

Release Notes AC500 V3 Firmware Version 3.6.0 HF2

Fixed issues with FW 3.6.0 HF2	ID
System: In rare cases the application based reboot (FB PmPlcReboot) may lead to the PLC being unresponsive. In these cases a manual reboot via power cycle is required.	3.6.0 HF2
System: In rare cases remanent data can get deleted during power cycle	3.6.0 HF2
Modbus RTU: Sometimes false positive error no. 32770 / 16#8002 ("Internal error I/O layer") is reported by ModRtuMast FB	3.6.0 HF2
Modbus RTU: Too long processing times of ModRtuMast FB for time sensitive applications	3.6.0 HF2

Functional changes / New features	Version
Support of CM589-PNIO-4 (-XC)	3.6.0
Support of SM560-S-FD-1 (-XC) and SM560-S-FD-4 (-XC)	3.6.0
Support of PROFINET Shared Device functionality	3.6.0
New PROFINET IO controller firmware V3.0.1.21 is available for CM579-PNIO (-XC) communication module. <ul style="list-style-type: none"> - Extended start-up support for PROFINET IO devices - Multiple writes for record data of PROFINET IO devices - No VLAN (Virtual LAN) tags are supported according to the latest PROFINET standard specification It is supported by V3 CPUs only and uses an updated PROFINET library.	AB 2.6.0
Ethernet: Support CM5640-2ETH Ethernet communication module	3.6.0
AC500-eCo Option Boards: "Support of new analog option boards for AC500-eCo PLCs: <ul style="list-style-type: none"> - TA5120-2AI-UI - TA5123-2AI-RTD - TA5126-2AO-UI Including support of option board firmware update"	3.6.0
Support for updated CPU hardware: Order numbers ending with R03xx (AC500 V3) or with R01xx (AC500-eCo V3)	3.6.0
I/O-Bus: Technology preview: Reconfiguration of I/O-Bus by IEC application	3.6.0

Fixed issues with FW 3.6.0	Version
Modbus RTU: Modbus RTU client might on AC500-eCo serial option board might set the PLC to stop in case of <ol style="list-style-type: none"> 1) using more than one serial option boards 2) missing Modbus RTU server response Furthermore, the buffer of the Modbus RTU client might not be updated in case of high PLC load.	3.6.0 3.5.0 HF8
OPC UA: OPC UA client stops working after 1 hour because of missing license	3.6.0 3.5.0 HF8
Modbus RTU: Modbus RTU communication needs several minutes to re-establish after line has been disconnected and reconnected again.	3.6.0 3.5.0 HF6
Modbus RTU: When using Modbus RTU communication, AC500 V3 PLC might shut down in applications with repeating interruptions or disturbances in serial communication.	3.6.0 3.5.0 HF6
AC500-eCo onboard I/Os: After crash of PLC the onboard outputs are not reset to zero	3.6.0 3.5.0 HF4
Ethernet: When connecting CP600 operator panels by using the "CODESYS V3 ETH" protocol, in rare cases data exchange with other CP600 operator panels or with OPC DA servers can become very slow.	3.6.0 3.5.0 HF2
Ethernet: After login with Automation Builder 2.5, the IP scan returns wrong results and IP address can no longer be changed until reboot of the PLC.	3.6.0 3.5.0 HF2
Workaround: Reboot PLC for changing IP address	
PROFINET: Incorrect handling of pull/plug alarms	3.6.0 3.5.0 HF1
EtherCAT: Number of sync units is limited to 72	3.6.0 3.5.0 HF1
Workaround: Don't use more than 72 sync units	
MQTT: MQTT publish has always the size of the very first message, exception when disabling publish function block.	3.6.0 3.5.0 HF1
Memory card: Un-/plugging a memory card during RUN can cause high system latency and ultimately trigger a watchdog	3.6.0
Workaround: Do not plug or remove a memory card during RUN	
AC500-eCo: When no memory card plugged in an AC500-eCo V3, realtime behavior of the PLC cannot be guaranteed	3.6.0
Workaround: Always plug a memory card in the PLC	

