Safety Designer

Configuration software

SICK
Sensor Intelligence.

SAFETY DESIGNER ENGINEERING TOOL

SICK
Sensor Intelligence.

Described product

Safety Designer

Manufacturer

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Original document

This document is an original document of SICK AG.

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1 About this document

1.1 Scope

Document identification

Document part number:
- This document: 8018180
- Available language versions of this document: 8018178

You can find the current version of all documents at www.sick.com.

1.2 Target groups

These operating instructions are intended for the following target groups: Project developers (planners, developers, designers), operators, and maintenance personnel.

1.3 Further information

http://www.sick.com

The following information is available via the Internet:

- Guide for Safe Machinery (six steps to a safe machine)
- Safety Designer (software for configuring safety solutions made by SICK AG)

1.4 Symbols and document conventions

Warnings and other notes

⚠ **DANGER**
Indicates a situation presenting imminent danger, which will lead to death or serious injuries if not prevented.

⚠ **WARNING**
Indicates a situation presenting possible danger, which may lead to death or serious injuries if not prevented.

⚠ **CAUTION**
Indicates a situation presenting possible danger, which may lead to moderate or minor injuries if not prevented.

❗ **NOTICE**
Indicates a situation presenting possible danger, which may lead to property damage if not prevented.

ⓘ **NOTE**
Highlights useful tips and recommendations as well as information for efficient and trouble-free operation.

Instructions to action

▶ The arrow denotes instructions to action.

1. The sequence of instructions for action is numbered.
2. Follow the order in which the numbered instructions are given.
✓ The check mark denotes the result of an instruction.

2 Safety information

2.1 General safety notes

> ⚠️ **WARNING**
>
> **Ineffectiveness of the protective device due to incorrect use of the configuration software while configuring a product**
>
> In the case of non-compliance, it is possible that the dangerous state of the machine may not be stopped or not stopped in a timely manner.
>
> ▶ Read this document carefully before working with the configuration software.
> ▶ Read the operating instructions for the products before configuring the products in the configuration software.
> ▶ Observe all safety notes in the relevant documents.

2.2 Intended use

Safety Designer can be used to design, configure, commission, and diagnose safety-related devices or system configurations.

2.3 Requirements for the qualification of personnel

Only qualified safety personnel may use the configuration software to project plan, configure, commission, and diagnose safety-related devices, device groups or system configurations.

Project planning

You need safety expertise to implement safety functions and select suitable products for that purpose. You need expert knowledge of the applicable standards and regulations.

Configuration

You need suitable expertise and experience. You must be able to assess if the machine is operating safely.

Commissioning

For commissioning, a person is considered competent when he/she has the expertise and experience in the relevant field and is sufficiently familiar with the application of the protective device on the machine that he/she can assess its operational safety status.

Operation and maintenance

You need suitable expertise and experience. You must be instructed in machine operation by the machine operator. For maintenance, you must be able to assess if the machine is operating safely.

3 Product description

3.1 Product characteristics

Safety Designer is the SICK configuration software for safety solutions.

Features:

- Can be used to design, configure, commission, and diagnose safety solutions
- Uniform user interface across individual devices through to complex system landscapes
- Workflow-oriented navigation
- Reports on configuration documentation

3.2 Structure and function

Overview

Safety Designer comprises the following components:

- The main window with Device tile(s)
- One or more Device windows

Important information

> **NOTE**
> These operating instructions describe the functions of the main Safety Designer window.
>
> For a description of configuration in the Device windows, please refer to the operating instructions for the relevant device.

Main window

The main window includes all the devices in a project, shown as Device tiles. Reports for the entire project can be created in the main window.

Device window

The devices for a project are configured in the Device windows.

Further topics

- "User interface", page 11
- "Open the device window – configure devices", page 29

4   Installation

4.1   Licenses

4.1.1   Activating the license

Overview

Certain functions of the Safety Designer require licenses.

For licensed functions, it is necessary to use the Wibu CodeMeter tool. Download the most recent version of the tool from the manufacturer and install the tool. You can find the tool at: **https://www.wibu.com/support/user/user-software.html**

You can activate the licenses in a browser using the CodeMeter License Central WebDepot.

Prerequisites

- License tool is installed on the server.
- Activation takes place from the server where the license tool is installed.
- Server has a connection to the Internet.
- Ticket ID of the license order is available.

Procedure

1. Opening the **CodeMeter License Central WebDepot**:
   https://license.sick.com/
2. Enter the Ticket ID and click on **Next**.
3. Select the binding for the licenses:
   - Binding to a PC
   - Binding to a dongle
4. Select the desired licenses.

   ⓘ **NOTE** | Note the specified number of licenses. If you have purchased a license package and only want to activate specific licenses in it, you need to first distribute the licenses.
5. Activate the licenses by clicking the **Now activate the selected licenses** button.

Complementary information

- It is also possible to activate a license offline. To do so, following the **File-based license transfer** instructions in the WebDepot.

4.2   Installing Safety Designer

Prerequisites

- Your Windows user account has rights for installing software.

Procedure

1. Call up the download web page and enter **Safety Designer** in the search field on **www.sick.com**.
2. Take note of the system requirements on the download page.
3. Download the installation file from the download page. Extract it and run it.
4. Follow the notes from the setup assistant.

4.3   Unsupervised installation

Unsupervised installation

In the case of a silent installation, the Safety Designer installation routine runs without additional input by the user. Unsupervised installation is configured with parameters in the command line.

The Inno Setup parameters are available for Safety Designer. You can find the parameters and their description under: **http://www.jrsoftware.org/ishelp**

The following syntax applies for the command line:

SafetyDesigner.exe [Parameter1] [Parameter2] [Parameter n]

Example

For unsupervised installation of Safety Designer without calling up message boxes and restarting the system, the following invocation is required in the command line:

SafetyDesigner_[Version]_Setup.exe /SUPPRESSMSGBOXES /VERYSILENT /NORESTART

5 Operation

5.1 Start

Overview

Following startup, Safety Designer displays the Home screen.

