Welcome to ABB Automation Builder 2.2.5

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=9AKK107680A4765&Action=Launch

Most important changes of Automation Builder 2.2.5

PLC - AC500 V3 Processor Modules (PM5xyz)
- CAN protocol via external coupler CM598-CN: Library extended by POUs for NMT, SDO read and SDO write
- Availability of terminal base with 6 coupler slots (TB5660) for PM5670 and PM5675

PLC - AC500 V2 Processor Modules (PM5xy)
- CAN protocol: New FB CANOM_SET_NODE_MODE to send enable/disable command to dedicated slaves

Panel Builder
- Integration of version 2.8.1.447 for configuration of CP600 2nd generation control panels

Drive composer pro
- Integration temporarily not available. Please continue using Automation Builder 2.2.4, if this feature is required. Automation Builder 2.2.4 can be downloaded from the ABB Library.

Most important changes of Automation Builder 2.2.4

IP configuration tool:
- Support of firmware update of CI50x-PNIO modules
- Support of EtherCAT scan

PLC - AC500 V3 Processor Modules (PM5xyz)
- Diagnosis system:
  - Access diagnosis information incl. text messages within IEC program via POUs
  - Access full diagnosis information via Automation Builder incl. consolidated views on different levels
  - Extension to Profinet diagnosis incl. alarm handling
- EtherCAT: support register read, write and topology scan in IEC program via ABB_EtherCAT_AC500.library
- JSON.library

PLC - AC500 V2 Processor Modules (PM5xy)
- New Codesys versions for non-safety PLC (2.3.9.59) with improved UI behavior when using Windows 10

Drive composer pro
- Embedding of Drive composer pro FSO backup files into the Automation Builder project

Most important changes of Automation Builder 2.2.3

Automation Builder:
- IP Config Tool: extend scan for CI50x devices and set station names

PLC - AC500 V3 Processor Modules (PM5xyz)
- Function Blocks providing diagnosis text messages
- Profinet scan and diagnosis in Automation Builder
- AC500 V3 Drives library (release version)
- PCO library (Tech Preview)
- CD522 library

PLC - AC500 V2 Processor Modules (PM5xy)
- JSON library

Panel Builder
- User can select which Panel Builder version to use for integrated engineering

Drive Manager
- FPNO-21 support
- Latest drive FW versions
    - ACS880 FW v2.90.0.0
    - ACS580 FW v2.06.0.2
    - ACS380 FW v2.08.0.1

Drive composer pro
- New Drive composer pro version 2.4.0 integrated in Automation Builder 2.2.3
- User can select which Drive composer pro version to use for integrated engineering

Most important changes of Automation Builder 2.2.2

No functional changes, scope of service release is limited to the following two fixed issues:
- PLC - AC500 V3 Processor Modules (PM5xyz): Correct information is shown regarding required/missing runtime license for KNX protocol.
- Panel Builder: Integration of Panel Builder V2.8.0.424 to fix all known cyber security issues.

Most important changes of Automation Builder 2.2.1

Automation Builder
- Troubleshooting is eased by an integrated Automation Builder functionality to collect all available data and zip it for exchange with support line

PLC - AC500 V3 Processor Modules (PM5xyz)
- Much faster access to RETAIN/PERSISTENT and addressed (%M area) variables
- Additional PLC shell commands for ethernet extended diagnosis
- CAN: Support of CM598-CN, limited to protocols CAN 2A and CAN 2B
- Modbus TCP: Significant less PLC load from Modbus TCP client and new client POU EthModMast2 with connection parameters for each connection.
- Ethernet: New POU DNS resolve in Ethernet library
- KNX: Usability and stability improvements

Modbus TCP – Communication Interface Modules (CI52x-MODTCP)
- Firmware update functionality of Modbus TCP devices (CI52x) is now available via IP configuration tool, which can be installed via Additional Tools within the Automation Builder installer.

Drive composer pro
- New Drive composer pro version 2.3.1 integrated in Automation Builder 2.2.1

Panel Builder
- Panel Builder software is included into the Automation Builder version profiles, starting with Automaton Builder 2.1. When installing Automation Builder 2.2 including version profile 2.1 it will install Panel Builder 2.8 and 2.6 and automatically use the right version when launching from an Automation Builder project.

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 2.2 installation completely replaces installed versions of Automation Builder prior to 2.2.0 / 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 2.2 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 2.2. Latest documentation packages can be found on the ABB website: www.abb.com/plc → Download Documentation, and then select your language.
- Automation Builder 2.2 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 2012 installation: 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
- SVGA graphics adaptor 256 colors, resolution of 1024x768 pixels
- Supported operating systems:
  - Windows 7 (32/64 Bit) Professional / Enterprise / Ultimate (SP1 required)
  - Windows 10 (32/64 Bit) Professional / EnterpriseWindows Server 2012 R2 64 bit (all devices have to be directly accessible by the server; requires enabled .Net Framework 3.5, refer to section below for installation details)

  Note: Windows 8.1 is no longer supported.

Table of contents

Changes in Automation Builder 2.2.5

The release includes the following device groups:

Automation Builder

Functional changes / New features	Version
IP Configuration Tool: • Support of firmware update of CI50x-PNIO modules • Support of EtherCAT scan	2.2.4
IP Configuration Tool: extend scan to CI50x-MODTCP devices, set station names of CI50x-MODTCP devices	2.2.3
Troubleshooting is eased by an integrated Automation Builder functionality to collect all available data and zip it for exchange with support line	2.2.1
Licensing: • License selection (local or from server) can be configured via Automation Builder (Tools -> Options -> Startup settings). By default, any available license is taken. • Licenses purchased 2019 or alter allow more than 4 licenses to be activated in one license container	2.2.0
Modularized Automation Builder installation structure reduces the download size and the installation time in case no or only few compatibly versions are selected during installation	2.2.0
Virtual System Testing: • Virtual Drive ACS880 is now supported (available as standalone software). Please contact Global Drives Support (global.drivessupport@fi.abb.com or +358 50 33 27200) for further information. • The technology previews of virtual Drives ACS380 and ACS580 are discontinued due to availability of Virtual Drive ACS880 support.	2.2.0
Automatic update of release notes in Automation Builder setup and tool with latest available version from internet	2.2.0
Integration of 3S Automation Platform SP13 Patch 1	2.2.0