System: Migration from AV500 V2 to AC500 V3: REAL_TO_WORD with parameter -1 returns 0 on AC500 V3 instead of 65535 on AC500 V2	3.6.0
Workaround: Manually check calls of REAL_TO_WORD during migration from AC500 V2 to AC500 V3	
CAN: CAN2A receive FB for CM598 is slower than for AC500 V2	3.6.0
System: In some rare cases there are wrong timestamps that are dated in the far future	3.6.0
AC500-eCo Option Boards: Option boards for serial communication that are produced 2023 or later will not be detected	BootFW 3.5.0.76 BootFW 3.6.0
Workaround: Use option boards with earlier production date	
AC500-eCo onboard I/Os: Outputs from onboard IO of AC500-eCo begin to blink, if the task execution time is longer than the configured cycle time	3.6.0
AC500-eCo Option Boards: AC500-eCo V3 simulation mode not working when any options boards are configured	3.6.0
Backup/Restore: Restore of certificates for encrypted communication does not work.	3.6.0
Workaround: Create certificate for encrypted communication again after doing the restore.	
Simulation: Simulation mode does not work for AC500-eCo PLCs with plugged option boards	3.6.0
Workaround: Remove option boards from project and before switching to simulation mode.	
COM port: The function ComGetIdByName does not work for AC500-eCo PLCs, the return value will be always 255 (COM_PORT.COM_ID_INVALID)	3.6.0
System: Unaligned REAL or LREAL access with pointers is leading to an exception and the IEC application is stopped.	3.6.0
Example (for type REAL): {attribute 'pack_mode' := '1'} TYPE MyStruct : STRUCT bBool: BOOL; rReal: REAL; END_STRUCT END_TYPE PROGRAM PLC_PRG VAR myStruct : MyStruct; pVarR: POINTER TO REAL; rVar: REAL; END_VAR pVarR := ADR(myStruct.rReal); myStruct.rReal := 123; (* -> correct handling *) pVarR^ := 123; (* -> exception: not 4-byte-aligned *)	
Workaround: Access the variables via structure elements as shown in the example above.	
Diagnosis: The following CPU parameters are being ignored: - Diagnosis history (on/off) - Max. diagnosis history entries Diagnosis history is always enabled, entries are limited to 2000.	3.6.0
Profibus DP: When using a CI54x device with index prior to "F1" the parameter "Diagnosis behavior" is only supported with value "AC500 V2 compatible". For using the setting "AC500 V3 compatible" a newer CI54x firmware is required. Please update then the firmware to the latest version.	3.6.0
SysLibs: The FB PmProdReadAsync returns the ProductID for PLCs with one Ethernet interface (PM5012, PM5032, PM5052) in output "Mac1" instead of "ProductId".	3.6.0
Workaround: Use value from output "Mac1" as "ProductId" for PM5012, PM5032 and PM5052.	
BACnet EDE file import is not allowing to select an exported file.	3.6.0
Workaround: Please rename the exported file to *_EDE.csv and retry the import	
Persistent memory: Please note that 44 bytes of the persistent memory is reserved by the system for internal data. If the persistent memory is used, the usable area is reduced by this amount.	3.6.0
Workaround: not available	

