6.1

The release includes the following device groups:

### Automation Builder

| *Functional changes / New features* | *Version* |
|---|---|
| Support of side-by-side installation instead of selecting required version profiles during installation | 2.6.0 |
| Availability of 64bit version | 2.6.0 |
| TCI (Tool Calling Interface) conformance class 1 and 2 support for 3rd party PROFINET and PROFIsafe devices | 2.6.0 |
| Support of CM589-PNIO-4 (-XC) | 2.6.0 |
| Support of SM560-S-FD-1 (-XC) and SM560-S-FD-4 (-XC) | 2.6.0 |
| Integration of AC500-S SCA (Safety Code Analysis) tool in Automation Builder | 2.6.0 |
| New PROFINET IO controller firmware V3.0.0.x of CM579-PNIO (-XC) communication module for V3 CPUs uses an updated PROFINET library. It requires manual adaptations of the PLC application. Further information is available from the application note AC500 V3 upgrade of projects with PROFINET to Automation Builder 2.6 | 2.6.0 |
| Gateway configurations can be repaired and set to newest available Gateway via the Installation Manager which checks the configuration during launch. | 2.6.0 |

| *Fixed issues* | *Version* |
|---|---|
| Scripting: Scripts might not be editable in Automation Builder if those are added to the project via "Enter" key from keyboard on the add script dialog.<br><br>Workaround: Please use the "Add" button on the "Add Script" wizard.If the script was already created and can't be opened again, please rename the script and try to open it again. | 2.6.1 |

| *Known problems* | *ID* |
|---|---|
| Licensing: Number of standard or premium licenses that are purchased 2018 and earlier that can be activated in one license container is limited to 4<br>Workaround: use license dongle if more licenses are required or contact Automation Builder support to update the licenses | n.a. |
| Installation issue on Windows 10:<br>During installation there might be issues with automatically deleted files by Windows in temporary folders which are required for installation. This automatic temporary file deletion is introduced with Windows 10 feature update (build 17720 and later).<br><br>Workaround: if you run into installation issues on Windows 10, please try to disable "Storage Sense":<br>Windows → Open Settings → Click on System → Click on Storage → Turn off the Storage sense toggle switch | AB-15979 |
| Automation Builder installation:<br>In case a PC reboot is required/executed during Automation Builder installation the setup might have to be restarted manually after PC restart.<br>Workaround: Please start the setup after restart and select the desired options to install. The setup will then continue the installation where it has been interrupted for reboot | n.a. |
| Projects created in Control Builder Plus software versions cannot be upgraded automatically to Automation Builder version 2.1.X.<br>Workaround:<br>• open project with profile "Automation Builder 1.2", perform upgrade, save project<br>• open project with latest profile "Automation Builder 2.0", perform upgrade, use project | n.a. |
| ABB I/O mapping list view for disconnected modules on PROFINET IO devices with Shared Device functionality like AC500 CM589-PNIO-4 (-XC) or 3rd party PROFINET IO devices (drives, I/O modules, encoders, etc.) is temporarily not supported. As a result, no I/O mapping information is shown for disconnected modules on CM589-PNIO-4 (-XC) or 3rd party PROFINET IO devices with Shared Device functionality in Automation Builder.<br>Workaround:<br>• use standard I/O Mapping for disconnected modules on CM589-PNIO-4 (-XC) or 3rd party PROFINET IO devices with Shared Device functionality | AB 2.0.3 |

**Disclaimer**: Technology Previews are designed to give you a preview at upcoming technologies. They are non-final versions of our product and should NOT be taken as a measure of the fit, finish, capability, and overall quality of the final release (including user documentation). Technology Preview features can be changed or removed in newer versions of Automation Builder as communicated via the release notes. If technology previews are subject to licensing, please contact your ABB sales representative.

## PLC - AC500 V2 Processor Modules (PM5xy)

**Firmware version embedded into Automation Builder 2.6.0: FW 2.8.6**

| *Functional changes / New features* | *Version* |
|---|---|
| System: Firmware has been certified according to Achilles Level 2 | 2.8.6 |
| System: Upgrade CODESYS runtime to V2.4.7.57 (fixes several known security issues) | 2.8.6 |
| System: Battery consumption has been optimized | 2.8.6 |

| *Known problems* | *ID* |
|---|---|
| Safety: SM560-S communication error during login and download: The usage of large arrays with initial values safety application leads to a communication error with automatic logout | CPUFW-8723 |
| Profinet: Only first F-Device error number (per Slot) is sent via PROFINET (CM589-PNIO) | CPUFW-8235 |
| IEC60870-5-104: In configurations with a high number of tags and in combination with the general interrogation command, the substation communication might not start. In this case the PLC responds with a negative confirmation of the general interrogation and the process image is also not sent.<br><br>Workaround: Reduce the initial load to the PLC, e.g. by starting one substation after the other in case of multiple substations. | CPUFW-8955 |
| Profinet: After download of an IEC project containing the POU PNIO_DEV_ALARM sometimes the POU reports the error 0x1005 (4101) which means that the specific driver is not yet ready. The PROFINET communication keeps on running, but the POU permanently reports this error.<br><br>Workaround: Create a boot project and reboot after the download in case this error appears. | CPUFW-8940 |
| System: SystemTime and TimeDate in CurTimeEx show different values when executed simultaneously.<br><br>Workaround: Select only one single way of getting the time and only use that in the whole application. | CPUFW-8591 |
| Bit wise access of LWORDs is subject to different byte order than other data types.<br><br>Workaround: Do not use bit wise access (via ".bit"). | CPUFW-8464 |
| Webserver: Parallel access of the webserver cannot be limited. The corresponding parameter only limits the number of available sockets for webserver connections. | CPUFW-8348 |
| Web Visualization: Java Applet might be blocked by your web browser<br>The Java Applet that provides the AC500 web visualization, created in Automation Builder V2.0.4 or lower includes an intermediate certificate that expired on Saturday April 13th, 2019. After this date the validation procedure for the certificate might fail as it cannot be validated via the “OCSD” procedure.<br>Depending on your browser and whether your computer is connected to the Internet, the Applet will be blocked after that date.<br><br>Workaround: The workaround steps are described in detail in the following application note:<br>http://search.abb.com/library/Download.aspx?DocumentID=3ADR010388&LanguageCode=en&DocumentPartId=&Action=Launch | AB-16179 |
| C-Code for AC500 V2: Replacing the C-Code Library is not working when CoDeSys 2.3 is running.<br><br>Workaround: Close CoDeSys 2.3 before replacing the library. | AB-22526 |
| Buffered Data: PM595-4ETH-F: Set IP address without plugged battery leads to loss of RETAIN and PERSISTENT data.<br><br>Workaround: Use RETAIN, PERSISTENT and/or RETAIN PERSISTENT data only with plugged battery. | CPUFW-7032 |
| Online access: Additional Visu Files at PLC without Onboard Ethernet leads to error during download<br><br>Workaround: Don't use Additional Visu files in PLCs without Onboard Ethernet | CPUFW-6929 |
| C-Code: PLC crashes on download program running C-Code-lib build with newer revision of FWAPI, e.g. BACnet library created with AB 2.2.0 (FWAPI 2.8.x) used with PLC firmware V2.7.2.<br><br>Workaround: Update PLC firmware to same version as FWAPI in C-code lib, e.g. PLC firmware V2.8.1 | CPUFW-6916 |
| Online access: Connecting a CP600 Panel via CODESYS protocol serial avoid creating a boot project<br><br>Workaround: Disconnect panel during creating of boot project | CPUFW-6885 |

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| Working on CoDeSys 2.3 projects with administrator and non-administrator users might lead to inconsistent data<br><br>Workaround: avoid working in this setup with administrator and non-administrator users | n.a. |
| Activating the CANopen sync mode requires to activate the "generic configuration view" (see "Tools->Options->Device editor") | AB-9768 |
| CM574-RS: If the parameter "Enable debug" is set to "Off" and when the PLC stops the CM574-RS continues to run causing an E2 failure.<br><br>Workaround: Set the parameter "Enable debug" to "On". | CPUFW-5538 |
| When PM5xx-ETH with 4 x CM597-ETH connected on the switch, the IP-Configuration tool shows a wrong "Configured IP Address" for PM5xx-ETH. When unplugging the cable from all CM597-ETH, the "Configured IP address" shows the right value."<br><br>Workaround: Unplug the CM597-ETH from the switch to check the IP address from PM5xx-ETH. | CPUFW-5537 |
| System: DC541: Error message after firmware update also in case of correct update<br><br>Workaround: Check FW version of DC541 after update | CPUFW-4659 |
| System: DWORD_TO_LREAL and UDINT_TO_LREAL: DWORD/UDINT value cannot be proper converted to LREAL if DWORD/UDINT >16#80000000. For PM595-4ETH CODESYS compiler generates warning.<br><br>Workaround: Add new function:<br>FUNCTION DWORD_TO_LREAL_ABB : LREAL<br>VAR_INPUT x: DWORD; END_VAR<br>VAR b: LREAL; END_VAR<br>b := DWORD_TO_LREAL(x);<br>IF b < 0.0 THEN b := 4294967296.0 + b; END_IF;<br>DWORD_TO_LREAL_ABB := b;<br>call function DWORD_TO_LREAL_ABB instead of DWORD_TO_LREAL in user program:<br>PROGRAM PLC_PRG<br>VAR a: DWORD; b: LREAL; END_VAR<br>b := DWORD_TO_LREAL_ABB(a); | CPUFW-3741 |
| POU: PM595-4ETH, LED_SET is without function in Mode=0. The POU is intended to control the additional LED's.<br><br>Workaround: Use POU LED_SET to control the additional LED's. | CPUFW-3721 |
| System: Firmware download to CM574-RS can lead to watchdog error of CM574-RS in case of using freewheeling task in CM574-RS<br><br>Workaround: Don't use freewheeling task in CM574-RS | CPUFW-3675 |
| Some Online Services lead to log out on PM595-4ETH<br><br>Workaround: None | CPUFW-3465 |
| Socket opened by IEC application via SysLibSock is not closed on PLC Reset<br><br>Workaround: None | CPUFW-3443 |
| "Run time of FB DEL_APPL is increased for about 6s. This is caused by increasing the time for delete flash."<br><br>Workaround: None | CPUFW-3087 |
| SysLibFile library: As of V2.3.x, dtLastAccess.time is always 00:00 on call of SysFileGetTime()<br><br>Workaround: None | CPUFW-2833 |
| CS31-Bus: In case of connection of AC31 modules like 07AC91, 07AI91, DC91 to CS31-Bus of COM1 and/or COM2 of CM574-RS, PM5xx-eCo, PM57x or PM58x a lot of bus errors occurs. Sometime these modules disconnect and reconnects. S500 modules don't show such effects.<br><br>Workaround: Don't use these datatypes in webvisu | CPUFW-1833 |
| WEB server: ActiveX-Element display incorrectly<br><br>Workaround: Don't use Active-X element in webvisu | CPUFW-1593 |
| WEB server: Alarm tables do not work on webvisu, if "All alarm groups" is selected. Messages are not displayed properly.<br><br>Workaround: Don't select "All alarm groups" | CPUFW-1506 |
| Telecontrol: (IEC60870-5-104) connection does not function properly after a long cable break<br><br>Workaround: Restart PLC after long cable break | CPUFW-1433 |

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| WEB server: In WMF-file integrated text isn't displayed in visualization<br><br>Workaround: Don't use WMF-file with integrated text | CPUFW-1310 |
| WEB server: The following datatypes are wrongly displayed in the web browser with the mentioned formatting strings:<br>byte with %i and %u, in both cases only the format letter (i or u) is displayed without the %<br>sint with %s shows the two's complement when negative values should be displayed<br>udint with %d shows a -1 if the maximum possible value of this datatype should be displayed<br>udint with %i and %u, in both cases only the format letter (i or u) is displayed without the %<br>dint with %i, only the format letter (i) is displayed without the %<br>lreal with %2.9f shows the infinity sign if the maximum/minimum value of this datatype should be displayed<br>udint with %s shows a -1 if the maximum possible value of this datatype should be displayed<br>real and lreal with %s shows 0.0 if the minimum possible value of this datatype should be displayed<br>lreal with %s shows the word infinity if the maximum possible value of this datatype should be displayed<br>char with %c, only the format letter (c) is displayed without the % instead of a single letter<br><br>Workaround: Don't use these datatypes in webvisu | CPUFW-1304 |
| Online: Display of the task priority shown not the correct value for interrupt task -> It is not the shown value of the boot project!<br><br>Workaround: No workaround. Interrupt task: Shown priority is the internal operating system priority | CPUFW-1072 |
| WEB server: option "Best fit in online mode" doesn't work properly<br><br>Workaround: WEB server: Option "Best fit in only mode" is not recommended for web visualization. | CPUFW-921 |
| SD card write protection function is not available for AC500-eCo CPUs<br><br>Workaround: SD-card write protection is not evaluated by AC500 CPUs. Write protected cards can be overwritten. Protect the SD card by yourself. | CPUFW-748<br>ECOHW-11 |

## PLC - AC500 V3 Processor Modules (PM5xyz)

**Firmware version embedded into Automation Builder 2.6.1: FW 3.6.2**

**Important Notes:**
- For AC500 V3 CPUs, the handling of diagnosis is different from the AC500 V2 CPUs.
- Please check the library placeholder resolution in case libraries are not found after project update. Set the placeholders back to default or select a matching available library version, e.g. via Project -> Project Environment.

| *Functional changes / New features* | *Version* |
|---|---|
| Support of PM5082 | FW 3.6.1 |
| Improved performance of Modbus TCP and Modbus RTU | FW 3.6.1 |
| Support of CM589-PNIO-4 (-XC) | FW 3.6.0 |
| Support of SM560-S-FD-1 (-XC) and SM560-S-FD-4 (-XC) | FW 3.6.0 |
| Support of PROFINET Shared Device functionality | FW 3.6.0 |
| New PROFINET IO controller firmware V3.0.1.21 is available for CM579-PNIO (-XC) communication module.<br>- Extended start-up support for PROFINET IO devices<br>- Multiple writes for record data of PROFINET IO devices<br>- No VLAN (Virtual LAN) tags are supported according to the latest PROFINET standard specification<br>It is supported by V3 CPUs only and uses an updated PROFINET library. | AB 2.6.0 |
| Ethernet: Support CM5640-2ETH Ethernet communication module | FW 3.6.0 |
| AC500-eCo Option Boards: "Support of new analog option boards for AC500-eCo PLCs:<br>- TA5120-2AI-UI<br>- TA5123-2AI-RTD<br>- TA5126-2AO-UI<br>Including support of option board firmware update" | FW 3.6.0 |
| Support for updated CPU hardware: Order numbers ending with R03xx (AC500 V3) or with R01xx (AC500-eCo V3) | FW 3.6.0 |
| I/O-Bus: Technology preview: Reconfiguration of I/O-Bus by IEC application | FW 3.6.0 |

| *Fixed issues* | *Version* |
|---|---|
| AC500-eCo option boards: Firmware version of analog option boards may be shown incorrectly in Automation Builder. | FW 3.6.1 |
| CM5640-2ETH: Web server and OPC UA server configured on CM5640-2ETH are not working in case the device is plugged on slot number 2 or higher.<br><br>Workaround: Use CM5640-2ETH on slot 1. | FW 3.6.1 |
| System: On startup, there might be some seconds of high CPU load affecting execution of non realtime tasks.<br><br>Workaround: Code that is mandatory to be executed right at startup should be called in realtime task. | FW 3.6.1 |
| SM560-S: F-Device diagnosis messages may be lost sometimes, resulting in false positive error logs in CM589-PNIO(-4) device. | FW 3.6.1 |
| PROFINET: In case all Profinet I/O devices are disconnected from the PLC, automatic re-connection of the devices might not work.<br><br>Workaround: Monitor the bus state (via FB CM579PnioGetCntrlState) and re-start the communication in case of this issue (via FB CM579PnioStartCom) | FW 3.6.1 |
| PROFINET: The diagnosis "profisafe watchdog detected" on CM589-PNIO(-4) is not cleared after connection is established again. | FW 3.6.1 |
| Ethernet/IP: Adapter cannot be extended by Ethernet/IP modules with inputs and outputs.<br><br>Workaround: Define Ethernet/IP adapter configuration in Automation Builder 2.5 and upgrade the project to Automation Builder 2.6 | AB 2.6.1 |
| OPC UA client: Unable to establish OPC UA communication by using the data sources manager<br><br>Workaround: Use library based OPC UA client implementation | AB 2.6.1 |
| Automation Builder 64bit and IP scan: Profinet and EtherCAT scans are not working via the IP configuration within Automation Builder, an "Error: error opening socket" is shown.<br><br>Workaround: Please use the IP configuration as standalone tool available via Installation Manager -> "IP Configuration Tool" option installation | AB 2.6.1 |
| Factory reset (via 'Diagnostics live list'):<br>The shown status of factory reset executions of PNIO devices might not be correct as Automation Builder always shows message 'The slave has been reset to factory settings' even if reset attempt has failed. | AB 2.6.1 |
| System: In rare cases the application based reboot (FB PmPlcReboot) may lead to the PLC being unresponsive. In these cases a manual reboot via power cycle is required. | FW 3.6.0 HF2 |
| System: In rare cases remanent data can get deleted during power cycle | FW 3.6.0 HF2 |
| Modbus RTU: Sometimes false positive error no. 32770 / 16#8002 ("Internal error I/O layer") is reported by ModRtuMast FB | FW 3.6.0 HF2 |
| Modbus RTU: Too long processing times of ModRtuMast FB for time sensitive applications | FW 3.6.0 HF2 |

