

AxiaManager Safety



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1 Overview

AxiaManager Safety is a software module integrated in AxiaManager where you can overview and edit all safety objects you need to setup the safety related functionality.

- You can enable one or more of the functional safety functions, so that they best suit your applications' requirements (STO, SBC, SS1 etc.).
- You can open the AxiaManager Safety software module during the configuration in AxiaManager to edit the specific objects relevant for the installed safety module.

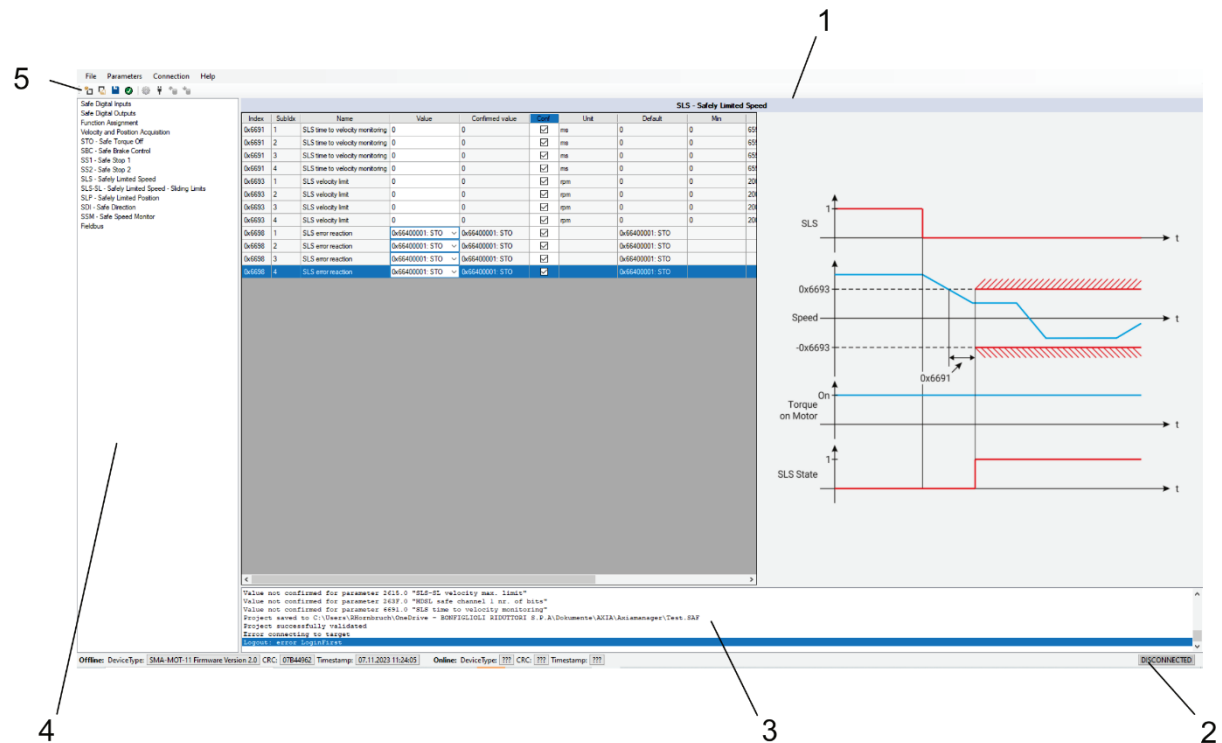
AxiaManager Safety can be started like a separate software or be opened from within AxiaManager by clicking the *AxiaManager Safety* icon.

NOTICE

Refer to the safety manual of the safety module before doing any changes to the parameterization!

1.1 Introduction to the User Interface

The figure below shows a view of AxiaManager Safety's workspace, including its used components.