Fixed issues	ID
Trial license activation issue with version 2.2.4	AB-17312
Codesys V2.3 loses focus after using intellisense (only on Windows 10 operating systems)	AB-16375
Improved Automation Builder installer robustness	AB-12497
Script objects are lost after project update	AB-15100
PLC runtime licensing: "Return license" does not work for licenses installed via SD Card Return license works properly when Automation Builder is connected to the PLC	AB-14019

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
CAN protocol: New FB CANOM_SET_NODE_MODE to send enable/disable command to dedicated slaves.	2.8.4
IoT communication: JSON library (IEC and C-Code library) Note: Can ONLY be used with PLC FW from version V2.8.0	2.8.2
Access rights for CoDeSys V2.3 project can be defined via Python script	2.8.2
Ethernet: MQTT: support IoT communication protocol MQTT (IEC and C-Code library) Note: Can only be used with PLC FW from version V2.8.0	2.8.0
I/O-Bus: I/O-Bus: HotSwap functionality for PM585-ETH, PM59x-ETH, PM595-4ETH Note: HotSwap functionality cannot be used together with S500-S Safety IO modules	2.8.0
Virtual AC500 V2 supports now also definitions of % HW addresses	2.8.0

Fixed issues	ID
Modbus TCP: PM595-4ETH/PM591-2ETH: not all sockets can be used for Modbus TCP	CPUFW-7518
Misalignment Error at Mixed REAL/LREAL Mode at PM595	AB-15630
Write Access in V2 WebVisu issue	AB-17484
Using GSDML files with sub-modules for PROFINET Shared Device is not working. AC500 PLC stops with wrong configuration data.	AB-13836
AC500 V2 libraries are not properly updated to latest versions in case of an update from Automation Builder 2.2.x to AB 2.2.3. This concerns the new libraries: CM597ETH_AC500_V28.lib, JSON_AC500_V28.lib and JSON_AC500_V28_Internal.lib as well as the updated libraries MqttClient_AC500_V28.lib and WAV_FILE_AC500_V24.lib.	AB-16726
EtherCAT: Usage of the SyncUnits feature with enabled AutoConfiguration for AC500 V2/V3 EtherCAT might result in compilation errors as some ENI file data gets not correctly generated.	AB-15520
Projects created with Automation Builder Version < 2.0 containing a V2 PLC with CM574-RS coupler and configured ASCII or Modbus protocol are failing during "Create configuration data" after upgrade to Automation Builder Version >= 2.0 with an error message.	AB-15973
EtherCAT: In case the "Autoconfig" of EtherCAT master is off and mailbox attached to the slaves the ENI file is wrong for 9, 17, 25, ... EtherCAT slaves. The EtherCAT fieldbus won't start.	AB-16389
CANopen/CAN configuration of CM598-CN: Configuration error when parameter "Heartbeat producer time" (ID: 0x01017000) does not exists	CPUFW-6088
AC500 configuration of shared device functionality with a TR-Electronic encoder doesn't work in Automation Builder 2.1.2	AB-15086

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
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 this 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.

Functional changes / New features	*Version*
CAN via external coupler CM598-CN: - library extended by POUs for NMT, SDO read and SDO write - CAN 2A/2B event task on dedicated CAN-IDs	3.2.5
EtherCAT: Additional FBs for retrieving external synchronization information (EcatGetExtSyncInfo and EcatSlvGetDCInfo)	3.2.5
Ethernet: Modbus TCP client: Extend IEC interface by parameter to set connect timeout	3.2.4
Libraries: JSON.library	3.2.4

Diagnosis system:
Enhancement:
    -   libraries: ABB_Diag_AC500 / ABB_DiagTypes_AC500
    -   download text lists with IEC program
    -   add textual output in IEC program
    -   replace POUs for device diagnosis with POUs with uniform interfaces (values and/or text and/or extended data)
    -   add POUs for PLC diagnosis with uniform interfaces (values and/or text and/or extended data)
    -   POUs: GetFirst.., GetNext.., GetLast.., GetPrev, Ack, ValToTxt
    -   Access full diagnosis information via Automation Builder incl. consolidated views on different level
    -   Extension to Profinet diagnosis including alarm handling
	3.2.4

EtherCAT: ABB_EtherCAT_AC500.library add new POUs (PLCopen style) - EcatRegisterRead - read EtherCAT slave register, if supported by device - EcatScanTopology - scan bus topology for detection of devices in EtherCAT network	3.2.4
Diagnosis system: POUs with output of error texts for CPU, I/O-Bus and S500 IO devices. Note: For activation a visualization object must be added to the PLC application.	3.2.3
PROFINET: DCP protocol (scan)	3.2.3
PROFINET: Diagnosis with Automation Builder in the same matter as for V2.x PLC. Alarms are created as entries in PLC log and automatically acknowledged. Note: This behavior will be removed, with integration of PROFINET in diagnosis system.	3.2.3
CD522 library (PLCOpen conform)	3.2.3
Ethernet: New POU EthSetRtoMin - set minimum retransmission timeout	3.2.2
System Much faster access to RETAIN/PERSISTENT and addressed (%M area) variables	3.2.2
Ethernet extended diagnosis Additional PLC shell commands: ethernet desc - get the current ethernet interface settings ethernet netstat - get list of used sockets "	3.2.2
Ethernet New POU DNS resolve in Ethernet library	3.2.2
Modbus TCP Significant less PLC load from Modbus TCP client.	3.2.2
Modbus TCP New client POU EthModMast2 with connection parameters for each connection.	3.2.2
CAN Support of CM598-CN, limited to protocols CAN 2A and CAN 2B	3.2.2
KNX Usability and stability improvements	3.2.2
OPC UA server enhancement - User management - Definition of (client specific) symbol configurations - Alarms and conditions (Events part)	3.2.0
Protocol IEC61850 (MMS server, GOOSE) Updated library 4.0.4.0 release with TÜV certificate	3.2.0
KNX Add KNX button and LED setting via AC500 Display	3.2.0
SD-Card FW update with compatibility check (needs Update FW 3.2.0.x)	3.2.0
Display FW 4.1 with - rework configuration menu <CFG> - rework display value menu <VAL> - add diagnosis menu <DIAG> - add KNX button, LED	3.2.0
I/O-Bus Local I/O HotSwap functionality added	3.2.0
Buffered data, PlcShell commands for RETAIN/PERSISTENT: - getsramlayout - Display layout of complete RETAIN/PERSISTENT. - clearsram - Init and mark SRAM segment or complete RETAIN/PERSISTENT as free. - savesram - save complete RETAIN/PERSISTENT content to file. - Restore complete RETAIN/PERSISTENT content from file	3.2.0
Ethernet interface Independent Gateway configuration for ETH1/ETH2 Ethernet interfaces	3.2.0
MQTT Implementation of IoT communication protocol MQTT	3.2.0