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|---|---|
| Ethernet: Memory leak during MQTT connect in case authentication fails | FW 3.6.0 HF1 |
| Modbus RTU: Modbus RTU client might on AC500-eCo serial option board might set the PLC to stop in case of<br>1) using more than one serial option boards<br>2) missing Modbus RTU server response<br>Furthermore, the buffer of the Modbus RTU client might not be updated in case of high PLC load. | FW 3.6.0<br>FW 3.5.0 HF8 |
| OPC UA: OPC UA client stops working after 1 hour because of missing license | FW 3.6.0<br>FW 3.5.0 HF8 |
| Modbus RTU: Modbus RTU communication needs several minutes to re-establish after line has been disconnected and reconnected again. | FW 3.6.0<br>FW 3.5.0 HF6 |
| Modbus RTU: When using Modbus RTU communication, AC500 V3 PLC might shut down in applications with repeating interruptions or disturbances in serial communication. | FW 3.6.0<br>FW 3.5.0 HF6 |
| AC500-eCo onboard I/Os: After crash of PLC the onboard outputs are not reset to zero | FW 3.6.0<br>FW 3.5.0 HF4 |
| Ethernet: When connecting CP600 operator panels by using the "CODESYS V3 ETH" protocol, in rare cases data exchange with other CP600 operator panels or with OPC DA servers can become very slow. | FW 3.6.0<br>FW 3.5.0 HF2 |
| Ethernet: After login with Automation Builder 2.5, the IP scan returns wrong results and IP address can no longer be changed until reboot of the PLC.<br><br>Workaround: Reboot PLC for changing IP address | FW 3.6.0<br>FW 3.5.0 HF2 |
| PROFINET: Incorrect handling of pull/plug alarms | FW 3.6.0<br>FW 3.5.0 HF1 |
| EtherCAT: Number of sync units is limited to 72<br><br>Workaround: Don't use more than 72 sync units | FW 3.6.0<br>FW 3.5.0 HF1 |
| MQTT: MQTT publish has always the size of the very first message, exception when disabling publish function block. | FW 3.6.0<br>FW 3.5.0 HF1 |
| Memory card: Un-/plugging a memory card during RUN can cause high system latency and ultimately trigger a watchdog<br><br>Workaround: Do not plug or remove a memory card during RUN | FW 3.6.0 |
| AC500-eCo: When no memory card plugged in an AC500-eCo V3, realtime behavior of the PLC cannot be guaranteed<br><br>Workaround: Always plug a memory card in the PLC | FW 3.6.0 |
| System: Migration from AV500 V2 to AC500 V3: REAL_TO_WORD with parameter -1 returns 0 on AC500 V3 instead of 65535 on AC500 V2<br><br>Workaround: Manually check calls of REAL_TO_WORD during migration from AC500 V2 to AC500 V3 | FW 3.6.0 |
| CAN: CAN2A receive FB for CM598 is slower than for AC500 V2 | FW 3.6.0 |
| System: In some rare cases there are wrong timestamps that are dated in the far future | FW 3.6.0 |
| AC500-eCo Option Boards: Option boards for serial communication that are produced 2023 or later will not be detected<br><br>Workaround: Use option boards with earlier production date | BootFW 3.5.0.76<br>BootFW 3.6.0 |
| AC500-eCo onboard I/Os: Outputs from onboard IO of AC500-eCo begin to blink, if the task execution time is longer than the configured cycle time | FW 3.6.0 |
| AC500-eCo Option Boards: AC500-eCo V3 simulation mode not working when any options boards are configured | FW 3.6.0 |
| Backup/Restore: Restore of certificates for encrypted communication does not work.<br><br>Workaround: Create certificate for encrypted communication again after doing the restore. | FW 3.6.0 |
| Simulation: Simulation mode does not work for AC500-eCo PLCs with plugged option boards<br><br>Workaround: Remove option boards from project and before switching to simulation mode. | FW 3.6.0 |
| COM port: The function ComGetIdByName does not work for AC500-eCo PLCs, the return value will be always 255 (COM_PORT.COM_ID_INVALID) | FW 3.6.0 |

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| System: Unaligned REAL or LREAL access with pointers is leading to an exception and the IEC application is stopped.<br><br>Example (for type REAL):<br>{attribute 'pack_mode' := '1'}<br>TYPE MyStruct :<br>STRUCT<br>  bBool: BOOL;<br>  rReal: REAL;<br>END_STRUCT<br>END_TYPE<br><br>PROGRAM PLC_PRG<br>VAR<br>  myStruct : MyStruct;<br>  pVarR: POINTER TO REAL;<br>  rVar: REAL;<br>END_VAR<br><br>pVarR := ADR(myStruct.rReal);<br>myStruct.rReal := 123;  (* -> correct handling *)<br>pVarR^ := 123;  (* -> exception: not 4-byte-aligned *)<br><br>Workaround: Access the variables via structure elements as shown in the example above. | FW 3.6.0 |
| Diagnosis: The following CPU parameters are being ignored:<br>- Diagnosis history (on/off)<br>- Max. diagnosis history entries<br>Diagnosis history is always enabled, entries are limited to 2000. | FW 3.6.0 |
| Profibus DP: When using a CI54x device with index prior to “F1” the parameter "Diagnosis behavior" is only supported with value "AC500 V2 compatible". For using the setting "AC500 V3 compatible" a newer CI54x firmware is required. Please update then the firmware to the latest version. | FW 3.6.0 |
| SysLibs: The FB PmProdReadAsync returns the ProductID for PLCs with one Ethernet interface (PM5012, PM5032, PM5052) in output "Mac1" instead of "ProductId".<br><br>Workaround: Use value from output "Mac1" as "ProductId" for PM5012, PM5032 and PM5052. | FW 3.6.0 |
| BACnet EDE file import is not allowing to select an exported file.<br><br>Workaround: Please rename the exported file to *_EDE.csv and retry the import | FW 3.6.0 |
| Persistent memory: Please note that 44 bytes of the persistent memory is reserved by the system for internal data. If the persistent memory is used, the usable area is reduced by this amount.<br><br>Workaround: not available | FW 3.6.0 |

| *Known problems* | *ID* |
|---|---|
| Visualization: When being online with Automation Builder, each open page of the visualization in Automation Builder reduces the number of available connections by one.<br><br>Workaround: Consider number of open visualization pages in Automation Builder, if it is mandatory that external clients can access the web visualization at the same time. | CPUFW-9815 |
| Visualization: When being online with Automation Builder, each open page of the visualization in Automation Builder reduces the number of available connections by one.<br><br>Workaround: Consider number of open visualization pages in Automation Builder, if it is mandatory that external clients can access the web visualization at the same time. | CPUFW-9815 |
| Profinet: In case all Profinet I/O devices are disconnected from the PLC, automatic re-connection of the devices might not work.<br><br>Workaround: Monitor the bus state (via FB CM579PnioGetCntrlState) and re-start the communication in case of this issue (via FB CM579PnioStartCom) | CPUFW-9804 |
| Security: When upgrading the PLC Firmware from version 3.4.x or earlier to version 3.5.x or later, the ethernet ports may be in switch mode for a brief period during the update, even when configured as separate ethernet ports.<br><br>Workaround: Block ethernet traffic by external measures if this is required for security reasons | CPUFW-9793 |
| Visualization: The visualization does not recognize multitouch gestures like pinch to zoom | CPUFW-9136 |
| System: The PLC may fail to handle files larger than 2GB on memory cards or on the flash disk of the PM5675<br><br>Workaround: Split files before they reach the critical size of 2 GB | CPUFW-8976 |
| AC500-eCo Option Boards: If a TA5142-RS485 is configured in the application, the PLC will also accept if a TA5142-RS485I is plugged into the respective option module slot. No configuration error will be issued.<br><br>Workaround: Manually ensure that the correct variant is used | CPUFW-8605 |
| Modbus TCP: Overall improved system behavior has side effects on Modbus TCP by generating more load<br><br>Workaround: None - only upgrade to FW 3.6, if required and if application has been qualified | CPUFW-9792 |
| Pmlib: Tasks that are created by AsyncAdd() are not deleted when the related function block instance is deleted during online change<br><br>Workaround: When using AsyncAdd() make sure that online change is only used, when the related calls are not removed. | CPU_FWLIB-565 |
| JSON: The character "°" cannot be added to a string. This results in the error JSON_ERR_MEM_ERR. The parsing of strings containing this character is possible.<br><br>Workaround: Set the project-wide compile option "UTF8 encoding for STRING" | CPU_FWLIB-626 |
| CM579-PNIO (-XC) firmware version 3.0.1.21 has a network load issue. Additional network traffic (except own PROFINET traffic) should be avoided, as this may lead to a loss of the connection between PROFINET IO controller and device. | CMNETX-282 |
| FW update: CM5xx: The firmware update of communication modules via SD card does not work in one step in case of PLC update firmware version 3.2.1 or earlier.<br><br>Workaround: Update the communication module firmware in two steps by using the same SD card:<br>step 1: update of the PLC update firmware<br>step 2: update of the communication module firmware | CPUFW-8814 |
| CAN onboard: Calling the POU CL2.DriverOpenH (library CAA CanL2) to open the CAN interface is blocking the task and takes more than 100 ms to complete.<br><br>Workaround: Option 1: Move the call of POU CL2.DriverOpenH to an event task, triggered once in main CAN task. Start CAN communication, when the event task is done.<br>Option 2: Adapt the watchdog settings (time and sensitivity) accordingly. The I/O bus task must have a higher priority than the CAN task. | CPUFW-8769 |
| Diagnosis: After an application download the information about a missing battery (if applicable) is not listed in diagnosis history view. After a reboot missing battery information is available from the diagnosis history again.<br><br>Workaround: Either check active diagnosis entries or do a reboot, which will add that diagnosis information to the diagnosis history. | CPUFW-8830 |
| Profinet: For some hot swap related diagnosis, Automation Builder receives the unknown error id 8 instead of 9736).<br><br>Workaround: Check for both error ids. | CPUFW-8612 |
| CAA_File: After closing a file and switching of the PLC by disconnecting from the power supply, the data of the file might be lost.<br><br>Workaround: Always call File.Flush before closing a file. | CPU_FWLIB-588 |

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| IP scan: AC500 V3 PLCs running on full CPU load might not respond in time to IP configuration scan requests.<br><br>Workaround: Set PLC in stop before executing the scan. | AB-22603 |
| GSDML: Projects with GSDML devices might not be properly upgraded to Automation Builder 2.6 if the GSDML files are not installed before the upgrade. This issue doesn't occur in case of upgrading via project archive.<br><br>Workaround: Install the missing GSDMLs, execute a "Project update" and then a "Build" | AB-22669 |
| Library Manager: The library manager might not show the sources of not-compiled libraries referenced in a project.<br><br>Workaround:<br>• Add any "dummy" FB, action and method below the Application node of a V3 PLC<br>• Open each object once<br>• After this it is possible to open FBs, actions and methods of open-source libraries inside the library manager | AB-22580 |
| Library placeholder:<br>Starting with Automation Builder 2.6.0, placeholder redirections that are set inside the pool library manager of a library, will be ignored when the library gets included into an application. | AB-21659 |
| OPC UA server does currently not support the following data types:<br>• LTIME_OF_DAY<br>• LDATE<br>• LDATE_AND_TIME | AB-20397 |
| OPC UA: System.NullReferenceException error appears when any symbols from a second level referenced library is added as OPC UA tags in symbol set.<br><br>Workaround: Add this library directly in the Library Manager (via "Add library") | AB-22488 |
| FW update status on communication modules: The current update status might not be properly shown after the FW update.<br><br>Workaround: Please update the status with reloading the 'Version Information' view by de-selecting and selecting it again. | AB-22593 |
| FW update including the UpdateFW:<br>FW updates including the UpdateFW require two times the update process (1st UpdateFW and 2nd SystemFW). FW updates via SD cards handle these two updates automatically.<br><br>Workaround: Execute the FW update process twice in this case. | AB-22126 |
| Device Description:<br>Wrong warnings "Device Description missing" are shown for empty slots like COM, Slot_1, etc.<br><br>Workaround: These warnings can be ignored | AB-21247 |
| Profinet: The "Compare and commit changes" feature based on a Profinet scan result is only working without errors or warnings in the following cases:<br>• No slave is configured below the Profinet Controller in the device tree<br>• Only slaves are configured below the Profinet Controller which are not found during the scan<br>Restriction: all found slaves need to be accepted, to ensure that all required data can be correctly added to the project | AB-20790 |
| Profinet: In the Profinet Controller 'Diagnostics live list' editor the parameter flag "Assign configuration temporarily" has no effect on writing a device name into a Profinet device. The device name is always stored permanently.<br><br>Workaround: use the IP configuration tool standalone (available via additional tools in Automation Builder setup) if this is required | AB-20609 |
| EtherCAT: The I/O mapping tab might not show recently added PDO entries when kept opened during adding.<br><br>Workaround: Please close and reopen the I/O mapping tab editor to update the view with latest PDO entries | AB-20783 |
| User Management: Users might be prompted to login twice after creating the user management on a computer where Automation Builder was never used before. | AB-20703 |
| Input assistant: The programming input assistant might show not matching initialization values for ERROR_ID ENUMs<br><br>Workaround: Define the initialization of ERROR_ID values directly in the program and not via input assistant | CPUFW-8983 |
| Input assistant: In case the automatically added Ethernet library is removed from the project's library manager the use of the programming input assistant might lead to a crash of the Automation Builder.<br><br>Workaround: Add the removed Ethernet library again to the project's library manager | AB-20877 |
| PROFINET: CM579-PNIO: The node state of Profinet I/O devices might be false negative in case of consecutive errors.<br><br>Workaround: Check number of nodes with error state on I/O controller level | CPUFW-8456 |

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| Profinet: Configured but missing I/O devices connected to a CI501-PNIO or CI502-PNIO module are not properly represented in the diagnosis system. The I/O device itself has no diagnosis message and therefore is shown as OK (both in the Automation Builder and in the IEC application).<br><br>Workaround: Check the ModuleDiffBlock of the CI50x-PNIO module for any missing I/O devices. | CPUFW-8272<br>CPUFW-8268 |
| Firmware update: Unable to update the system or display firmware, if update firmware (UpdateFW) versions 3.1.2.32 or 3.1.4.82 are installed.<br><br>Workaround: First update the update firmware (minimum version: 3.3.2.113) before updating the system or display firmware in a second step. | CPUFW-8252 |
| EtherCAT: The first breakpoint in the EtherCAT sync task is not processed properly. It is always being ignored if there is at least a second breakpoint.<br><br>Workaround: Always use at least two breakpoints in the EtherCAT sync task considering that the first one will be ignored. | CPUFW-8227 |
| EtherCAT: POU EcatSync outputs ErrInCnt and ErrOutCnt never start at 0<br><br>Workaround: Do not use the first output values of EcatSync function block after setting EtherCAT to operation. | CPUFW-7983 |
| BACnet: If server objects of type "BACNet.BacnetSchedule" or "BACNet.BACnetSchedule" are instantiated in the PLC application, the PLC will crash when the project is deleted from the device.<br><br>Workaround: Only use the BACnet Schedule by adding it below the BACnet Server in the device tree instead of adding it from the PLC application. | CPUFW-7854 |
| Diagnosis: The PLC node might show a diagnosis indicator "!" in the Automation Builder device tree even if no diagnosis exists. In this case the root cause is that the device diagnosis is disabled.<br><br>Workaround: Activate the device diagnosis in Automation Builder | CPUFW-7519 |
| Ethernet/IP Adapter cannot handle more than one connected scanner (Exclusive Owner). When connecting a 2nd (Listen Only) Ethernet/IP scanner a connection failure occurs<br><br>Workaround: not available | AB-19326 |
| Diagnosis text lists are not updated after new GSDML installation/device object update if the text list was already present in the project.<br><br>Workaround: Delete the diagnosis text lists, save project, restart Automation Builder, and rebuild the project. The updated text lists are now generated into the project | AB-16737 |
| Diagnosis text lists are not transferred to the AC500 V3 PLC if download/login is done without rebuild.<br><br>Workaround: Please check that a visualization is added to the project, the setting 'enable diagnosis for devices is set and project is rebuilt (clean all → rebuild) | AB-18007 |
| Online values of program code are not correctly refreshed in editor if exception handling is included in code | AB-18215 |
| Cyclic non-safe data exchange: An initialization of arrays and structures in the non-safe program is not supported by the safety program in CoDeSys v2.3 and creates corresponding errors "Erroneous initial value". | AB-17989 |
| Compile error will occur after renaming "CAN bus" on AC500 V3 PLCs<br><br>Workaround: Please keep default name | AB-17541 |
| Sync-SDOs parameters are not generated when 'Enable Sync Producing' is disabled:<br>For both communication modules CM578-CAN and CM598-CAN, when the parameter CANopen Master parameter 'Enable Sync Producing' is disable, parameter 'set communication cycle period' and 'Set synchronous windows length' are not generated. When CANopen Master parameter 'window Length' is set to 0, the parameter 'Set synchronous windows length' is also not generated. | AB-14071 |
| Fast counter of DA501/502 does not work if used at a Communication Interface (CI) module on PROFINET, EtherCAT or CAN | AB-16614 |
| IO mapping: use only mappings available in the IO mapping editor, avoid manual variable declarations using AT % operations | AB-16521 |
| FW 3.2.0:<br>Downgrade of AC500 PLCs from firmware 3.2.x version to previous versions via Automation Builder 2.1.X is not supported.<br><br>Workaround: Please prepare SD-card with desired firmware versions and execute firmware version update via SD-card | n.a. |
| Sometimes the display firmware is not updated within the first “Update Firmware” process (display shows “bAdFIr”). Please start the “Update Firmware” process a second time. | AB-17204 |
| The "Scan for devices" functionality does not work when the "Log" Editor of the V3 PLC is opened, After the call of "Scan for devices" it is also no longer possible to add any object in the device tree (as long as the "Log" Editor is active).<br><br>Workaround: select another editor tab and call "Scan for devices" again | AB-15749 |
| Division by zero for REAL and LREAL variables does not raise exceptions in IEC user program.<br><br>Workaround: Check results of division in IEC program for "FIN". | CPUFW-7429 |

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| Counter: Fast counter word order is wrong for devices on PROFINET and EtherCAT.<br><br>Workaround: Swap in- and outputs accordingly. | CPU_FWLIB-279 |
| CAA_File: POU FILE_MOVE is missing<br><br>Workaround: Use File copy + File delete | CPU_FWLIB-242 |
| CommFB: The library CommFB is not supported for CM579-PNIO<br><br>Workaround: Use library ABB_PnioCntrl_AC500.library | CPU_FWLIB-140 |
| PROFINET and CM589-PNIO: After second download the CM589-PNIO does not work, first download and starting via boot project works.<br><br>Workaround: Start project as boot project.<br><br>Note: CM589-PNIO with CODESYS driver not supported with FW 3.2.4 or later | CPUFW-6641 |
| CM579-ETHCAT: In some configurations, the state of the last EtherCAT slave is shown as red circle in AB device tree, even if slave works fine.<br><br>Workaround: Ignore wrong state and/or check state with POU. | CPUFW-6134 |
| Deleting of an AC500 V3 PLC in the tree might fail if there is an invalid AlarmConfiguration task configured. An error message "Invalid object guid..." might be displayed and the PLC cannot be removed.<br><br>Workaround: Delete AlarmManagerTask below task configuration and delete then the PLC node. | AB-15554 |
| Runtime licensing:<br>Return license feature of runtime license is working on AC500 firmware versions 3.1.3 and higher. Please update AC500 firmware first to this version and then return licenses. Otherwise runtime licensing on this PLC will become unusable! | FW 3.1.0 |
| System: PLCShell command "date" and "rtc-set" cannot set a date after 2038 | CPUFW-5870 |
| TLS/SSL self-signed certificates can't have an End-date after 2038. | CPUFW-5765 |
| SD-Card: In some cases, If the SD card is removed while in PLC is in RUN mode and SD card is accessed and is put back, the PLC don´t recognize that the SD Card is put back.<br>If you try to write on a File on the SD Card there is Error NOT_EXIST but the file is there.<br><br>Workaround: Do not to remove the SD card while actively accessing it.<br>Note: On display activity of SD card is shown as long as a file is open on it. | CPUFW-5099 |
| Modbus TCP: It's not possible to use multiple connections to one server with Modbus TCP.<br><br>Workaround: Use only one connection per Modbus TCP server. | CPUFW-5076 |
| LIB: CommFB POUs: GETIO_PART/SETIO_PART do not work. Status code 16#40820000 will be returned.<br>As of V3.1.0 error code "NOT_IMPLEMENTED" will be returned.<br><br>Workaround: Do not use the POUs | CPUFW-4927 |
| If the SD card is removed during a read / write process, the SD card won't remounted from the PLC after replug.<br>POU FileClose does not output a Done or Error and remains in Busy status.<br><br>Workaround: Do not remove the SD card during read/write process. | CPUFW-4684 |
| Function Code 7 for Modbus TCP not working.<br><br>Workaround: FCT=7 cannot be used until issue is fixed. | LIB-1192<br>CPU_FWLIB-118 |
| Function code 23 for ETHx_MOD_TCP has different max data length (write 121, read 125) then V2 (write 125, read 125). The values in V3 are according to Modbus specification.<br><br>Workaround: Use data length according to Modbus specification. | LIB-1167LIB-1167<br>CPU_FWLIB-125 |
| CAA-File: "The files to be accessed from IEC (user) applications go to directories that are not visible for the user (e.g. /mytemp). The PLC takes the filename specified by the user and appends it to this IecFilePath, and this complete name has a length <= 255.<br>So, the maximum length of a file name for the CAAFile user is 255 minus the length of the Iec Path."<br><br>Workaround: Consider the Iec Path in the IecFilePath. | AB-13406<br>LIB-1176<br>CPU_FWLIB-9 |
| Modbus TCP: Function code 23 for ETHx_MOD_TCP has different max data length (write 121, read 125) then V2 (write 125, read 125). The values in V3 are according to Modbus specification.<br><br>Workaround: Use NOT_EXIST for both use cases | LIB-1167<br>CPU_FWLIB-125 |
| CAA-File: POU FileOpen doesn't distinguish if the SD card is write-protected or if there is no SD card inserted (in both cases the error message is NOT_EXIST).<br><br>Workaround: Use NOT_EXIST for both use cases | LIB-1140<br>CPU_FWLIB-19 |

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| OPC UA server: Property MaxMonitordItemsPerCall has been reduced to 100. If this property is read by OPC UA clients, it returns no value (null) | n.a. |

**Disclaimer**: Technology Previews are designed to give you a preview at upcoming technologies. They are non-final versions of our product and should NOT be taken as a measure of the fit, finish, capability, and overall quality of the final release (including user documentation). Technology Preview features can be changed or removed in newer versions of Automation Builder as communicated via the release notes. If technology previews are subject to licensing, please contact your ABB sales representative.