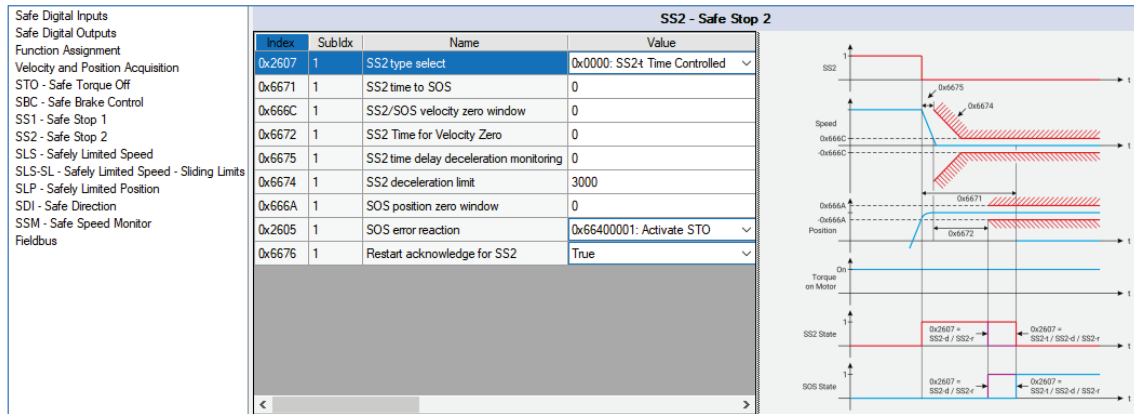


1	Workspace window	2	Status bar
3	Output window	4	Safety objects panel
5	Toolbar		

This chapter gives an overview of these elements.

1.1.1 The Workspace Window

The *Workspace* window (1) lists all objects in the parameters group selected in the *Safety objects* panel (4) in the left column of the window. You can see the objects' numbers, names, and their values. Graphics on the right support the parametrization functions.



1.1.2 The Safety Objects Panel

The *Safety objects* panel (4) contains the group of parameters available for the safety module installed in your inverter and the functional safety variant selected in your application project.

1.1.3 The Output Window

The *Output* window (3) is the place where AxiaManager Safety prints its output messages.

```
Project successfully validated
Value not confirmed for parameter 6643.0 "STO activates SBC"
Value not confirmed for parameter 6643.0 "STO activates SBC"
Value not confirmed for parameter 6643.0 "STO activates SBC"
Value not confirmed for parameter 6643.0 "STO activates SBC"
Value not confirmed for parameter 6643.0 "STO activates SBC"
```

1.1.4 The Status Bar

The *Status* bar (2) displays the state of the application at its left border, and an animated control reporting the state of communication at its right border.

Offline: DeviceType: SMA-MOT-11 Firmware Version 2.0 CRC: 07B44962 Timestamp: 07.11.2023 11:24:05 Online: DeviceType: ??? CRC: ??? Timestamp: ???

In addition, other information is displayed related to the current device and the target device. The current device is the project, the one you are configuring through AxiaManager Safety.

The target device instead is the safety module to which AxiaManager Safety is possibly connected. The information related to device type and version, CRC and timestamp are displayed to allow the user to compare the information of both devices.

If you have not yet attempted to connect to the target, the status of communication is set to *Disconnected*.

DISCONNECTED

When you try to connect to the target device, the state of communication becomes one of the following:

- *Connected*: The communication has been correctly established.

CONNECTED

- *Error*: The communication cannot be established. You should check both the physical link and the communication settings.

ERROR

1.1.5 The Toolbar

Each operation in the environment can be performed through the menus. The toolbar (5) contains icons which work as shortcut for the menu's commands (🔗 5.4).

1.2 Using the Environment

This chapter shows you how to deal with the UI elements AxiaManager Safety is composed of, in order to let you set up the environment in the way which best suits your specific development process.

1.2.1 Conventions Used in This Document

Text Type	Description
Command, Key	Name of the command or keyboard shortcuts key.
<u>Menu>Item</u>	For menu items hierarchy, the ">" symbol is used. A record File>Open Project is equivalent to "the Open Project item under the File menu".
🔗 ...	Link to related subject within this guide.
🔗 ...	Link to related subject in an external guide.
<i>Terminology</i>	Important term or concept.
0x1234	Representation of parameter numbers
<i>Parameter/Object</i>	Representation of parameter names
01234	Representation of parameter values/object settings

