

**AC500-S safety PLC -
Overview of changes in
Automation Builder 2.1.x and
2.0.x**





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Die in dieser Anwendungsnotiz enthaltenen Dateien beschreiben eine mögliche Anwendung der Steuerung AC500/AC500-S bzw. zeigen eine mögliche Einsatzart der Steuerung. Sie stellen nur Beispiele dar, sind aber keine fertigen Lösungen. Eine Gewähr kann nicht übernommen werden.

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Only for customers with seat in Germany

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German substantive law shall apply excluding the UN Convention on the International Sale of Goods."

2 Overview

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Three major changes in Automation Builder 2.1.x and 2.0.x related to AC500-S safety PLC are covered in this application note:

- New licensing mechanism for AC500-S functional safety engineering
- New PROFIsafe F-Host library V2.0.0 (SafetyBase_PROFIsafe_LV200_AC500_V22.lib) in Automation Builder 2.1.x and PROFIsafe F-Host library V1.0.1 (SafetyBase_PROFIsafe_AC500_V22_Ext.lib) in Automation Builder 2.0.x
- New version of GSDML importer in Automation Builder 2.0.x / 2.1.x vs. older Automation Builder versions.

2.1 New license handling for AC500-S safety PLC

A new licensing mechanism common with existing Automation Builder products is now used for AC500-S functional safety engineering. It means that the existing PS501-S license enabling package (1SAP198000R0001) is replaced by DM220-FSE (1SAS010020R0102) and DM221-FSE-NW (1SAS010021R0102) Automation Builder 2.0.x (or newer) add-ons. These are listed in the Main Catalog - PLC Automation:

- <http://search.abb.com/library/Download.aspx?DocumentID=3ADR020077C0204&LanguageCode=en&DocumentPartId=&Action=Launch>. 30 days trial license is available for AC500-S functional safety engineering after Automation Builder 2.0.x (or newer) installation.

All users of Automation Builder 2.0.x (or newer) who start their safety programming in Automation Builder 2.0 profile (or newer) will have to obtain DM220-FSE and/or DM221-FSE-NW Automation Builder add-ons to do AC500-S functional safety engineering, if they used older versions of Automation Builder.

All customers who have already valid PS501-S license keys can upgrade free-of-charge their licenses to DM220-FSE:

- Send your valid PS501-S license authentication code to ABB technical support via email: plc.support@de.abb.com. Details on PS501-S authentication code location can be found at: <http://search.abb.com/library/Download.aspx?DocumentID=3ADR025001M0601&LanguageCode=de&LanguageCode=en&LanguageCode=fr&DocumentPartId=&Action=Launch>

If you do not wish to migrate your current project to Automation Builder 2.0 (or newer) profile, then you can continue using your PS501-S license keys with older Automation Builder profiles as before.

Further details on the common license handling of Automation Builder products can be found in Automation Builder Online Help, which is available after Automation Builder installation or can be downloaded from:

- <http://search.abb.com/library/Download.aspx?DocumentID=9AKK106930A5213&LanguageCode=en&DocumentPartId=&Action=Launch>.

2.2 New PROFIsafe safety library

New PROFIsafe F-Host library V2.0.0 (SafetyBase_PROFIsafe_LV200_AC500_V22.lib) in Automation Builder 2.1.x and PROFIsafe F-Host library V1.0.1 (SafetyBase_PROFIsafe_AC500_V22_Ext.lib) in Automation Builder 2.0.x are used in all newly created projects with SM560-S safety CPU(s), independent of the profile used. PROFIsafe F-Host library V1.0.1 and V2.0.0 include improvements related to the handling of 0 telegrams in the previous PROFIsafe F-Host library V1.0.0 (SafetyBase_PROFIsafe_AC500_V22.lib). In addition, PROFIsafe F-Host library V2.0.0 includes improvements for use with new SM560-S-FD-1 and SM560-S-FD-4 safety CPUs.

Make sure that proper organizational steps are planned and carried out because the use of this new library will lead to a new safety boot project CRC and, thus, may require additional verification and/or validation steps for your safety application.

PROFIsafe F-Host library V1.0.0 (SafetyBase_PROFIsafe_AC500_V22.lib) can be further used only in old projects (created with previous versions of Automation Builder) and opened in the old profile included in the Automation Builder 2.0.x. If a new Safety CPU is added to that old project, a new PROFIsafe F-Host library will be added.

PROFIsafe F-Host library V1.0.0 (SafetyBase_PROFIsafe_AC500_V22.lib) shall not be used in any new AC500-S safety projects.