New Diagnosis concept and system (1st step) - CPU errors Battery, Flashdisk - I/O-Bus and S500 errors - auto control of ERR LED	3.2.0
PROFINET Introduction of new driver for CM579-PNIO (with limited diagnosis capabilities)	3.2.0
EtherCAT Enhanced commissioning diagnosis – Manual control of bus states via Automation Builder	3.2.0
System Integration of CODESYScontrol V3.5 SP13 P0	3.2.0
Technology Preview: C-Code support for AC500 V3 PLCs is just enabled for PM5650	3.2.0
Protocol KNX - licensed per PLC – PS5604-KNX runtime license	3.1.4/3.2.0

Fixed issues	*ID*
CPU: Reading the TYPE from the production data is limited to 12 characters (instead of 14 characters)	CPUFW-7672
EtherCAT: Crash of applications with task time > cycle time of sync task	CPUFW-7635
EtherCAT_ Sync task not triggered after bus stop followed by bus start	CPUFW-7630
EtherCAT: Increased stability of FBs EcatScanTopology, EcatReadRegister, EcatWriteRegister	CPU_FWLIB-266 CPU_FWLIB-313
EtherCAT: Memory leaks when using EtherCAT sync and CoE in parallel (Async.lib 1.1.0.x)	CPU_FWLIB-327
Profinet: Error in case of devices with either 0 inputs or 0 outputs (error 401)	CPUFW-7546
Profinet: IO driver signals configuration error for devices with more than one API	CPUFW-7516 AB-16898
Deleting of user created text lists on build/rebuild	AB-17609
SyncSendService failed which might lead to crash of V3 CPU	AB-17090
Error message TrendStorageAccess: Database Error in function/method 130: Error code = 30402, Action = 3003	AB-17088
If PLC is overloaded (Display shows 'AC500') and the RTC is read/write via PLC shell commands, the PLC is blocked for 30 sec.	CPUFW-7441 CPUFW-7451
EtherCAT: Usage of the SyncUnits feature with enabled AutoConfiguration for AC500 V2/V3 EtherCAT might result in compilation errors as some ENI file data gets not correctly generated. Workaround: in case you are running into such errors please contact Automation Builder support team	AB-15520
File: POU PmDiskStatus: excessive call of this POU (e.g. each 10ms) leads to running the PLC out of memory in short time. Note: Checking like once per day should be sufficient, even when imposing the maximum possible write load on the flash. In the Diagnosis system is a diagnostics function based on SysDiskStatus implemented that should alert the customer when the flash reaches the end of its lifecycle, maybe this would already be sufficient for the customer instead of using the POU. Workaround: Update with newer SystemFW	CPUFW-7141
KNX: No information is shown regarding required/missing runtime license for KNX protocol.	CPU_FWLIB-252
UpdateFW: PLC with SystemFW 3.2.2.58 and UpdateFW 3.2.0.188 -update of only UpdateFW to version 3.2.1.43 cause stay of PLC in state "update".	CPUFW-6972
MQTT: MQTT POUs with file need full path instead of relative path	CPUFW-6768
KNX: If the CPU reboots or the application restarts, the first changed output value of the group addresses is immediately sent to the KNX. The last sent value of the first sent group address is not matching the value out of the PLC application (if value is not equal to default/initial value) and is not sent again after the first calculation. In this case the calculated value in the PLC differs to the last sent value on the KNX bus. After calculation of the value, the changed value is not sent again to the KNX bus.	CPUFW-6747

KNX: ABB_IoDrvKNX_AC500.library - the following KNX DPT are transferred in Motorola byte order to IEC data type ARRAY[] OF BYTE:
  -   Channel Group object name   IEC data type   DPT
  -   ---
  -   35   iTime   ARRAY[0..2] OF BYTE   10.*
  -   36   qTime   ARRAY[0..2] OF BYTE   10.*
  -   45   iString   ARRAY[0..13] OF BYTE   16.*
  -   46   qString   ARRAY[0..13] OF BYTE   16.*
  -   51   iDateTime   ARRAY[0..7] OF BYTE   19.*
  -   52   qDateTime   ARRAY[0..7] OF BYTE   19.*
	LIB-1716/
	CPU_FWLIB-90/
	AB-14564/
	IoDrvKNX 3.5.13.7

IoDrvKNX: some data types (Time, DateTime, String, Color) are transferred in IEC data type ARREY and in Motorola byte order → Convert functions are available (except for "Color") for the specific datatypes	CPU_FWLIB-90/ LIB-1716

KNX: ABB_IoDrvKNX_AC500.library - the following KNX DPT are transferred in Motorola byte order to IEC data type ARRAY[] OF BYTE: - Channel Group object name IEC data type DPT - -- - 55 iColor ARRAY[0..2] OF BYTE 232.* - 56 qColor ARRAY[0..2] OF BYTE 232.* Fix: Color information is shown in the IO mapping description within Automation Builder	CPU_FWLIB-204
Ethernet FTP server: When PLC with configured FTP server is starting up from bootproject and power is lost at the right moment, it might get into a state where it will no longer enter RUN ever again. In the PLC log there will be a message "chpasswd failed" and the only remediation is a FW update (even to the same version)	CPUFW-6600
Ethernet WEB server: HTTPS is not supported for PLC FW 3.1.x in combination with Chrome Internet Browser version > V60.	CPUFW-6286
Licensing: The functionality Remote Target Visu and IEC61850 do not follow the standard demo licensing period. If used without license the functionality stops after 30 minutes. In this case the PLC remains in status running but will stop when the standard demo period is expired.	CPUFW-5961
SD-Card: Update with write protected sdcard results in an endless loop for the update process.	CPUFW-5917
IEC 61850: GOOSE subscribe does not work	CPUFW-5902
Ethernet: The PLC doesn't apply the changes in IP tool ("Configured IP Address") and Display before re-boot.	CPUFW-5896
Ethernet: Sometimes Online access with 3S block driver TcpIp cannot be established.	CPUFW-5884
System: SysTaskSuspend blocks for 50ms.	CPUFW-5881
Network Variables (NV): Does not work with default Broadcast address 255.255.255.255.	CPUFW-5803 AB 2.2.0
CAA-File: After creating and then deleting a big file which filled all available memory space on the disk (sdcard or userdisk), the DISK_STATUS fb always shows that there is no space left. It is also impossible to perform other file/directory actions, e.g.: creating a new directory.	CPUFW-5746
System: In case of time jumps might have undesired behavior in the system.	CPUFW-5560
There might be variable naming conflicts when using IEC60870 and AC500 V3 diagnosis with enabled PLC setting 'diagnosis for devices'. This issue is resolved by using a dedicated namespace for IEC60870. Corresponding warnings are shown in the message window.	AB-15081