1.2.2 Customize the Layout

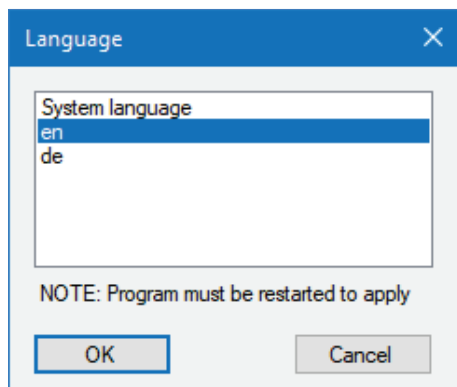
The *Output* window (3) and the *Safety objects* panel (4) are always visible and can be freely scaled. If you move the mouse over the separating bar it will change to this symbol:

-  • Drag and move the separating bar as you wish.

AxiaManager Safety takes care to save the layout configuration on application exit, in order to persist your preferences between different working sessions.

1.2.3 Change Language

If you click File>Select Language menu you can change the language of the environment by selecting a new one from the list shown in this dialog.



After selecting the new language, confirm by clicking the OK button. This change will be effective only the next time you start AxiaManager Safety.

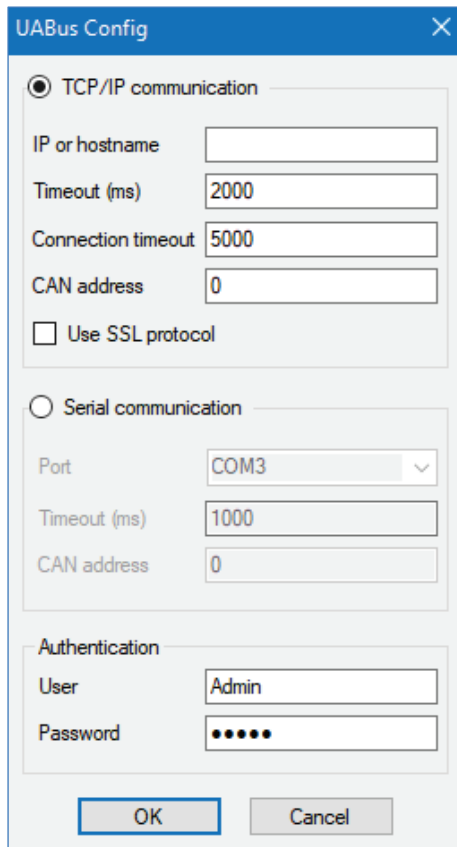
2 Setup Communication to the Inverter

The communication settings can be edited and verified in the menu *Connection > Configure communication...*: In this menu, you can select the communication type:

- **TCP/IP** communication: This protocol is used for Ethernet connection.
- **Serial** communication: This protocol is used for connection via USB/COM port.

2.1 TCP/IP communication (for Ethernet connection)

- Go to the *Connection* menu. Select *Configure communication...*.
- Select *TCP/IP communication*.



The screenshot shows the 'UABus Config' dialog box with the 'TCP/IP communication' radio button selected. The settings are as follows:

- TCP/IP communication:**
 - IP or hostname: (empty text box)
 - Timeout (ms): 2000
 - Connection timeout: 5000
 - CAN address: 0
 - ☐ Use SSL protocol
- Serial communication:** (radio button is not selected)
 - Port: COM3 (dropdown menu)
 - Timeout (ms): 1000
 - CAN address: 0
- Authentication:**
 - User: Admin
 - Password: (masked with dots)

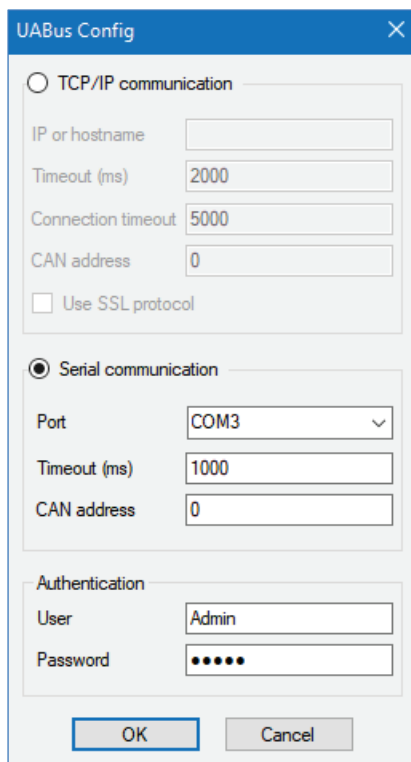
At the bottom, there are 'OK' and 'Cancel' buttons.