2.3 New GSDML importer – Automation Builder V2.1.x

A new version of GSDML importer is used in Automation Builder 2.1.x. This new version of GSDML importer is not compatible with the previous version except for AB 2.0 profile due to the change in the data description. The compatibility break 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 PROFIsafe safety devices (e.g., safety encoders, gateways, etc.) instantiated using GSDML files in old profiles (older than Automation Builder 2.0) to Automation Builder 2.1 profile. These steps are listed below:

1. All Automation Builder profiles that were used in the past to instantiate 3rd party PROFIsafe safety devices in the given project shall be installed.
2. If the project archive was created before Automation Builder 2.1.x installation, then go directly to **Step 5**.
3. If the project archive was not created before, identify all original GSDML files for 3rd party PROFIsafe safety devices (e.g., safety encoders, gateways, etc.) used in the Automation Builder project and install them in your Automation Builder 2.1 profile.
4. Open your project in Automation Builder 2.1 profile, which will continue with **Step 5B**.
5. Start Automation Builder 2.1.x with 2.1 profile and open the project archive to upgrade your project.
 - A. In the message box *"The item or file ... already exists. Do you want to overwrite it?"*, select checkbox *"Apply for all ..."* and then select *"No"*.
 - B. If some prerequisites for project upgrade are not met, the dialog is shown with additional information for project upgrade. If required GSDML files are not installed, use *"Install GSDML for compatibility profiles"* button to install them automatically for compatibility profiles. After GSDML files installation, re-initiate the project upgrade with *"Retry"* button.
 - C. In the following dialog *"Version mismatch"*, confirm to upgrade the project to Automation Builder 2.0. It is recommended to select also *"Create backup ..."* option.

* In some cases, additional *"Assertion Failed ..."* message boxes may appear. *"Ignore"* button shall be used for these *"Assertion Failed ..."* message boxes.
 - D. Confirm your user credentials in the project. Otherwise, the project migration will fail.
6. When the project update is complete, click on menu item *"Create Safety Configuration Data"* in the context menu for the SM560-S safety project.
7. Open F-Parameter editors for all 3rd party PROFIsafe safety devices and verify that all F-Parameters values are correct.

2.4 New GSDML importer – Automation Builder V2.0.x

A new version of GSDML importer is used in Automation Builder 2.0.x. This new version of GSDML importer is not compatible with the previous version due to the change in the data description. The compatibility break was needed to be able to implement more restrictive style checks according to GSDML style rules.

To minimize your efforts please contact ABB technical support (refer to contact details on the title page) who can migrate your projects from previous versions of Automation Builder free-of-charge. You can still perform special steps listed below yourself but this is not recommended.

Special steps are now needed to migrate projects with 3rd party PROFIsafe safety devices (e.g., safety encoders, gateways, etc.) instantiated using GSDML files in old profiles to Automation Builder 2.0 profile. These steps are listed below:

1. All Automation Builder profiles that were used in the past to instantiate 3rd party PROFIsafe safety devices in the given project shall be installed.
2. If the project archive was not created before Automation Builder 2.0.x installation, start Automation Builder 2.0.x with your original profile (e.g., 1.2 profile). Create an archive using "Project Archive" function of the Automation Builder project with 3rd party PROFIsafe safety devices in your original profile.
3. Identify all original GSDML files for 3rd party PROFIsafe safety devices (e.g., safety encoders, gateways, etc.) used in the Automation Builder project.
4. Install all these original identified GSDML files with 3rd party PROFIsafe safety devices to device repositories of compatibility profiles (older profiles used in the safety project) in Automation Builder. **To avoid checking which GSDML is required in which profile, it is recommended to install all original GSDML files for all older Automation Builder profiles.**
5. Start Automation Builder 2.0.x with 2.0 profile and extract the project archive created in Step 1 including all referenced devices to some folder on your hard disc.
 - E. In the message box "*The item or file ... already exists. Do you want to overwrite it?*", select checkbox "*Apply for all ...*" and then select "*No*".
 - F. In the following dialog "*Version mismatch*", confirm to upgrade the project to Automation Builder 2.0. It is recommended to select also "*Create backup ...*" option.
 - G. In some cases, additional "*Assertion Failed ...*" message boxes may appear. "*Ignore*" button shall be used for these "*Assertion Failed ...*" message boxes.
 - H. Confirm message boxes that 3rd party PROFIsafe devices are not updated using "*OK*" button.
 - I. Confirm your user credentials in the project. Otherwise, the project migration will fail.
 - J. **Troubleshooting:** If conditions to perform F-Parameter set update are not met, a dialog listing all conditions which are not met will be displayed and the project will be automatically closed without performing a project upgrade. If you are not able to prepare the environment in such a way that all pre-conditions for successful migration are met, please contact ABB technical support (please refer to contact details on the title page).
6. When the project update is complete, click on menu item "Create Safety Configuration Data" in the context menu for the SM560-S safety project.
7. Open F-Parameter editors for all 3rd party PROFIsafe safety devices and verify that all F-Parameters values are correct. The amber color background for F-Parameter values is used to demonstrate that F-Parameter values were migrated to a new profile. Please change at least one F-Parameter of each safety device, click OK and change the value back to its former value. When F-Parameter value change is done, the amber background will change back to yellow.