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
Profinet: When an error is caused by some kinds of third party devices, the error is not always show on 'Diagnosis' tab in Automation Builder. The Profinet slave node does not go back into 'Node active' state when error is gone. Workaround: Check device state in device tree	CPUFW-7499
Profinet: When the ethernet connection between CM579-PNIO coupler and PNIO slaves is disconnected, error codes are shown in Diagnosis tab of Automation Builder, but error description indicates 'Diagnosis text not available'. Workaround: Check device state in device tree	CPUFW-7498
Diagnosis text lists are only downloaded to the PLC if a visualization is added to the application	AB-16465
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-17250

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
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
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. Workaround: Please make sure the application of the AC500 V3 PLC is set as active before engineering the V3 PLC.	AB-16692
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 "bAdFlr"). 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 SystemFW 3.2.4 Workaround: Use SystemFW 3.2.3	CPUFW-7462
Display: If the PLC display is not updated for 2 seconds, e.g. by a lot of calculations during startup of PLC program, the communication to display is broken and will not be reestablished. Display shows 'AC500'" Workaround: Set task watchdog in PLC program and avoid long calculations during startup.	CPUFW-7446
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. Workaround: Open	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 Workaround: Open	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. Workaround: None, Open	CPUFW-5765
Modbus TCP server: fast On/Off switching of server can lead to incomplete log entries (e.g. missing IP address) Workaround: None, Open	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	*Version*

	Version
SM560-S-FD-1 (-XC) and SM560-S-FD-4 (-XC) are supported. - New safety library SafetyDeviceExt_LV100_PROFIsafe_AC500_V27.lib is introduced to support PROFIsafe F-Device functionality on SM560-S-FD-1 (-XC) and SM560-S-FD-4 (-XC) safety CPUs. New safety library SafetyExt2_LV100_AC500_V27.lib is introduced to support new functions like reading safety boot project CRC and triggering SAFE STOP from safety application program on all AC500-S safety CPUs with firmware V2.0.0. Updated PROFIsafe F-Host library SafetyBase_PROFIsafe_LV200_AC500_V22.lib is available. It is needed to support supplementary functions on SM560-S-FD-1 (-XC) and SM560-S-FD-4 (-XC). This library shall be used in all new AC500-S safety projects.	2.1.0
A new licensing mechanism common with existing Automation Builder products is used now for AC500-S functional safety engineering. It means that PS501-S license enabling package is replaced by DM220-FSE and DM221-FSE-NW Automation Builder 2.0.2 add-ons. All customers who have already valid PS501-S license keys can upgrade free-of-charge their licenses to new ones (DM220-FSE and/or DM221-FSE-NW). All users of Automation Builder 2.0.2 who start their safety programming in Automation Builder 2.0.2 profile will have to obtain DM220-FSE and/or DM221-FSE-NW Automation Builder add-ons to do AC500-S functional safety engineering.	2.0.2
A new version of GSDML importer is used in Automation Builder 2.0.2. This new version of GSDML importer is not compatible with the previous version due to the change in the data description. This was needed to be able to implement more restrictive style checks according to GSDML style rules. Special steps are now needed to migrate projects with 3rd party safety modules instantiated using GSDML files in old profiles to Automation Builder 2.0. These steps are described in Application Note 3ADR025275M0201 in detail.	2.0.2

Bug corrections	ID
F-Device not supported in 2.2.4	AB-17493

Modbus TCP – Communication Interface Modules (CI52x-MODTCP)

Functional changes / New features	Version
Firmware update functionality of Modbus TCP devices (CI52x) is now available via IP configuration tool, which can be installed via Additional Tools within the Automation Builder installer. Latest firmware files are available from the ABB Library. Firmware version of CI52x devices can be scanned and updated (incl. bulk update of several devices).	2.2.1
Diagnosis: Detailed diagnosis of Modbus TCP Communication Interface modules directly connected to the Automation Builder available. This also indicates if there are not hot swap enabled I/O devices are plugged into hot swap enabled terminal units.	2.2.0

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
Added support for FPNO-21	2.2.3

Added support for latest FW versions:
         - ACS880 FW v2.9
         - ACS580 FW v.2.08
         - ACS480 FW v.2.05
- ACS380 FW v.2.08
	2.2.3

General: New firmware support ACS880 – AINFX 2.82.0.0	2.2.0
Import/Export of firmware's to/from DriveManager is redesigned, user friendly and available under Tools -> DriveManager Upgrade menu item.	2.2.0
ACS880 Virtual drive supported for Virtual Commissioning	2.2.0
Added ACS480 drive support	2.2.0
Added DCS880 drive support	2.2.0
German language support added for dynamically populated parameters Instead of displaying firmware names, now loading package names are displayed in firmware list for Crane application	2.2.0

firmware's under ACS880 drive	

Bug corrections	ID
Firmware mismatch warning is not displayed when DriveManager is connected to ACS880 drive which has same firmware version available in both Crane application and primary control firmware's.	AB-14664
Invalid process data selection shown in Process data tab in DriveManager for ACS550 under Profinet.	AB-14654
Automation Builder crashed when user try to connect to drive using DriveManager while virtual simulation is in progress.	AB-14125
Exported DCParamBak does not contain Dynamic Parameters	214691
Export dmbak functionality is not working when AB is in German language	214796
Dependent parameters are not displayed for DCS880.	240841
DriveManager is missing 93.01 parameter from all crane firmware's	229521
"Unknown Actions" error message while importing custom firmwares to primary control firmware	247760