- Type in the IP address or hostname, timeout and the CAN address.
- Add a user authentication and click OK.
- Select the *Connect* button in the toolbar (🔌) to connect the inverter.

If the communication has been correctly established, the Status bar displays *Connected*. This concludes the connection to the PC workstation.

2.2 Serial communication (for USB/COM port connection)

- Go to the *Connection* menu. Select *Configure communication...*.
- Select *Serial communication*:



The image shows the 'UABus Config' dialog box. It has a title bar with a close button. There are two main sections: 'TCP/IP communication' and 'Serial communication'. The 'Serial communication' section is selected with a radio button. In this section, the 'Port' is set to 'COM3', 'Timeout (ms)' is '1000', and 'CAN address' is '0'. There is also an 'Authentication' section with 'User' set to 'Admin' and 'Password' masked with dots. At the bottom are 'OK' and 'Cancel' buttons.

Section	Option	Value
TCP/IP communication	IP or hostname	
	Timeout (ms)	2000
	Connection timeout	5000
	CAN address	0
	Use SSL protocol	☐
Serial communication	Port	COM3
	Timeout (ms)	1000
	CAN address	0
	Authentication	
Authentication	User	Admin
	Password	•••••

- Select the COM port and type in timeout and the CAN address.
- Add a user authentication and click OK.
- Select the *Connect* button in the toolbar () to connect the inverter.

If the communication has been correctly established, the Status bar displays *Connected*. This concludes the connection to the PC workstation.

3 Configure Functional Safety

Safety object values can be viewed in AxiaManager GUI but it is not possible to change safety settings. The AxiaManager Safety is used for parametrizing the functional safety functions.

All safety modules come preconfigured with default safety object values set in the firmware. The password has to be changed to a user-defined password, to be able to leave the safe state,  3.1.

However, applications typically will require the default safety object values to be altered and validated to suit the particular application requirements,  manual of the safety module installed to your inverter.

- Check if the default safety object values in the firmware are correct for their chosen application.
- Ensure that any changes made to default object settings do not compromise the safe operation of the inverter,  3.5.

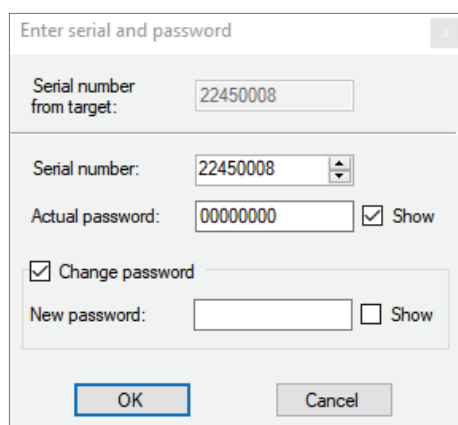
After the change and validation of settings it is recommended to save the project,  4.2. To write the new values to the target device,  3.6.

It is recommended to save the default setting of the safety module as a project,  3.4. This allows to restore the default settings,  3.8. On the opposite, it is possible to set altered values as default values in the project,  3.7.

3.1 Change Password

By default, a generic password (00000000) is set in the safety module at the production site. When the user establishes the connection with the inverter for the first time, he will be required to set a new safe password.

If the user does not set a new safe password, the error message `F12C1 Reset to default settings` or `default password active` will be displayed until a new safe password is set.



- Enter the safety module's serial number to confirm that the connection is established with the correct device. The actual serial number is displayed above the entry field.