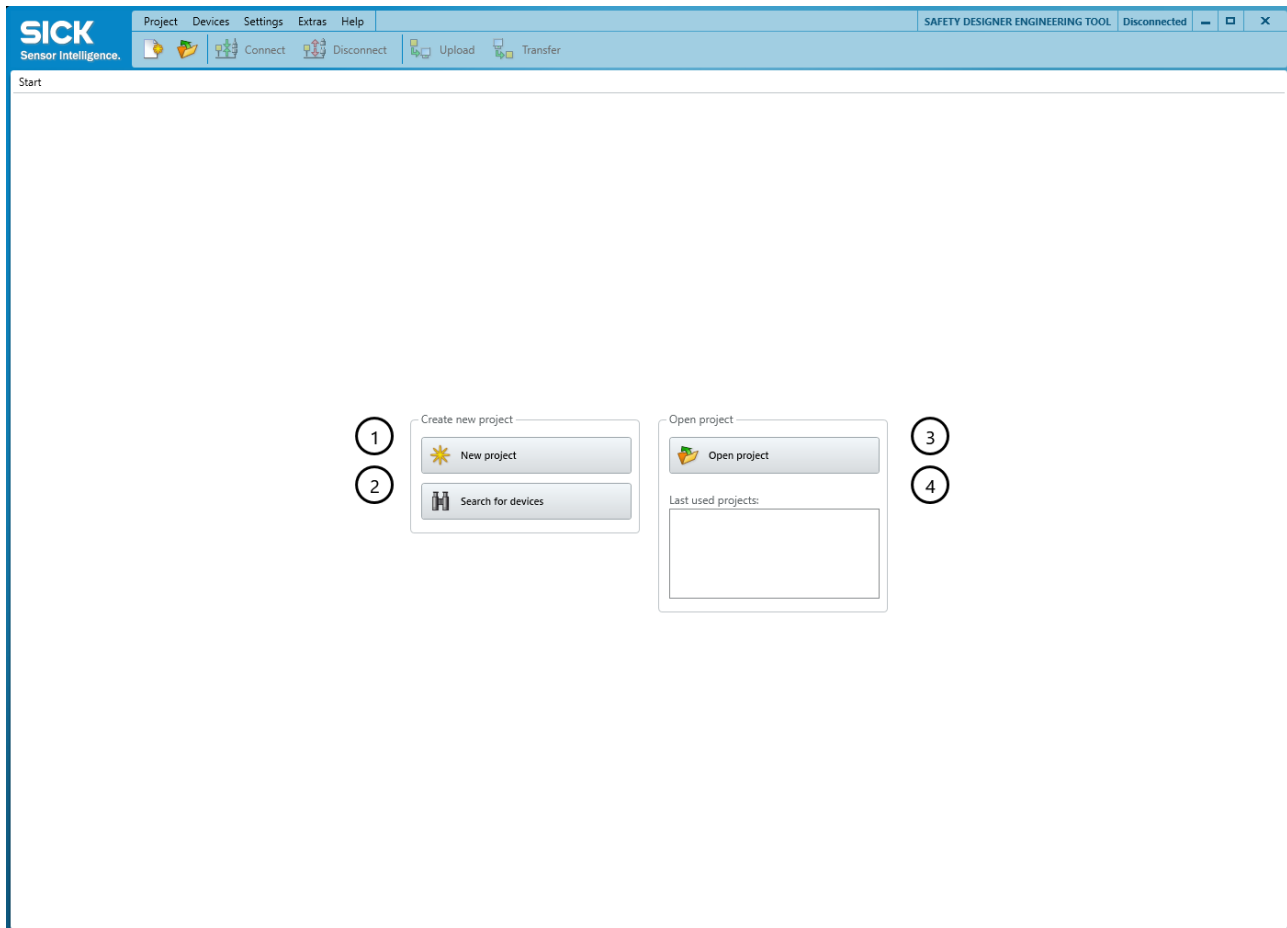*Figure 1: Home screen*

① Create and open a new project.
② Search for connected devices.
③ Open an existing project.
④ Open a recently saved project.

Certain functions (for example verification) can only be performed on a computer that meets all the system requirements.

When starting up, the Safety Designer checks the hardware and the operating system. The Safety Designer reports any issues that were found.

Procedure

► Select one of the options.
✓ Safety Designer switches to its user interface.
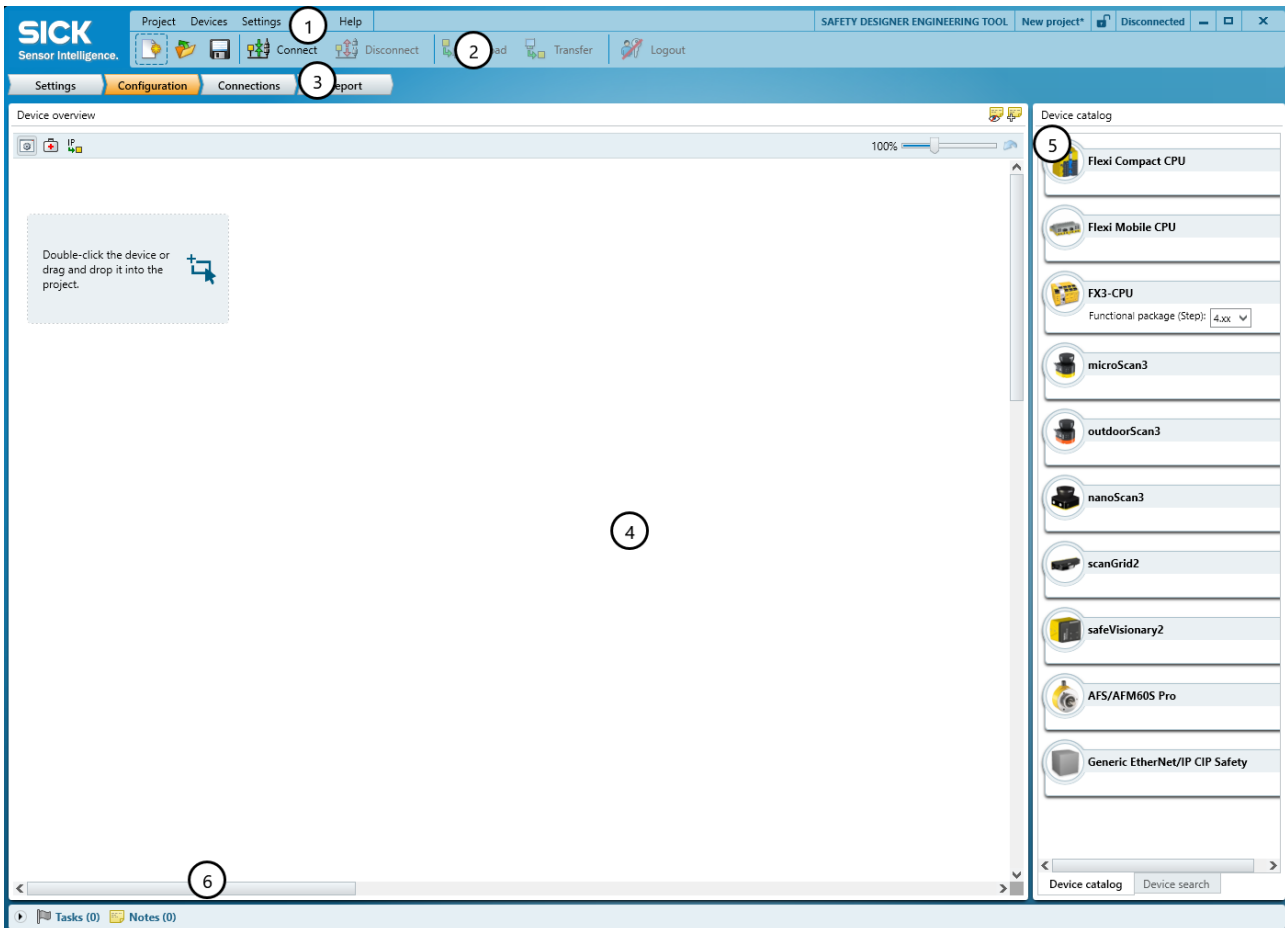
5.2 User interface

Figure 2: Software controls

①   Menu bar
②   Toolbar
③   Main navigation
④   Working range
⑤   Device catalog
⑥   Task list and notes

5.2.1 Menu and toolbar

Menu bar

The following menus are available in the menu bar:

- **Project**
  - Create new project
  - Open project
  - Last used
  - Protect project with password
  - Save
  - Save as
  - Save partial project
  - History of the project
  - Close project
  - Quit
- **Devices**

- o   Connect
- o   Disconnect
- o   Upload
- o   Transfer
- **Settings**
  - o   Language
  - o   Options
  - o   Update device catalog
- **Extras**
  - o   Create diagnosis dump
- **Help**
  - o   Help (operating instructions)
  - o   Info (Access information on the software version)
  - o   Check for update
  - o   License information

Toolbar

The toolbar includes the commands needed for the various work situations. All the buttons on the toolbar are described below. Depending on the jobs in progress, fewer buttons may be displayed (e.g., immediately following startup of Safety Designer).

