Welcome to ABB Automation Builder 2.3.0

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 from the ABB library at:
https://search.abb.com/library/Download.aspx?DocumentID=9AKK107991A0265&Action=Launch

Most important changes of Automation Builder 2.3.0

Note: Automation Builder 2.3.0 does not support PM5630 and PM5650. The support of these devices will be available again with Automation Builder 2.4.0!

Automation Builder:
- Managing of Codesys packages
- Introduction of safety version for easy identification of safety relevant changes
- Support of Windows Server 2019 operating systems

PLC - AC500 V2 Processor Modules (PM5xy)
- Improved EtherCAT online diagnosis
- Automatic source code download

PLC - AC500 V3 Processor Modules (PM5xyz)
- Integrated AC500-S safety
  - Support of SM560-S
  - Improved cyclic non-safe data exchange
  - Safety verification tool
- Support of BACnet IP
- Improved EtherCAT diagnosis (online and application based)
- OPC UA server: Support of access to complex data types
- Improved engineering and web visualization
- Availability of Static Code Analysis as additional professional tool
- Simulation mode (technology preview)

General information

- **Standard and Premium license of Automation Builder 1.x will not be valid for Automation Builder 2.x For Automation Builder 2.x standard and premium features appropriate licenses need to be purchased and activated**. Please check the upgrade licenses possibilities with your ABB sales representative. For details please refer to Automation Builder lifecycle documentation in ABB Library or contact your sales representative.
- 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 2.3 installation completely replaces installed versions of Automation Builder prior to 2.3.0 / Control Builder Plus. Side-by-side installation of Automation Builder and Control Builder Plus is not supported, but also not required. Projects created with previous versions can be upgraded to the latest version easily. If upgrading is not desired, projects can be opened in one of the integrated version profiles.
- Automation Builder 2.3 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 2.3. Latest documentation packages can be found on the ABB website: www.abb.com/plc → Download Documentation, and then select your language.
- Automation Builder 2.3 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 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.
- Please create project archives (File -> Project Archive -> Save/Send Archive…) to support smooth project upgrade to latest Automation Builder version before installing latest version
- After upgrading projects to latest Automation Builder, please check for having the matching firmware installed before doing a download.
- 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.

System Requirements

- 1 gigahertz (GHz) or faster 32-bit (x86) or 64-bit (x64) processor
- 4 GB RAM
- 5-18 GB free available hard disk space depending on the selected feature set
- Supported operating systems:
  - 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)

  Note: Windows 7 is no longer supported.

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Changes in Automation Builder 2.3.0

The release includes the following device groups:

Automation Builder

Functional changes / New features	Version
Managing of Codesys packages via Package Manager	2.3.0
Introduction of safety version for easy identification of safety relevant changes	2.3.0
Support of Windows Server 2019 operating systems	2.3.0
Integration of 3S Automation Platform SP15 Patch 3	2.3.0
Integration of Project SVN Version Manager 4.2.5	2.3.0

Fixed issues	ID
Licenses cannot be returned if a trial license is activated	AB-17922
'Rename' via context menu does not work	AB-17882

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 Workaround: use license dongle if more licenses are required or contact Automation Builder support to update the licenses (refer to new features)	n.a.
Installation issue on Windows 10: 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). Workaround: if you run into installation issues on Windows 10 please try to disable "Storage Sense": Windows -> Open Settings -> Click on System -> Click on Storage -> Turn off the Storage sense toggle switch	AB-15979
During uninstall all of Automation Builder the Virtual Drives uninstallation might fail Workaround: Please uninstall Virtual Drives via Windows Control Panel -> Programs and Features	n.a.
GSDML: The character "/" used inside a module name of a GSDML file is not supported by Automation Builder. An error message is shown during installation to Device Repository. Workaround: Remove corresponding characters in module name of GSDML file.	AB-13924
Projects created in Control Builder Plus software versions cannot be upgraded automatically to Automation Builder version 2.1.X. Workaround: • open project with profile "Automation Builder 1.2", perform upgrade, save project • 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. Workaround: • use standard I/O Mapping for disconnected modules on CM589-PNIO-4 (-XC) or 3rd party PROFINET IO devices with Shared Device functionality	2.0.3
Automation Builder installation: In case a PC reboot is required/executed during Automation Builder installation the setup might have to be restarted manually after PC restart. 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.

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.