Known problems	ID
Ethernet/IP: Adapter cannot be extended by Ethernet/IP modules with inputs and outputs. Workaround: Define Ethernet/IP adapter configuration in Automation Builder 2.5 and upgrade the project to Automation Builder 2.6	AB-23102
Visualization: When being online with Automation Builder, each open page of the visualization in Automation Builder reduces the number of available connections by one. Workaround: Consider number of open visualization pages in Automation Builder, if it is mandatory that external clients can access the web visualization at the same time.	CPUFW-9815
Profinet: In case all Profinet I/O devices are disconnected from the PLC, automatic re-connection of the devices might not work. Workaround: Monitor the bus state (via FB CM579PnioGetCntrlState) and re-start the communication in case of this issue (via FB CM579PnioStartCom)	CPUFW-9804
Security: When upgrading the PLC Firmware from version 3.4.x or earlier to version 3.5.x or later, the ethernet ports may be in switch mode for a brief period during the update, even when configured as separate ethernet ports. Workaround: Block ethernet traffic by external measures if this is required for security reasons	CPUFW-9793
Visualization: The visualization does not recognize multitouch gestures like pinch to zoom	CPUFW-9136
System: The PLC may fail to handle files larger than 2GB on memory cards or on the flash disk of the PM5675 Workaround: Split files before they reach the critical size of 2 GB	CPUFW-8976
AC500-eCo Option Boards: If a TA5142-RS485 is configured in the application, the PLC will also accept if a TA5142-RS485I is plugged into the respective option module slot. No configuration error will be issued. Workaround: Manually ensure that the correct variant is used	CPUFW-8605
Modbus TCP: Overall improved system behavior has side effects on Modbus TCP by generating more load Workaround: None - only upgrade to FW 3.6, if required and if application has been qualified	CPUFW-9792
Pmlib: Tasks that are created by AsyncAdd() are not deleted when the related function block instance is deleted during online change Workaround: When using AsyncAdd() make sure that online change is only used, when the related calls are not removed.	CPU_FWLIB-565
JSON: The character "" cannot be added to a string. This results in the error JSON_ERR_MEM_ERR. The parsing of strings containing this character is possible. Workaround: Set the project-wide compile option "UTF8 encoding for STRING"	CPU_FWLIB-626
CM579-PNIO (-XC) firmware version 3.0.1.21 has a network load issue. Additional network traffic (except own PROFINET traffic) should be avoided, as this may lead to a loss of the connection between PROFINET IO controller and device.	CMNETX-282
FW update: CM5xx: The firmware update of communication modules via SD card does not work in one step in case of PLC update firmware version 3.2.1 or earlier. Workaround: Update the communication module firmware in two steps by using the same SD card: step 1: update of the PLC update firmware step 2: update of the communication module firmware	CPUFW-8814
CAN onboard: Calling the POU CL2.DriverOpenH (library CAA CanL2) to open the CAN interface is blocking the task and takes more than 100 ms to complete. Workaround: Option 1: Move the call of POU CL2.DriverOpenH to an event task, triggered once in main CAN task. Start CAN communication, when the event task is done. Option 2: Adapt the watchdog settings (time and sensitivity) accordingly. The I/O bus task must have a higher priority than the CAN task.	CPUFW-8769
Diagnosis: After an application download the information about a missing battery (if applicable) is not listed in diagnosis history view. After a reboot missing battery information is available from the diagnosis history again. Workaround: Either check active diagnosis entries or do a reboot, which will add that diagnosis information to the diagnosis history.	CPUFW-8830
Profinet: For some hot swap related diagnosis, Automation Builder receives the unknown error id 8 instead of 9736). Workaround: Check for both error ids.	CPUFW-8612
CAA_File: After closing a file and switching of the PLC by disconnecting from the power supply, the data of the file might be lost. Workaround: Always call File.Flush before closing a file.	CPU_FWLIB-588