The following buttons are available in the toolbar:

Table 1: Buttons on the toolbar

Button	Meaning
	Create new project
	Open project
	Save project as file
	Connect to a device or system configuration
	Disconnect from a device or system configuration
	Read configuration from the device or system configuration
	Transfer configuration to a device or system configuration
	Logout from all devices

5.2.2   Navigation

The navigation is available at the top of the Safety Designer. The buttons will take you to the following areas:

5.2.3   Working area

The working area displays the area selected in Navigation: **Settings**, **Configuration** or **Report**.

For example, in the **Configuration** working area, you can create a project consisting of several devices.

5.2.4   Task list

Safety Designer determines which steps are still necessary in order to complete a typical configuration. Using the task list allows you to gradually work through these steps.

You can sort the tasks or search for tasks.

► Click on the **triangle** at the far left in the footer.
✓ The tasks and notes are displayed.
► Click on **Tasks**.
✓ The **Sort by** and **Search** fields are shown.

5.2.5   Notes

Notes can be placed in the working area. These notes might include additional information about selected settings, for example.
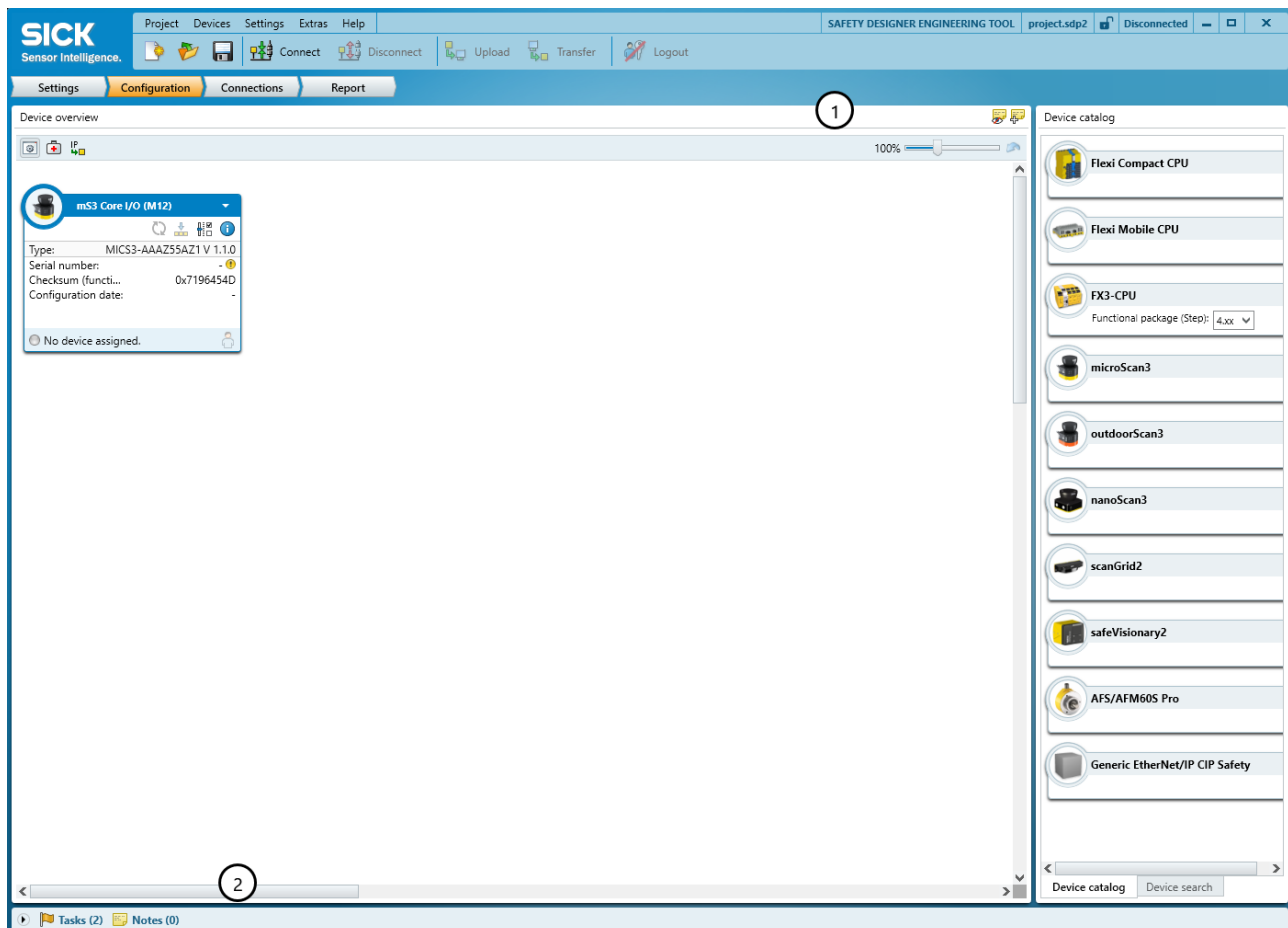

Figure 3: Notes

① Display/hide/create notes

② Notes on a project

8018180/1NT6/2024-06-05 | SICK
Subject to change without notice

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Table 2: Buttons for notes

Button	Meaning
	Show notes
	Hide notes
	Create notes

The number of notes is displayed in the status bar.

- All notes that have been added to a project and to device windows are displayed in the main Safety Designer window.
- The device window only displays notes on an individual device or system configuration.

Edit a note

You can enter a title and text for the note, select a color for the note, or delete the note.

Table 3: Edit buttons for notes

Button	Meaning
	Select color
	Delete note

Go to a note

You can change to the page on which the note was created.

► Click on **Notes** in the footer.
✓ The available notes are shown.
► Click on **Go to note** next to the desired note.
✓ The Safety Designer changes to the page on which the note was created.