### KNX

| *Functional changes / New features* | *Version* |
|---|---|
| No functional changes | |

### Safety PLC - AC500-S

**Note:** Before using the functional safety configuration and programming tools contained in Automation Builder, you must have read and understood the AC500-S Safety PLC User Manual (download link). Only qualified personnel are allowed to work with AC500-S safety PLCs.

Compiling and executing functional safety projects on AC500-S Safety CPUs require the purchase of a license.

| *Functional changes / New features* | *Automation Builder Version* |
|---|---|
| Integration of AC500-S SCA (Safety Code Analysis) tool in Automation Builder | 2.6.0 |
| New PROFIsafe V2.6 protocol with short and long frames (up to 123 bytes) was added as part of AC500-S safety CPUs (both F-Host and F-Device, respectively). New PROFIsafe F-Host SafetyBase_PROFIsafe_LV210_AC500_V22.lib was added.<br><br>New features are added in the PROFIsafe, e.g. support of FLOAT32, INT32, UINT32 data types in both PROFIsafe V2.4 and PROFIsafe V.6.<br><br>Specific functions for user-defined CRC calculation up to SIL3 and PL e were added. Refer to new function blocks in the new safety library version: SafetyExt2_LV110_AC500_V27.lib.<br><br>New PLC browser command „flashstatus“ was added for safety CPUs. It shows the flash programming progress in the safety CPU when downloading boot code, firmware or a bootproject. | 2.5.0 |

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| A separate letter of confirmation is available for AC500-S safety engineering as part of Automation Builder. The version of AC500-S safety engineering and its components can be seen using “About…” option from “Help” menu in Automation Builder.<br><br>SM560-S (-XC) safety CPUs are supported by AC500 V3 CPUs. SM560-S-FD-1 (-XC) and SM560-S-FD-4 (-XC) are not supported by AC500 V3 CPUs yet.<br><br>New cyclic non-safe data exchange editor and related functionality is introduced for SM560-S (-XC) safety CPUs with AC500 V3 CPU.<br><br>Safety Verification Tool (SVT) is added to Automation Builder to verify safety project configuration integrity when safety CPUs are used with V2 or V3 CPUs.<br><br>BYTE data type is used instead of WORD for all variables of DI581-S safety I/O module when used with V3 CPUs.<br><br>If data types like Unsigned16, Unsigned32, Integer16, Integer32 or Float32, which require more than one byte, are used in PROFIsafe data, note the following. The byte order in such data types depends on the used PROFIsafe device endianness and selected AC500 CPU type. V2 CPU supports big-endian and V3 CPU supports little-endian. Make sure that the symbolic variables are mapped properly, and the delivered safety data is correctly represented in your safety application.<br><br>SD card handling with V3 CPUs:<br>• “sdappl” and “sdcoupler” commands are not supported on V3 CPUs.<br><br>Contact ABB technical support when the Automation Builder project shall be migrated from V2 CPU with AC500-S to V3 CPU with AC500-S.<br><br>If non-safety V3 CPU is stopped, the safety CPU will go to DEBUG STOP (non-safety) state and safety I/O modules will immediately switch to RUN (module passivation with a command) state. Later, if the safety CPU changes to DEBUG RUN (non-safety) state, e.g., after switching non-safety CPU back to RUN state, the safety I/O modules will immediately change to RUN (ok) state and deliver valid process values to the safety CPU without the need for reintegration.<br><br>Error acknowledgement on safety CPUs is not directly synchronized with error acknowledgement on V3 CPU. All error acknowledgement for safety CPUs shall be done on V3 CPUs directly.<br><br>The active user login connection to the safety CPU can be interrupted if the new non-safety configuration is loaded to the V3 CPU in parallel.<br><br>Safety CPU firmware V2.1.0 is introduced as part of Automation Builder for SM560-S (-XC), SM560-S-FD-1 (-XC) and SM560-S-FD-4 (-XC). Firmware V2.1.0 is compatible with previous safety CPU firmware versions V1.0.0, V2.0.0 and, thus, previously obtained functional safety certifications for machines or processes remain valid, because the boot project CRC (Cyclic Redundancy Check) does not change. As an example, SM560-S (-XC) modules with firmware V2.1.0 can be used to replace SM560-S (-XC) modules with firmware V1.0.0 or V2.0.0.<br><br>Note:<br>Firmware V2.1.0 on SM560-S (-XC) safety CPUs can be downgraded to V1.0.0 or V2.0.0 only if the hardware index for these safety CPUs is below C0, for example, hardware indices A3, B1, etc. In safety CPU modules with the hardware index C0 and above, the new flash memory is used which is not compatible with safety CPU firmware versions V1.0.0 and V2.0.0. Only firmware V2.1.0 or above can be used on such safety CPUs. Usage of SF_RTS_INFO function in SM560-S (-XC) boot project allows controlling which firmware version(s) will be accepted by the SM560-S application program and which is not, if tighter control over firmware version is required from the customer application.<br>• Firmware V1.0.0 does not run on SM560-S-FD-1 (-XC) and SM560-S-FD-4 (-XC).<br>• Firmware V1.0.0 and V2.0.0 do not run on safety CPUs with hardware index C0 and above. | 2.3.0 |

| ***Fixed issues*** | ***Version*** |
|---|---|
| “Simulation Mode” is not supported for AC500-S Programming Tool. | 2.6.1 |

| *Known problems* | *ID* |
|---|---|
| When using one or more variable mappings with type BOOL or STRING in 'Cyclic non safe data exchange' and a mix of Safety and non-safety IO modules on the IO_Bus the address mapping might not be correctly calculated after adding IO modules with the first 'Build / Generate Code' execution.<br><br>Workaround: In order to calculate the correct addresses, execute a 'Rebuild' again. | AB-22764 |
| Relevance: Non-safety AC500 V3 CPU with AC500-S safety PLC only.<br><br>If UINT data type, which requires two bytes (e.g., as it is the case in ABB ACS880 drives with FSO-12 or FSO-21 safety modules, etc.), with individual displayed bits is used in PROFIsafe data in Automation Builder project, note the following. The values for such PROFIsafe safety variables might be not correct. Thus, these variables shall not be used in the non-safety V3 CPU program. The correct variable value is only available in the safety CPU project and AC500-S Programming Tool.<br><br>Workaround: Use individual bit variables in the safety CPU project and map them using "Cyclic non-safety data exchange" functionality supported on the non-safety V3 CPU. These variables can be then used in the non-safety V3 CPU project, e.g., for diagnostic purposes, visualization on operator panels, etc. | AB-19238 |
| If safety CPU is set to DEBUG STOP mode when used with V3 CPU, then the safety CPU will not follow state changes, like, "Run" and "Stop" of V3 CPU anymore. | CPUFW-7743 |
| „Initializations of arrays, structures and enumerations used for cyclic non-safe data exchange within the AC500 V3 variable declaration are currently not supported in AC500-S safety application and create corresponding compile errors "Erroneous initial value".<br><br>Workaround: Please initialize the values of the concerned arrays, structures and enumerations within the non-safety and safety PLC programs during runtime." | AB-17989 |
| AC500 V3: Safety output online values of safety IO modules used with an AC500 V3 are not visible in the tab "IO-Mapping".<br><br>Workaround: Use the tab "IO-mapping list" instead. | AB-20834 |

## Modbus TCP – Communication Interface Modules (CI52x-MODTCP)

| *Functional changes / New features* | *Version* |
|---|---|
| No functional changes | |

| *Known problems* | *ID* |
|---|---|
| Diagnosis only works with CI52x-MODTCP firmware version 3.2.7 and higher. | n.a. |

## Drive Manager

Remark: Drive Manager is not (yet) supported with Automation Builder 64bit. If required please use Automation Builder 32bit.

| *Functional changes / New features* | *Version* |
|---|---|
| No functional changes | |

| *Known problems* | *ID* |
|---|---|
| No synchronization between Process data tab and Drive Manager's FBA data in & data out parameter group with 32-bit parameters.<br><br>Workaround: While configuring offline data in FBA data in & data out in drive manager if 32-bit parameter is selected then leave next parameter as empty | AB-7586 |
| Drive manager loses connection to drive if, user is using Profinet / Profibus DPV1 read/write function blocks in PLC program to read/write parameters of the drive. | AB-8376 |
| Drive Manager is not connecting over Y-link in Profibus connection | 104203 |
| Messages are not displaying after exporting the .dsp and .dcparambak file from Drive & Project in online/Offline mode | 247760 |
| German language support for ACS530, ACS560 and DCS880 drive parameters are missing. | |

## Drive Application Programming

Drive application programming is only supported until Automation Builder 2.1. Please install the corresponding previous version profiles if you want to continue using Automation Builder for drive application programming.

The current tool for drive application programming is Drive Application Builder. It is available for downloaded from the ABB website: https://new.abb.com/drives/software-tools/drive-application-programming

## Drive Composer

Drive composer pro is compatible with all new common architecture drives such as ACS880. The complete compatibility table is available in Software Tools web page http://new.abb.com/drives/software-tools/

Drive composer pro version embedded into Automation Builder 2.6.1: V 2.8.2

| *Functional changes / New features* | *Version* |
|---|---|
| Integration of latest Drive composer pro 2.8.2 version containing quality improvements | 2.8.2 |

| *Known problems* | *ID* |
|---|---|
| If a computer has a newer Drive Composer pro and Drive Application Builder installed, installing old version of Drive Composer pro will fail. Workaround for this problem is to uninstall DriveDAOPCServer from control panel/Programs and Features. Then install Drive Composer pro. However, there is a small probability that this might cause problem to Drive Application Builder when communicating with drives | |
| USB connection is occasionally not resumed when unplugging and plugging in USB cable from the drive. | |
| Occasionally, Drive Composer pro does not close properly and will cause No Drive Found failure. The solution to this problem is to kill Drive Composer and DriveDA processes manually from the Task Manager | |

## Condition Monitoring System

| *Functional changes / New features* | *Version* |
|---|---|
| No functional changes | |

| *Known problems* | *Version* |
|---|---|
| Triggering measurement start from external signal (e.g. DI or DC) should be prevented. The file could be corrupted.<br><br>Workaround: Please use the “Instantly” or “Delayed” trigger mode for starting a measurement. | 2.6.3 |

## SCADA - Zenon

| *Functional changes / New features* | *Version* |
|---|---|
| No functional changes | |
| Limitation: Zenon AC500 V3 variable synchronization is currently not supported | |

## Panel Builder 600

Panel Builder 600 version embedded into Automation Builder 2.6.1: V 4.5.0.678

| *Functional changes / New features* | *Version* |
|---|---|
| Integration of latest Panel Builder 600 version containing quality improvements | 4.5.0.678<br>(AB 2.6.1) |
| – Alarms<br>  ○ Add Date Format property in action DumpEventArchive<br>  ○ Add Touch Ack Notify sent only when the Ack is performed locally by the HMI<br>– Behavior<br>  ○ Client Cache Improvement<br>  ○ Download, as project resources, specific protocol files (userdata)<br>  ○ Added Analog Camera widget<br>– Gallery<br>  ○ Review and improve widget gallery | 4.5.0.632<br>(AB 2.6.0) |

- Generic
  - Add to project properties a flag to allow users to disable any type of popup controlled by runtime
  - openssl CVE-2022-1292
  - Add generic option to mask a fields
  - Add support for win64 target in protocol installer
- JavaScript
  - Added JS profiling in Runtime developer tools for deep diagnosis
  - Dialog size can be changed from JavaScript up to 1920x1080 resolution
  - Added API for Load project / Last visited project actions
- MQTT
  - Added Tag interface to MQTT
  - Improved management of MQTT CA Certificate file
  - MQTT: Improve the accuracy of currentTimestamp to ms
- Multilanguage
  - Possibility to associate a keypad to current language
- PB4Web
  - PB4Web: Extend gesture area widget with possibility to execute one
  - shot actions on new events + support for gstArea widget
  - PB4Web: Added Scheduler widget in read mode
  - PB4Web: added support for widget filtering
  - PB4Web: widgets are not accepted during the Canvas widget drawing
  - PB4Web: Data Transfer action
  - PB4Web: Possibility to choose widget objects from Index Tag parameter in Indexed Tags
  - All Fonts type can be used in PB4Web
  - PB4Web: Stack widget integration
  - PB4Web: Tab bar widget integration
  - PB4Web: Add support to parameters feature into formula conversion
  - PB4Web: login page restyled
  - PB4Web: Added loaded progress bar
  - PB4Web: Optimizations and performance improvements
  - Option to enable/disable web runtime spinner (loading) on page change
  - PB4Web: Added "logout" API called from project instance
  - PB4Web: Add Epoch and ISO8601 standard as available Data Format
- Protocols
  - Added dictionary file synchronization on tag for most used protocols
  - [CDS3] Remove "full node address" option
  - [MIQE][MIQS] Increase Offset range for some CPU model
  - [S7ET][S7OP] Add support for importer TIA Portal project 17
  - [MODS] Node disable management for Server protocols
  - [MODR] Node Override for Modbus TCP Server with possibility to disable node
  - [S7DP] Add Node Override feature
  - [PROD] Not possible to set NodeOverride tag to 0
  - [MRTU] Add support for array elements direct access in Modbus RTU
  - [S7OP] Import array of strings as separated strings -
  - [MODS] Node disable management for Server protocols
  - [MRTU] Reduce protocol communication gap
  - [MRTU] Add support for array elements direct access in Modbus RTU
  - [OPCU] Add possibility to auto accept server certificate from protocol editor
  - [OPCU] Improve protocol editor certificate settings
  - [CDSH] Documentation for protocol CODESYS V3 Handler
  - Include CDSH protocol into Panel Builder
  - [CDSH] Give the protocol editor the possibility to read the certificate from a file.
  - [CDSH] Implement online user security - Implement PLC Handler based protocol
  - [CDSH] Mask password field in UI
- Recipes
  - Added warning message when restore recipe fails due to not supported chars
- Remote clients
  - Added warning message when restore recipe fails due to not supported chars
- Security
  - Certificate to sign projects
  - Added FTPS secure communication
  - Enhanced password hashing method in runtime and PB
  - TLS support for PB mailing
  - Added project signature functionality to allow only certified project to run
  - Added HTTPS secure communication
  - Added timeout after wrong password for user login
  - Added CSRF (Cross-site request forgery) token as project property for web security
  - Updated openSSL library
  - Enforced default settings for user management/security
  - Added project file encryption
  - Add NTP port information in Ports and Firewalls chapter

| | |
|---|---|
| – Simulator<br>o Added tool in Simulator to watch and simulate project tags<br>o Added Online Simulator tool<br>– SQL<br>o Added database native connectors<br>o "Added table data source widget for easier connection with database<br>o query"<br>o Added PostgreSQL connector as native DB connector<br>o Added ODBC connector as native DB connector<br>o Add Unicode Support for DB Connectors<br>– Tags<br>o Possibility to display better view for indexed tags sets in case of long name tags<br>o Add "replace" button for "Invalid Tag Reference"<br>o Import/Export/Copy/Paste for Indexed Tag sets<br>o Tag editor improvement, add double click selection for properties<br>o Added Client system variable to support remote variable scenarios<br>o Enhanced scenarios of synchronization with external Tag symbol files: choose to keep datalinks when Tags is removed externally<br>o Possibility to choose widget objects from Index Tag parameter in Indexed Tags<br>o Importer default selection should follow also the combo-box selection of protocols<br>o "Add tag name info in read block and read datagram error in protocol<br>o error message"<br>o Manage tag values with offline simulator<br>– Trends<br>o "Added Up and Down button in Trend Data log to reorder Tags to be<br>o sampled"<br>o Sampling Time datalink is available only if we have more than one tag to log<br>o Add Minimum interval Time to 100 ms in trend sample when it used a Trigger Tag<br>o Trend buffer import/export, clone and autofill<br>o Add "Attach to" option for FileName properties of DumpTrend<br>o Add Epoch and ISO8601 standard as available Data Format<br>– User Interface<br>o Automatic offsets for retentive variables<br>o Added System Settings button in Manage Target<br>o Change Project Type option on right click of Device node in project tree<br>o "Added possibility to choose project upload folder and quick click to open<br>o an uploaded project"<br>o Added Online help<br>– Widgets<br>o PB4Web: Table widget sorting support<br>o New scatter chart widget<br>o "Added 2D and 3D style to buttons to choose text behavior when button<br>o is pressed"<br>o Enhanced combo box widget style capabilities<br>o Added continuous index option in combo box widget<br>o Enhanced Web browser widget capabilities<br>o Add MJPEG Camera URL between the basic properties of IP Camera Widget<br>o Added Dashboard pages<br>o Added Tag bar widget<br>o Added Stack widget to manage layers<br>o Added new icons in widget gallery<br>o Added QR code widget<br>o Web Browser widget: Add save cookie and Accept-Language support<br>o Provided way to load legacy widget gallery<br>o Common alignments settings for all text/numeric widgets<br>o Added historic and real time trend chart widgets<br>o Added user gallery configurator for icon, display text and tooltip<br>o Optimized layer widget communication management to activate only active layer<br>o Add support to RTSP & MJPEG protocol in IP Camera widget | |

| ***Fixed issues*** | ***Version*** |
|---|---|
| – Behavior<br>o OnRelease event on physical keyboard not executed when changing page (sporadic)<br>o Video does not always appear when project is downloaded from studio on UN65<br>– Keypads<br>o When custom keypad is created with left and right buttons, then UI of left button in default keypads showing wrong after close and reopen the project<br>– Protocol<br>o Runtime crash loading page with tables and big amount of data | 4.5.0.678<br>(AB 2.6.1) |