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
Embedding of Drive composer pro FSO backup files into the Automation Builder project	2.2.4
New Drive composer pro version 2.4.0 integrated in Automation Builder 2.2.3	2.4.0.100

Known problems	ID
Drive composer pro integration is not working properly, object can't be added to the project in latest profile 2.2 Workaround: use Drive composer pro integration in Automation Builder 2.2.4 or in Automation Builder profiles <= 2.1	AB-17819

Solutions

Condition Monitoring System

Functional changes / New features	Version
New FB WAV_FILE_APPEND_LABEL which allows to also append the label (LIB-1630)	2.8.1

SCADA - Zenon

Functional changes / New features	Version
Integration in Automation Builder supports latest zenon version 8.00 (installable with separate zenon setup)	8.00

Limitation: Zenon AC500 V3 variable synchronization is currently not supported	2.2.0

Panel Builder

Functional changes / New features	Version
PB610 Panel Builder 600 version 2.8.0.460 integrated into Automation Builder 2.2.4: No functional changes, only error corrections	2.8.0.460
PB610 Panel Builder 600 version 2.8.0.424 integrated into Automation Builder 2.2.2: No functional changes, only error corrections	2.8.0.424
Panel Builder software is included into the Automation Builder version profiles, starting with Automaton Builder 2.1. When installing Automation Builder 2.2 including version profile 2.1 it will install Panel Builder 2.8 and 2.6 and automatically use the right version when launching from an Automation Builder project.	2.2.1
PB610 Panel Builder 600: Supported control panels • Support of new control panels CP6407, CP6410, CP6415 added Help (user manual) • Documentation of new panels (data sheets, installation instructions, operating instructions) added • [IRL5] German translation for IRL5 protocol added Protocols • [IR5L] add access to fields of structured RAPID variables • [ETIP] Add NX serial to Ethernet IP PLC model • [ETIP] Enlarge maximum length of write operations for Ethernet/IP CIP protocol • [MRTU] Import comment with comma (,) between quotation marks (" ") • [OPCU] allow casting in client and in general provide better type handling • [S7ET] Enlarge maximum length of write operations for Ethernet/IP CIP protocol Studio • Add support for reading panel serial number using SysTarget Library command	2.8.1.447
PB610 Panel Builder 600: Actions and events • Extend gesture area widget with possibility to execute one shot actions on new events Feature • Enable ftp client actions in Scheduler and Alarms • Extend gesture area: Passthrough Alarms • Background color for alarm widgets • Table Alarm widget optimization Audit trail • Create AuditTrail display widget - Case ID: 201202158 • Events to log inside the Audit Trail • New format of events buffer dump (SaveArchive) • Action to log a message into the Audit Trail • Ensure the authenticity of reports generate from HMI • Audit Trail with date and time on separate columns Deployment and run time operation • Provide backspace functionality for numeric keypad • Enable Check box button in Scheduler and Alarm widget is too small • Improve Studio boot time • OPC UA Server: Server expose tags grouped with name (prot1, prot2) • Global property to disable multi-touch gestures in a project • OPC UA Server: Increase maximum size for strings • Provide the "attach to tag" to buzzer properties inside project widget • Fit to screen size Dialogs • Add Keyboard functionalities also in Dialog pages Documentation • OpenVPN client support (integrated into the BSP Linux) • Review of Sampling Filter explanation in user manual JavaScript • Change current user via JavaScript • Extend JS file read API to be able to know file encoding • Add JavaScript debugger support for custom widget modules • Long JavaScript class to support int64 and uint64 into Qt JavaScript engine • Define a new most important bit position (big endian) formula: $MsbPos(arg) • Add project.log(message) API, to write into runtime console log PB4Web • Add project.log(message) API, to write into runtime console log • Support for User Management • Trends rendering optimization on mouse drag/touch move • Develop attach to alias	2.8.0.367

- Develop OnHold event on buttons
- Reduce the loading time of a web project
- Add the system variable "Remote Client variables -> Connection status"
- Add User Management system variable
- Canvas widget
- JSFuncBlock widget
- Align custom widget
- Align grid layout
- Add the trend action "RestoreTrendDefault"
- Add the JavaScript functions on/off to manage change page and resize
- Blue system icon delay as project property
- Trend Cursor value for Scatter Diagram
- Possibility to change alarms font
- Add SetTrendView(Xmin, Xmax, Ymin, Ymax)
- Password aging / expire functionality
- Specifying visualization format by wildcards for field
- Formula Xform on tag attachment
- Possibility to define range of values in ColorPalette
- Add the possibility to enable a loading animation that appears at page change

Multilanguage
- Multilanguage management of error messages in login form

Print
- Print reports to PDF with filename defined at runtime
- Increase PDF quality of Graphic Report in Linux panels

Productivity and user interface
- Possibility to duplicate pages
- Possibility to cleanup Unused Tags
- Improved PB610 when Monitor DPI is higher than 100%
- Graphical user interface improvement for Deviation Alarms
- Show a Lock icon few seconds when a user try to change a read only widget
- Possibility to define range of values in ColorPalette
- Extend Dump DataLog/Trend to let users choose columns to dump
- Project properties reorganization
- Aligned Context Menu project property description
- Add cross reference for all type of data sources (via System variable, Recipes, Alias)
- Save HMI IP address as part of project files
- Added version numbers into PB610 shortcuts
- Improve folder organization of temporary files in subfolder or temp folder
- Possibility to define range of values in ColorPalette - Tooltip
- Add a default color for color palette when the tag value is none of the defined index
- Simple Generic Table widget
- Alarm editor -> Event types dialog -> Notify, Log, Actions ,Print Sections heading to be changed

Recipes
- Allow Unicode import into recipes as per Multilanguage
- Add Set status to recipes to identify if values have been modified

Remote Client
- HMI Client for CP600-eCo and CP600-Pro panels (Linx platforms)

Security
- Password aging / expire functionality
- FDA CFR 21 Part 11 support
- Added Electronic Signatures
- Added common User settings
- Add specific user permissions for Web access and Windows Client access
- Update user management pages to support Multilanguage error messages
- CFR21Part11 support on PC Runtime PB610-R
- Provide a Read Only variable with list of available user names
- Review of OPC UA Server Client and Importer