5.2.6 Adjust user interface

This section outlines how to adjust the Safety Designer user interface.
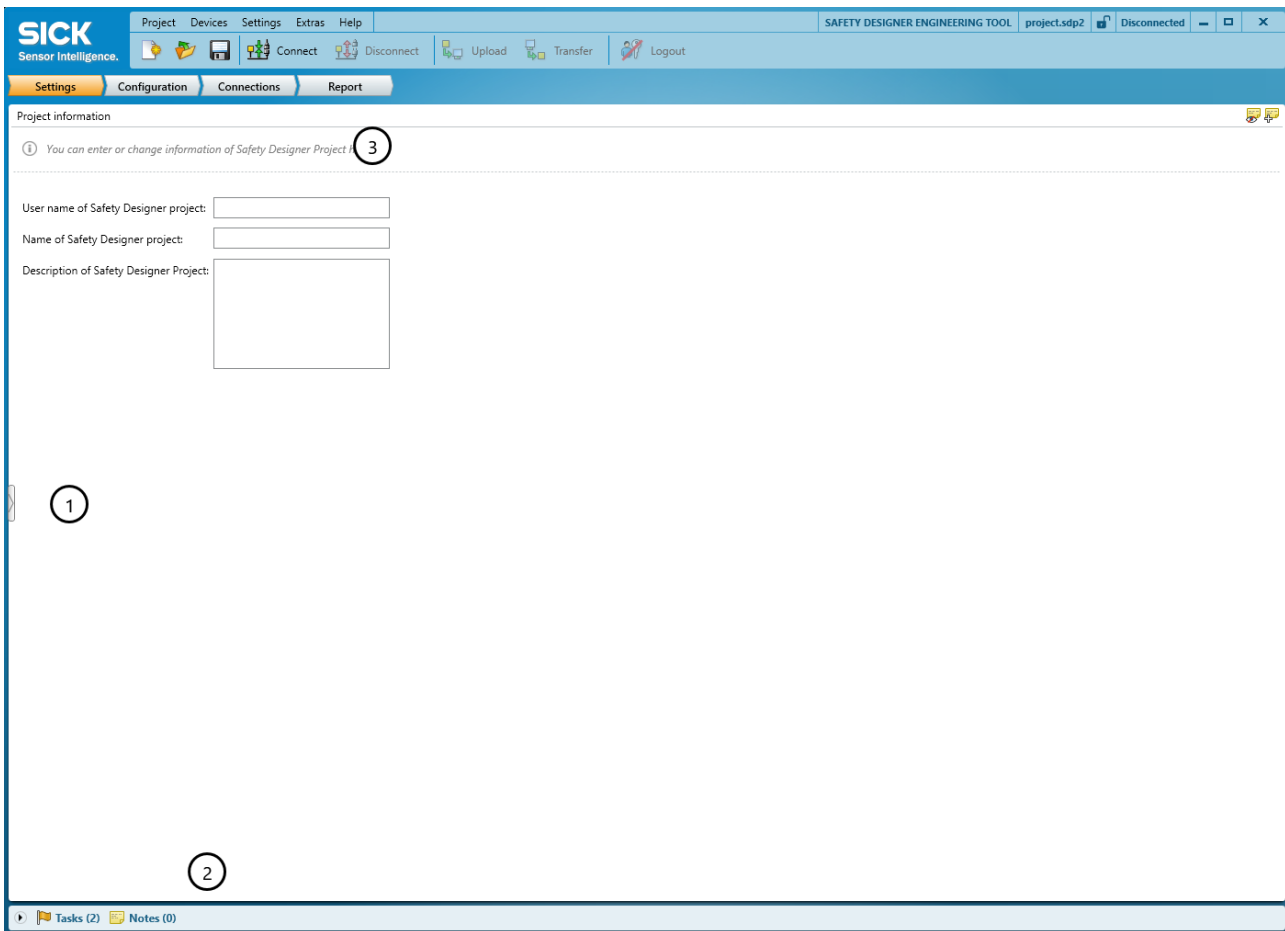
Figure 4: Adjust user interface

①   Show or hide Navigation
②   Show or hide tasks and notes
③   Show or hide information

Select desired language

▶   Use the **Language** command in the **Settings** menu to select the desired language.
✓   The user interface will switch into the selected language.

Show or hide Navigation

On the left hand side of Safety Designer there is a Navigation tool which you can choose to show or hide.

- When Navigation is displayed, you will see all Navigation functions arranged hierarchically.
- When Navigation is hidden there will be more space in the working area, e.g., for large projects with lots of Device tiles.

Show or hide tasks and notes

Tasks and notes for a project are displayed in the footer. You can expand this footer.

▶   Click on the **triangle** at the far left in the footer.
✓   The tasks and notes are displayed.

Show or hide information

Information on the settings is shown on the pages of the Safety Designer. You can show or hide this information.

▶ Select the **Options...** command in the **Settings** menu.
✓ The **Options** dialog box opens.
▶ Activate or deactivate the **Show information on configuration pages** option in the **General settings** tab.
✓ The information is then either shown or not shown on the configuration pages

5.2.7 Options

General settings

Under **General settings**, you can find out whether or not information is displayed on the pages of Safety Designer.

Connection settings

Under **Connection settings**, the interfaces available on your computer are displayed. Only activated connections are included in the search for devices.

Dialogs

Under **Dialogs**, you can reset all dialog settings to the factory settings.

Data recorder

Under **Data recorder**, you can set after which amount of time recording is terminated without data signals.

You can also set whether the recording is saved or deleted.

5.2.8 Create diagnosis dump

Overview

You can generate a diagnostics dump for service purposes.

Prerequisites

• The project file must be saved.
• Connect the desired devices if the diagnostics dump contains device data.

Procedure

1. In the menu bar under **Extras**, select the **Create diagnosis dump** function.
2. Select devices which should be included in the diagnostics dump.
3. Enter optional user name and comments.
4. Select **Create diagnosis dump**.
5. Select the directory and save the diagnostics dump file.
6. Send diagnostics dump file (.sdsdmp) to SICK Service.

5.3 Projects

Overview

Safety Designer saves the devices' configuration parameters and information in a project.

Projects

The following functions are available for projects:
- Create new project: Opens an empty project.
- Open project: Loads all device information and parameters from a project file. Any currently open project will be closed.
- Protect project with password: Protects the project with a passport.
- Save project: Saves all device information and parameters in a project file e.g., on a hard drive.
- Save project as: Saves a project under a different name or in a different location.
- Save subproject as: Saves a selected subproject under a different name or in a different location.

5.3.1 Protecting projects with a password

Overview

If you protect a project with a password, the project file can only be opened after entering the password.

Important information

> [!] **NOTICE**
> The password cannot be reset. If the password is lost, the project file has to be created again.

Procedure

1. In the menu bar, select **Project** > **Protect project with password**.
✓ The dialog window opens.
2. Enter the password.
3. Re-enter the password.
4. Optionally enter a password hint.
5. Acknowledge the note that the password cannot be reset.
6. Select **OK**.

Complementary information

You can remove the password protection using the following menu entry: **Project** > **Remove password of the current project**.

5.4 Settings

5.4.1 Entering project information

Overview

Under **project information**, you have the option of entering data, for example, in the project report. The user name helps subsequent users to find a contact for the project. A description makes it easier to understand a project's context more quickly.

Procedure

1. Under **Project Information**, you can enter a user name, a project name, and a short description of the project.
✓ The project information is saved in the project.

5.4.2 Network settings

You can configure the defaults for network-compatible devices under **Network > Network settings**.

5.4.2.1 Defining the IP addresses

Overview

You can pre-configure the following under **IP settings**:

- The range of IP addresses used for automatic IP address generation.
- Automatic IP address generation and their device assignment. Automatic IP address generation ensures that IP addresses are not used more than once.