| | |
|---|---|
| ○ [CDS3] Delay between datagrams when this protocol is used in TCP mode<br>– Security<br>○ It is possible to login to client with user group having no authorization to login in client<br>– User Interface<br>○ Add generic option to mask a fields<br>– Widget<br>○ Number format property of numeric field return to custom value | |
| – Alarms<br>○ Alarm import file filter not effective when PB runs in French language<br>○ Live Tag of Multi size array generate an invalid Tag reference<br>○ Corrected behavior of alarms connected to array elements<br>– Audit Trail:<br>○ Warning message appears at every Logout after Date&Time change<br>– Behavior<br>○ Corrected behavior of HMI Client application in boot sequence<br>○ Initial change password not working with Client<br>○ Corrected performances issue when loading page with Tables<br>○ Page with dot in them name could not been load<br>○ Corrected behavior of HMI Client on login<br>○ Deleted false error detected by project validator on recipe widget<br>○ Error sending email with attachment in specific SMTP server<br>○ Corrected behavior on property pane which closes after specific sequence<br>○ Wrong page numbering on PB tabs on specific page sequence creation<br>○ Corrected behavior of NFC variables in specific scenario<br>○ Actions defined on hold key pressure are not executed<br>○ Improved tag selection in specific sequence from Tag Editor<br>○ In runtime, all web files are stored in main project folder and not inside web folder<br>○ BACnet scheduler can't read weekly boolean tag and crash with PLCtrend<br>○ Corrected behavior of specific project causing disconnection from HMI client<br>○ Corrected behavior on specific project tun on Simulator<br>○ Corrected PB behavior when cutting some tags in tag editor<br>○ Aligned differences in rendering on the HMI device or in the web using a large amount of data<br>○ Corrected PB behavior in project conversion if project is not saved as but renamed<br>○ Corrected data entry behavior on scaled numeric field linked to recipe selected set<br>○ Opening an external application while holding button causes button to remain pressed<br>○ Corrected false positive error on loading images at project opening<br>○ Corrected unexpected behavior of runtime using specific project<br>○ JavaScript Editor increases the distance between two consecutive rows of code under specific scenarios<br>○ Corrected hierarchical importers behavior<br>○ Corrected USB update behavior in specific conditions<br>○ Corrected behavior when DBWrite Action are executed and Fast Boot is enabled<br>○ Corrected runtime behavior on print action with specific project<br>○ Fixed behavior while setting protocols with plc network and specific steps<br>○ CODESYS 3.5 SP14 runtime not communicating with protocol on WCE<br>○ Corrected behavior on second project download for specific hardware<br>○ Fixed runtime behavior on loading a specific project<br>○ Action “File > Save Project As” doesn’t show the path of the current opened project<br>○ Corrected disk size value displayed in project wizard for some models<br>○ Add/Remove modules from system variables and other changes<br>○ Certain passwords block the FTP connection to the panel (990/FTPS and normal FTP) and the project download<br>○ Customer's PB project does not start Offline Simulator (crash simulation)<br>○ HMI does not change page at power-up with Page Request value set<br>○ In manage target, Unload project is not working with v 4.5.0<br>○ Page duration in alarm history and audit view showing empty in Web<br>○ Panel Builder Client application doesn't store fullscreen option<br>○ PB cannot keep stored 'admin' password of HMI; Enter Dialog will be always asked before a project download on PC with OS Win10 and Win7<br>○ PLC through enhancement capability case of multidrop selection node<br>○ Rename user galley page cause PB to crash<br>○ Runtime crashes when wrong link is attached to Consumption meter<br>○ Runtime get crash on trigger the save dialog from text editor<br>○ Runtime get crash when we unload stack widget project from runtime<br>○ Runtime on HMI freeze if numeric field are pressed simultaneously on Multi touch screen<br>○ Some fonts are not importing into PB<br>○ Tags with Type INT64 not showed in Trend on Web Pages<br>○ Text in Custom Widget Full is replaced when we unlock and lock again the widget<br>○ The PB page is not positioned correctly, when we have an combo widget. | 4.5.0.632<br>(AB 2.6.0) |

- The runtime crashes when unload project when 2 bacn alarm configured with same notification class
- Thousands separator not working as intended
- Time field format in Dump is not respecting with Date format in the action in 4.5
- Time format with AP always showing AM in dump files when the time is between 12PM and 1PM
- User logout cause stop communication for indexed tag connected to a JSFunctionBlock
- Using 1/10 s time sampling it is not accurate in PC runtime
- Web Browser widget does not support HTTPS site that require to trust the certificate
- Web Browser widget getting crash with the wce runtime in v 4.5
- Web folder not completely exported when downloading a project

– JavaScript
  - Corrected action execution on JavascriptFuncBlock on project level

– MQTT
  - MQTT timestamp is published differently for Will/Birth message and for Data Pub message
  - MQTT Interface when we open the Manage push policies, the default policy changes to OnChange
  - MQTT AlarmGroup keyword is always the same at runtime
  - MQTT TLS version is inherited from Generic Broker configuration
  - Connection to Amazon AWS not working, bad character in if_mqtt.xml file
  - MQTT: Value received does not update the tag if tagName keyword is not present in topic
  - MQTT with multiple tags in payload published wrongly when on timer is Used
  - Corrected MQTT connection behavior with Google IoT Core broker
  - Corrected MQTT behavior when using TLS without certificates
  - MQTT: Runtime HMI cannot publish to Amazon AWS Broker due to plugin missing

– Multilanguage
  - Multilanguage Import of CSV file does not found any file if language is Japanese

– PB4Web
  - PB4Web: Improve error message in case of incorrect web agent
  - PB4Web: GridLayout on web page generates an error
  - PB4Web: Indexed alias not working when in case array tag is attached using index tag
  - PB4Web: Scheduler action ShowDialog is not executed
  - PB4Web: Improved view on Multistate frames
  - PB4Web: SetTimeout action is not executed in template
  - PB4Web: Shape with reduced opacity (0.7) generates a shadow on the label above
  - PB4Web: Scheduler that executes a JS action is not performed on web project
  - PB4Web: Table widget Filter does not work with Columns that support Multilanguage
  - PB4Web: DataTransfer not working between client variables and Tag
  - PB4Web: Indexed tags in a dialog stop to work if we open a second dialog
  - PB4Web: Mozilla Firefox cannot operate with touch
  - PB4Web: corrected performances issues on access to Filter Table widget
  - PB4Web: Toggle action on widget property does not work correctly
  - PB4Web: SetTrendView does not work if Max/Min are set to 0
  - JM4Wweb: corrected behavior on project.getGroup() action
  - PB4Web: Error message appears when TableWgt page is loaded
  - Runtime positioning on web dialog does not work properly
  - PB4Web: Corrected group visibility behavior
  - PB4Web: Actions not executed in dialog pages
  - PB4Web: Non-modal dialog on web pages behave as modal but is not noted on validator
  - PB4Web: Error Message when load the Home Page after first time
  - PB4Web: Table's Rows disappear when filter is complex
  - PB4Web: Indexed tags are not initialized at the first opening of dialog
  - PB4Web: Corrected error after dbQuery
  - PB4Web: adjusted visualization of specific widgets
  - PB4Web: Non-Modal dialog not working on web pages
  - PB4Web: Embeddable Font is not exported in web client
  - PB4Web: Audit View returns warning if Page Duration is set to All
  - PB4Web: Corrected behavior of Show/Hide with Rows filter in table widget
  - PB4Web: Table's filter is not applied when the number of rows is higher than 500
  - PB4Web: Error when we load Home Page after a setLanguage action
  - Aligned DbResponse behavior from web and native
  - PB4Web: specific project remains on loading and shows an error
  - PB4Web: Indexed tags not working when used from dialog pages
  - PB4Web: Web pages not loading on a specific project
  - PB4Web: Load page is not executed when a non-modal Dialog is opened
  - PB4Web: at first loading of Pages and Dialogs, they will refresh twice
  - PB4Web: Delay of loading data on Table Page
  - PB4Web: Javascript query separator cannot be distinguished from same char inside results
  - PB4Web: Corrected Table Filter behavior with specific field value
  - PB4Web: corrected behavior when closing dialog causing screen freeze
  - PB4Web - Access to different panels web pages trough port forwarding causes alternate disconnection
  - Accessing web page of a project results in stuck visualization

- Grid layout vertical scroll is not working on web pages
- PB4Web: Momentary button stays pressed when web page is used from Mobile device
- Fixed initial password is broken in PB4Web
- Color palette doesn't work on the property background of web pages
- PB4Web: Button Fill color with formula not working in web browser
- PB4Web: fill color property of bargraph does not work on web site
- PB4Web: Integer Tag with HMI datatype float are not converted when they are writing
- PB4Web: Recipe widget shows empty after deleting last recipe in browser

– Protocol
- [MODS] Corrected serial data exchange in WCE targets
- [MODR] Adjusted behavior on node 0 inserting, to be applied only for UDP connections
- [BACN] max segments accepted error if device doesn't handle segments
- [OPCU] Error while importing from Wago PFC200 (message in the header too large)
- [ETIP] Write string data from recipe does not write String LEN value
- [OPCU] Data type imported as null
- [CDS3] Device loses connection with CODESYS Workbench under certain conditions
- [CAND] Import of DBC file does not take care of Mux info start in frame
- [S7ET] Communication failed with CP1542SP Slot 2
- [ABBE] Tag Import erroneously from PLC file with tab/space character in the Tag Name
- [BACN] Communication error with specific BACnet device
- [IR5L] IRC5 Linux protocol not starting in PB 4.5
- [MODR] Server does not answer in TCP mode with Node ID 0
- [ETIP] Communication error when reading multidimensional arrays of structures
- [ABBE] Tag Import erronealy from plc file with tab/space character in the Tag Name
- [MRTU] Reduce protocol communication gap - Case ID: 202200810
- [MODR] Tags defined in Modbus TCP Server has inappropriate ID in Tag URL
- [ETIP] Communication error when reading multidimensional arrays of structures
- [IR5L] IRC5 Linux protocol not starting in PB 4.5
- [MODR] Server does not answer in TCP mode with Node ID 0
- [MODR] HMI runtime crashes with modbus server if malformed packets are sent
- [BACN] Communication error with customer BACnet device
- [BACN] max segments accepted error if device doesn't handle segments
- [CDS3] Device loses connection with CODESYS Workbench under certain conditions
- [ETIP] Write string data from recipe does not write String LEN value
- [ETIP] Tags related with the servo drives are not imported-Int64 types added
- [IR5L] ABB IR5L boolean Tag not working anymore
- [MODR] Tags defined in Modbus TCP Server has inappropriate ID in Tag URL
- [MODR] Runtime crashes when sending request with random long strings(Introduce issue)
- [MODR] Node Override for Modbus TCP Server with possibility to disable node
- [MODS] Different behavior between UN30 and UN31
- [OPCU] Display App Uri Validation not correct
- [ETIP] Long Integer are imported as LINT of int64 but in the protocol configuration they are not available
- [MIQE] Mitsubishi iQ/Q/L ETH protocol causes crashes on 4.5 when there's a communication error
- [MIQE] When using PLC network with Mitsubishi IQ ETH, the system will read and write tags only on the first of the list
- [MODT] String handling in optimization
- [MRTU] Communication issues Modbus RTU protocol
- [MRTU] Request to have better performance on communication with Modbus RTU protocol
- [OPCUA Server] Historical alarm generates events every time a new client (web or PB) will connect

– Recipes
- Corrected behavior when recipe download is executed on string tags
- Corrected behavior when recipe download is executed on string with special chars
- Recipe Field displays wrong data on screen
- Writing more char in string recipe elements following elements is overwritten
- HMI executes more and redundant write data in plc when a Tag array is used in Recipe
- Restore Recipe for specific Set of specific Recipe will Restore all set of the recipe selected

– Scheduler
- Sunrise and Sunset wrong hour during summer time

– Security
- Login after Change Password in Login Page does keep the Permission of the User Logged before
- User forced to change initial password after editing another user credentials
- Group home page changed when changing FTP/HTTP settings
- Corrected behavior when accessing to USB and SD via FTP on specific hardware
- Always ask for the encryption password when it is needed
- HMI runtime crashes with modbus server if malformed packets are sent
- CVE-2022-1292

– Simulator

- Simulator is not closing when PB closed

– SQL
  - dbReadRecipes action returns Element not found on high size recipes
  - Database query with Nchar and Nvarchar will not be returned properly
  - Aligned DbResponse behavior from web and native

– Tags
  - Scaled array with fixed point does not write value properly
  - PB does not save Interfaces tag group selection
  - Tag editor Scaling problems when entering scaling factors with decimal point
  - Usage of double array resets connection (device offline)

– Trends
  - [BACN] Corrected Simulator behavior using BACNetTrends
  - Corrected PLC Trend behavior in showing curves

– Widget
  - PB4Web: property Sorting for Alarm History Table does not work
  - PB4Web: Group column in Alarm History widget is not shown
  - Reviewed not working RSS feeds widgets
  - TextTableFilter widget apply filter "0" when field is empty
  - Trend table duration not working properly when we set 4 weeks / ALL
  - Network configuration is not applied when the interface is with an AutoIP
  - Improved Pinch event management on Scatter Chart widget
  - Browser widget scrollbars does not work
  - Corrected behavior when scrolling GridLayout causing performances issues
  - Corrected PB behavior on continuous index flag of combobox widget
  - ComboBox doesn't show communication error icon and show wrong element with index data
  - Fixed behavior of IC Camera widget image polling
  - Reviewed minor icon graphic in new widget gallery
  - Corrected visualization issues on a custom alarm table
  - Boolean BACnet scheduler does not work properly
  - Table filter formula does not work at first time
  - Web browser widget keyboard is not working with the runtime
  - Chart Widget's gesture event shows curves frozen
  - Combobox widget with empty data property
  - Table widget with filter does not deactivate tags when filter changes
  - Web Generation error when we just drag and drop the Tab widget
  - Custom Style property is not exposed for "TabBarWgt" by default for style == Custom
  - Datalink initialization issue first layer stack widget
  - Wgt javascript variables does not work properly inside stack widget in custom widget
  - Data read for new chart widget is not stopped when page is changed
  - The Chart widget trigger a user.notice pblauncher: QFont::setPixelSize: Pixel size <= 0 (0)
  - PB hangs while resize new gallery trend widgets
  - PB crashes when User Gallery folder is changed
  - Delay while open the PB in pc with new gallery
  - Layer widgets are not visible if we insert more than 3 nested stack widget
  - Text Editor widget save file without extension and does not recognize them in browse
  - Alarm name missing in the alarm report widget
  - Boolean bacnet scheduler widget does not show and write propely default value
  - Crash of Runtime when we access to HTTPS page from Web Browser widget
  - Delay when load the page with Table widget
  - History trend widget not updating values after some time of plotting in browser
  - Labels on Custom Widget replace special character with "?"
  - Messages and label inside nested Custom Widget are completely lost in 4.5
  - Setting tahoma font on widget it becomes MS Shell Dlg 2
  - Text in Custom Widget Full is replaced when we unlock and lock again the widget
  - The PB page is not positioned correctly, when we have an combo widget.
  - The runtime crashes when unload project when 2 bacn alarm configured with same notification class
  - Thousands separator not working as intended
  - Time field format in Dump is not respecting with Date format in the action in 4.5
  - Time format with AP always showing AM in dump files when the time is between 12PM and 1PM
  - User logout cause stop communication for indexed tag connected to a JSFunctionBlock
  - Using 1/10 s time sampling it is not accurate in PC runtime
  - Web Browser widget does not support HTTPS site that require to trust the certificate
  - Web Browser widget getting crash with the wce runtime in v 4.5

| *Known problems* | *ID* |
|---|---|
| When installing CP600 control panel option including previous version profiles, the Panel Builder installer asks for replacing the last installed version of Panel Builder. This question has to be answered with “no”. In case of accidently choosing “yes”, the installer has to be executed again, although it has been finished successfully. | PB600-632 |
| ABB Modbus RTU protocol with Model ABB AC31 Series 90 not working. | |
| Missing error message: It is not possible to download a Runtime version lower than V4.5.0.x to a panel with BSP V1.3.x | |
| Project update: Selecting a new location for updated project will damage project when working with Automation Builder integration. Workaround: Use option “convert and overwrite” | |
| Export files from Automation Builder 2.6 have wrong default format to be used in Panel Builder 600 protocols. There is a workaround available: To select the profile that supports Panel Builder 600 V4.5.0, the user needs to select “Panel Builder Export” option in the storage version dropdown. Further details can be found via this LINK | |

## Servo Drives

| *Functional changes / New features* | *Version* |
|---|---|
| Integration of latest Mint Workbench version 5.8.68.1 with improved security | 5.8.68.1 |

# Appendix

## Appendix 1: CS31 Library Package 2.4.5

The software Libraries in HA Library Package are for V2 CPUs only and have been tested with the following versions:

- Automation Builder versions AB1.1 to AB2.6.1
- CPU and CM574: Firmware versions FW2.4.2 to FW 2.8.6
- CI590-CS31-HA: Firmware T3.0.15

In no event will ABB or its representatives be liable for loss of data, profits, revenue or consequential, incidental or other damage that may result from the use of other versions of product / software / firmware versions.
The error-free operation of this library package with other products / software / firmware versions cannot be guaranteed.
This release notes contains important information about the library and it´s installation.

**Changes in different package versions**

V1.0.0 HA_CS31_AC500_V13.lib
V2.0.0 HA_CS31_AC500_V20.lib
V2.3.0 HA_CS31_AC500_V23.lib (2013-12-11, library version V2.3.0) HA_CS31_CALLBACK_STOP updated from program to function
V2.4.0 HA_CS31_AC500_V23.lib (2014-04-29, library version V2.4.0) Support of more than one CS31 bus by using CM574, Bug fixes.
V2.4.1 HA_CS31_AC500_V23.lib (2014-10-24, library version V2.4.1) Adaptation for compatibility with new FW 2.4.0 (LIB-391, LIB-394)
V2.4.2 HA_CS31_AC500_V23.lib (2015-03-27, library version V2.4.2) bugs fixes (LIB-347, LIB-419, LIB-347, LIB-418)
V2.4.3 HA_CS31_AC500_V23.lib (2015-03-27, library version V2.4.2) no changes in library, only online help CAA-Merger-9.chm updated (2016-05-02)
V2.4.4 HA_CS31_AC500_V23.lib (2015-03-27, library version V2.4.2) no changes in library, only example and documentation updated for CM597 (2018-06-08)
V2.4.5 HA_CS31_AC500_V23.lib (2015-03-27, library version V2.4.2) no changes in library, only example and documentation upgraded to valid CP600 HMI (LIB-1970)

**Known limitations or bugs**
- A list of limitations can be found in the online help: AC500 High Availability System> AC500 HA-CS31 > AC500 High Availability CS31 System Technology > System Structure > HA-CS31 Limitations
- The Replacement of CI590 is possible with a normal HA-CS31 system, which otherwise has no error : PLC A has to be (made) Primary. For replacement of CI590 when PLC B is Primary, the following pins of TU522-CS31 must be bridged before: 2.2 to 2.5, 2.3 to 2.6, 2.4 to 2.7
- CI590 modules connected on CM574-RS - SYNC led is blinking if user restart those modules. User need to user ACK_CHG_OVER input from HA_CS31_CONTROL FB to remove the same (LIB-745)
- CI590 FW T3.0.0: CI590 Analogue + Digital output compare is not working. This is fixed with CI590 FW T3.0.15
- CI590 FW T3.0.15: Manual switch over is causing SYNC led to blink on CI590 modules. User need to use ACK_CHG_OVER input from HA_CS1_CONTROL function block to reset SYNC led blink (LIB-743)
- PLC settings, PMxxx-ETH Parameters, Parameter "Behaviour of outputs in stop": If this parameter is changed from default value to "Actual state in hardware and online" the HA system gets unstable when the primary CPU is stopped (LIB-2137)

**Installation and Update**
The AC500 HA CS31 Library Package is part of the Automation Builder

## Appendix 2: PS553-DRIVES 1.2.8

AC500 libraries for control and communication to ABB ACS and DCS Drives using ABB Drives Profile.