Special Widgets
- Formula Xform
- Allow attach to tag for custom widget parameters
- Table widget support for Alarm History
- Enabling Full inheritance for custom widgets
- Convert pages from web to native and vice versa
- NCol/NRow of grid layout and table widget managed as special PB610 commands

System Variables
- Add the system variable "Remote Client variables -> Connection status"
- Expose VNC server start/stop/state in system variables / services

Tag Editor

- Tags find and replace
- Tags find and rename

Trends
- Extend trends to save a copy when full in csv format
- Have "Dynamic" path for "DumpTrend" action
- Add the trend action: RestoreTrendDefault
- Select trend to display in history trend widget
- Support for Fixed Header in Tables

Widget: Field
- Specifying visualization format by wildcards for fields

Widget: Scatter Diagram
- Trend Cursor value for Scatter Diagram

Widget: Table
- Add copy and paste functionality to Table Data Source widget
- Table widget support for Trends
- Show dynamic properties in exposed custom widget properties
- Table widget filter (with formula support) for tests
- Support of font changing in table widget (standard data source)
- Formula improvements
- JavaScript API getCurrentTopRow() for Table widget
- Get/Set table model from JavaScript even with not null filter is set
- ViewModel OnDataUpdate() added to Table widget
- getRowCount() js table API added
- Trend data source widget optimizations
- Improved management of combo-box properties as tree items
- New grid layout selector functionalities to add and remove columns and rows
- Standard table data source widget: fixed header support
- Add Table widgets to gallery

Widget: Video
- Video player support for CP600-eCo and CP600-Pro panels (Linux platforms)

Widget: WebBrowser
- HTTPs support

Fixed issues	Version
Alarms	2.8.1.447
• Active alarm widget reports triggered alarm but tag value is 0	
• DateTime field of alarms manager widget returns wrong value	
BACNET widgets	
• BACnetClearPriority and BACnetClearAllPriorities not working with Indexed Tags	
• BACnet alarms and scheduler are not working in Remote Client	
• BACnet Scheduler widget day names are wrongly written	
Dialogs	
• Opening dialog inside dialog focus remain on first one	
• Crash of the panel caused by dialogs	
Events	
• OnMouseHold event not working properly if button is into a scrollable grid layout	
Multilanguage	
• Content of csv exported file inconsistent with what displayed into Multilanguage editor for custom widgets labels	
Protocols	
• [BACN] powering on an IP device on same network causes panel crash	
• [ETIP] HMI runtime hangs with customer project	
• [ETIP] No reconnection after ethernet cable unplug/plug with Omron NX PLC	
• [ETIP] UDT data type not imported	
• [IR5L] ABB Robotics IRC5 for Linux subscription not working as expected	
• [MRTU] So Machine importer does not read comma separated files	
• [MRTU] Fix detection of exceptions in case of ASCII mode	
• [OPCU] Cast boolean type if data received from server is spurious	
• [OPCU] Server Policy URI parameter not updated after project conversion	
• [S7ET] Error importing tag with from Step7 file	
Recipes	
• Invalid reference when recipe widget is attached to recipe	
• Slow loading of table when containing recipe data	
Security	
• Security not supported by inner objects of table widget	
• Security settings are not applied for OnDataUpdate programmed actions	
• Wrong error message changing user password	
Studio	
• Download application is not possible Panel Builder shows corrupted path	

• PanelBuilder crash on duplicate ID widget delete • On reopening PanelBuilder shows less device in plc network than saved before • Duplicating a closed page both pages lost label properties information Tags • Panel Builder cannot detect if a Tag/parameter is used more time in a formula • Tags Cross Reference show system variables as invalid if project has been converted from previous versions • Tags Cross reference show some unused tags but the tags are not available into the project • Problems with tag editor scaled tags in 2.8 • Tags listed twice in Tag Cross Reference window after project conversion • Special chars not accepted into formula • After deleting tags datalink remain on JavaScript function blocks • Runtime crash with when broken context in the formula • Tag deletion leads to impossibility to select any Panel Builder part when properties pane is floating Trends • Dump Trend includes quality information also if not required when launched from Scheduler • Dynamic selection of tag for curve not working on RealTime Trend widget • RealTimeTrend widget no more working after project conversion • TrendBufferReader (AlarmBufferReader AuditTrailBufferReader) must be aligned with actual Trend Buffer that read max 5 Tag • Trendcursor does not display any value when Tag is equal to value "-1" Widgets • Rotation Menu items number no more editable starting from v.2.6 • Color conversion not working on ComboBox Font Color on WCE panels • Segmented bargraph not updated when entering page if Min property differs from 0 • Press and Release events of Media Player widget not managed on Linux panels • Drop-down List and Enable Check box button in Scheduler widget are too small to operate • It is not possible to delete an item from Rotating menu widget • Button's release events not performed if button is disabled/hide when in pressed state • Loading parameter Tags inside custom widgets is slower than static tags • Write on custom widget internal property not working if inheritance is enabled • IP Camera widget does not recover connection when using ftp for image polling • getProperty "listData" of ControlList when used in Javascript return partial data • Running project with multistate image shows wrong colors • MoveIPCamera action does not convert + char into the corresponding percent encoding format • Message Widget does not work when inserted in a Table Widget • Changing language the default font is not set in table widget • CX and CY properties of widgets into a custom widget not saved	
Cyber Security • PB610 crashes after launching an empty *.JPR application file. The corrected build checks file size and type. If file is empty or the loading fails, the loading is aborted with "invalid file" message. • HMI simulator does not check content-length of HTTP request. The corrected build checks the content-length. If less than zero, http error 400 is returned. A maximum value for content-length is defined in order to avoid excess memory allocation. Access of CGI interface ReadFile/WriteFile is limited to working directory. • HMI Studio accepts malicious SHCORE.DLL file In the corrected build the current/working directory is removed from search path.	2.8.0.460

ABB is aware of six private reports of a vulnerability in the product version PB610 V2.8.0.367.
• Panel Builder
  • Disable login with Idal master credentials
  • PC Server / simulator crashes with uncontrolled format string
• PB4Web
  • When configured, the password must be entered even on local host
• HMI simulator
  • Block port 22
For detailed information please refer to ABB Advisory 3ADR010377.
	2.8.0.424