Procedure

1. In the **IP range:** fields, enter the lowest and highest IP addresses that are to be assigned.
2. If applicable, enter an alternate subnet mask in the **Subnet mask:** field.
3. If applicable, enter the IP address of a router in the **Router** field.
4. If you want to assign a configured IP address within the defined IP address range to every device in the project, enable the **Assign an IP address from this IP address range automatically to each new device in the project.** option.

5.4.2.2 Configuring the safety network number

Overview

The safety network number (SNN) for a project is assigned under **SNN settings (safety network number)**. The safety network number should be identical for all devices in an EFI-pro network or safety-related EtherNet/IP network.

You can take the following actions:

- Directly enter a SNN (to do so, you must know the correct SNN format).
- Use the **Paste** button to paste an SNN from the clipboard.
- Use the **Copy** button to copy an SNN to the clipboard.
- Generate a SNN.

Procedure

1. If you want to assign the configured SNN to every device in the project, enable the **Assign this safety network number automatically to each new device in the project.** option.
2. Click on **Generate**.
✓ The **Safety network number** dialog opens.
3. Generating an SNN:
   ► Click on **Time-based**.
   An SNN with the current time stamp is generated and displayed.
   ► In the **Manual (Decimal)** field, enter a number between 1 and 9999 and click on **Generate**.
   An SNN based on the manual entry is generated and displayed.
4. Click on **OK**.
✓ The dialog is closed and the SNN is applied.

Complementary information

If you start the configuration online with a device connected, the SNN of that device is stored as the default for other devices.

5.4.3　Connections via router (NAT)

You can use router connections to find devices from another network and then perform configuration and diagnostics with Safety Designer.

You can define TCP/IP ports in a NAT table (network address translation table) of a network router. The devices are available via these ports.

5.4.3.1　Establishing connections to devices via router

Prerequisites

- The NAT table is configured in the router.

Procedure

In a new project:

1. Activate the **Connection via router active** field.
2. Enter the router IP address.
3. In the table for the device, enter the TCP/IP configuration port on the router, the IP address and the TCP/IP configuration port of the device. The information must match the configured NAT table.
✓ The affected device is assigned to the router.
4. If necessary, add other devices with the **Add line** button.
✓ Another line is added to the table and can be filled with the respective values.
5. Select **Connect**.

In an existing project:

1. Activate the **Connection via router active** field.
2. Enter the router IP address.
3. Select **Add device from project**.
✓ A window with all available devices in the project opens.
4. Select the desired devices by activating the checkbox.
5. Select **Add device(s)**.
✓ The desired devices are written in the table.
6. Select **Connect**.

Complementary information

- You can only assign devices to one router.
- You can find the TCP/IP configuration port of the device in the operating instructions of the respective device.
- After connecting to the device, the device tile in the configuration receives a serial number.

5.4.3.2　Searching for devices in a router

Prerequisites

- The NAT table is configured in the router.
- Connections to devices must be separated for assignment.

Procedure

1. Activate the **Connection via router active** field.
2. Enter the router IP address.
3. Select **Search for suitable devices via router**.
✓ All available devices of the router are displayed.
4. Select the desired devices via **Assign**. If you would like to access all devices, select **Assign all**.
✓ The devices can now be configured or diagnosed with the Safety Designer.

5. Select **Connect**.

Complementary information

- You can use the **Identify** button to identify devices in the application. The respective device flashes for a certain amount of time after the button is pressed.

5.4.4 Activating time synchronization

Overview

You can synchronize the time and date of the devices in the network. This is important, amongst other things, for ensuring that diagnostics and reports have synchronized and correct time stamps.

The following options are available for time synchronization:

- One device in the project acts as the time server for all other devices. All other devices obtain the time from this device.
- A UTC server acts as the time server for all devices. All devices obtain a so-called coordinated universal time from the UTC server.
- A UTC server acts as the time server for one device in the project. This device obtains from the UTC server the coordinated world time and acts as the time server for all other devices.

Prerequisites

- Time synchronization only occurs for devices that support SNTP (Simple Network Time Protocol).

Procedure

A device or a UTC server acts as the time server
1. In the drop-down menu under **configuration type**, select the **device or time server** option.
2. Enter the IP address of the time server (a device on the network or the UTC server) in the **IP address** field.
3. For the devices that use the time from the time server, specify the **update interval** and **Maximum deviation**.
4. Click on **Apply to all devices from the current project that are included in the time synchronization consistency check**.
✓ The configuration is applied to all devices for which the consistency check has been enabled.
5. Review the results of the consistency check and, if necessary, correct any errors.
6. Reboot device.
✓ Time synchronization is activated.

Higher-level device as the time server with upstream time server
1. In the drop-down menu under **configuration type**, select the **Preceding device as a time server with upstream external time server** option.
2. In the **IP address** field, enter the IP address of the UTC server.
3. Select the IP address of the device that will act as the time server for the other devices in the project.
4. Specify the **update interval** and **Maximum deviation** for the device.
5. For the devices that use the time from the time server, specify the **update interval** and **Maximum deviation**.
6. Click on **Apply to all devices from the current project that are included in the time synchronization consistency check**.
✓ The configuration is applied to all devices for which the consistency check has been enabled.
7. Review the results of the consistency check and, if necessary, correct any errors.

8.   Restart the devices.
✓   Time synchronization is activated.

Complementary information

The consistency check is automatically enabled for all devices that support SNTP. You can deactivate the consistency check under **Time synchronization** in the device window.

5.4.5   Configuring the data recorder

Overview

The data recorder saves records in a file.

You can start the data recorder from the relevant device window. The storage location and file name are specified at the project level, however.

Procedure

▶   Enter the storage location and file location for the record file of the data recorder under **Data recorder**.
✓   The storage location and file name of the record file are adopted.