PLC - AC500 V2 Processor Modules (PM5xy)

Functional changes / New features	Version
Improved EtherCAT online diagnosis via Automation Builder	2.3.0
Automatic source code download	2.3.0

Fixed issues	ID
Misalignment Error at Mixed REAL/LREAL Mode at PM595	AB-15630
Profinet module parameters are lost at the second setting if the editor is not closed meanwhile	AB-15219

Known problems	ID
Web Visualization: Java Applet might be blocked by your web browser 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. Depending on your browser and whether your computer is connected to the Internet, the Applet will be blocked after that date. Workaround: The workaround steps are described in detail in the following application note: http://search.abb.com/library/Download.aspx?DocumentID=3ADR010388&LanguageCode=en&DocumentPartId=&Action=Launch	AB-16179
After target change from any PLC to PM595, logins to the PM595 PLC via Automation Builder might be disturbed Workaround: avoid doing target change to PM595. Create new PLC object in project and copy/paste or export/import the corresponding data to new PLC	AB-16004
Automation Builder might crash when going online with node "Positioning_with_use_of_MC_MoveAbsolute" in example project "PLC_PTO_PLCopen_example" from the motion library (PS552).	AB-14638
PLCs set to DHCP will show the configured IP address instead of the one assigned by the DHCP server in Automation Builder communication settings using the scan. Workaround: use the IPConfig scan to find out the assigned IP address, then set communication settings manually	AB-18277
Buffered Data: PM595-4ETH-F: Set IP address without plugged battery leads to loss of RETAIN and PERSISTENT data. 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 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. 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 Workaround: Disconnect panel during creating of boot project	CPUFW-6885
Working on CoDeSys 2.3 projects with administrator and non-administrator users might lead to inconsistent data 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. 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." 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 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.
 	
Workaround: Add new function:
    FUNCTION DWORD_TO_LREAL_ABB : LREAL
    VAR_INPUT x: DWORD; END_VAR
    VAR b: LREAL; END_VAR
    b := DWORD_TO_LREAL(x);
    IF b < 0.0 THEN b := 4294967296.0 + b; END_IF;
    DWORD_TO_LREAL_ABB := b;
   call function DWORD_TO_LREAL_ABB instead of DWORD_TO_LREAL in user program:
    PROGRAM PLC_PRG
    VAR a: DWORD; b: LREAL; END_VAR
    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. 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 Workaround: Don't use freewheeling task in CM574-RS	CPUFW-3675
Some Online Services lead to log out on PM595-4ETH Workaround: None	CPUFW-3465
Socket opened by IEC application via SysLibSock is not closed on PLC Reset 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." Workaround: None	CPUFW-3087
SysLibFile library: As of V2.3.x, dtLastAccess.time is always 00:00 on call of SysFileGetTime() 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. Workaround: Don't use these datatypes in webvisu	CPUFW-1833
WEB server: ActiveX-Element display incorrectly 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. Workaround: Don't select "All alarm groups"	CPUFW-1506
Telecontrol: (IEC60870-5-104) connection does not function properly after a long cable break Workaround: Restart PLC after long cable break	CPUFW-1433
WEB server: In WMF-file integrated text isn't displayed in visualization 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:
    byte with %i and %u, in both cases only the format letter (i or u) is displayed without the %
    sint with %s shows the two's complement when negative values should be displayed
    udint with %d shows a -1 if the maximum possible value of this datatype should be displayed
    udint with %i and %u, in both cases only the format letter (i or u) is displayed without the %
    dint with %i,only the format letter (i) is displayed without the %
    lreal with %2.9f shows the infinity sign if the maximum/minimum value of this datatype should be displayed
    udint with %s shows a -1 if the maximum possible value of this datatype should be displayed
    real and lreal with %s shows 0.0 if the minimum possible value of this datatype should be displayed
    lreal with %s shows the word infinity if the maximum possible value of this datatype should be displayed
    char with %c, only the format letter (c) is displayed without the % instead of a single letter
 	
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! 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 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 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 ECOHW-11

PLC - AC500 V3 Processor Modules (PM5xyz)

Important Notes:
- For AC500 V3 CPUs, the diagnostic handling is different from the AC500 V2 CPUs.
- **Automation Builder 2.3.0 does not support PM5630 and PM5650. The support of these devices will be available again with Automation Builder 2.4.0!**