Actions and Events • Instability of PB610 while copying a custom widget to specific user gallery page Alarms • Alarm history widget does not show correct groups • Ack notify not working anymore after modification of alarms configuration and project download • Wrong ack notify tag on alarm setting after deletion of alarms.bin file Data entry • Decimal values are not written if Index tag is a float Data transfer • Manage DataTransfer between tags having different data types • Tag read when set as destination tag of Data Transfer executed on trigger Deployment and runtime operation	2.8.0.367

- Runtime unstable on JavaScript remote debugger use
- Project not loading fine with LoadProject macro if you give only projectname.jpr
- Button widget does not respect Tag value on specific page
- Retentive memory behavior differs between Ethernet download and use of update package
- Live Tags in alarm description are required also if alarm is not enabled
- Initial sample of consumption meter behavior
- Fixed gesture area widget behavior for some events
- OPC UA Server: initial tag update not working
- Runtime unstable on specific FTP configuration
- FTP Get does not return error if cable is disconnected while transferring data
- PB610 FTP server converting to lowercase path of files does not allow to copy files into path with uppercase
- Parameter does not maintain name if it starts with number
- Tag visualization lag using customer project
- Fixed Runtime behavior with customized ChangePassword page
- Tags are not read anymore when accessing the second time to a page with dynamic datalink
- Runtime unstable when executing change page form keyboard after selecting raw in table widget
- Panel reboots continuously after download of Runtime from specific PC - Case ID: 201708376
- Runtime unstable on customer's panel
- Custom widget is not imported correctly during import page
- Live Tags in alarm description are updated once when they are triggered and not more - Case ID: 201802009
- Download Runtime becomes slow when user home is mapped on a network path - Case ID: 201802990
- Panel CPU stuck at 100% when a dialog page is opened causing very slow reaction of the system
- Tag selection disabled when a formula is defined to return output value on a widget
- Some buttons defined in template page do not work in customer project
- Touch events do not work on system windows opened from PB610 Runtime PC running on Windows 10
- Images missing some days after download of project
- Customer project shows missing images and then reboots after VNC connection
- Momentary button status does not reflect user input when attached to BuzzerControl R/W

Dialogs
- On Panel PC: numeric keyboard on a dialog page writes numbers twice

Documentation
- Add note regarding compatibility of trendbufferreader utility

Fonts
- Error message "missing font" when trying to save project

Gallery
- Fixed widget gallery behavior if using two monitors with specific settings

JavaScript
- Searching text in JavaScript deletes last text modification
- Support also UTF-8 in JavaScript instruction "fs.readFile"

PB4Web
- Project shown different in Simulator, Chrome, Mozilla and IE
- Opacity of a simple rectangle (or other shape) cannot be attached to a tag
- Visualization problems with specific svg-images and widgets
- ComboBox widget with big text is not displayed properly
- IP Camera widget does not work in version 2.6
- Scatter diagram issues fixed
- Alarm background issue in web page after particular sequence of enable/disable alarms
- Visible attribute becomes "not a number" (after direct setting to false
- Wrong behavior of bargraph widget when Browser Optimization property is set to True
- Combo box list is displayed only down
- Login form appears even though it is disabled in "Authorization Settings"->"IP List"
- Font not correctly loaded before setting of language in customer project
- Scaling on History Trend not applied
- Scale widget doesn't show background color
- Trend widget doesn't align labels correctly and stops showing cursor
- Opacity property not exposed if used with JavaScript
- Function getTag returns full array if array tag is attached to a widget
- Cached template fields do not work when entering in page twice
- Delegate to browser on device system: the choice of font is missing or not exportable
- JM4Web: "not a number" visible when viewing a scaled value
- JM4Web: ScrollTrendToTime action not working
- Color palette does not work on bargraph - Case ID: 201803194
- IP camera widget: mjpeg stream makes network busy
- Visibility of line widget doesn't work if attached to a tag

Multilanguage
- Texts duplicated in Multilanguage for widgets of Graphic Report pages

PDF Reader

- Improve gestures on PDF viewer

Print

- Missing columns in Alarms Report widget

Productivity tools and User Interface (UI)

- Dialog pages are not shown on the same monitor of PB610 if PB610 is running on the secondary monitor
- Alarm Background/Foreground color not applied if edited from RGB field
- FTP Status system variable detected as invalid tag by tag cross reference window if used in Data Transfer
- Cross reference missing and wrong information
- Alarm's description deleted after project conversion to 2.6
- PB610 creates an empty folder "props" in Root Directory
- Remove Font fail if project contain a needle widget
- Missing widgets after project conversion
- It is not possible to choose different file name (dynamic use) in GCode Editor widget by project
- Fixed file browser size for smaller HMIs
- ComboBox linked on arrayTag with dynamic Array index write wrongly data when entry in page
- Page's name in LoadPage action configured into Keyboard buttons not updated on page's name change
- Table widget lock update data refresh after logout
- Add support for reserved chars into recipe elements name
- Error message during project optimization if project contains a JSFunctBlock in Project properties and at least one PB4Web page
- Tag Cross Reference show system variables as invalid

Protocol

- OPC UA Client and Server IP and port misalignment
- OPC UA Array of double not correctly imported

Recipes

- Fixed Runtime behavior when a wrong csv file is selected for Restore recipe
- Import Recipe csv edited with Excel not executed correctly
- Cannot use recipe set element in formula

Security

- ChangePassword User Management page error message not cleared after wrong inserted password
- Custom widget doesn't accept changes on security settings

Special Widgets

- Fixed read/write behavior on custom widget
- Runtime crash if set -1 to the tag attached to "Default Layer" of MultiState Image MultiLayer
- BACnet Keypads displayed without text
- Video redirect of DVI video input interrupted for a moment when entering into a page containing DVI Input widget
- Custom widget loses all configured properties during project conversion if custom widget name contains dot
- Can't use param as array's index in custom widget
- Modifying version on custom widget will delate all of them on closed unsaved page
- Custom widget loses font when user edits its model
- Tags attached to properties of "General" category not maintained when user modifies custom widget version
- Row type of TableDataSource widget doesn't support Font property if Multilanguage support is enabled

Standard Widgets

- PB610 shows message "Failed to load page (namepage.)" when a page contains "." (dot) symbol in the name
- Combo box reFeature is unsatisfactory at first use of combo box
- ComboBox widget improvements
- Combo-box select element not chosen with special sequence
- History trend widget doesn't show curves under a line