5.5   Configuration

You collect the devices of a project in the **Configuration** area. The available devices can be found in the Device Catalog. The devices are displayed as Device tiles in the working range.
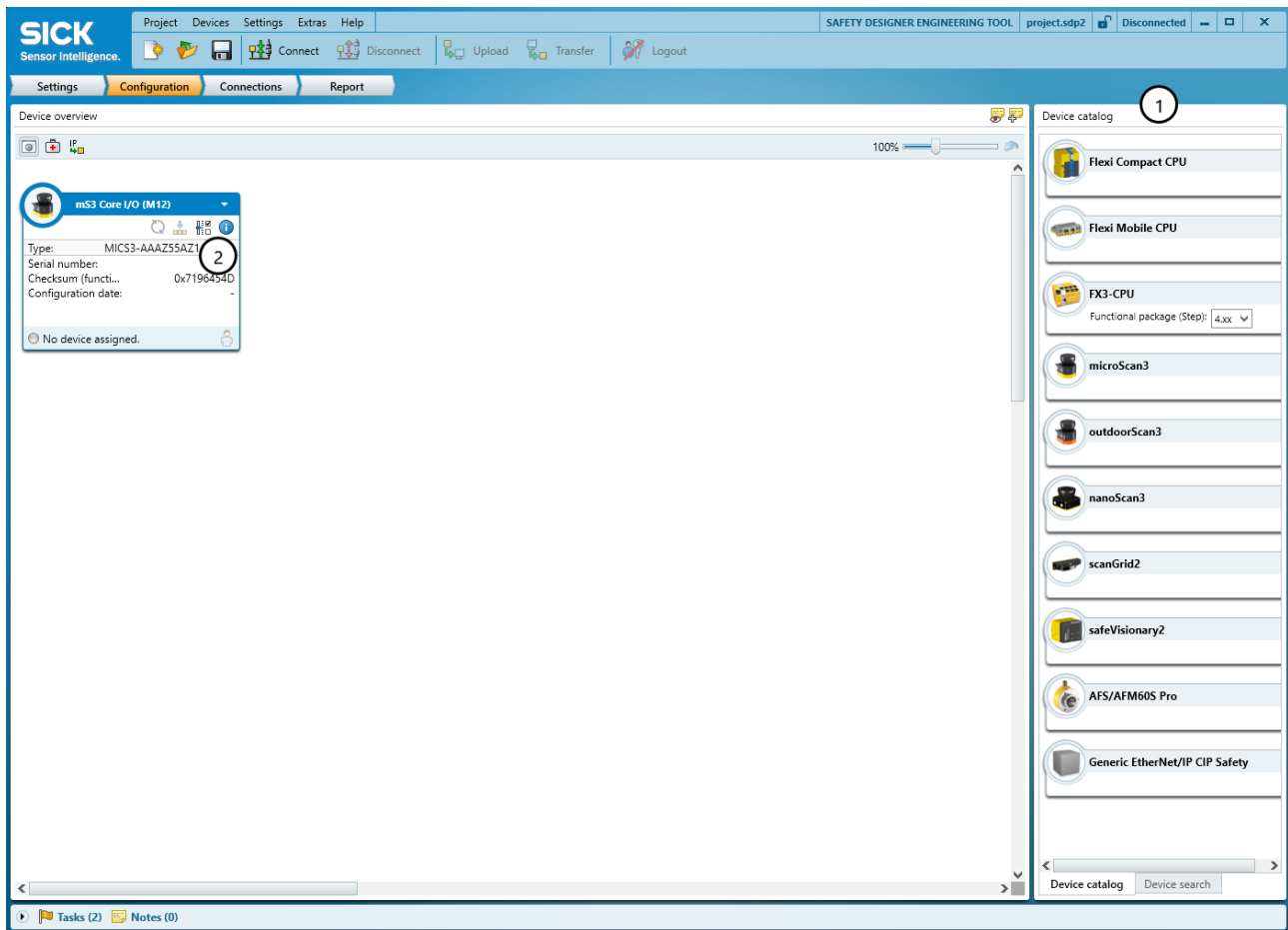
Figure 5: Configuration

① Device Catalog

② Device tile

5.5.1 Device Catalog

Overview

The device catalog contains all available devices:
- The **Device catalog** tab contains the devices installed in Safety Designer.
- The **Device search** tab contains the devices found during a device search.

Search for devices in the Device search tab

If a device is connected to the computer, Safety Designer can detect the device.

Table 4: Buttons in the Device Catalog

Button	Meaning
🔍	Search for devices one time
⚠	Remove devices which are no longer detected from the list of found devices.
🔧	Settings for the device search

In Options, you can specify which interfaces of your computer are included in the search (see "Options", page 16).

Under **Settings for the device search**, you can define the following options:

- Display all found devices.
- Show only devices that are not in the project.

Complementary information

- If devices are located behind a firewall, you need to open the relevant ports.
    - The Safety Designer searches for devices on UDP port 30718
    - The devices respond on UDP port 30719
- If the devices are located behind a router in the network, the device search function of the Safety Designer will not find them.

▶ In this case you need to enter the complete IP address (including subnet mask and gateway address) in the device window.
    - The Safety Designer searches for devices on TCP port 2122
    - The devices respond on TCP port 2123

5.5.1.1 Generic EtherNet/IP CIP safety device

Create a **generic Ethernet/IP CIP safety device** in the device catalog in the main Safety Designer window. It is possible to integrate devices from third-party manufacturers into a Flexi Soft system via EtherNet/IP™ in this way.

Possible EtherNet/IP™ connections

- EtherNet/IP™ with CIP Safety™
  FX3-GEPR as the originator with an EtherNet/IP™ CIP Safety™ device as the target

5.5.1.1.1 Creating generic Ethernet/IP CIP safety device

▶ Double-click on **generic Ethernet/IP CIP safety device** in the device catalog.
✓ A device tile for the generic Ethernet/IP CIP safety device is added in the device overview.

5.5.1.1.2 Configuring generic Ethernet/IP CIP safety device

Procedure

1. Click on the device tile for the generic Ethernet/IP CIP safety device to open the associated device window.
2. In the **General** navigation, make the following settings:
    - ▶ Enter a **device name** and assign an image to the device where applicable.
    - ▶ Enter the device **IP address** and the project **safety network number.**
    - ▶ Enter the general characteristics of the new device (**supplier, product type, product code, main version,** and **minor version**). You can find this data in the manual or the EDS file for the device.
    - ▶ Optionally, enter a **user** and/or a **comment**.
3. Under **Default settings,** enter the general connection parameters. This includes the **data format,** as well as the **maximum fault number** and the **standard RPI rate** where applicable. You can find this data in the manual or the EDS file for the device.
4. Optionally, you can also enter a **configuration signature** under **Default settings**.
5. In the **Connections** navigation, configure the connection paths of the new device. These can be calculated from the assembly data of the device (can be found in the manual or the EDS file). Alternatively, you can enter the hexadecimal connections paths directly under **Define connection path**.

ⓘ **NOTE**
You must always enter the **assembly size,** even if a hexadecimal connection path is being used.

Complementary information

There are pre-configured generic profiles for different robot controls available for import in the configuration of the generic EtherNet/IP CIP safety device. You can select the profiles in the **General** navigation via **Import example**.

5.5.2 Device overview

Devices are displayed as device tiles in the working area of the device overview.
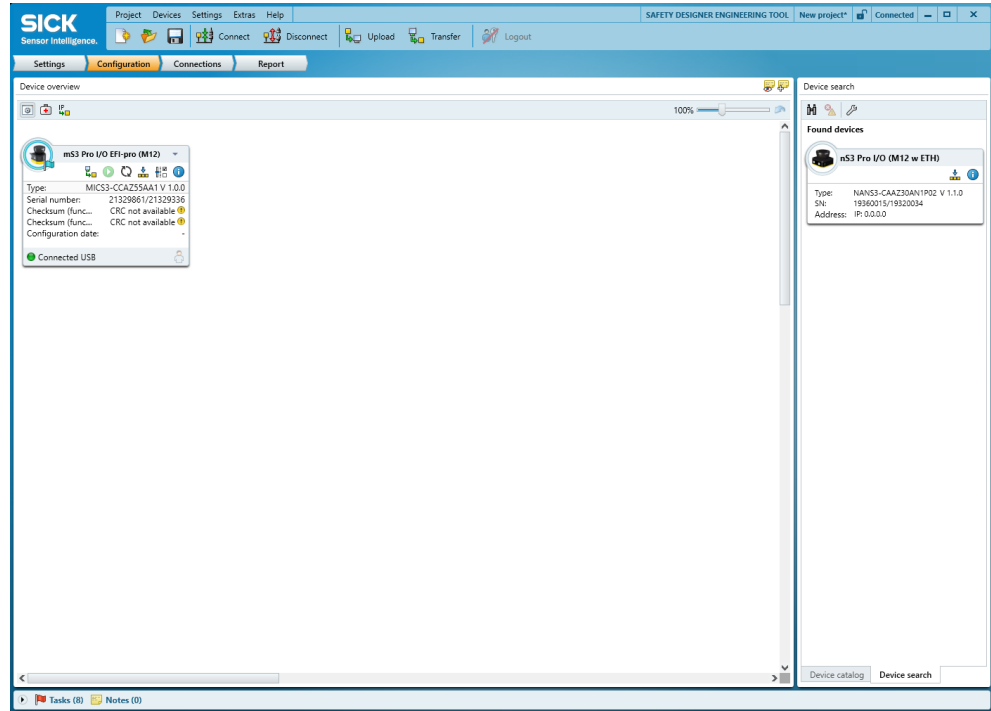