Functional changes / New features	Version
BACnet: Support of BACnet IP on Ethernet interfaces ETH1 and ETH2	3.3.1
Safety: Support of Safety PLC SM560-S incl.: - Driver for S500-S IO devices on local I/O-Bus - Driver for PROFIsafe devices (ABB and third party) on PROFINET communication module CM579-PNIO - Noncyclic nonsafe data exchange via POUs - Cyclic nonsafe data exchange (configuration in Automation Builder) - PLC shell commands - Integration in V3 diagnosis system	3.3.1
Diagnosis: - Improved user information in case of incomplete or unavailable error texts - Increased resolution of time stamps from 1 second to 1 millisecond	3.3.1
EtherCAT: Additional diagnosis POUs: - EcatMasterGetCPULoad - EcatBusDiag: new outputs CurrentState, TargetState, StopReason, StatusFlags, NumFaultSlv - EcatMasterGetMemInfo - EcatState - EcatMasterGetThresholdCout - EcatMasterGetTimingInfo - EcatSlvGetMDPModules - EcatSlvReadESCVersion - EcatSlvReadLostLinkCnt - EcatSlvReadRxErrorCnt	3.3.1
EtherCAT: Additional parameter "Bus Target State" for definition of startup behavior of EtherCAT bus: "OP" (operational), "SAFEOP" or "PREOP".	3.3.1
OPC UA server: Support of access to complex data types and not only to single elements of STRUCTs	3.3.1
PLC Shell: New PLC shell command "heapinfo" to display heap usage, peak usage and total memory available.	3.3.1
Library: Unified handling of instance pins for Communication Modules (CM5xx) POUs in system libraries. The input parameter ""Slot"" is changed ""Device"" and requires the name of the communication module from the device tree instead of the slot number. **Note: existing projects upgraded from FW 3.2.x and earlier must be adapted.**	3.3.1
Security: - Codesys control runs with limited access to Linux OS - General improvements by integration of new Linux kernel (version 4.9.178)	3.3.1
System: Set path for trend data storage in PLC (e.g. to SD card) via PLC shell command "trenddatastorage <path>"	3.3.1
System: Significantly decreased PLC and CPU load	3.3.1
System: Integration of Codesys control V3.5 SP15 P3	3.3.1

Fixed issues	ID
Display: In case of high load of the PLC during startup of the PLC program, the communication to display might get lost. Then the display shows 'AC500'. Workaround: Set task watchdog in PLC program and avoid complex calculations during startup.	CPUFW-7446
Modbus RTU: ModRtuMast FB does not work correctly with more than one Server.	CPU_FWLIB-377
Indications in the device tree of diagnosis information on sub nodes are only updated if the mouse cursor is moved to the device tree window Workaround: in case the indications seem to be outdated move your mouse to the device tree nodes, the state will be then refreshed	AB-17201
When working with AC500 V2 and V3 PLCs in one project the inherited V3 library methods of a library base class might not be correctly visualized in library manager and code if the AC500 V2 application is set as active.	AB-16692
Rebuild deleting all the text lists	AB-17310
AC500 V3 EtherCAT - wrong target state shown	AB-17313

When using the function block EthDNSResolve of the Ethernet library 1.2.0.4 compile errors are thrown. Workaround: Please contact Automation Builder support to get an updated library	AB-18309
CM589 is only supported as Profinet slave on an AC500 V3 PLC when configured via the GSMDL file in the project Workaround: Please check in the ABB library for GSDML download or contact Automation Builder support	AB-18296
When using an AC500 V3 PLC with integrated AC500-S safety you might run into situations where a login on the AC500 V3 is only possible with online change/download even if you haven't done any change in the project.	AB-16281 AB-18311
The firmware AC500 V3 for profile Automation Builder 2.2 is getting installed in the wrong location Workaround: Please delete the empty folder C:\ProgramData\AutomationBuilder\AC500_Firmware_V3_AB2.2 and rename the folder C:\ProgramData\AutomationBuilder\AC500_Firmware_3.2 to C:\ProgramData\AutomationBuilder\AC500_Firmware_V3_AB2.2	AB-18304

Known problems	ID
Modbus TCP: High number (>80) of parallel calls for Modbus device synchronization (FB EthModMast or FB EthModMast2) might lead to unstable ethernet communication in PM5670-2ETH and PM5675-2ETH. Workaround: Distribute the calls of EthModMast or EthModMast2 to different batches that are called with short breaks in between. Example for 120 parallel connections: Step 0: Time 0 Call EthModMast for connections 1-30 Step 1: Time 0 + 30ms Call EthModMast for connections 31-60 Step 2: Time 0 + 60ms Call EthModMast for connections 61-90 Step 3: Time 0 + 90ms Call EthModMast for connections 91-120 In case of updating from FW 3.1.4 or earlier, carefully monitor the Modbus behavior.	CPUFW-8029
Ethernet: The function block EthSetRtoMin (part of AC500_Ethernet library) might cause an exception with FW V3.3.1. This also affects the AC500 High Availability - HA-ModbusTCP V3 Library Example, as it is using this function block. Workaround: If using this function block is mandatory, a dedicated hotfix version of the firmware has to be used (available on request from ABB technical support).	CPU_FWLIB-401
CP600: When using "CODESYS V3 ETH" protocol, the AC500 V3 tags are not accessible. Workaround: Use OPC UA or Modbus TCP instead of "CODESYS V3 ETH"	CPUFW-8101
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. 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
BACnet: Mandatory / missing runtime license for BACnet not always shown correctly in the runtime licensing view. Workaround: Always check that the BACnet runtime license is listed as available license in the runtime licensing view.	CPUFW-7992
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. Workaround: Activate the device diagnosis in Automation Builder	CPUFW-7519
CM579-PNIO: Sporadic error that diagnosis information of third party devices are not available. Workaround: Check the device status for third party devices also from status icon in the Automation Builder device tree	CPUFW-7499
CM579-PNIO: Missing error text on disconnected ethernet cable (error code 2) Workaround: Ignore missing error text in case of error number 2 on CM579-PNIO	CPUFW-7498
Diagnosis text lists are only downloaded to the PLC if a visualization is added to the application	AB-16465
In case the flag "Enable Diagnosis for devices" (PLC node editor → PLC Settings) is not set the diagnosis indication on the device tree object might not be correct Workaround: either activate the flag "Enable device diagnosis" or open the diagnosis editor of the corresponding device object	AB-17250
Diagnosis text lists which are downloaded to the PLC for diagnosis text message access via the IEC program are not getting included in the boot project. Which means transferring a PLC program via SD card from one PLC to another won't provide access to the diagnosis texts. Workaround: Directly download the PLC program including diagnosis text messages to the corresponding PLC	AB-16611