System Variables

- Wrong behavior in array with a tag as index

Tag importer

- Fixed behavior of generic Tag import/export

Trends

- RestoreTrendDefault does not consider when min max are attached to tags
- Memory issue in page that contains Historical Trend
- Fixed PB610 behavior in Real Time Trend, attach a Date Time combo widget to the Page Duration property

Utility/Tools

- Manage Target does not download package if same application has been deleted from panel

VNC

- VNC disconnection with specific project and action on WCE
- VNC server causes memory leak on WCE panels
- VNC does not allow connection protected by password when VNC logging is disabled

Widget: Button

- Button widget Value is not updating when the Tag attached to it is changed
- Warning message "widget conflict" if user adds a new button widget into customer project

Widget: Light

- PB610 is unstable, if clicking on "+" OnDataUpdates" on a custom widget

Widget: Scatter Diagram • Pinch to zoom in Scatter Diagram • Graphic issues in axes labels for big numbers after zooming repeatedly Widget: Shape • Triangle shape is not an isosceles triangle Widget: Table • Items not centered in table widget when Scrollbar auto-hide is set to "AlwaysVisible" • Memory leak in table widget when open "OnDataUpdate" • Filtering table with BitIndexXForm does not work at first refresh	

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
PB4Web: Canvas • PB4Web does not support drawImage function in Canvas widget. Linux IRC5 protocol • Subscribe mode is not yet working error free.	2.8.0.367

Servo Drives

Functional changes / New features	Version
Mint WorkBench • Allow entry into the Autotune screen when enabled • Add support for motor brake delays in Autotune tests and when entering the Drive Setup and Operating Mode wizards	Build 5852

Appendix

Appendix 1: Release notes HA Library Package 2.4.5

HA Modbus TCP Library Package

Library Package for AC500 V2+V3 CPUs:
- Contained here only as help/documentation.
- The HA Modbus Library Package is currently provided directly via Sales and Support, for this AB2.2.1 release.

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 AB2.2.5
- 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) updated (2016-05-02)	no changes in library, only online help CAA-Merger-9.chm
V2.4.4 HA_CS31_AC500_V23.lib (2015-03-27, library version V2.4.2) updated for CM597 (2018-06-08)	no changes in library, only example and documentation
V2.4.5 HA_CS31_AC500_V23.lib (2015-03-27, library version V2.4.2) upgraded to valid CP600 HMI (LIB-1970)	no changes in library, only example and documentation

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 AB2.2.5
- Firmware versions FW2.5 to FW 2.8.4

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.

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 AB2.2.5
- PM592-ETH Firmware FW2.4 to FW2.8.4
- 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
- The signal processing blocks must be placed in 1 task (no parallel tasks) (LIB-2100)

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 AB2.2.5
- 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 AB2.2.5
- 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 AB2.2.5
- 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 AB2.2.5
- 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 AB2.2.5
- CPU FW2.4 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 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 AB2.2.5
- 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 AB2.2.5
- 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 3.2.2

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

- Automation Builder AB1.2 to AB2.2.5
- 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 cannot 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)
- Automation Builder crashes when PLC_PTO_PLCopen_example.project is used with MC MoveAbsolute (AB-14638)

Installation and Update

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

This Library needs a valid license for compilation.

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

What's new in Version V3.1.0

- 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, EtherCAT and motion-cycle < 1ms possible
    - o 16 bit limits for velocity, acceleration and deceleration removed

What's 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)

Appendix 12: CODESYS IEC 61850 Server 4.0.5 (runtime license required)

Welcome to the CODESYS IEC 61850 Server 4.0.5

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 AB2.2.5
- V3 CPU FW3.1.4 to FW3.2.5

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 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

- V4.0.5 (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
  - 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 AB2.2.5
- V3 CPU FW3.2.0 to FW3.2.5

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 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:

- CI52x_AC500_V26.lib, V1.2.0.3

- HAModbus_AC500_V26.lib, V1.2.0.5

AC500 V3:

- ABB_CI52x_AC500.compiled-library, V1.2.0.10

- ABB_HaModbus_AC500.compiled-library, V1.2.0.15

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

- Automation Builder AB2.2.3 to AB2.2.5

- V2 CPU: FW2.7.2 to FW 2.8.4

- V3 CPU: FW3.2.2 to FW3.2.5

- CI52x-MODTCP F0, Firmware V3.2.2 / V3.2.7 / 3.2.9

- CM597-ETH, Firmware 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

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 3ADR025289M0206.pdf, chapter 5.6

Limitations / known problems in Package Version 1.2.0.2

- 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)
- V3 library:
  - LifeCom2 (on modbus) Error bit is blinking in normal operation when Sync cable is removed from PLC (LIB-1641)
  - Lifecom2 (CAN only) cable disconnection sometimes causing PLC switchover (LIB-1645)
  - 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)
  - DC562 and DO562 are not yet supported (LIB-1606)
- Bulk Data Tool:
  - Fast counters are not fully supported --> User has to manually configure fast counters in the application (LIB-1626)
  - 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)
- Ethernet coupler CM577 is not supported --> Use CM597 instead
- It is recommended not to change xNoCiBus variable in a running system. When xNoCiBus := TRUE & clusters are configured, system will run stable with switchover scenarios working except for CI communication cable removal from PLC. (LIB-2173, LIB-2174)

Change history

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

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

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

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

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

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

- Call new function block EthSetRtoMin from AC500_Ethernet library version 1.1.3.4 or higher, more details in chapter 5.2.3 in AC500 High Availability - HA-ModbusTCP V3 Library Example Description 3ADR025289M0206.pdf
- Improvement: Up to 3000 instances of sync function block "HaModDataSync" possible (LIB-1753 / LIB-2050)

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

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

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

- Library and examples updated to AB2.1.1 and FW3.1.3
- Fixed issues:
  - Fast counters are not working in HA system (LIB-1624 / LIB-1625)
  - Overview Visualization: LifeCom over CAN indication is misleading (LIB-1621)
  - Primary bit disturbance in secondary PLC when MRP switch is powered off (LIB-1601 / LIB-1610)
  - Run time Error is reset when there is a configuration error (LIB-1656)
  - When the CI52x FB is disabled and enabled outputs on the module is no longer frozen (Lib-1638)
  - Integrated help file contains wrong table of content (LIB-1483)

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

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

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

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

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

- first package

Appendix 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 AB2.2.5
- 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