The software Libraries of this package have been tested with the following versions:

- Automation Builder versions AB1.1 to AB2.6.1
- Firmware versions FW2.5 to FW 2.8.6

In no event will ABB or its representatives be liable for loss of data, profits, revenue or consequential, incidental or other damage that may result from the use of other versions of product / software / firmware versions.
The error-free operation of this library package with other products / software / firmware versions cannot be guaranteed.
This release notes contains important information about the library and it´s installation.

**Changes in different versions**

V1.2.8: (4.3.2020)
- Examples and documentation updated: set the EN input of Ctrl-block to constant TRUE (LIB-2271, LIB-2273)

V1.2.7: (20.06.2019)
Several improvements and bugfixes in the existing libraries
- ACSDrivesBase_AC500_V20.lib (V1.1.3)
- ACSDrivesComModRTU_AC500_V20.lib (V1.1.4)
- ACSDrivesComModTCP_AC500_V22.lib (V1.0.2)
- ACSDrivesComModTCP_Ext_AC500_V24.lib (V1.0.1)
- ACSDrivesComPB_AC500_V24.lib (V1.0.2)
- ACSDrivesComPN_AC500_V24.lib (V1.0.2)
- DCSDrives_AC500_V24.lib (V1.0.1)

JIRA tickets:
LIB-479: ACS_COM_MOD_RTU_ENHANCED - Output "ONLINE" is not reset after correction of wrong drive settings - PLC must be reset
LIB-495: Skip Modbus RTU communication to drives that are not online and retry only after e.g. each 20sec
LIB-1128: Comment for DRIVE_DATA input is wrong (this is visible as tooltip)
LIB-1129: Visu ACS_COM_MOD_RTU_GEN_VISU_PH to be added four values
LIB-1269: ACS_DRIVES_CTRL_ENG_VISU_PH color of RESET input should be green instead of yellow if TRUE
LIB-1729: Code related to "DRIVE_DATA.ctrlBlockUsed" is not introduced in "ACS_COM_MOD_TCP" in line with other communication blocks
LIB-1732: ACS_COM_MOD_TCPx_ENHANCED and interlock missing if not used with control block
LIB-1736: Difference in DCS & ACS drive control behavior: When CW = 0, DCS drive does not go to stop while ACS drive goes to stop
LIB-1812: Improve the error description for the outputs SPEED_REF and TORQUE_REFLIB-1971: Docu for DRIVES-Lib V2 - Hint for ACS380 not to use ACS3XX blocks
LIB-1972: add new DRIVE_TYPE for ACS380, ACS480, ACQ580

V1.2.6: (08.06.2018)
- Updated Examples for Modbus TCP with CM597)

V1.2.5: (29.05.2017)
- Updated Examples for Modbus RTU and TCP (workaround for AB-12166)

V1.2.4: (15.03.2017)
- Updated Example documentation: Quickstart Guide B 3ADR025232M0201.pdf (LIB-1247)
- Online help: Added chapter about "ACS / DCS Drives Communication via Modbus TCP EXT" library (AB-11069)

V1.2.3: (22.09.2016)
Added broadcast message functionality to ACS_COM_MOD_RTU_GEN Function block (V1.1.3).
- ACSDrivesComModRTU_AC500_V20

V1.2.2: (24.06.2016)
Improved generation time of DONE output for Profibus and Profinet DPV1 function blocks (V1.0.1)
- ACSDrivesComPB_AC500_V24
- ACSDrivesComPN_AC500_V24

V1.2.1: (17.03.2016)
Update of online help

V1.2.0: (27.10.2015)
Added following new libraries (V1.0.0)
- DCSDrives_AC500_V24.lib
- ACSDrivesComPB_AC500_V24
- ACSDrivesComPN_AC500_V24
- ACSDrivesComModTCP_Ext_AC500_V24

Several improvements in the existing libraries
- ACSDrivesBase_AC500_V20.lib (V1.1.2)
- ACSDrivesComModRTU_AC500_V20.lib (V1.1.2)
- ACSDrivesComModTCP_AC500_V22.lib (V1.0.1)

Update of online help and examples

V1.1.7: (17.07.2013)
Corrections in PB / PNIO Example documentations - now version E
Added Presentation "PS553 Library Introduction and Exercises V34.pdf" and
ACS Drives - AC500 overview fieldbus connectivity.xls in folder "Examples\PS553-DRIVES"
V1.1.6: (17.05.2013)
Update of folder structure, documents and projects in Examples
V1.1.5: (03.05.2013)
Update of AC500 online help (CAA-Merger11.chm) - Version delivered with Control Builder Plus V2.3.0
V1.1.4: (12.04.2013):
Update of AC500 online help (CAA-Merger11.chm) including German translation.
V1.1.3: (03.04.2013):
Update of example documentations and AC500 online help (CAA-Merger11.chm).
V1.1.1: (16.01.2013):
ACSDrivesBase_AC500_V20.lib:
Bug fixes in existing visualizations for webserver use
ACSDrivesComModRTU_AC500_V20.lib:
Bug fixes in existing visualizations for webserver use
InstallShield:
Bug fix to install (setup) documentation without libraries
V1.1.0: (14.12.2012):
ACSDrivesComModTCP_AC500_V22.lib:
new library for Modbus TCP communication to all ACSxxx drives
ACSDrivesBase_AC500_V20.lib:
New function blocks for fieldbus independent control and scaling
Bug fixes in existing function blocks and visualizations
ACSDrivesComModRTU_AC500_V20.lib:
New function blocks for Modbus RTU communication to all ACSxxx drives
New function blocks for communication to generic slave devices used on same RTU line.
Bug fixes in existing function blocks and visualizations
Documentation:
Update of chm docu in CAA-Merger11.chm
Examples:
New examples for connection with Profibus, ProfiNet

V1.0 (10.12.2010):
Release for AC500-eCo and ACS3XX

**Known issues**

- Drive manager may be disconnected if user is using Profinet / Profibus DPV1 read write function block in PLC. (AB-8376)
- Currently user cannot use enumeration from ACS_PB_PN_PRM_TYPE_ENUM. Instead user need to use numerical values from ACS_PB_PN_PRM_TYPE_ENUM only. (LIB-940)
- Modbus reconnection not possible in special cases (LIB-2245):In the following case it might be possible that the connection to the drive is not reestablished after a connection loss, e.g. due to cable being unplugged or power off of the drive:
  If the “EN” input of the control blocks (ACS_DRIVES_CTRL_STANDARD, ACS_DRIVES_CTRL_ENG) is connected from the output “ONLINE” of the communication block ( e.g. ACS_COM_MOD_RTU, ACS_COM_MOD_RTU_ENHANCED, ACS_COM_MOD_TCP, ACS_COM_MOD_TCP_ENHANCED, ACS_COM_MOD_TCPx, ACS_COM_MOD_TCPx_ENHANCED) it is necessary to switch off/on the PLC.
  Workaround: We strongly recommend to set the EN input of the control blocks fix to TRUE.

**Installation and Update**

This Library Package is part of the Automation Builder. It is installed by default.
Examples can be found in C:\Users\Public\Documents\AutomationBuilder\Examples\PS553-DRIVES

## Appendix 3: PS566 CMS Signal Processing Package (Technology Preview)

**Disclaimer**: Technology Previews are designed to give you a preview at upcoming technologies. They are non-final versions of our product and should NOT be taken as a measure of the fit, finish, capability, and overall quality of the final release (including user documentation). Technology Preview features can be changed or removed in newer versions of Automation Builder as communicated via the release notes. If technology previews are subject to licensing, please contact your ABB sales representative.

Welcome to the AC500 CMS Signal Processing Package, Version 2.1.0, consisting of

- SP_AC500_V28_App.lib (and .obj files, since the library contains C-Code)
- Example folder with examples, example documentation and library documentation

The software Libraries in this package have been tested with the following versions:

- Automation Builder AB1.2 to AB2.6.1
- PM592-ETH Firmware FW2.4 to FW 2.8.6 (Version 2.0.0 requires at least FW2.8.0)
- FM502 V1.0.0

In no event will ABB or its representatives be liable for loss of data, profits, revenue or consequential, incidental or other damage that may result from the use of other versions of product / software / firmware versions.
The error-free operation of this library package with other products / software / firmware versions cannot be guaranteed.
This release notes contains important information about the library and it´s installation.

**Version history**

- V2.1.0 (AB2.4.1, 2020-05-04)
  - New function blocks (Prototype folder)
    - SP_MAGFFT_OVERLAP_AVG_App (LIB-2563)
    - SP_FFT_CMPL_POLAR_App, SP_PHASE_OFFSET_FREQ_App, SP_PAHSE_OFFSET_TIME_App, SP_SPEED_KEYPHASOR_App (LIB-2286)
  - Fixed function blocks:
    - SP_FFT_RMS_App improved (LIB-2560)
    - SP_STATISTICS_App, MEDIAN now fully working (LIB-2550)
  - Example updated: AC500_V2_CMS_SP_Expert_AB240.project , Bug fix for overwrite encoder settings (LIB-2493, LIB-2391)
  - Updated library documentation in example folder ...PS566-CMS\Signal Processing V2\LibraryDocumentation (LIB-2567)
- V2.0.0 (AB 2.2.5, 2020-03-04)
  - Library optimized: SP_AC500_V28_App.lib (LIB-2146, LIB-2100, LIB-2235), SP_ENVELOPE_App corrected (LIB-2199). Upgrade path is described in chapter 4.1 of AC500 V2 CMS SP Library V200 description 3ADR025244M0208.pdf.
  - New examples for first steps, gearbox and pumping (LIB-2230, LIB-2168, LIB-1999)
- V1.3.0 (AB 2.2.3, 2019-06-03)
  - New function block added: SP_READ_WAV_HEAP_App which doesn't needs the program memory but works in the heap (LIB-2029)
- V1.2.3 (AB 2.2.1, 2019-03-01)
  - Examples improved (LIB-1965), updated FIR Block: First samples according to filter order number are deleted (LIB-1953)
- V1.2.2 (AB 2.2.0, 2018-10-09)
  - Fixed calculation mistake / issue in the SP_FIR_FILTER_APP Function Block (LIB-1733), library enabled for PM595 (LIB-1721)
- V1.2.1 (AB 2.1.2, 2018-06-05)
  - New function blocks: SP_FFT_RMS_APP, SP_FIR_FILTER_APP, SP_HARMONICS_APP, SP_MAGFFT_ENERGY_APP, SP_MATH_APP
- V1.1.0 (AB 1.2.3, 2016-07-11)
  - New LP and HP filter blocks: SP_HIGH_PASS_FILTER_APP, SP_LOW_PASS_FILTER_APP
- V1.0.0 (AB 1.0.0, 2016-01-18)
  - First version: SP_AC500_V24_App.lib

**Known limitations or bugs**

- only supported by PM585 or higher due to need of co-processor

**Installation and Update**
Basic CMS libraries and examples are part of the Automation Builder:

- Basic Libraries: \Program Files\Common Files\CAA-Targets\ABB_AC500\AC500_V12\library\CMS_IO_AC500_V24.lib and WAV_FILE_AC500_V24.lib
- Basic Examples: \Users\Public\Documents\AutomationBuilder\Examples\PS566-CMS\Measurements

This package contains additional libraries, examples and documentation for the Condition Monitoring System:

- Signal Processing library: \Program Files\Common Files\CAA-Targets\ABB_AC500\AC500_V12\library\ApplicationLibraries\SP_AC500_V28_App.lib
- Signal Processing examples and library help file: \Users\Public\Documents\AutomationBuilder\Examples\PS566-CMS\Signal Processing V2

This Library Package is part of the Automation Builder. It can be selected as an Option during installation.

## Appendix 4: PS565 BACnet-ASC Library Package (license required)

Welcome to PS565 BACnet-ASC Library Package, Version 1.0.2

The software Libraries in this package have been tested with the following versions:

- Automation Builder AB1.2 to AB2.6.1
- CPU Firmware FW2.5 to FW 2.8.6

In no event will ABB or its representatives be liable for loss of data, profits, revenue or consequential, incidental or other damage that may result from the use of other versions of product / software / firmware versions.
The error-free operation of this library package with other products / software / firmware versions cannot be guaranteed.
This release notes contains important information about the library and it´s installation.

**Version history**

V0.9.0 2016-05-04 First version, technology preview
V1.0.1 2016-08-30 First product version, certified by BTL
V1.0.2 2019-03-14 Performance improved with library BACnet_BASC_AC500_V28.lib (V1.0.2), This library version requires FW version 2.8 or higher (LIB-1390 / LIB-2016)

**Known limitations or bugs**

- eCo (PM554 etc.): Very little applications possible only
  - BASC_SERVER + BASC_DEVICE + 1 ANALOG_IN is working
  - May be one to two more FBs will work in addition
- Runtime error #81 after program change and download -> Solution: Perform "Project - Clean all" and download again [LIB-1074]

**Installation and Update**

This Library Package is part of the Automation Builder. It can be selected as an Option during installation.

This Library needs a valid license for compilation.

- License is obtained via an authorization code as a product, which has to be bought via the normal AC500 sales channels.

**What's new in Version V1.0.2**

- LIB-1390: Performance improved with library BACnet_BASC_AC500_V28.lib (V1.0.2), for even faster versions please contact support

**What's new in Version V1.0.1**

- Several fixes for BACnet certification

## Appendix 5: PS554 FTP Client Library Package (Technology Preview)

**Disclaimer**: Technology Previews are designed to give you a preview at upcoming technologies. They are non-final versions of our product and should NOT be taken as a measure of the fit, finish, capability, and overall quality of the final release (including user documentation). Technology Preview features can be changed or removed in newer versions of Automation Builder as communicated via the release notes. If technology previews are subject to licensing, please contact your ABB sales representative.

Welcome to the AC500 FTP client Library Package, Version 1.8.1

The software Libraries in this package have been tested with the following versions:

- Automation Builder AB1.0 to AB2.6.1
- CPU FW2.4.2 to FW 2.8.6

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The error-free operation of this library package with other products / software / firmware versions cannot be guaranteed.
This release notes contains important information about the library and it´s installation.

### Version history

2013-02-06 V 1.0 - released
2013-03-06 V 1.2 - few bug fixes
2013-03-27 V 1.3 - added corrections from final review
2013-06-24 V 1.4 - Fixed reply code evaluation when opening a data channel to Microsoft FTP Server / - Free socket descriptor even if socket could not be opened
2013-07-23 V 1.5 - changed FTP_MAX_PATH length from 30 characters to 60 characters
2014-11-04 V 1.6 - Fixed error in the offset calculation of the internal receive / - Fixed reply code evaluation in the FTP_OPEN on slow connections
2014-11-28 V 1.7 - Fixed error when the server sends "download complete" message before all data packages have been acknowledged by the client.
2018-05-28 V 1.8 - Fixed: FTPClient keeps command channel open after first reset of FTP_DOWNLOAD or FTP_LIST [LIB-1627] / syslibsockets.lib and CAA_File lib are referenced automatically [LIB-1329]
2018-10-04 V1.8.1 - All examples updated to AB2.1 or higher (LIB-1768)

### Known limitations or bugs

- Download of big files fails if longer than 3 seconds (LIB-2604)

### Installation and Update

This Library Package is part of the Automation Builder. It can be selected as an Option during installation.

## Appendix 6: PS562 Solar Library Package (license required)

Welcome to PS562 Solar Library Package, Version 1.0.3

The software Libraries in this package have been tested with the following versions:

- Automation Builder AB1.0 to AB2.6.1
- CPU FW2.3 to FW 2.8.6

In no event will ABB or its representatives be liable for loss of data, profits, revenue or consequential, incidental or other damage that may result from the use of other versions of product / software / firmware versions.
The error-free operation of this library package with other products / software / firmware versions cannot be guaranteed.
This release notes contains important information about the library and it´s installation.

**Version history**

| PS562 Solar Library Package | Solar_AC500_V22.lib | SolarNREL_AC500_V22.lib |
|---|---|---|
| V1.0.0 | V1.0.0 (2012-12-19) | V1.0.0 (2012-12-19) |
| V1.0.2 / V1.0.3 | V1.0.2 (2016-02-16) | V1.0.1 (2016-02-16) |

**Known limitations or bugs**

SolarNREL_AC500_V22.lib

- Not running on Eco

Solar_AC500_V22.lib

- (no known limitations)

Solar example does not work with PM595 (LIB-1722).

**Installation and Update**

This Library Package is part of the Automation Builder. It can be selected as an Option during installation.

This Library needs a valid license for compilation.

- License is obtained via an authorization code as a product, which has to be bought via the normal AC500 sales channels.
- If you had an authorization code for this major library version already, please contact support for an update license/code.

**What’s new in Version V1.0.2 / V1.0.3**

- Solar_AC500_V22.lib compatible with new CPU type PM595
- SolarNREL_AC500_V22.lib compatible with new CPU type PM595
- Example updated with V1.0.3

## Appendix 7: PS5617 Solar Library Package for AC500 V3 (technology preview)

**Disclaimer**: Technology Previews are designed to give you a sneak peek at upcoming technologies. They are non-final versions of our product and should NOT be taken as a measure of the fit, finish, capability, and overall quality of the final release (including user documentation). Technology Preview features can be removed without further notice. If you use the preview, you could experience things that go wrong, data that gets lost, and things to change. While we don't stop you using these versions in projects, we don't recommend it if you cannot afford data loss and the usual quirks of running preview software. It will not be possible to call ABB Support hotlines for help with Technology Preview features. If you are interested in getting support for a Technology Preview feature this can be done in the context of a piloting. In this case please contact us to set up a piloting agreement.
Welcome to the PS5617-Solar Library Package, V1.0.0.1, which is the V3 upgrade of the V2 Solar library (PS562-SOLAR)
The package is consisting of: Example and Documentation

- Example_PM5072_Solar_2Axis_ABxxx.project
- AC500_Example_PM5072_Solar2Axis_3ADR011085R1.pdf
- (ABB_Solar_AC500.compiled-library is not part of the Automation Builder Installation Package. For the Library, please contact Technical Support: plc.support@de.abb.com.)

The solar library has been tested with the following versions:

- Automation Builder AB2.6.1
- CPU Firmware 3.6.1

In no event will ABB or its representatives be liable for loss of data, profits, revenue or consequential, incidental or other damage that may result from the use of other versions of product / software / firmware versions.
The error-free operation of this library package with other products / software / firmware versions can not be guaranteed.

**Version history**

- V1.0.0.1 2023-08 :
  - Example project udpated (LIB-3398)
- V1.0.0.0 2023-02 : First version with AB2.6.0 (Technology Preview)

**Known limitations or bugs**

**Installation and Update**

- This Library Package is part of the Automation Builder. It can be selected as an Option during installation or any time later using the Automation Builder Installation Manager.
  (ABB_Solar_AC500.compiled-library is not part of the Automation Builder Installation Package. For the Library, please contact Technical Support: plc.support@de.abb.com.)