Diagnosis text lists are not updated after new GSDML installation/device object update if the text list was already present in the project. 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
Download Manager might report a successful firmware update of AC500 V3 PLCs but the version information screen still shows the previous firmware version on the PLC. Workaround: In this case please run the PLC firmware update in 'Version information' screen (single update).	AB-18113
Download Manager can't be used for downgrades (target system firmware version lower than current version)	AB-17621
Diagnosis text lists are not transferred to the AC500 V3 PLC if download/login is done without rebuild. Workaround: Please check that a visualization is added to the project, the setting 'enable diagnosis for devices is set and project is rebuilt (clear all -> rebuild)	AB-18007
Online values of program code are not correctly refreshed in editor if exception handling is included in code	AB-18215
Firmware update might fail via Automation Builder Workaround: Please check if ETH1 and ETH2 are in different subnets	AB-18004
BACnet EDE file import is not allowing to select an exported file. Workaround: Please rename the exported file to *_EDE.csv and retry the import	AB-18210
PLCs set to DHCP will show the configured IP address instead of the one assigned by the DHCP server in Automation Builder communication settings using the scan. Workaround: use the IPConfig scan to find out the assigned IP address, then set communication settings manually	AB-18277
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 "Erreneous initial value".	AB-17989
Cyclic non-safe data exchange: Build error "address is already used" occurs if STRING mapping is defined at the end Workaround: In this case add any non string varialbe at the end of the mapping or change mapping order	AB-17782
Compile error will occur after renaming "CAN bus" on AC500 V3 PLCs Workaround: Please keep default name	AB-17541
Sync-SDOs parameters are not generated when 'Enable Sync Producing' is disabled: 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: Downgrade of AC500 PLCs from firmware 3.2.x version to previous versions via Automation Builder 2.1.X is not supported. 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
PM5630: There might be not sufficient memory for boot projects when visualizations are used or had been used and downloaded before. Workaround: In case you are running into memory issues please check that visu files which are no longer required are deleted using the "Files" tab in the editor of the main CPU node (delete the files in 'PlcLogic/visu/').	AB-15729
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). Workaround: select another editor tab and call "Scan for devices" again	AB-15749
CM589-PNIO: not supported with FW 3.2.4 or later Workaround: Use FW 3.2.3, if CM589-PNIO is required. Support of CM589-PNIO will be available in future version again.	CPUFW-7462
Division by zero for REAL and LREAL variables does not raise exceptions in IEC user program. Workaround: Check results of division in IEC program for "FIN".	CPUFW-7429

EtherCAT: EtherCAT ENI files are not deleted, e.g. after changing the slot of a CM579-ETHCAT device Workaround: Delete ENI files manually	CPUFW-7183
Counter: Fast counter word order is wrong for devices on PROFINET and EtherCAT. Workaround: Swap in- and outputs accordingly.	CPU_FWLIB-279
CAA_File: POU FILE_MOVE is missing Workaround: Use File copy + File delete	CPU_FWLIB-242
CommFB: The library CommFB is not supported for CM579-PNIO Workaround: Use library ABB_PnioCntrl_AC500.library	CPU_FWLIB-140
Trend: Storage size limitation does not work properly. Limitation by file size does not work, as limitation by maximum number of records works. Otherwise PLC can run out of memory. Workaround: Use limitation by maximum number of records	CPUFW-7172 CPUFW-7173
PROFINET and CM589-PNIO: As of 2nd download coupler does not work, 1st DL and bootproject are ok. Workaround: Start project as bootproject.	CPUFW-6641
System: IEC task watchdog followed by Online -> Reset warm leads to crash of PLC.	CPUFW-6142
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. 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. Workaround: Delete AlarmManagerTask below task configuration and delete then the PLC node.	AB-15554
Runtime licensing: 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