Debugging: Forced variables are not released when logging off. Workaround: Execute the "Unforce All Values" command.	AB-21824
Automation Builder 64bit and IP scan: Profinet and EtherCAT scans are not working via the IP configuration within Automation Builder, an "Error: error opening socket" is shown. Workaround: Please use the IP configuration as standalone tool available via Installation Manager -> "IP Configuration Tool" option installation	AB-22889
IP scan: AC500 V3 PLCs running on full CPU load might not respond in time to IP configuration scan requests. Workaround: Set PLC in stop before executing the scan.	AB-22603
GSDML: Projects with GSDML devices might not be properly upgraded to Automation Builder 2.6 if the GSDML files are not installed before the upgrade. This issue doesn't occur in case of upgrading via project archive. Workaround: Install the missing GSDMLs, execute a "Project update" and then a "Build"	AB-22669
Library Manager: The library manager might not show the sources of not-compiled libraries referenced in a project. Workaround: <ul style="list-style-type: none"> • Add any "dummy" FB, action and method below the Application node of a V3 PLC • Open each object once • After this it is possible to open FBs, actions and methods of open-source libraries inside the library manager 	AB-22580
Library placeholder: Starting with Automation Builder 2.6.0, placeholder redirections that are set inside the pool library manager of a library, will be ignored when the library gets included into an application.	AB-21659
OPC UA server does currently not support the following data types: <ul style="list-style-type: none"> • LTIME_OF_DAY • LDATE • LDATE_AND_TIME 	AB-20397
OPC UA: System.NullReferenceException error appears when any symbols from a second level referenced library is added as OPC UA tags in symbol set. Workaround: Add this library directly in the Library Manager (via "Add library")	AB-22488
FW update status on communication modules: The current update status might not be properly shown after the FW update. Workaround: Please update the status with reloading the 'Version Information' view by de-selecting and selecting it again.	AB-22593
FW update including the UpdateFW: FW updates including the UpdateFW require two times the update process (1st UpdateFW and 2nd SystemFW). FW updates via SD cards handle these two updates automatically. Workaround: Execute the FW update process twice in this case.	AB-22126
Factory reset (via 'Diagnostics live list'): The shown status of factory reset executions of PNIO devices might not be correct as Automation Builder always shows message 'The slave has been reset to factory settings' even if reset attempt has failed.	AB-22221
Device Description: Wrong warnings "Device Description missing" are shown for empty slots like COM, Slot_1, etc. Workaround: These warnings can be ignored	AB-21247
Profinet: The "Compare and commit changes" feature based on a Profinet scan result is only working without errors or warnings in the following cases: <ul style="list-style-type: none"> • No slave is configured below the Profinet Controller in the device tree • Only slaves are configured below the Profinet Controller which are not found during the scan Restriction: all found slaves need to be accepted, to ensure that all required data can be correctly added to the project	AB-20790
Profinet: In the Profinet Controller 'Diagnostics live list' editor the parameter flag "Assign configuration temporarily" has no effect on writing a device name into a Profinet device. The device name is always stored permanently. Workaround: use the IP configuration tool standalone (available via additional tools in Automation Builder setup) if this is required	AB-20609
EtherCAT: The I/O mapping tab might not show recently added PDO entries when kept opened during adding. Workaround: Please close and reopen the I/O mapping tab editor to update the view with latest PDO entries	AB-20783
User Management: Users might be prompted to login twice after creating the user management on a computer where Automation Builder was never used before.	AB-20703
Input assistant: The programming input assistant might show not matching initialization values for ERROR_ID ENUMs Workaround: Define the initialization of ERROR_ID values directly in the program and not via input assistant	CPUFW-8983