## Appendix 8: PS563 Water Library Package (license required)

Welcome to PS563 Water Library Package, Version 1.2.3

The software Libraries in this package have been tested with the following versions:

- Automation Builder AB1.0 to AB2.6.1
- CPU FW2.3 to FW 2.8.6

In no event will ABB or its representatives be liable for loss of data, profits, revenue or consequential, incidental or other damage that may result from the use of other versions of product / software / firmware versions.
The error-free operation of this library package with other products / software / firmware versions cannot be guaranteed.
This release notes contains important information about the library and it´s installation.

**Version history**

| PS563 Water Library Package | LogData_AC500_V23.lib | PUMP_AC500_V23.lib | HMI Example | PSCT Pump Station Configuration Tool (Technology Preview) |
|---|---|---|---|---|
| V1.0.0 | V1.0.0 (2013-10-24) | V1.0.0 (2013-10-22) | HMI_ACQ_V18_Example.zip | n/a |
| V1.1.0 | V1.1.0 (2015-04-17) | V1.0.1 (2014-10-15) | HMI_ACQ_V191_Example.zip | n/a |
| V1.2.0 | V1.1.0 (2015-04-17) | V1.1.0 (2015-09-15) | HMI_ACQ_V191_Example.zip | V1.2.0 |
| V1.2.1 | V1.1.1 (2016-03-17) | V1.1.0 (2015-09-15) | HMI_ACQ_V191_Example.zip | V1.2.2 / V2.0.0 |
| V1.2.2 | V1.1.1 (2016-03-17) | V1.1.1 (2018-03-21) | HMI_ACQ_V191_Example.zip | n/a (discontinued) |
| V1.2.3 | V1.1.3 (2023-02-16) | V1.1.1 (2018-03-21) | HMI_ACQ_V191_Example.zip | n/a (discontinued) |

**Known limitations or bugs**

LogData_AC500_V23.lib

- Not running on Eco
- CPU firmware must be V2.3.3. or higher
- Use SD card from ABB
- Maximum number of files (input of FB LOG_HANDLING) is limited to 500, if SD card is formatted with FAT16

PUMP_AC500_V23.lib

- (no known limitations)

HMI example for ACQ Drive (project for pumping functions in ACQ810)

- (no known limitations)

**Installation and Update**

This Library Package is part of the Automation Builder. It can be selected as an Option during installation.

This Library needs a valid license for compilation.

- License is obtained via an authorization code as a product, which has to be bought via the normal AC500 sales channels.
- If you had an authorization code for this major library version already, please contact support for an update license/code.

**What’s new in Version V1.1.0**

- PUMP_AC500_V23.lib compatible with new CPU type PM595

- LogData_AC500_V23.lib: Bugs fixed (details in LOG_VERSION_INFORMATION)
- HMI example compatible with Panel Builder V1.91.0

**What’s new in Version V1.2.0**

- PUMP_AC500_V23.lib with new simulation blocks
- Pump Station Configuration Tool as Technology Preview

**What’s new in Version V1.2.1**

- Pump Station Configuration Tool as Technology Preview: Boost Control Mode added
- LogData_AC500_V23.lib: Bugfix direct communication Mode 2

**What’s new in Version V1.2.2**

- PUMP_AC500_V23.lib - Fixed: Autochange style 3 not working for level control with two pumps [LIB-1637]
- Pump Station Configuration Tool removed (discontinued)

**Whats new in Version V1.2.3**

- LogData_AC500_V23.lib: Bugfix for automatic mode of generic logger: When refresh on historical data in first cycle, a wrong historical array was stored (LIB-2772)

## Appendix 9: PS564 Temperature Control Library Package (license required)

Welcome to the PS564 Temperature Control Library Package, Version 1.1.1

The software Libraries in this package have been tested with the following versions:

- Automation Builder AB1.1 to AB2.6.1
- CPU FW2.4 to FW 2.8.6

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The error-free operation of this library package with other products / software / firmware versions cannot be guaranteed.
This release notes contains important information about the library and it´s installation.

**Version history**

- V1.0.0 2015-12-10 First version
- V1.1.0 2016-05-04 Online documentation corrected, improved logger, current monitoring
- V1.1.1 2016-07-29 Update of online documentation

**Known limitations or bugs**

- Cooling not possible if Heat is disabled (LIB- 918)
- If TECT_WrongLimits error is generated, then Reset warm is required to reset the Error. (LIB- 939)
- Autotune will still be started when Actual Temperature is greater than Tune Setpoint (LIB-912)

**Installation and Update**

This Library Package is part of the Automation Builder. It can be selected as an Option during installation.

This Library needs a valid license for compilation.

- License is obtained via an authorization code as a product, which has to be bought via the normal AC500 sales channels.
- If you had an authorization code for this major library version already, please contact support for an update license/code.

**What's new in Version V1.1.0 / V1.1.1**

- Current monitoring with common or individual sensor, 1 phase or 3 phases
- Data logging modified in order to reduce number of data log lost
- Online help updated with V1.1.1 (AB-8489)

## Appendix 10: AC500 HVAC Library Package (Technology Preview)

**Disclaimer**: Technology Previews are designed to give you a preview at upcoming technologies. They are non-final versions of our product and should NOT be taken as a measure of the fit, finish, capability, and overall quality of the final release (including user documentation). Technology Preview features can be changed or removed in newer versions of Automation Builder as communicated via the release notes. If technology previews are subject to licensing, please contact your ABB sales representative.

Welcome to the AC500 HVAC Application Library Package, Version 1.0.3

It contains the following components:

- AC500 Library HVAC_AC500_App_V22.lib (V1.0.2) containing basic Function Blocks, structures and visualizations for Heating, Ventilation and Air Condition
- AC500 Library CTRL_AC500_App_V22.lib (V1.0.1) containing HVAC specific control or signal processing blocks
- CTRL_test_example_PM583.project example for the CTRL library, function block CTRL_PI_PULSE_APP
- HVAC AC500 Application Library Package Documentation V103.pdf (V1.0.3) documentation for HVAC libraries including example description

The software Libraries in this package have been tested with the following versions:

- Automation Builder AB1.1 to AB2.6.1
- CPU FW2.4.2 to FW 2.8.6

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The error-free operation of this library package with other products / software / firmware versions cannot be guaranteed.
This release notes contains important information about the library and it´s installation.

**Version history**

V1.0.0 2013-11-07 First release of package, consisting of HVAC_AC500_App_V22.lib (V1.0.0) and CTRL_AC500_App_V22.lib (V1.0.0)
V1.0.1 2014-05-15 HVAC_AC500_App_V22.lib (V1.0.1): Update of air density and enthalpy FB
V1.0.2 2015-01-19 HVAC_AC500_App_V22.lib (V1.0.2): Add conversion function LREAL_TO_REAL, CTRL_AC500_App_V22.lib (V1.0.1): CTRL_FILTER_CONTINUOUS_APP optimized
V1.0.3 2015-12-10 Example CTRL_test_example_PM583.project updated for upgrade to PM595

**Known limitations or bugs**

none

**Installation and Update**

This Library Package is part of the Automation Builder. It can be selected as an Option during installation.

## Appendix 11: PS571 Pumping Library Package (Technology Preview, license required)

**Disclaimer**: Technology Previews are designed to give you a preview at upcoming technologies. They are non-final versions of our product and should NOT be taken as a measure of the fit, finish, capability, and overall quality of the final release (including user documentation). Technology Preview features can be changed or removed in newer versions of Automation Builder as communicated via the release notes. If technology previews are subject to licensing, please contact your ABB sales representative.

Welcome to PS571 Pumping Library Package, Version 0.9.1

The software Libraries in this package have been tested with the following versions:

- Automation Builder AB1.2.3 to AB2.6.1
- CPU FW2.5.3 to FW 2.8.6

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The error-free operation of this library package with other products / software / firmware versions cannot be guaranteed.
This release notes contains important information about the library and it´s installation.

**Version history**

V0.9.0 2016-10: First version, library V0.9.0
V0.9.1 2019-10: No changes in library (V0.9.0), example and documentation updated, function block description moved to AB help (LIB-2149)

**Known limitations or bugs**

External mode of sleep function is not yet implemented

**Installation and Update**

This Library Package is part of the Automation Builder. It can be selected as an Option during installation.

## Appendix 12: PS552-MC-E Motion Control Library Package (license required)

Welcome to PS552-MC-E Motion Library Package, Version 3.2.4

The software Libraries in this package have been tested with the following versions:

- Automation Builder AB1.2 to AB2.6.1
- CPU Firmware FW2.5. to FW 2.8.6
- CM579-ETH EtherCAT coupler FW 4.3.0
- Bosch Indra Drive Cs FW MPB-16V20-D5-1-NNN-NN
- ACSM1 FW 1510 + FECA-01 FW 109
- E150 FW 58.09

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The error-free operation of this library package with other products / software / firmware versions cannot be guaranteed.
This release notes contains important information about the library and it´s installation.

**Version history**

- V1.0.0 PS551-MC (2010) First version
- V2.0.0 PS552-MC (2011) PLC based Motion added
- V3.0.1 PS552-MC-E (2014) Coordinated Motion added
- V3.1.0 PS552-MC-E (2016) see below
- V3.2.0 PS552-MC-E (2016) see below
- V3.2.1 PS552-MC-E (2017) see below
- V3.2.2 PS552-MC-E (2018) see below
- V3.2.3 PS552-MC-E (2020) see below
- V3.2.4 PS552-MC-E (2021) see below

**Known limitations or bugs**

- Initial delta times values for MC_PositionProfile, MC_VelocityProfile and MC_AccelerationProfile must be zero (LIB-550)
- ACS355_Drive-based_MotionControl_ProfibusDP.project and ACSM1_Drive-based_MotionControl_ProfibusDP.project: Compilation error due to new Profibus library. Work around is user should manually delete PROFIBUS_AC500_V10.lib. (LIB-1311)
- Automation Builder crashes when PLC_PTO_PLCopen_example.project is used with MC MoveAbsolute (AB-14638) Workaround: Login and download the project to the PLC via CoDeSys from 3S (instead of Automation Builder)
- MC_SetPosition function block throws error 7 (timeout) as long as Execute=TRUE when used with FM562 PTO module. (LIB-1139)
- When FM562 PTO module is used, Stepper motor will not stop when MC_Power function block is disabled. (LIB 1560)
- MC_ReadStatus function block is reads wrong status when the Axis Enable DI0 is powered off on FM562 module (LIB1561)

**Installation and Update**

This Library Package is part of the Automation Builder. It can be selected as an Option during installation.

This Library needs a valid license for compilation.

- License is obtained via an authorization code as a product, which has to be bought via the normal AC500 sales channels.
- If you had an authorization code for this major library version already, please contact support for an update license/code.

**What's new in Version V3.2.4**

- Updated libraries
  - CompactMotionControl_AC500_V12.lib: V3.2.4
  - MathFunctions_AC500_V23.lib: V3.1.0

  - MC_Base_AC500_V11.lib: V3.2.4
  - MC_Blocks_AC500_V11.lib: V3.2.4
  - MC_CoBlocks_AC500_V23.lib: V3.2.0
- New function blocks
  - MCA_CAMINFO
  - MCA_PhasingbyMaster (LIB-1032)
- Bug fixing
  - Using MC_COMBINEAXES results in increasing EtherCAT processing time when used with Modulo axes (LIB-1219)
  - MC_SetPositon reports error 7 (timeout) as long as Execute=TRUE used with PTO (LIB-1139)
  - Stepper motor running with MC_Power function block does not stop even if the MC_Power function block is disabled while running. (LIB-1560)
  - MC_ReadStatus function block is reading wrong status when the Axis Enable DI0 is powered off on FM562 module (LIB-1561)
  - Move FBs should not start a movement with deceleration=0, because it will then never stop again (LIB-1040)
- Examples updated
  - ACS355_Drive-based_MotionControl_ProfibusDP_AB240.project
  - ACSM1_Drive-based_MotionControl_ProfibusDP_AB240.project
  - Ethercat Application Library_Description V03 3ADR023047M0202.pdf (example documentation)
  - PTO example docu updated with AB2.5.0 (AB-20253)

**What's new in Version V3.2.3**

- EtherCAT examples updated for AB2.3.0 (LIB-2380)

**What's new in Version V3.2.2**

- All examples updated to AB2.1.0 or higher (LIB-1767)

**What's new in Version V3.2.1**

- Example CompactMotion_EtherCAT_ACSM1.project updated as workaround for AB-10467

**What's new in Version V3.2.0**

- New function blocks
  - ECAT_AC500_APPL_V21
    New block ECAT_402_ParameterHoming_APP to send homing related parameters per SDO
    support for drive-based homing and input parameter for drive-operation mode with ECAT_CiA402_CONTROL_APP
  - MC_BLOCKS_AC500_V11
    New block MCA_DriveBasedHome to execute a drive based homing method for 402-profile drives on EtherCAT
    New block MCA_GearInDirect, a modified MC_GearInPos which does not need the master to move for starting synchronization
    New block MCA_CamInDirect, a modified MC_CamIn which does not need the master to move for starting synchronization
    New block MCA_SetOperatingMode, allows to set the axis in a state to work just velocity based, switch of position control loop, ignore position jumps and following error
  - MC_CoBlocks_AC500_V23
    New block MCA_SyncInfeedToPath
    New block MCA_SyncCamToPath
- New behavior
  - Axis will go to an ERRORSTOP when 32-Bit position overrun occurs with an axis in positioning mode, in velocity mode, position overrun is allowed (related to MCA_SetOperatingMode)
- Bug fixing
  - CMC_Sinterpolation, had wrong deceleration when velocity changed to smaller values during movement
  - SPLINE interpolation for profiled movement had not used the last data point, problem since 3.1.0
  - V_CHECK_TIME was not used anymore, problem since 3.1.0
  - modified the velocity calculation for CAM with MasterStartDistance,had before wrong result with non-linear velocity transition
  - changed the functionality for MCA_SetPositionCOntinuous with SUPER=FALSE, did create a small movement
  - improvement for jerk calculation
  - MCA_JogAxis had wrong behavior when moving backward with MinJogDistance > 0

- MCA_MoveBuffered, output ActiveEvent ok, problem since 3.1.0

**What's new in Version V3.1.0**

- New function blocks
  - MCA_MoveRelativeOpti
  - CMC_Sinterpolation
  - Buffered and blending movement for coordinated motion
- Direct parameter access through AXIS_REF structure
  - Position control loop parameters directly available
- Additional actual values from AXIS_REF structure
  - Improvement for software limit switches
  - U_PER_REV_NOMINATOR/U_PER_REF_DENOMINATOR as DINT (from WORD)
- Bug fixing
  - Improved accuracy of acceleration/deceleration times when using Jerk
  - Allow access to new axis run-time parameters to adjust gains, following error limits and other axis related settings
  - Additional error codes added to Kernel ErrorID
  - Inclusion of new software limit functions including ramp to limit
  - Fixed issue with modulo master axis when using MC_PhasingRelative
  - Fixed issue with MC_CamIn when using data that is relative to start point
  - Improved operation of MC_ReadStatus function block
  - Scaling parameters for axis now defined as DINT instead of WORD
  - Fixed issue with MC_MoveContinuousAbsolute caused by constantly changing Velocity parameter
  - Increased range of various axis parameters (e.g. MaxVelocityApplication changed from WORD to LREAL)
  - Added new generic ECAT_CiA402_CONTROL_APP function block to replace previous block that referenced e150 servo drive
  - In combination with PM595, EtherCAT and motion-cycle < 1ms possible
  - 16 bit limits for velocity, acceleration and deceleration removed

## Appendix 13: PS5602 IEC 61850 Server for AC500 V3 (runtime license required)

Welcome to the CODESYS IEC 61850 Server 4.0.7.3 (setup 4.0.7.2574)

This package allows the AC500 to act as interface to substation automation systems via IEC 61850:

- AC500 V3 CPU acts as an IED with IEC 61850 Server, Edition 1, allowing communication as MMS Server and GOOSE Publisher and Subscriber
- A wide set of Logical Nodes is pre-defined and can be extended.
- The implementation of Logical Nodes can be freely programmed in ST code.
- Automation Builder is used as IED configuration tool for modelling the IEC 61850 data structures and connecting them to the PLC applications
- Support of SCL – Substation Configuration Language to transfers detailed configuration information between different IEDs

Basic functionality has been tested with the following versions:

- Automation Builder AB2.1.2 to AB2.6.1
- V3 CPU FW3.1.4 to FW3.6.1

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The error-free operation of this package with other products / software / firmware versions cannot be guaranteed.
This release notes contains important information about the library and it´s installation.