Projects created with AC500 V3 PLCs in Automation Builder 2.0 require to manually exchange the following libraries:
      AC500_ExtUtils -> AC500_PM
      AC500_IntUtils -> AC500_Io, AC500_PM
      AC500_EthernetUtils -> AC500_Ethernet
The V3.1 library "AC500_Ethernet" contains all Function blocks from the V3.0 library "AC500_EthernetUtils"
The V3.1 library "AC500_Io" contains Function blocks from the V3.0 library "AC500_IntUtils"
The V3.1 library "AC500_Pm" contains Function blocks from the V3.0 library "AC500_IntUtils" and "AC500_ExtUtils"
	LIB-1424
	LIB-1421
	LIB-1419

Projects for AC500 V3 PLCs created with Automation Builder 2.0 need manual update if CM modules had been used as slot numbering is changed now in Automation Builder 2.1. If POUs with a "slot" parameter are used, the slot needs to be adapted to the physical CM position (from 1 to 6) on the terminal base. If EtherCAT is used in "synchronous mode", the event tasks need to be changed (e.g. "EventTask1" for the first slot, "EventTask3" for the third slot).	AB-12531
System: PLCShell command "date" and "rtc-set" cannot set a date after 2038	CPUFW-5870
Ethernet: FTP server: FTP server: If FTP server is configured on booth Ethernet interfaces ETH1 and ETH2, FTP server will be activated on ETH1 with configuration of ETH1. The FTP server configuration of ETH2 will be ignored. Workaround: Configure FTP server only on one Ethernet interface ETH1 OR ETH2.	CPUFW-5869
Network Variables (NV): does not work with default Broadcast address 255.255.255.255 Workaround: Use other Broadcast address as 255.255.255.255, e.g. 192.168.0.0	CPUFW-5803
TLS/SSL self-signed certificates can't have an End-date after 2038.	CPUFW-5765
Modbus TCP server: fast On/Off switching of server can lead to incomplete log entries (e.g. missing IP address)	CPUFW-5763

CAA-File: If the userdisk is full, the PLC won't create the INI file with production data on the SD card.
 	
Workaround:
   -   Don't fill userdisk to 100% (proposed space is 10%).
   -   Login via PLC Shell and remove files from the userdisk manually.
	CPUFW-5734

Diagnosis: In AC500 V3 CPU, the system diagnostic should be done using function blocks in user program or with Automation Builder using online diagnostic and Device Tree. The CPU ERR Led doesn't indicate the errors. Workaround: - Use Automation Builder or User program for diagnosis. - New POU SetLEDErr in IntUtils library in 3.0.2.	CPUFW-5221 CPUFW-5259
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. If you try to write on a File on the SD Card there is Error NOT_EXIST but the file is there. Workaround: Do not to remove the SD card while actively accessing it. 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. 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. As of V3.1.0 error code "NOT_IMPLEMENTED" will be returned. 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. POU FileClose does not output a Done or Error and remains in Busy status. Workaround: Do not remove the SD card during read/write process.	CPUFW-4684
Modbus TCP: POU ETHx_MOD_MAST and EthxModMast with wrong input data length for FCT=22, 23 leads to access violation Workaround: Check the input parameters for valid values	LIB-1615 CPU_FWLIB-104
Modbus TCP: POU ETHx_MOD_MAST with wrong input parameters leads to exception: ADDR := 16#FFFF, NB := 0 Workaround: Check the input parameters for valid values	LIB-1559 CPUFW-6154
CAA_File: FILE.close: exception in case file handle is zero. POU stays forever is state busy. Workaround: Check file handle before call FILE.close. (Must be >0)	LIB-1532 CPUFW-5060
Function Code 7 for Modbus TCP not working. Workaround: FCT=7 cannot be used until issue is fixed.	LIB-1192 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. Workaround: Use data length according to Modbus specification.	LIB-1167LIB-1167 CPU_FWLIB-125
CAA-File: The maximum number of files opened at the same time is limited to 1024. The runtime system already opened some files. So the limit for the CAA file applications is less 1024, e.g. 1007. Workaround: Consider this limitation for CAA file application.	AB-13406 LIB-1183 CPU_FWLIB-94
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. So the maximum length of a file name for the CAAFile user is 255 minus the length of the Iec Path." Workaround: Consider the Iec Path in the IecFilePath.	AB-13406 LIB-1176 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. Workaround: Use NOT_EXIST for both use cases	LIB-1167 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). Workaround: Use NOT_EXIST for both use cases	LIB-1140 CPU_FWLIB-19
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 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.

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 (see http://www.abb.com/PLC). Only qualified personnel are allowed to work with AC500-S safety PLCs.

