

Release Notes - Firmware V2.2.0 of AC500-S Safety CPUs

For SM560-S (-XC), SM560-S-FD-1 (-XC) and SM560-S-FD-4 (-XC)

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Firmware V2.2.0 for AC500-S Safety CPUs

Note:

- Firmware V1.0.0 for SM560-S (-XC) Safety CPUs and firmware V2.0.0, V2.1.0 for all AC500-S Safety CPUs is also included as part of SD card firmware update content in case the downgrade to firmware V1.0.0, V2.0.0 or V2.1.0 is required (see notes below to check when it is possible).

General purpose

The firmware version is capable to run on the following hardware variants:

- SM560-S, **1SAP280000R0001**
- SM560-S-XC, **1SAP380000R0001**
- SM560-S-FD-1, **1SAP286000R0001**
- SM560-S-FD-1-XC, **1SAP386000R0001**
- SM560-S-FD-4, **1SAP286100R0001**
- SM560-S-FD-4-XC, **1SAP386100R0001**

Firmware V2.2.0 is compatible with previous safety CPU firmware versions V1.0.0, V2.0.0, V2.1.0 and, thus, previously obtained functional safety certifications for machines or processes remain valid, because the boot project CRC (Cyclic Redundancy Check) does not change. As an example, SM560-S (-XC) modules with firmware V2.2.0 can be used to replace SM560-S (-XC) modules with firmware V1.0.0, V2.0.0 or V2.1.0.

Note:

Firmware V2.2.0 on SM560-S (-XC) safety CPUs can be downgraded to V1.0.0 or V2.0.0 only if the hardware index for these safety CPUs is below C0, for example, hardware indices A3, B1, etc. In safety CPU modules with the hardware index C0 and above, the new flash memory is used which is not compatible with safety CPU firmware versions V1.0.0 and V2.0.0. Only firmware V2.1.0 or above can be used on such safety CPUs.

Usage of SF_RTS_INFO function in SM560-S (-XC) boot project allows controlling which firmware version(s) will be accepted by the SM560-S application program and which is not, if tighter control over firmware version is required from the customer application.

Note:

- Firmware V1.0.0 does not run on SM560-S-FD-1 (-XC) and SM560-S-FD-4 (-XC).
- Firmware V1.0.0 and V2.0.0 do not run on safety CPUs with hardware index C0 or higher.
- The boot code V1.0.0 for all AC500-S safety CPUs was not changed.

Changes in this version

- PROFI-safe V2.6 F-Host and F-Device support on AC500-S safety CPUs from Automation Builder 2.5 in addition to PROFI-safe V2.4.
 - PROFI-safe V2.6 short frame (up to 13 Bytes)
 - PROFI-safe V2.6 long frame support with up to 123 byte of input and 123 bytes of output safety data in one frame
 - All PROFI-safe mandatory data types are now supported (incl. FLOAT32, INT32, UINT32 data types in PROFI-safe specification)
- Specific functions SF_CRC_INIT, SF_CRC_INPUT and SF_CRC_FINISH for user-defined CRC calculation.
- New PLC Browser command "flashstatus" is supported on AC500-S safety CPUs to show the flash programming progress in the safety CPU in % when downloading boot code, firmware or a bootproject
- Minor internal improvements.

Known issues

- N.A.

Installation (Download) prerequisite

Check Appendices B and C in AC500-S Safety User Manual V1.3.0

<https://search.abb.com/library/Download.aspx?DocumentID=3ADR025091M0210&LanguageCode=en&DocumentPartId=&Action=Launch> or newer for compatibility with AC500 V2 and V3 CPU firmware and AC500-S safety CPU firmware V2.2.0.

The installation / download of this firmware can be performed using SD card or Automation Builder.

- Attached SD card image:
 - SD card image to update AC500-S safety CPUs on any of external coupler slots of the non-safety CPU to a new firmware version:
 - **SD_card_create_SM560-S_V2_2_0.exe**

Update using Automation Builder software (recommended):

Use Automation Builder documentation on how to update firmware for external couplers including AC500-S safety CPUs. AC500-S safety CPU firmware V2.2.0 will be available in Automation Builder 2.5 (or newer).

Update using SD card:

V2 non-safety CPUs:

SD card image files in the provided .exe file will create the needed update directory on a formatted SD card.

- Put the SD card into the SD card reader on your PC.
- With double click on **SD_card_create_SM560-S_V2_2_0.exe**, the file content is automatically extracted (select the SD card reader/writer root directory to extract files).
- Confirm the procedure and the program will generate the file structure on the SD card and copy all the needed files in the corresponding directories.
 - Note that firmware V2.2.0 is used as the default firmware for safety CPU update. To use other firmware versions, e.g., V1.0.0, V2.0.0 or V2.1.0, the sdcards.ini file shall be modified accordingly. Contact ABB technical support for further details.

V3 non-safety CPUs:

Use "Memory card in AC500 V3" sub-section in Automation Builder documentation on how to update firmware for external couplers including AC500-S safety CPUs.

Perform the firmware update for AC500-S safety CPUs as described in the AC500-S Safety User Manual.