Version history

- V4.0.7.3 (setup 4.0.7.2574, library 4.0.7.8) (Feb 2023)
  Improvements
  - MMS and GOOSE is possible via new Ethernet coupler CM5640 (AC500_TEST-2659)
  - Number of possible datasets increased from 20 to 32 (AB-21005)
  - IEC61850 system technology updated in Automation Builder help
  Bugs fixed
  - GOOSE messages greater than 1500 byte do not lead to exception anymore, runtime error is created now (LIB-2996)
  - GOOSE subscriber now also working on ETH2 onboard (LIB-3135)
  - MMS Server is only listening on configured Ethernet slot (LIB-3121)

- V4.0.7.2 (setup 4.0.7.2257, library 4.0.7.6) (June 2022)
  - Updated Logical node definition, which will only take effect after project upgrade and then creating new logical nodes (AB-21319)
    - https://iec61850.tissue-db.com/tissue/219
    - updated SBO for all controllable data object types: SPC / DPC / INC / BSC / ISC
  - GOOSE Subscriber.xErrorTimeAllowedToLive fixed (LIB-2879)
  - GOOSE Subscriber now working on 2nd Ethernet adapter (LIB-2800)
  - GOOSE Subscriber stabilized for high number of GOOSE messages (LIB-2980)
  - GOOSE Publisher: Increased TAL (Time Allowed to Live), when GOOSE value has changed (LIB-2947)
  - GOOSE manager: Improved diagnosis (LIB-2870, LIB-2968)
  - Added dummy IP information to exported cid file (AB-21298)

- V4.0.7.1 (setup 4.0.7.2170, library 4.0.7.1) (December 2021)
  - GOOSE performance improved (AB-20488), more details in AC500_IEC61850_Example_Description_3ADR010262_6_en_US.pdf, chaper 4.3
  - Configuration of GOOSE publisher min repetition time can now be configured (LIB-2761)
  - Configuration of IEC61850 Server: Properties "IP, Subnetmask, Gateway" removed , since they were never active. AC500 IP settings are (and were always) only configured in Communication settings of the PLC

- V4.0.7.0 (setup 4.0.7.1991, library 4.0.5.7) (December 2020)
  - MAC address for GOOSE publisher/subscriber can be entered offline (FEAT-286)
  - GOOSE Master can be disabled (LIB-2412)
  - Updated and new examples (D and E)

- V4.0.6 (June 2019)
  - library AC500_IEC61850Server 4.0.5.5. updated for changed references in AB2.3.0 (LIB-2370)

- V4.0.5 (March 2019)
  - library placeholder renamed to AC500_IEC61850Server (4.0.5.4), package updated (AB-15610)
  - no functional changes

- V4.0.4.0 (Release, October 2018)
  - Sequence of Coded Enum bits corrected (PUA-206)
  - SCL Import error corrected (PUA 204)
  - Number of signals increased from 250 to 1000 (PUA-209)

- V4.0.3.75 (Technology Preview, Mai 2018)
  - Final fixes for certification by TÜV Süd

- V4.0.3.60 Update (March 2018) with following improvements
  - No “clean all” after update of IEC 61850 server needed any more (PUA-170)
  - Optimization of GOOSE (PUA-161, PUA-168, PUA-174)
  - Change of MAC address of GOOSE publisher and subscriber is properly updated (PUA-184)
  - GOOSE ID may contain special character like slash or dot (PUA-194)
  - SCL import improved (PUA-193, PUA-160)

- V4.0.3.18 First version (November 2017)

Limits

- MMS Reporting: max 5 MMS clients
- GOOSE Publish and MMS reporting: Max 32 datasets. Each dataset is limited to 50 entries, which can be data objects or data attributes.
- GOOSE Publish: The GOOSE Ethernet frame length must not exceed 1500 bytes. This can even happen with less than 50 data objects per dataset, if each data object has many data attributes
  Example: The maximum number of large data objects of type AnIn (containing 7 data attributes each) is 35 per dataset only.
  Exceeding 1500 bytes will lead to a runtime error at the diagnosis variable eStatus. Workaround: Reduce DO/DAs in dataset.
- GOOSE Subscribe: Max 50 Ethernet frames per cycle. Workaround: Adapt cycle time
- GOOSE Publish or Subscribe: Max 3000 Byte per cycle. Workaround: Adapt cycle time
- Not possible to have 2 or more IEC61850 server in one AB project. Workaround: Create 2 or more projects (PUA-172)
- Only one Logical Device per IEC61850 Server
- Only one Report per DataSet (PUA-167)

Known issues

- Exceeding the GOOSE Publish Ethernet frame length above 1500 bytes leads to an exception (LIB-2996)
  This can even happen with less than 50 data objects per dataset, if each data object has many data attributes
  Example: The maximum number of large data objects of type AnIn (containing 7 data attributes each) is 35 per dataset only
- For GOOSE communication with small cycle times of 1-2 ms, we have observed higher PLC load and longer round-trip times with AB2.6.0 (AC500_TEST-2752)

Installation, Update and Licensing

- This package is part of the Automation Builder. It can be selected as an Option during installation or any time later using the Automation Builder Installation Manager.
- Basic documentation can be found in the online help – Automation Builder - PLC Integration - Configuration in Automation Builder for AC500 Products - Protocols and Special Servers - IEC 61850 Server
- AC500 specific documentation is part of the examples documentation. This also contains certificates, MICS, PICS, PIXIT and TICS
  typical folder: C:\Users\Public\Documents\AutomationBuilder\Examples\PS5602-IEC61850
- For operation a runtime license is required. Right-click on the PLC – Runtime Licensing – PLC runtime licensing.
- Please contact your local sales support to get a runtime license

- For Update projects from previous AB versions:
  - Open project
  - Go to Menu: Project- Update Project
  - Go to IEC_61850_Server (below Ethernet) and Update objects

## Appendix 14: PS5605-Drives Library Package for AC500 V3

Welcome to the PS5605-Drives Library Package, V1.3.0.0, consisting of

- V3 library ABB_Drives_AC500.compiled-library
- Examples and documentation
- Library documentation (online help)

The package includes the function blocks to control and communicate with the ABB drives using different Industrial protocols like Modbus TCP, Modbus RTU, Profinet, EtherCAT, CANOpen.

Basic functionality has been tested with the following versions:

- Automation Builder AB2.2.0 to AB2.6.1
- V3 CPU FW3.2.0 to FW3.6.1

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The error-free operation of this package with other products / software / firmware versions cannot be guaranteed.

This release notes contains important information about the library and it´s installation.

**Change history**

- Package V1.3.0.0 (Feb 2023)
  - Profinet read and write Function blocks updated with input Device replacing input slot. Upgrades from projects made with previous Automatoin Biulder versions require manual adaptions in all used DrvPnRead and DrvPnWrite function blocks! (LIB-2845)
  - Online help updated for Profinet read write FB changes (AB-22090)
  - Profinet example project updated based on updated read and write FBs (LIB-2802)
- Package V1.2.0.0 (December 2021)
  - new function blocks: DrvProfinetRead and DrvProfinetWrite (LIB-1905, LIB-1906)
  - updated example and documentation
  - Fixed LIB-2625: DrvModbusTcp and DrvModbusRtu: Wrong detection of Write-Value-Changes in specific situation
  - Fixed LIB-2626: DrvModbusWrite, DrvModbusTcp and DrvModbusRtu: Write values are not stored at rising edge of execute, only the pointer
- Package V1.1.0.3 (May 2021), containing ABB_Drives_AC500.compiled-library, V1.1.0.17
  - Support for V3 eco: COM ports > 1 supported (LIB-2594)
  - DrvModbusWrite improved: read values at rising edge of Execute (LIB-2270), except write values (LIB-2626, see know issues)
  - DrvModbusTcp improved (LIB-2275)
- Package V1.1.0.2 (March 2020), containing ABB_Drives_AC500.compiled-library, V1.1.0.11
  - updated Quickstart guidePackage V1.1.0.1 (November 2019), containing ABB_Drives_AC500.compiled-library, V1.1.0.11
  - function block documentation updated (LIB-2128)
  - code styleguide improvements (LIB-2140, LIB-2098)
- Package V1.1.0.0 (First product version, June 2019), containing ABB_Drives_AC500.compiled-library, V1.1.0.9
  - New function blocks: DrvControlCANCiA402, DrvControlModbusEng, DrvModbusReadWrite23, DrvModbusRtuBroadcast
  - Improvements and Enhancements
  - Bug fixes
  - Example documents and project for all protocols supported.
  - Generic modbus blocks (starting with ModRtu...) were moved to generic Modbus RTU library: AC500_ModbusRtu
- Package V1.0.0.2 (Technology Preview, March 2019), containing ABB_Drives_AC500.compiled-library, V1.0.0.19
  - New examples for EtherCAT, Profinet and ModbusRTU
  - New function block ModRtuReadWrite23 (LIB-1904)
  - New function block DrvModbusReadWrite23 (LIB-1945)
  - New function block DrvControlModbusEng (LIB-1678)
  - New function block DrvControlCANCiA402 (LIB-1907)
  - LIB-1895 - ModRtuToken improved
  - LIB-1929 - NoConToDrive output in the DrvControlModbusEng added
  - LIB-1840 - DrvModbusRtu improved
  - LIB-1820 - DrvModbusTcp input validation for 'IpAdrServer'
  - LIB-1841 - DrvControlModbusACS and DrvControlModbusDCS improved
  - LIB-1819 - Visualization updated
  - LIB-1838 - ModRtuRead improved
  - LIB-1804 - bug fix for line token halt
  - LIB-1928 - bug fix, update in function block description related to Online output in DrvModbusTcp
  - LIB-1966 - HA specific functionality inputs
- Package V1.0.0.1 (Technology Preview, October 2018) containing ABB_Drives_AC500.compiled-library, V1.0.0.9
  - First version

**Known limitations or bugs**

- DrvModbusTCP function blocks: If the drive is not online with the PLC and Enable input is disabled, outputs reset will be delayed (LIB-2107)
- Modbus reconnection not possible in special cases (LIB-2245):
  In the following case it might be possible that the connection to the drive is not reestablished after a connection loss, e.g. due to cable being unplugged or power off of the drive:
  If the “Enable” input of the control blocks (DrvControlModbusEng, DrvControlModbusACS, DrvControlModbusACS) is connected from the output “Online” of the communication block ( e.g. DrvModbusTcp, DrvModbusRtu) it is necessary to switch off/on the PLC.
  Workaround: We strongly recommend to set the Enable input of the control blocks fix to TRUE.

**Installation, Update and Licensing**

- The package is installed as part of the V3 option per default.

## Appendix 15: PS5601 HA ModbusTCP Library Package for AC500 V2+V3 (runtime license required)

Welcome to HA Modbus Library Package, Version 1.3.0.6
consisting of High Availability libraries for AC500 V2 and V3, AC500 Bulk Data Manager tool and examples.

AC500 V2:

- HAModbus_AC500_V26.lib, V1.3.0.x
- (CI52x_AC500_V26.lib, V1.3.0.x is installed by default for use of CI52x modules without HA)

AC500 V3:

- ABB_HaModbus_AC500.compiled-library, V1.4.0.x
- (ABB_CI52x_AC500.compiled-library, V1.4.0.x is installed by default for use of CI52x modules without HA)

The software Libraries in this package have been tested with the following versions:

- Automation Builder AB2.2.3 to AB2.6.1
- V2 CPU: FW2.7.2 to FW2.8.6
- V3 CPU: FW3.2.2 to FW3.6.1
- CI52x-MODTCP F0, Firmware V3.2.3 to 3.2.7
- CM597-ETH (Firmware 1.2.1.20 to 1.2.18.21)
- CM5640-2ETH, FW3.6.0.172
- Bulk Data Manager tool: Bulk_Data_32bit_1.0.8408.34382.zip / Bulk_Data_64bit_1.0.8408.34255.zip

The package contains further documents, examples and tools: Please start by reading the System technology description

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The error-free operation of this library package with other products / software / firmware versions can not be guaranteed.
This release notes contains important information about the library and it´s installation.

Installation, Update and Licensing

The package is an installation option of Automation Builder and contains the following parts:

- V2 libraries are copied to …\Common Files\CAA-Targets\ABB_AC500\AC500_V12\library\PS5601-HA-MTCP
- V3 libraries are installed into Library repository
- Bulk Data Manager Tool, Library documentation, Example projects and documentation are copied to C:\Users\Public\Documents\AutomationBuilder\Examples\PS5601-HA-MTCP

The Library package requires to have a PS5601-MTCP runtime license per each CPU to be entitled to use it . (V3 CPU can even not go to Run mode without that the license has been locked to the CPU, but will report a notification “PLC License missing”).
PS5601-MTCP is a normal product license which must be bought through normal sales channel. Installation is described in the system technology, chapter 1.2.2.5

Limitations / known problems in Package Version 1.3.0.6

- When CAN is used for Lifecom2 and CI modules are connected via CM5640 coupler, "Coupler detected watchdog failure" warning message in AB Diagnosis window is visible but has no impact on normal operation. (CPUFW-10103).
- Limitation of CI52x if more than 6 high density Analog I/O OR many fast counters are used, please check with Excel tool "S500 CI52x-IOCalc V1.0x_HA_TCP" in example folder.
- Some IO types not supported in the CI52x clusters: CD522 not supported in V2 and BDM (LIB-2486)
- V3 library:
  - When another program than HA is loaded to the CPU the display might still show "ArunP" (LIB-1794). Workaround: right mouse click on CPU -> reset origin device
  - Manual change over is not possible when sync/LC1 is lost (LIB-3208)
- Bulk Data Tool:
  - Mapping of fast counters is not fully supported --> User has to manually configure mapping for fast counters in the application (LIB-1626)
  - DA502 and AC522 module configuration is not supported in BDM (LIB-3207)
- General Limitation with FW3.6. of AB2.6:
  - Modbus CI communication in larger Systems creates higher PLC- and CPU-Load % - also visible in Task manager by longer Task cycles. Therefore, we do recommend to NOT update existing Systems to AB2.6/FW3.6 if such Load Values are already high without adapting cycle times to lower them again.

Change history

Package V1.3.0.6 (2023-08-03): Release version for AB2.6.1

Improvements / fixed issues

- Bug fixed: HA without CI functionality is working again (Bug in AB2.6.0) (LIB-3370)
- Updated example document: IP address for HMI (LIB-2984)
- System technology document udpated for CM5640 use (pdf located in example folder) (LIB-3367)
- CD522 module is supported for V3 CI library (LIB-2486), not yet in BDM
- Timeout recommendation is updated in HA example document and project for v3 (LIB-3246)

Package V1.3.0.5 (2023-02-16): Release version for AB2.6.0

Improvements / fixed issues

- New V3 Ethernet coupler CM5640 can be used for HA Sync or Modbus communication to CI52x modules (LIB-3111) as technology preview (not fully tested in all combinations)
    - Limitation: CM5640 cannot be used for Lifecom2
    - HaModControl, inputs SyncSlot and SecSlot are ignored (this was redundant information --> assignement is done by the inputs IpAdrCpuA(B)Sync and IpAdrCpuA(B)Lifecom2)
      Exception: 2nd lifecom over CAN Protocol is enabled by SecSlot := 3 (like before), this ensures backward compatibility
    - Visualization VisuHaOverview is updated accordingly
- Missing IO types added to CI library: DA502, AC522 (LIB-2534, LIB-2664)

Package V1.3.0.4 (2022-06-20): Release version for AB2.5.1

Improvements / fixed issues

- Fixed wrong calculation of CI52x if more than 6 high density Analog I/O OR many fast counters are used (LIB-2730).
- Fixed fast counters when configured by Automation Builder only (LIB-2469)

Package V1.3.0.3 (2021-12-03): Release version for AB2.5.0

Improvements / fixed issues

- V2 library from package (HAModbus_AC500_V26.lib, V1.3.0.10) had an issue with less than 28 bytes sync data --> fixed (LIB-2700)
- Warning if too many IO modules (see limitation above) are attached to CI52x (LIB-2730)
- Bulk data manager tool ready for 64bit version of MS Access (LIB-2213)
- Documentation updated (How to exchange CPU in HA system) (LIB-2547)

Package V1.3.0.2 (2021-05-10): Release version for AB2.4.1

- Fixed issues
    - Primary bit may flicker for few seconds during startup phase (LIB-1644, LIB-1643, LIB-1642, LIB-1661, LIB-1662)
    - When an IO module is removed or reconnected during operation an error is shown (RuntimeError.2), but during the next 60 seconds it comes back after acknowledgement by input ACK (LIB-1752, 1762)
    - Runtime error bit 7 is not triggered when CI Module is powered off for all clusters (LIB-2371)
    - Network reconfiguration: may lead to signal freeze in CI52x module (duration of 500 ms for V2 CPU, if onboard Ethernet is used) (LIB-1628, LIB-1690) --> workaround: Use CM597 coupler
    - V3
        - LifeCom2 (on modbus) Error bit is blinking in normal operation when Sync cable is removed from PLC (LIB-1641)
        - LifeCom2 (CAN only) cable disconnection sometimes causing PLC switchover (LIB-1645)
        - Runtime error gets generated in running system after some hours for certain duration (LIB-2490)
- Improvements
    - 120 CI modules possible with V3 library using new priority scheme "Onboard Ethernet" (CPUFW-8029, CPUFW-8343, LIB-2401)
    - New diagnostic function blocks HaModDiag and CIModDiag (LIB-1880, LIB-2191, LIB-2032, LIB-2189, LIB-2190)
- Examples updated, new examples for HA without CI module
- Documentation updated

**Notes for customer upgrading current running HA system from package 1.2.x to new package 1.3.0.x**

For AC500 V2

1. timHaModSyncTimeOut: Added into the library to check lifecom1 sync timeout based on HA task. This timeout should be set equal to HA Task time. Earlier Sync timeout was internally using timCi52xTimeout (this timeout is related to Modbus field communication to CI52x. To make the lifecom1/sync timeout independently settable, timHaModSyncTimeOut is added. If timeouts are not adapted as recommended to the application size, then default values are used which can lead to runtime errors for sync indicating e.g. unstable system with e.g. frequent exchange of primary status.

For AC500 V3

1. timHaModSyncTimeOut: Added into the library to check lifecom1 sync timeout based on HA task. This timeout should be set equal to HA Task time. Earlier Sync timeout was internally using timCi52xTimeout (this timeout is related to Modbus field communication to CI52x. To make the lifecom1sync timeout independently settable, timHaModSyncTimeOut is added. If timeouts are not adapted as recommended to the application size, then default values are used which can lead to runtime errors for sync indicating e.g. unstable system with e.g. frequent exchange of primary status.
2. timResponseTimeout: Added into the library to allow CI module timeout to be aligned with system size = number of CI modules. This timeout should be at least 2 * Modbus cycle time or minimum 50ms (present default value is 32ms and has to be changed).
3. V3 CPU parameter Communication Schema has to be set as “Onboard Ethernet” (new CPU parameter since AB2.4.1 see online help).
   This setting is mandatory and will increase the PLC and CPU load: Therefore recheck your loads before and after upgrade and adjust the HA tasks (HA, Modbus, application) settings to slightly higher values if deemed necessary (follow the task calculation guidelines in HA system technology: pdf in AB/Examples/ directory).

Package V1.2.0.3 (2020-03-04): Release version for AB2.2.5

- Improvements
  - V2 libraries updated to support ETH3/ETH4 of PM595-4ETH PLC (LIB-2219)
  - DC562 and DO562 are supported for V2 library (LIB-1606)

Package V1.2.0.2 (2019-11-08): Release version for AB2.2.4

- Improvements
  - HA system can be used without any CI module connected as field devices, to use the feature Global variable xNoCiBus in HA_GLOBAL_VARIABLES must be made TRUE (LIB-2173, LIB-2174)

Package V1.2.0.1 (2019-06-21): Release version for AB2.2.3

- Fixed issues
  - If secondary CPU modbus cable is reconnected faster than 2 minutes after disconnect, a signal flicker will occur (LIB-1601, LIB-1610).
  - Network reconfiguration: may lead to signal freeze in CI52x module (duration of 200ms for V3 CPU or V2 coupler CM597 / duration of 500 ms for V2 CPU) (LIB-1628, LIB-1690)
- Prerequisites for these fixes:
  - AC500 V2
    - Ensure that CM597 firmware version is 1.2.5 or above
    - CM597-ETH configuration: Set Send timeout of Modbus_TCP_IP_Server to 600 ms, more details in chapter 5.1.1 of AC500 High Availability - HA-ModbusTCP V2 Library Example Description 3ADR025288M0205.pdf
    - Call new function block CM597ETH_SET_TCP_RTO from CM597_ETH_AC500_V28.lib, more details in chapter 5.2.4 of AC500 High Availability - HA-ModbusTCP V2 Library Example Description 3ADR025288M0205.pdf
  - AC500 V3
    - Ensure that CPU firmware is V3.2.2 or above
    - Call new function block EthSetRtoMin from AC500_Ethernet library version 1.1.3.4 or higher, more details in chapter 5.2.3 in AC500 High Availability - HA-ModbusTCP V3 Library Example Description 3ADR025289M0206.pdf
- Improvement: Up to 3000 instances of sync function block "HaModDataSync" possible (LIB-1753 / LIB-2050)

Package V1.2.0.0 (2018-08-24): Release version for AB2.1.2 / 2.2.0

- Library and examples updated to AB2.1.2 and FW3.1.4
- Fixed issues:
  - Proper error indication if more than 1024 Sync FB instances (LIB-1646)
  - Utility blocks optimized, if declared as retain persistent (LIB-1708)
  - Improved diagnosis: Global variable for number of sent ethernet frames: iNoOfEthFrames (LIB-1647 / LIB-1692)
  - No Signal flicker when CI52x Ethernet cable is removed (LIB-1657)

Package V1.1.0.1 (2018-04-24): RC1 version for AB2.1.1

- Library and examples updated to AB2.1.1 and FW3.1.3
- Fixed issues:

- Fast counters are not working in HA system (LIB-1624 / LIB-1625)
- Overview Visualization: LifeCom over CAN indication is misleading (LIB-1621)
- Primary bit disturbance in secondary PLC when MRP switch is powered off (LIB-1601 / LIB-1610)
- Run time Error is resetted when there is a configuration error (LIB-1656)
- When the CI52x FB is disabled and enabled outputs on the module is not longer frozen (Lib-1638)
- Integrated help file contains wrong table of content (LIB-1483)

Package V1.1.0.0 (2018-02-02): Beta version for AB2.1.0

- Library and examples updated to AB2.1.0 and FW3.1.x
- Naming of function blocks, inputs and outputs updated according to PLC Open Style
- Fixed issues:
  - HA_TCP_CONTROL FB outputs are running even when the EN = FALSE (LIB-1407, LIB-1406)
  - If CAN is used for second LifeCom (only possible with V3 library):
    - CAN communication is not getting reestablished after cable reconnection, Workaround: Restart system (LIB-1352)
    - On long run CAN error is appearing automatically without any disturbance to the CAN cable. LifeCom2 signal is lost (LIB-1457)
  - Error handling
    - Lifecom2 error is not getting reset, if PLC A is missing while restarting the system (LIB-1436, LIB-1416)
    - Configuration error bit0 (CI module configuration mismatch) observed when one of the PLC is powered off (LIB-1474)
    - Runtime error “CI52x module lost” is not cleared automatically after inserting the CI52x module again. Workaround: Manually acknowledge with CI function block
    - Sync error observed when Ethernet switch (MRP) power off (Connected to PLC B Primary), very rare
    - HA_TCP_CONTROL: No proper configuration error, when IP_A2 and IP_B2 are equal (LIB-1398)
    - Remote IO Modules error indication not working as expected
    - PLC stop is not causing for LifeCom2 Error if the same is configured over Modbus (LIB-1478 /LIB-1477)
    - Primary bit is not set to FALSE when PLC is in STOP mode (LIB-1451)
  - Bulk Data Manager Tool does not fit for small screens (LIB-1472) …not all CI clusters visible.
  - Slow update of cluster signal if one PLC is powered off (LIB-1434)

Package V1.0.0.1 (2017-08-15): Examples enhanced

- V2 Example enhanced: V2_HA_MODBUS_Example_Visu_02.project
- V3 Example enhanced: V3_HA_MODBUSTCP_Example_Visu_02.project

Package V1.0.0.0 (2017-08-11): First version (Application Library) for AB2.0.x

- first package

## Appendix 16: PS573 PCO Library (Technology Preview)

**Disclaimer**: Technology Previews are designed to give you a preview at upcoming technologies. They are non-final versions of our product and should NOT be taken as a measure of the fit, finish, capability, and overall quality of the final release (including user documentation). Technology Preview features can be changed or removed in newer versions of Automation Builder as communicated via the release notes. If technology previews are subject to licensing, please contact your ABB sales representative.