Figure 6: Device tiles

5.5.2.1 Add device tile

Procedure

The devices from the device catalog can be added to a project in the working range:
1. Open main navigation **Configuration**.
2. Drag a device into the working range using drag and drop. Alternatively, double-click on a device in the device catalog.
✓ The device is shown as a tile in the working range.

Complementary information

When a device is configured offline for the first time, the device selection wizard opens for devices with multiple variants (device types). This is where you select the exact type of device to be configured.

5.5.2.2 Functions of the device tile

Views

You can use the buttons in the working area to select different views for the tiles.

Table 5: Buttons for selecting the type of information on a tile

Button	Meaning
⊚	Display configuration view on the tile

Button	Meaning
	Display diagnostics view on the tile
	Display network view on the tile
100%	The size of the tiles can be adjusted using the slider.

Tile menu

In the top right-hand corner of the tile you will find the symbol to open the Tile menu (gray triangle).

Status indicators

In the top left-hand corner of the tile the status of the device is displayed.

Table 6: Device status displays

Icon	Meaning
	The device is ready for use.
	The device is only partially ready for use (because, for example, the configuration has not yet been verified).
	There are tasks in the task list. The device is not ready for use.
	There are tasks in the task list. The device is partially ready for use.
	There are warnings for the device. But it is still ready for use.
	One or more errors have occurred. The device is not ready for use.

The footer of the tile shows the status of the connection to the device.

Table 7: Status of connection

Icon	Meaning
	Disconnected
	Addressable
	Connected
	Connection broken
	Device is not reachable

Buttons

Table 8: Tile buttons dependent upon device status

Button	Meaning
	Establish connection with device
	Disconnect from device
	Write the configuration into the device
	Import configuration from the device

Button	Meaning
	Verifying configuration
	Start application (function is device-specific (see "Device-specific functions", page 31))

Table 9: Tile buttons not dependent upon device status

Button	Meaning
	Viewing information on the device
	Open device window
	Make device display or LEDs flash (function is device-specific (see "Device-specific functions", page 31) and is only active when device is connected)
	Update checksums; the checksums are recalculated (function is then only active if the checksums are not up to date)

5.5.2.3 Removing Device tiles

Procedure

1. Open the Tile menu in the top right-hand corner (gray triangle).
2. Select the **Remove** command.
✓ The Device tile is removed.

5.5.3 Connecting to connected devices

Overview

Depending on the device connection, you can connect the devices to the Safety Designer via USB or a network (TCP/IP connection).

Important information

> **NOTE**
> Using IT security tools, e.g., a firewall, can lead to problems connecting to the devices.

Prerequisites

TCP/IP connection:
- The device has an IP address.
- The IP address of the device is in the same subnet or in a subnet for which a route is configured.

Procedure

For a new project without Device tiles:
1. In the **Devices** menu, select the **Connect** command or, in the toolbar, click on **Connect**.
✓ The Safety Designer changes to the **Device search** tab in the **Device catalog**.
✓ The detected devices are displayed after a successful scan.
2. Drag the found device or devices from the Device catalog to the working area.
✓ The status of the tile will show **Connected** or **Addressable**.

For a new project with Device tiles created offline:
1. In the **Devices** menu, select the **Connect** command or, in the toolbar, click on **Connect**.
✓ The Safety Designer changes to the **Device search** tab in the **Device catalog**.

✓ The detected devices are displayed after a successful scan.

2. Drag the found devices from the device catalog to the relevant tiles.

✓ The status of the tile will change to **Connected**.

For an existing configured project with Device tiles:

1. In the **Devices** menu, select the **Connect** command or, in the toolbar, click on **Connect**.

✓ The Safety Designer changes to the **Device search** tab in the **Device catalog**.

✓ The detected devices are displayed after a successful scan.

✓ If the device that matches a Device tile is found (matching serial number), the status of the tile will change to **Connected**.

2. Drag not yet assigned devices from the device catalog to the relevant tiles (assignment via type code).

✓ The status of the tile will change to **Connected**.

Complementary information

Connection status:

- **Connected**: The device is connected via USB or a network and the Safety Designer can establish a TCP/IP connection to the device.
- **Addressable**: If the device is not displayed as Connected, but can be addressed via UDP broadcast, then the Safety Designer displays the connection status as **Addressable**. With this connection status, only a few basic interactions with the device are possible.

Further topics

- "Device Catalog", page 22
- "Functions of the device tile", page 24

5.5.4 Assigning device tiles to physically present devices

Overview

If a project has been configured offline, the device tiles for the project are not assigned to the devices that are physically present.

The physically present devices can be found in the device catalog on the **Found devices** tab, and the device tiles of the project in the workspace.

The assignment of a device tile to a physically present device can also be removed again. This means that the device tiles for a project can, for example, be reassigned to different devices at a later point in time.

Important information

ⓘ NOTE
Before configuration data can be transferred, the device tiles of the project must be assigned to the found devices. This is essential from a safety technology-related perspective.

Prerequisites

It is only possible to assign a device tile to a physically present device if the configured type code of the device tile and the actual type code of the device match.

Procedure

Connecting a device to a device tile

▶ Drag a found device from the device catalog to the respective device tile using drag and drop.

✓   The device is now associated with the device tile, and the tile displays the status **Connected** (see table 7, page 25).
✓   It is now possible, for example, to transfer a configuration to the device.

Transferring a configuration from one device to another
▶   Drag a found device from the device catalog to the workspace using drag and drop.
✓   A device tile is placed in the workspace, and the tile displays the status **Connected** (see table 7, page 25).
▶   Import the configuration from the device.
▶   In the Tile menu (triangle in the top right-hand corner of the tile), select the **Remove assignment** command.
✓   The tile displays the status **Disconnected.**
▶   Drag another device with the same type code onto the device tile.
✓   The device is now associated with the device tile, and the tile displays the status **Connected** (see table 7, page 25).
▶   Transfer the configuration to the device.

Complementary information

Note the version number

Devices have, amongst other things, a version number. This version number is shown on the type label. The device configuration is generally downward compatible but not upward compatible.

•   The configuration of a device with a version number V 1.0.0 can be transferred to a version V 1.1.0 device.
•   The configuration of a device with a version number V 1.1.0 **cannot** be transferred to a version V 1.0.0 device.