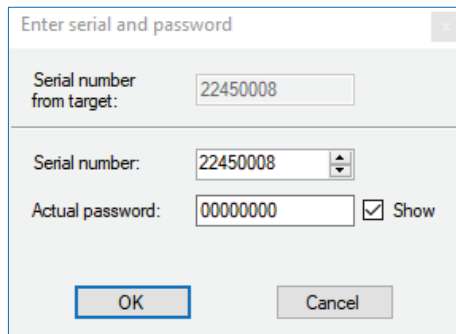
Note that changing the password will also change the CRC of the parametrization inside the safety module.

- Enter the actual password. (Default: 00000000)
- Enter a new password and click OK.

3.2 Upload Values from Target

If the inverter is connected to the PC workstation you can read the settings from the safety module (target) into the project.

- Go to menu *Connection>Upload values from target...* or press  in the toolbar.



Enter serial and password

Serial number from target: 22450008

Serial number: 22450008

Actual password: 00000000 ☒ Show

OK Cancel

- Enter the safety module's serial number. The actual serial number is displayed above the entry field.
- Enter the actual password and click OK.

The *Output* window displays "Values loaded" and "Project was successfully validated".

```
HW Code: SAFE0020
FW Version: 03000646
UploadSafeFile OK
TimeStamp: 26.02.2024 12:14:06
Values loaded
Project successfully validated
CloseSession OK
```

In the column "Conf" in the *Workspace* all checkmarks are set. This confirms that the values in the editable column correspond to the values loaded from the safety module.

Index	SubIdx	Name	Value	Confirmed value	Conf
0x2613	1	Min. time STO after SS1	300		☒
0x6651	1	SS1 time to STO	0		☒
0x6658	1	SS1 activate SBC	0x66400001: Activate STO		☒

3.3 Edit Values

Editing values causes the value to be modified in the project but not in the connected device until the download to the target takes place,  3.6. Values are aligned with device values when successful download operations are done.

If the value in the grid is different from the default value, the default value is shown in **blue** instead of black.

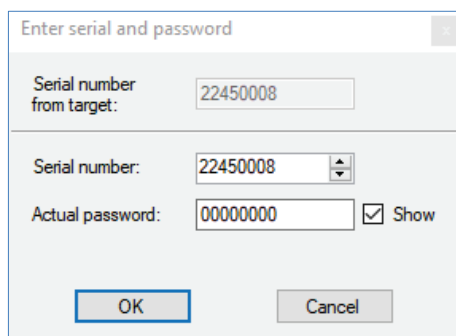
3.4 Create Default File

Before changing the configuration of the Functional Safety, it is recommended to secure the safety module's configuration. For this, a default project file is created which can be loaded at a later time to restore the default values,  3.8.

- Upload the default values from the target,  3.2.
- Go to File>Save as ... to save the file as default project.
- Enter a name, in the *Name* text area, modify the location, and press **Enter**.

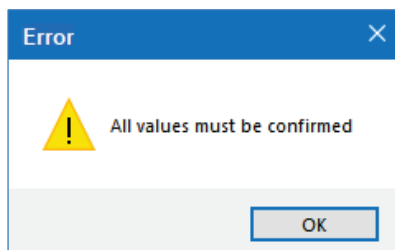
3.5 Generate Configuration

In order to send a new configuration file to the safety module, the user must first generate a new configuration by clicking on *Generate configuration* button and after that verify the new values by comparing the *Value* column with the *Confirmed value* column. After that, the user must validate the objects by setting checkmarks in the *Conf* column next to the altered objects.



- Enter the safety module's serial number. The actual serial number is displayed above the entry field.
- Enter the actual password and click *OK*.

If you try to save the project without previously validating the object values an error message will appear:



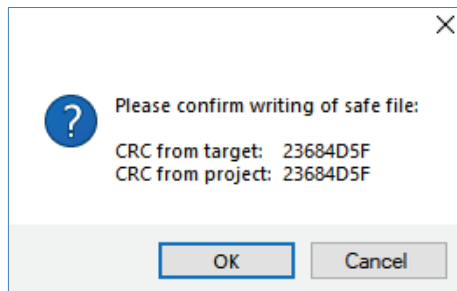
- To validate the project, click the *Generate configuration* button or go to menu Parameters>Generate configuration.
- Check all values in the *Workspace* area and confirm them by ticking the corresponding checkboxes in the "Conf" column.