Welcome to PCO Library Package, Version 0.9.3.1, consisting of:

- PCO library: Pco_AC500_V28.lib, Version 0.9.1
- Simple example: PCO_Motor_Demo_AB223.project / PCO_MotorDemo_800xA6.0.3.2.afw
- Example documentation PCO_MotorDemo_Documentation_AB223.pdf
- Library documentation: part of online help

The software Libraries in this package have been tested with the following versions:

- Automation Builder AB2.2.3 to AB2.6.1
- AC500 V2 CPU: FW2.8.1 to FW 2.8.6
- 800xA 6.0.3.2
    - 800xA Base
    - SoftPoint Server
    - PLCConnect
- AC500 Connect 6.0.4 as an Add on Package

Please start by reading the System technology description, which can be found in the Automation Builder online help.
A simple example can be found in the example folder: C:\Users\Public\Documents\AutomationBuilder\Examples\PS573-PCO

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The error-free operation of this library package with other products / software / firmware versions can not be guaranteed.
This release notes contains important information about the library and it´s installation.

**Version history**

- Package V0.9.3.1 (2021-04-29): Updated version (Technology Preview) for AB2.4.1
    - Formal changes (LIB-2535)
- Package V0.9.3.0 (2020-12-01): Updated version (Technology Preview) for AB2.4.0
    - Library prepared for 800xA intelligent uploader (LIB-2201) new Version 0.9.1:
        - upgrade procedure from 0.9.0 to 0.9.1 is given in AC500_PCO Library Example Documentation AB223 3ADR010401_r4.pdf
    - example docu updated (LIB-2207)
    - online help updated (AB-17542)
- Package V0.9.2.0 (2019-11-08): Updated version (Technology Preview) for AB2.2.4
    - Documentation improved and PCO_MOTCON details added to example folder (LIB-2153, LIB-2169)
- Package V0.9.1.0 (2019-06-26): First version (Technology Preview) for AB2.2.3
    - library documentation (system technology and function block description) moved from example folder (pdf) to online help
- Package V0.9.0.0 (2019-05-27): First version (Technology Preview for Pilot customers) for AB2.2.x
    - First version

**Known limitations or bugs**

- None

**Installation and Update**
This Library Package is part of the Automation Builder. It can be selected as an Option during installation.
The package contains the following parts:

- V2 libraries are copied to …\Common Files\CAA-Targets\ABB_AC500\AC500_V12\library\Application
- Example projects and documentation are copied to C:\Users\Public\Documents\AutomationBuilder\Examples\PS573-PCO

## Appendix 17: PS5607 BACnet-BC Library Package for AC500 V3 (runtime license required)

Welcome to the PS5607-BACnet-BC Package, V1.7.0.0

BACnet is a standardized data communication protocol for Building Automation and Control networks as defined in the ANSI/ASHRAE Standard 135 and ISO 16484-5. This package enables AC500 to act as a BACnet Building Controller (B-BC profile) as server and/or client. Supported protocol are BACnet IP and MS/TP.

The PS5607-BACnet-BC Package consists of:

- BACnet plug-in component
- Device descriptions for BACnet servers, BACnet objects, and BACnet clients
- Libraries: BACnet, BACnetDefaultImpl, CmpBACnet, BACnetExt
- Examples and documentation

It has been tested with the following versions:

- Automation Builder AB2.3.0 to 2.6.1
- CPU FW3.3.1 to FW3.6.1

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The error-free operation of this library package with other products / software / firmware versions can not be guaranteed.
This release notes contains important information about the library and it´s installation.

**Version history**

- V1.7.0.0 Released with AB2.6.0
  - BACnet EDE file import is now working (AB-18210)
- V1.6.1.1 Released with AB2.5.1
  - Example updated (AC500_V3_BACnet_B-BC_Example_AB251.project): Write Property Multiple (DS-WPM-B) with AC500 as server is now working (LIB-2794)
- V1.6.1.0 Released with AB2.5.0
  - MSTP also for V3 Eco
  - BACnet certification for MSTP including Eco (see example folder / Datasheets and FAQ)
  - Minor improvements with version 1.6.1.0
- V1.6.0.0 Released with AB2.4.1
  - Support of MS/TP
  - Support for V3 Eco (IP only)
  - Example improved
  - Documentation updated
  - System technology in online help
  - FAQ and certificates for IP in example folder
- V1.5.2.1 Released with AB2.4.0, improved version
- V1.5.2.0 Released with AB2.3.0

**Known limitations or bugs**

- If server objects of type "BACNet.BacnetSchedule" is initiated in the PLC application, the PLC will crash when the project is deleted from the device.
  Workaround: Only use the BACnet Schedule by adding it below the BACnet Server in the device tree instead of adding it from the PLC application. (CPUFW-7854)
- AC500 holds UTC time only (LIB-2430). A workaround is described in online help - BACnet system technology
- After deleting MSTP datalink from COM port and download, the MSTP datalink is still active (AB-19441)

**Installation and Update**

- This Library Package is part of the Automation Builder. It can be selected as an Option during installation or any time later using the Automation Builder Installation Manager.

## Appendix 18: PS5611 Motion Control Package for AC500 V3 (runtime license required)

Welcome to the Motion Control (PS5611) software package which contains the following components and features:

1. Motion Control libraries (V1.2.0.8), based on PLCopen Motion Control standards with documentation and examples
   - listed as package "Motion Library PS5611" - PS5611-MC product license needed for the use
2. Motion Solution wizard (V2.6.0) to configure the motion solution and its axes in an user oriented way, based on PLCopen Motion Control library
   - listed as package "Generic Solution Engineering"
3. CAM Editor (V2.6.0) to visually create CAM tables linked to the PLCopen library. Named as Generic Solution Engineering in Packages.
   - listed as package "Motion Solution"

The components have been tested with Automation Builder 2.6.1 and CPU Firmware 3.6.1
In no event will ABB or its representatives be liable for loss of data, profits, revenue or consequential, incidental or other damage that may result from the use of other versions of product / software / firmware versions.
The error-free operation of this library package with other products / software / firmware versions can not be guaranteed.

**1. Motion Control libraries**
Motion Control libraries are an upgrade of V2 PS552-MC (without coordinated and drive based motion) and additionally contain ABB_MotionControlLoad library (Tech preview *).
The library package is consisting of:

- Motion libraries for AC500 V3
  - ABB_MotionControl_AC500.compiled-library
  - ABB_MathFunctions_AC500.compiled-library
  - ABB_Ecat_CiA402_AC500.compiled-library
  - ABB_MotionControlEco_AC500.compiled-library
  - ABB_MotionControlLoad_AC500.compiled-library (Tech Preview *)
- Examples and documentation
  - AC500_V3_MotionControl_EtherCat_MFE190_Examples_ABxxx.project
  - AC500_V3_MotionControl_Simulation_Examples_ABxxx.project
  - AC500_V3_MotionControl_CD522_Example_ABxxx.project
  - AC500eCo_V3_MotionControl_Examples_ABxxx.project
  - ABB_Ecat_CiA402_AC500.library (editable version) is available in the example folder
  - AC500 V3 Motion Controller Guide_3ADR011116.pdf

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**Version history**

- V1.2.0.8 2023-08-09, released with AB2.6.1
  - Bug Fixes
    - ECAT_CiA402_Control_App FB updated - LIB-3361
- V1.2.0.7 2023-02-15, released with AB2.6.0
  - New function blocks
    - OBIO_PTOSingleLineMotionKernel - LIB-3190
    - All libraries in Motion package is signed - AB-20794
- V1.2.0.6 2022-11-24, released with AB2.5.2
  - New function blocks
    - MCA_MoveByExtRefRelative- LIB-2985
    - MCA_MoveBuffer- LIB-3094
    - MCA_DigitalCamSwitch - LIB-2950
  - Improvements
    - All position moves FBs to run only when the position / distance can be achieved - LIB-2919
    - MC_ReadAxisError with new output to provide DriveError (EtherCAT CiA402) - LIB-2925
    - Additional structure in AxisReferece for parameter access (Supported only when motion solution wizard used) - LIB-2969 / LIB-3139
    - Improved MC_Reset FB response time - LIB-2927
    - Modulo maximum position value is set as 16#40000000 - LIB-2921

        - New AC500 V3 Motion Controller Guide_ 3ADR011116.pdf for Motion Solution Wizard and Library
    - Bug fixes
        - Wrong behaviour of parameter SWLimit2DecPos, SWLimit2DecNeg, ReverseDirection is fixed - LIB-2836 / LIB-2863
        - Wrong behavior of MC_MoveSuperImposed input accel and Decel is fixed - LIB-2874
        - Bug fixes for CamIn FB's - LIB-2913/3033/3034/3035/3036/3037
        - CamIn FB's EndOfProfile behavior changed when axis is modulo - LIB-3093
        - MC_ReadActualVelocity output ActualVelocity value gives wrong value during 32-bit position rollover - LIB-2920
        - Bug fixes for MC_MoveSuperImposed and MC_HaltSuperImposed - LIB-2875
        - Bug fix for MC_MoveVelocity input accel decel behavior when the value is "0" - LIB-2928
        - MC_SetOverride input VelFactor to accept "0" - LIB-3091
        - Bug fix for MC_MoveAdditive position calculation - LIB-3092
        - Bug fix for MC_SetPosition - LIB-3109 / LIB-3141
        - Bug fix for MCA_DriveBasedHome - LIB-3134
        - MC_TorqueControl to be compactable with ECAT_CiA402_TouchProbe_App - LIB-2923.
- V1.2.0.1 2022-01-11, released with AB2.5.0
    - Support for Load Control (FEAT-336) (Tech preview)
    - Example and documentation updates.
    - MC_Power improved (LIB-2638)

- V1.1.0.0 2021-05: First product version with AB2.4.1
    - Support for V3 Eco
    - Bug fixes of former prototype blocks (LIB-2512)
    - Kernel block improved (LIB-2501)
    - CD522 tested
    - Documentation updated
    - Examples for V3 Eco and CD522 module included

- V1.0.0.0 2020-12: First version with AB2.4.0 (Technology Preview)

**Known limitations or bugs**

- Device input of FB visualization for EtherCAT read/write is empty (LIB-2554)

**2. Motion Solution wizard**

The Motion Solution wizard helps in efficiently configuring the EtherCAT axis using Automation Builder in a short time. Detailed documentation explaining how to use the motion solution wizard is available in the Automation Builder example folder "AC500 V3 Motion Controller Guide_ 3ADR011116.pdf"

**Version history**

- V2.6.0 2023-02-15, released with AB2.6.0
    - Axis generation is improved - AB-22274
    - Issues related to PDO mapping for 3rd party drives is fixed - AB-22298

- V2.5.2 2022-11-24, released with AB2.5.2
    - Master Encoder Axis - AB-21414
    - PTO Axis - AB-21528
    - Disable EtherCAT slave device - AB-21524
    - Axis configuration support for all drives with EtherCAT CIA 402 profile - AB-20432
    - Simplified axis code generation - AB-21544
    - Allow update of EtherCAT drive objects - AB-21209
    - Modified default AC500 parameters for the quick start up - AB-21619
- V2.5.0 First version released with AB2.5.0 (Tech preview)

**Known limitations or bugs**

- Dynamic limits from motion wizard except Jerk values are overwritten by the library in the first scan cycle - AB-23498
    - Workaround - Please use the MC_WriteParameter function block or write the parameter directly at Axis reference.Parameter after first cycle.
- Motion Solution Wizard is only tested with ABB Microflex E180/190 drives.

- Motion Solution Wizard currently supported only EtherCAT / PTO based motion applications. For Analog modes user need to make the configuration manually.
- PLC tasks must set a higher watchdog time (~100ms) if the PLC is stopping due to an exception error CPUFW-8453 / CPU_FWLIB-517
- Workaround – Disable and Enable watchdog using IEC application.
- Motion Solution Wizard can configure the EtherCAT master only in coupler slot 1
- Removing generated code / EtherCAT mappings does not force new code generation - AB-22137
- Duplicate error messages in message window - AB-22281
    - Workaround – Refresh message window once
- Motion wizard project from AB2.5.0 / 2.51 to AB2.5.2 can cause duplicate task calling - AB-21688
    - Workaround – remove the task calling which does not have the comment “Generated by motion solution”

**3. CAM Editor**
The newly introduced Cam editor can create Cam & tappet table using the graphical window of Cam editor.
Detailed documentation explaining how to use the Cam Editor is available in the Automation Builder example folder “AC500 V3 Motion Controller Guide_ 3ADR011116.pdf”

**Version history**

- V2.6.0 2023-02-15, released with AB2.6.0
    - No changes
- V2.5.2 2022-11-24, released with AB2.5.2
    - Cam tappet function - AB-21528
- V2.5.0 First version released with AB2.5.0 (Tech preview)

**Known limitations or bugs**

- none

**Installation and Update**
This Motion Control (PS5611) software package is part of the Automation Builder. It can be selected as an option during installation or any time later using the Automation Builder Installation Manager.

## Appendix 19: PS5609 Log Library Package for AC500 V3 (Runtime license required; Multilogger is without license and technology preview)

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Welcome to the PS5609-Log Library Package, V1.1.0.0,
which is the V3 upgrade of the V2 Datalogger library, which is part of PS563-WATER package

The package is consisting of:

- Datalogger Libraries for AC500 V3
  - ABB_DataLogger_AC500.compiled-library (for midrange CPUs, use PS5609-Log Runtime license)
  - ABB_DataLoggerEco_AC500.compiled-library (for Eco CPU: PM5072-2ETH, use PS5609-Log-e runtime license)
  - ABB_DataLoggerMulti_AC500.compiled-library (for all V3 CPUs)
- Examples and documentation (for midrange CPUs):
  - Example_Generic_DataLoggerV3_ABxxx.project
  - Example_IEC60870_DataLoggerV3_ABxxx.project
  - Example_MultiLoggerV3_ABxxx.project

The software Libraries in this package have been tested with the following versions:

- Automation Builder AB2.6.1
- CPU Firmware 3.6.1

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The error-free operation of this library package with other products / software / firmware versions can not be guaranteed.

**Version history**

- V1.1.0.0 2022-09: Update package release (to be used with AB2.5.1 or higher):
  - DataLogger and DataLoggerEco: Change from Technology preview to product. Separate runtime license for DataLoggerEco
  - DataLoggerEco library namespace is updated to AC500_Datalogger from AC500_DataloggerEco.
  - DataLoggerEco FIFO size is configurable between 0 to 60.
  - DataLoggerMulti: Only mode 2 and 3 as technology preview, no license required
- V1.0.0.0 2022-01: First version with AB2.5.0

**Known limitations or bugs**

- (none)

**Installation and Update**

- This Library Package is part of the Automation Builder. It can be selected as an Option during installation or any time later using the Automation Builder Installation Manager.

## Appendix 20: PS5608 - Pump Library Package for AC500 V3 (technology preview)

**Disclaimer**: Technology Previews are designed to give you a sneak peek at upcoming technologies. They are non-final versions of our product and should NOT be taken as a measure of the fit, finish, capability, and overall quality of the final release (including user documentation). Technology Preview features can be removed without further notice. If you use the preview, you could experience things that go wrong, data that gets lost, and things to change. While we don't stop you using these versions in projects, we don't recommend it if you cannot afford data loss and the usual quirks of running preview software. It will not be possible to call ABB Support hotlines for help with Technology Preview features. If you are interested in getting support for a Technology Preview feature this can be done in the context of a piloting. In this case please contact us to set up a piloting agreement.
Welcome to the PS5608 - Pump Library Package, V1.0.0.0, which is the V3 upgrade of the V2 Pumping library (PS571)
The package is consisting of AC500 V3 library, example and documentation

- ABB_Pump_AC500.compiled-library
- Example_PumpV3_AB2xx.project
- AC500_V3_Example_Pumping_Library_3ADR011194.pdf
- PS5608 Pump Library in V3 - System Technology Description 3ADR011195,1_AB261.pdf

The pumping library has been tested with the following versions:

- Automation Builder AB2.6.1
- CPU Firmware 3.6.1

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The error-free operation of this library package with other products / software / firmware versions can not be guaranteed.

**Version history**

- V1.0.0.0 2023-08 : First version with AB2.6.1 (Technology Preview)

**Known limitations or bugs**

- External Sleep and external Wakeup mode is not yet implemented (LIB-3196)

**Installation and Update**

- This Library Package is part of the Automation Builder. It can be selected as an Option during installation or any time later using the Automation Builder Installation Manager.
- The use of the Library package requires a PS5608 runtime license. Otherwise, the CPU cannot go to Run mode but will report a notification “PLC License missing”. Please contact your PLC Support if the trial period (10 runtime days) is not sufficient.