Compiling and executing functional safety projects on SM560-S Safety CPUs require the purchase of a license.

Functional changes / New features	Automation Builder Version
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. 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. New cyclic non-safe data exchange editor and related functionality is introduced for SM560-S (-XC) safety CPUs with AC500 V3 CPU. 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. BYTE data type is used instead of WORD for all variables of DI581-S safety I/O module when used with V3 CPUs. 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. SD card handling with V3 CPUs: • "sdappl" and "sdcoupler" commands are not supported on V3 CPUs. Contact ABB technical support when the Automation Builder project shall be migrated from V2 CPU with AC500-S to V3 CPU with AC500-S. 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. 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. 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. 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. Note: 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. • Firmware V1.0.0 does not run on SM560-S-FD-1 (-XC) and SM560-S-FD-4 (-XC). • Firmware V1.0.0 and V2.0.0 do not run on safety CPUs with hardware index C0 and above.	2.3.0

Known problems	ID
When "SD clone" command is used for big Automation Builder projects while the user is logged in, the user may be logged out unintentionally. Note that even if the user is logged out, the "sdclone" operation will successfully complete independently on this event.	CPUFW-7268
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
The Safety Verification Tool (SVT) V1.1.0.592 does not support BYTE data in IO-mappings on DI581-S safety modules used with AC500 V3 CPUs. To avoid this issue, it is recommended not to use symbolic names for BYTE data in IO-mappings of DI581-S safety modules with AC500 V3 CPUs. The valid AC500-S safety PLC project can still be created if BYTE data in IO-mappings is used on DI581-S, however, the errors in the SVT checklist will be present for BYTE data in IO-mappings on DI581-S safety modules used with AC500 V3 CPUs. An updated SVT version will be provided, which will support the BYTE IO-Mappings during safety verification of project integrity. Contact ABB technical support for further details.	AB-18404

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

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. 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/

Functional changes / New features	Version
No functional changes	2.4

Condition Monitoring System

Functional changes / New features	Version
No functional changes	

SCADA - Zenon

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

Panel Builder

Functional changes / New features	Version
No functional changes	2.8.1.447

Known problems	Version
• BACnet IP communication failed in CP635 • CP6407, CP6410, CP6415: Loading/reloading an application into a CP6407, CP6410 or CP6415 after continuous power on for 20 hours and more make the communication protocols stop working. Workaround: After the download of the project is completed successfully, power shall be switched of and then on again. This power interruption and restart of the panel will avoid that issue.	2.8.1.447
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.	2.2.1

Servo Drives

Functional changes / New features	Version
No functional changes	Build 5852

Appendix

Appendix 1: Release notes HA -CS31 Library Package 2.4.5

Note: HA ModbusTCP Library Package for AC500 V2+V3 CPUs: -> see Appendix 13

HA 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 AB2.3.0
- CPU and CM574: Firmware versions FW2.4.2 to FW 2.8.4
- 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: Release notes 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 AB2.3.0
- Firmware versions FW2.5 to FW 2.8.4

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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.

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 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 AC500 CMS Signal Processing Package, Version 2.0.0

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

- AutomationBuilder AB1.2 to AB2.3.0
- PM592-ETH Firmware FW2.4 to FW2.8.4 (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

- V1.0.0 (AB 1.0.0, 2016-01-18)   First version
- 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
- V1.2.1 (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
- V1.2.2 (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)
- V1.2.3 (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)
- V1.3.0 (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)
- 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)

Known limitations or bugs

- only supported by PM585 or higher due to need of co-processor
- Example: AC500_V2_CMS_SP_Expert_AB224 overwrites encoder settings (LIB-2391): If an encoder is configured in Automation Builder and the program changes to run. A new configuration of the Analog Channels will be written. This resets also the encoder configuration which causes the disabling of the encoder functionality.

  Workaround: Read the configuration in the first cycle and set this configuration as default write configuration. If there is a difference in the channel configuration in the retained memory overwrite only the analog channels and leave the encoder configuration as it is.
  Another possibility would be to also store the encoder configuration as retained memory and allow the user to change this config via CP600

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 AB2.3.0
- CPU Firmware FW2.5 to FW2.8.4

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 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 AC500 FTP client Library Package, Version 1.8.1

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

- AutomationBuilder AB1.0 to AB2.3.0
- CPU FW2.4.2 to FW2.8.4

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

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

- none

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 AB2.3.0
- CPU FW2.3 to FW2.8.4

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: PS563 Water Library Package (license required)

Welcome to PS563 Water Library Package, Version 1.2.2

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

- Automation Builder AB1.0 to AB2.3.0
- CPU FW2.3 to FW2.8.4

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)

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)

Appendix 8: 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 AB2.3.0
- CPU FW2.4 to FW2.8.4