3.6 Download Values to Target

Before sending the new configuration file to the safety module, the user must validate the new objects by setting checkmarks in the "Conf" column next to the altered objects.

- Generate the configuration ( 3.5).
- Go to menu Connection>Download values to target... or press  in the toolbar.

- Enter serial number and password (if needed), press *OK*.
- The values are now transferred to the safety module.



- Confirm the saving of the safety file on the target after checking the CRC from target and the CRC from project match each other.

The altered settings are now saved persistently to the safety module.

The altered settings and the CRC are reported in the Properties window (🔧 4.4).

The project data can also be listed in a print file (.htm file). The data includes the projects properties and the safety object settings.

NOTICE

Fault display when writing objects to the module

When a new set of objects is written to the safety module, the error messages **F0D0C** and **F12C4** may be triggered. This is not a fault but occurs due to communication between the safety module and the main device being briefly interrupted. The error messages can be acknowledged by the user.

- The user must validate all safety functions after any changes to the safety-relevant parameterization within the application.



The safety object values are stored in the safety module. Setting default values in the main device does not affect the settings of the safety module.

3.7 Set Selected Values to Default

- Select an object in the Workspace.
- Enter a new value in the *Value* column.
- Go to menu *Parameters>Set selected values to default*.

The value is taken over to *Default* column.

Make sure to validate and save the configuration as default setting (🔧 3.4).

3.8 Restore Default Values

- Go to menu *File>Open* and select the previously stored default file (🔧 3.3).
The default project is loaded.
- Download the values to target (🔧 3.6).

The safety setting is written to the safety module.

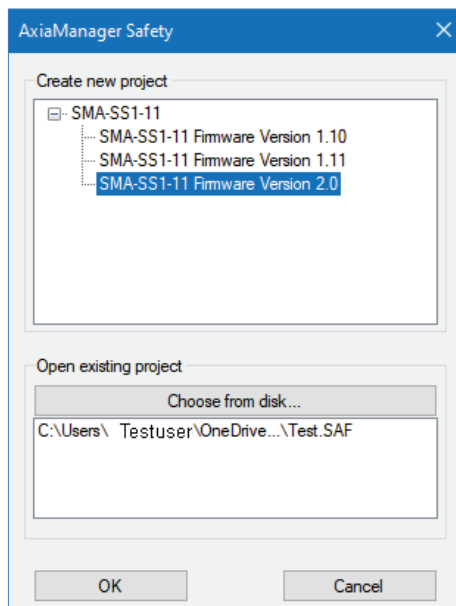
Alternatively, the default values can be reset with help of the FSoE dip-switches, 📖 manual of the safety module installed to your inverter.

4 Managing AxiaManager Safety Projects

This chapter explain how to organize the safety project files. An AxiaManager Safety file (.saf file) includes all components' information and parameter settings of the project.

4.1 Start a Project

- To start a new project, click **File>New** of the AxiaManager Safety menu. This causes a dialog box to appear, which lets you create a new safety project.
Or:
- To open an existing AxiaManager Safety project, click **File>Open** of AxiaManager Safety menu. This causes a dialog box to appear, which lets you open an existing project.



- Select the Axia safety module and the firmware version you use from this catalog. The list of devices contains all available safety modules and firmware versions.
If AxiaManager Safety is opened from AxiaManager GUI the installed safety module will be recognized automatically if you start AxiaManager Safety from within Axia Manager.

4.2 Save a Project

When you make any changes to the project you are required to save it in order to persist that change.



Before you can save the project all changes must be validated (🔧 3.5).

- To save the project, go to menu **File>Save**.
- Enter the name of the new project in the *Name* text area.

4.2.1 Save to an Alternative Location

Go to menu **File>Save As ...** to rename the file or change the location of where you want to save the file.