Input assistant: In case the automatically added Ethernet library is removed from the project's library manager the use of the programming input assistant might lead to a crash of the Automation Builder.	AB-20877
Workaround: Add the removed Ethernet library again to the project's library manager	
Scripting: Scripts might not be editable in Automation Builder if those are added to the project via "Enter" key from keyboard on the add script dialog.	AB-22844
Workaround: Please use the "Add" button on the "Add Script" wizard. If the script was already created and can't be opened again, please rename the script and try to open it again.	
PROFINET: CM579-PNIO: The node state of Profinet I/O devices might be false negative in case of consecutive errors.	CPUFW-8456
Workaround: Check number of nodes with error state on I/O controller level	
Profinet: Configured but missing I/O devices connected to a CI501-PNIO or CI502-PNIO module are not properly represented in the diagnosis system. The I/O device itself has no diagnosis message and therefore is shown as OK (both in the Automation Builder and in the IEC application).	CPUFW-8272 CPUFW-8268
Workaround: Check the ModuleDiffBlock of the CI50x-PNIO module for any missing I/O devices.	
Firmware update: Unable to update the system or display firmware, if update firmware (UpdateFW) versions 3.1.2.32 or 3.1.4.82 are installed.	CPUFW-8252
Workaround: First update the update firmware (minimum version: 3.3.2.113) before updating the system or display firmware in a second step.	
EtherCAT: The first breakpoint in the EtherCAT sync task is not processed properly. It is always being ignored if there is at least a second breakpoint.	CPUFW-8227
Workaround: Always use at least two breakpoints in the EtherCAT sync task considering that the first one will be ignored.	
EtherCAT: POU EcatSync outputs ErrInCnt and ErrOutCnt never start at 0	CPUFW-7983
Workaround: Do not use the first output values of EcatSync function block after setting EtherCAT to operation.	
BACnet: If server objects of type "BACNet.BacnetSchedule" or "BACNet.BACnetSchedule" are instantiated in the PLC application, the PLC will crash when the project is deleted from the device.	CPUFW-7854
Workaround: Only use the BACnet Schedule by adding it below the BACnet Server in the device tree instead of adding it from the PLC application.	
Diagnosis: The PLC node might show a diagnosis indicator "!" in the Automation Builder device tree even if no diagnosis exists. In this case the root cause is that the device diagnosis is disabled.	CPUFW-7519
Workaround: Activate the device diagnosis in Automation Builder	
Ethernet/IP Adapter cannot handle more than one connected scanner (Exclusive Owner). When connecting a 2nd (Listen Only) Ethernet/IP scanner a connection failure occurs	AB-19326
Workaround: not available	
Diagnosis text lists are not updated after new GSDML installation/device object update if the text list was already present in the project.	AB-16737
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	
Diagnosis text lists are not transferred to the AC500 V3 PLC if download/login is done without rebuild.	AB-18007
Workaround: Please check that a visualization is added to the project, the setting 'enable diagnosis for devices is set and project is rebuilt (clean all → rebuild)	
Online values of program code are not correctly refreshed in editor if exception handling is included in code	AB-18215
Cyclic non-safe data exchange: An initialization of arrays and structures in the non-safe program is not supported by the safety program in CoDeSys v2.3 and creates corresponding errors "Erroneous initial value".	AB-17989
Compile error will occur after renaming "CAN bus" on AC500 V3 PLCs	AB-17541
Workaround: Please keep default name	
Sync-SDOs parameters are not generated when 'Enable Sync Producing' is disabled: For both communication modules CM578-CAN and CM598-CAN, when the parameter CANopen Master parameter 'Enable Sync Producing' is disabled, parameter 'set communication cycle period' and 'Set synchronous windows length' are not generated. When CANopen Master parameter 'window Length' is set to 0, the parameter 'Set synchronous windows length' is also not generated.	AB-14071
Fast counter of DA501/502 does not work if used at a Communication Interface (CI) module on PROFINET, EtherCAT or CAN	AB-16614
IO mapping: use only mappings available in the IO mapping editor, avoid manual variable declarations using AT % operations	AB-16521

FW 3.2.0: Downgrade of AC500 PLCs from firmware 3.2.x version to previous versions via Automation Builder 2.1.X is not supported. Workaround: Please prepare SD-card with desired firmware versions and execute firmware version update via SD-card	n.a.
Sometimes the display firmware is not updated within the first "Update Firmware" process (display shows "bAdFir"). Please start the "Update Firmware" process a second time.	AB-17204
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
Division by zero for REAL and LREAL variables does not raise exceptions in IEC user program. Workaround: Check results of division in IEC program for "FIN".	CPUFW-7429
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
PROFINET and CM589-PNIO: After second download the CM589-PNIO does not work, first download and starting via boot project works. Workaround: Start project as boot project. Note: CM589-PNIO with CODESYS driver not supported with FW 3.2.4 or later	CPUFW-6641
CM579-ETHCAT: In some configurations, the state of the last EtherCAT slave is shown as red circle in AB device tree, even if slave works fine. 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
System: PLCShell command "date" and "rtc-set" cannot set a date after 2038	CPUFW-5870
TLS/SSL self-signed certificates can't have an End-date after 2038.	CPUFW-5765
SD-Card: In some cases, If the SD card is removed while in PLC is in RUN mode and SD card is accessed and is put back, the PLC don't recognize that the SD Card is put back. 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 POU: 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 POU	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
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-1167 LIB-1167 CPU_FWLIB-125
CAA-File: "The files to be accessed from IEC (user) applications go to directories that are not visible for the user (e.g. /mytemp). The PLC takes the filename specified by the user and appends it to this lecFilePath, 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 lec Path." Workaround: Consider the lec Path in the lecFilePath.	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 MaxMonitorItemsPerCall has been reduced to 100. If this property is read by OPC UA clients, it returns no value (null)	n.a.

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