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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 9:AC500 HVAC Library Package (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 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 AB2.3.0
- CPU FW2.4.2 to FW2.8.4

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

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

Installation and Update

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

Appendix 10: PS571 Pumping Library Package (Technology Preview, license required)

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 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 AB2.3.0
- CPU FW2.5.3 to FW2.8.4

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.
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 11: PS552-MC-E Motion Control Library Package (license required)

Welcome to PS552-MC-E Motion Library Package, Version 3.2.3

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

- Automation Builder AB1.2 to AB2.3.0
- CPU Firmware FW2.5. to FW2.8.4
- 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

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

Version history

- V1.0   PS551-MC   (2010)   First version
- V2.0   PS552-MC   (2011)   PLC based Motion
- V3.0   PS552-MC-E   (2014)   Coordinated Motion
- V3.1   PS552-MC-E   (2016)   see below
- V3.2   PS552-MC-E   (2016)   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)
- 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)
- Move FBs should not start a movement with deceleration=0, because it will then never stop again (LIB-1040)
- 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)
- 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)

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.

Whats 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

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

Whats new in Version V3.2.x

- New function blocks
  - o 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
  - o 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
  - o MC_CoBlocks_AC500_V23
    New block MCA_SyncInfeedToPath
    New block MCA_SyncCamToPath
- New behavior
  - o 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
  - o CMC_Sinterpolation, had wrong deceleration when velocity changed to smaller values during movement
  - o SPLINE interpolation for profiled movement had not used the last data point, problem since 3.1.0
  - o V_CHECK_TIME was not used anymore, problem since 3.1.0
  - o modified the velocity calculation for CAM with MasterStartDistance,had before wrong result with non-linear velocity transition
  - o changed the functionality for MCA_SetPositionCOntinuous with SUPER=FALSE, did create a small movement
  - o improvement for jerk calculation
  - o MCA_JogAxis had wrong behavior when moving backward with MinJogDistance > 0
  - o MCA_MoveBuffered, output ActiveEvent ok, problem since 3.1.0
- V3.2.1: Example CompactMotion_EtherCAT_ACSM1.project updated as workaround for AB-10467
- V3.2.2: All examples updated to AB2.1 or higher (LIB-1767)
- V3.2.3: Ethercat examples updated for AB2.3.0 (LIB-2380)

Appendix 12: CODESYS IEC 61850 Server 4.0.6 (runtime license required)

Welcome to the CODESYS IEC 61850 Server 4.0.6

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 AB2.3.0
- V3 CPU FW3.1.4 to FW3.3.1

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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

- V4.0.6 (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)

Know limitation or bugs

- MMS Reporting: Max 20 datasets with max 50 entries each, max 5 MMS clients
- GOOSE Publish: Max 20 datasets with max 50 entries each
- (GOOSE Subscribe: Number of datasets and entries not limited)
- Operation
  - Speed: Max 3000 Byte per cycle. Example: With an IEC61850-cycle time of 2ms it takes at least 10 ms to send 5 reports à 3000 Bytes
- Engineering

- o Not possible to have 2 or more IEC61850 server in one AB project. Workaround: Create 2 or more projects (PUA-172)
- o Only one Logical Device per IEC61850 Server
- o When data objects are inserted the first one has no suffix, e.g. "Ind" instead of "Ind0" (PUA-171)

Installation, Update and Licensing

- The package is an installation option of Automation Builder
- 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 13: PS5605-Drives Library Package for AC500 V3

Welcome to the PS5605-Drives Library Package, V1.1.0.2, 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 AB2.3.0
- V3 CPU FW3.2.0 to FW3.3.1

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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

- Package V1.1.0.2 (March 2020), containing ABB_Drives_AC500.compiled-library, V1.1.0.11
  - updated Quickstart guide
- Package 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 limitation 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

<u>Installation, Update and Licensing</u>

- The package is an installation option of Automation Builder, enabled by default

Appendix 13: HA ModbusTCP Library Package for AC500 V2+V3 (PS5601 runtime license required)

Welcome to HA Modbus Library Package, Version 1.2.0.3
consisting of High Availability libraries for AC500 V2 and V3, AC500 Bulk Data Manager tool and examples.