4.3 Print

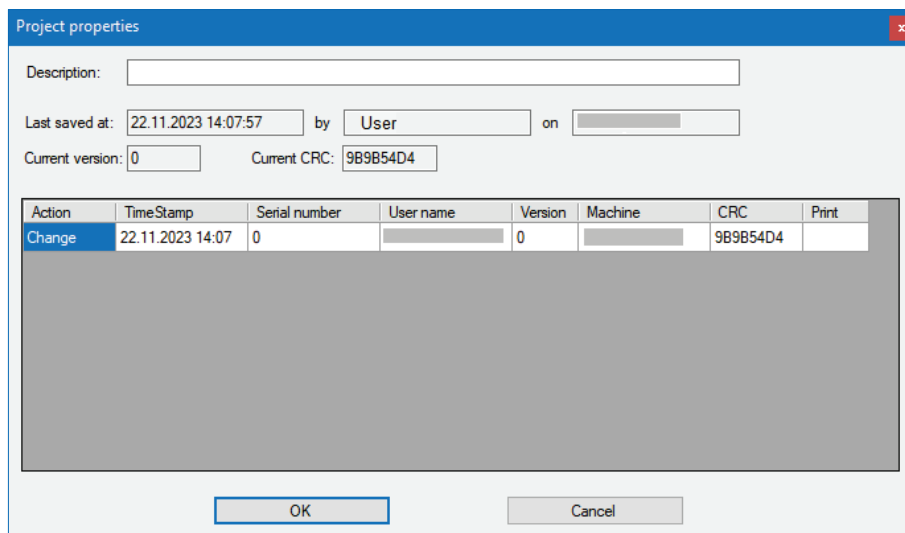
Follow this procedure to print the safety project data. The data includes the projects properties and the safety object settings.

- Select the item [File>Print](#).

The output format is .htm and can be displayed in your internet browser or XML editor.

4.4 Properties

Go to [File>Properties](#) to open the project properties window.



Action	TimeStamp	Serial number	User name	Version	Machine	CRC	Print
Change	22.11.2023 14:07	0		0		9B9B54D4	

This window reports all information on recent changes to the project. It gives a detailed description which settings have been changed by whom and when. It also lists the checksums (CRC) created with each action taken.

5 User Interface Reference

In the following tables you can see the list of all AxiaManager Safety's commands in the menus and the toolbar. You may find some disabled commands or even some unavailable commands if there is no logical relation to the active project.

5.1 File Menu

Command	Icon	Description
<i>New</i>		Creates a new AxiaManager Safety project.
<i>Open...</i>		Opens an existing AxiaManager Safety project.
<i>Save</i>		Saves the currently open project.
<i>Save As...</i>		Saves the currently open project specifying new name, location and extension.
<i>Print</i>		"Prints" all safety objects settings and its values. The output format is .htm and can be displayed in your internet browser.
<i>Properties...</i>		Opens the <i>Project properties</i> window with the recent changes.
<i>Change language...</i>		Opens the language selection menu. You can change the language of the environment by selecting a new one from the list shown in this dialog. You need to restart AxiaManager Safety to apply changes.
<i>Exit</i>		Closes AxiaManager Safety.

5.2 Parameters Menu

Command	Icon	Description
<i>Generate configuration</i>		Generates a new configuration for the target device according to the settings made in AxiaManager Safety.
<i>Set selected values to default</i>		Sets the values of objects selected in the workspace to default.

5.3 Connection Menu

Command	Icon	Description
<i>Configure communication...</i>		Lets you set the properties of the connection to the target.
<i>Connect</i>		AxiaManager Safety establishes a connection to the target.
<i>Upload values from target...</i>		Read all values from the safety module into the project.
<i>Download values to target...</i>		Writes all project values to the safety module.

5.4 Main Toolbar Reference



Icon	Command	Description
	<i>New</i>	Creates a new AxiaManager Safety project.
	<i>Open...</i>	Opens an existing AxiaManager Safety project.
	<i>Save</i>	Saves the current open project.
	<i>Generate configuration</i>	Generates a new configuration for the target device according to the settings made in AxiaManager Safety.
	<i>Configure communication...</i>	Lets you set the properties of the connection to the target.
	<i>Connect</i>	AxiaManager Safety establishes a connection to the target.
	<i>Upload values from target...</i>	Uploads all values from target.
	<i>Download values to target...</i>	Downloads all values to the target.

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