AC500 V2:

- ABB_CI52x_AC500.lib, V1.2.0.3

- HAModbus_AC500_V26.lib, V1.2.0.5

AC500 V3:

- ABB_CI52x_AC500.compiled-library, V1.2.0.4

- ABB_HaModbus_AC500.compiled-library, V1.2.0.3

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

- Automation Builder AB2.2.3 to AB2.3.0

- V2 CPU: FW2.7.2 to FW 2.8.4

- V3 CPU: FW3.2.2 to FW3.3.1

- CI52x-MODTCP F0, Firmware V3.2.3 to 3.2.7

- CM597-ETH (Firmware 1.2.1.20 to 1.2.5.21)

- Network configuration:

  o 2 Switches (Hirschmann RED25) and up to 29 CI52x modules in an MRP ring

  o 4 MRP switches in a ring and several CI modules per MRP in daisy-chain

- Bulk Data Manager tool: Bulk_Data_1.0.6788.21062.zip

The package contains further documents, examples and tools: Please start by reading the System technology description
…3ADR025285M0202.pdf, which can be found in the Automation Builder example folder:
C:\Users\Public\Documents\AutomationBuilder\Examples\PS5601-HA-MTCP\LibraryDocumentation

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.
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 use of the Library package requires a PS5601 runtime license. Otherwise, the CPU cannot go to Run mode but will report a notification "PLC License missing".
License can be acquired through local sales. Installation is described in
C:\Users\Public\Documents\AutomationBuilder\Examples\PS5601-HA-MTCP\AC500_V3\Documentation\AC500 High Availability - HA-ModbusTCP V3 Library Example Description 3ADR025289M0205.pdf, chapter 5.6

Limitations / known problems in Package Version 1.2.0.3

- 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 200ms/500 ms signal freeze module (LIB-1628, LIB-1690), 200ms for V3 CPU or V2 coupler CM597, 500 ms for V2 CPU

- 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)

- CD522 IO module is not supported in the CI52x clusters

- V3 library:
  - o Above FW3.1.4 large systems with more than 70 CI52x (or overall ModbusTCP sockets used in parallel) are not recommended, please select then FW3.1.4 or check with technical support. (CPUFW-8029)
  - o The new function block EthSetRtoMin part of AC500_Ethernet library (according to chapter 5.2.3 in AC500 High Availability - HA-ModbusTCP V3 Library Example Description 3ADR025289M0206.pdf) might cause an exception with FW V3.3.1 (LIB-2381) --> Workaround:
    - ▪ Do not use this function block with following limitations: secondary CPU modbus cable is reconnected faster than 2 minutes after disconnect, a signal flicker will occur (LIB-1601, LIB-1610).
    - ▪ If using this function block is mandatory, a dedicated hotfix version of the firmware has to be used (available on request from ABB technical support).
  - o LifeCom2 (on modbus) Error bit is blinking in normal operation when Sync cable is removed from PLC (LIB-1641)
  - o Lifecom2 (CAN only) cable disconnection sometimes causing PLC switchover (LIB-1645)
  - o When another program than HA is loaded to the CPU the display might still show "ArunP". Workaround: Call the FB "PmDispSetText" with: Text="*run**", TimeOnScreen=0 once (LIB-1794)
  - o DC562 and DO562 are not yet supported (LIB-1606)
  - o Ethernet coupler CM597 is not supported in general on V3-platform

- Bulk Data Tool:
  - o Fast counters are not fully supported --> User has to manually configure fast counters in the application (LIB-1626)
  - o It is recommended to install MS Access or Access Database(DB) engine (2010 or 2013) English version. If other than this version or language is installed, BDM might not run. Workaround: Run the 'Abb.BulkData.Setup.msi' file in the setup folder to install the BDM (LIB-1882)

- V2 Library:
  - o Ethernet coupler CM577 is not supported --> Use CM597 instead

Change history

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

- Improvements
  - o V2 libraries updated to support ETH3/ETH4 of PM595-4ETH PLC (LIB-2219)
  - o 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

- o 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
    - o If secondary CPU modbus cable is reconnected faster than 2 minutes after disconnect, a signal flicker will occur (LIB-1601, LIB-1610).
    - o 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:
    - o 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
    - o 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:
    - o Proper error indication if more than 1024 Sync FB instances (LIB-1646)
    - o Utility blocks optimized, if declared as retain persistent (LIB-1708)
    - o Improved diagnosis: Global variable for number of sent ethernet frames: iNoOfEthFrames (LIB-1647 / LIB-1692)
    - o 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:
    - o Fast counters are not working in HA system (LIB-1624 / LIB-1625)
    - o Overview Visualization: LifeCom over CAN indication is misleading (LIB-1621)
    - o Primary bit disturbance in secondary PLC when MRP switch is powered off (LIB-1601 / LIB-1610)
    - o Run time Error is resetted when there is a configuration error (LIB-1656)
    - o When the CI52x FB is disabled and enabled outputs on the module is not longer frozen (Lib-1638)
    - o 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 14: PS573 PCO Library (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 PCO Library Package, Version 0.9.2, consisting of:

- PCO library: Pco_AC500_V28.lib (Version 0.9.0)
- 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 AB2.3.0
- AC500 V2 CPU: FW2.8.1 to FW2.8.4
- 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

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

Version history

- Package V0.9.2 (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 (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 (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