Preventing automatic allocation

If a device tile has previously been allocated to a device, that device tile will automatically be connected to the same device in future as soon as the Safety Designer connects to the connected devices. This is because the sensor is allocated to a project file. You can use the **Remove assignment** function to remove this automatic connection and prevent it from happening in future.

5.5.5 Import configuration

Overview

Safety Designer can import partial configurations or the entire configuration from connected devices.

Procedure

1.   In the **Parameter** menu, select the **Upload** command or, in the toolbar, click on **Upload.**
✓   A dialog box opens. The available partial configurations and connected devices are displayed in this dialog box.
2.   Under **Devices**, select the devices from which the partial configurations are to be read out.
3.   Under **Partial configurations**, select the partial configurations which are to be read by the devices.
4.   Click on **Read in selection.**
✓   Safety Designer imports the selected partial configurations from the connected devices.

5.5.6 Open the device window – configure devices

Overview

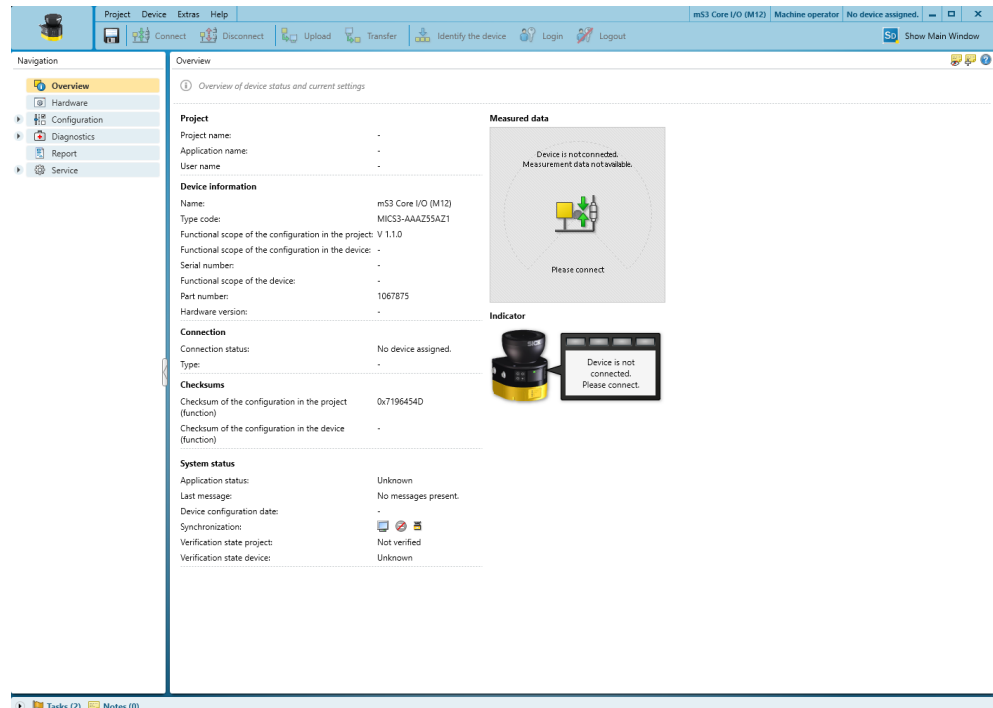To configure the device, perform diagnostics or create reports, open a device window.

Figure 7: Example of a device window

Procedure

You have the following options:
► Double-click on the Device tile.
 Or:
► Open the tile menu and choose **Configure**.
✓ The device window opens.

Complementary information

When a device is configured offline for the first time, the device selection wizard opens for devices with multiple variants (device types). This is where you select the exact type of device to be configured.

5.5.7 Logging into or out of a device

Overview

You can log into or out of an assigned device in the device window. You can also change the user group.

Figure 8: Login button

Figure 9: Logout button

Important information

> ⚠ **NOTICE**
>
> When you log into a device, the configuration software stores the password so that you do not need to re-enter it for other configuration steps.
>
> If you do not change any other settings in the login dialog, the password is deleted as soon as you exit the configuration software, or log out in the main window or Device window.
>
> If you enable the **Temporarily store password for login on additional devices.** function, the password will be retained even if you log out in the device window only.
>
> If you leave the computer unattended, you must log off to prevent unwanted access to the device.

Procedure

Logging into a device or changing the user group
1. In the toolbar, click on the **Login** button.
✓ The **Login** dialog window opens.
2. In the **User group** drop-down menu, select the desired user group.
3. Enter the password in the **Password** field.
4. If necessary, activate the **Temporarily store password for login on additional devices.** function.
✓ User group and password are temporarily stored for login on additional devices.
5. Click on **Login**.

Logging out of a device
▶ In the menu and toolbar, click on the **Logout** button.

Complementary information

The Device tile shows the logged-in user group at the bottom right.

Further topics

5.5.8 Transfer configuration

Overview

You can transfer a new or altered configuration to connected devices.

At first, a configuration only exists as a project, namely as a configuration file. You have to transfer the configuration file to the device. The compatibility of the configuration is checked during the transfer.

You can transfer the entire configuration or partial configurations to the connected device.

Procedure

▶ In the **Parameter** menu, select the **Transfer** command or, in the toolbar, click on **Transfer**.
✓ A dialog box opens. The available partial configurations and connected devices are displayed in this dialog box.
▶ Under **Devices**, select into which devices the partial configurations are to be transferred.
▶ Under **Partial configurations**, select which partial configurations are to be transferred into the devices.
▶ Click on **Transfer selection**.
✓ The **Log in** dialog box is opened.

▶ Select the user group **Authorized customer** and enter the **password**.
▶ Click on **Log in**.
✓ The progress of the transfer process is displayed in Safety Designer.

Figure 10: Progress display

Further topics

-

5.5.9 Verify configuration

Overview

The configuration must be verified to ensure that the safety function is implemented correctly.

Important information

ⓘ **NOTE**
Additional information on transferring and verifying a configuration can be found in the operating instructions for the relevant device.

Procedure

▶ Select **Verify** in the Tile menu.
✓ Safety Designer displays the configuration report.
▶ Check the configuration report, and, if appropriate, click on **Confirm**.
✓ The device configuration is shown as verified.

5.5.10 Device-specific functions

The following functions are possible depending on the device:

- Start safety application
- Stop safety application
- Identify the devices (e.g., through flashing display or LEDs)

5.5.11 Disconnect

Procedure

1. In the **System** menu, select the **Disconnect** command or click on **Disconnect** in the toolbar.
✓ The Safety Designer displays all connected devices.
2. Select specific or all devices to be disconnected.
3. Select **Disconnect**.
✓ The Safety Designer disconnects the selected devices. The status in each relevant Device tile changes to **Disconnected**.

Complementary information

Once the last connected device has been disconnected, the status of Safety Designer also changes to **Disconnected**.

5.6 Networking

The Safety Designer is able to establish a network between the following systems:
- Flexi Soft systems with an FX3-GEPR EFI-pro gateway
- Other EFI-pro-enabled SICK devices (e.g., microScan3 Pro EFI-pro)
- Devices from third-party manufacturers that support EtherNet/IP™ CIP Safety™

> **NOTE**
> EtherNet/IP™-enabled devices from third-party manufacturers can be integrated as **generic EtherNet/IP CIP safety devices** in projects in Safety Designer, see "Generic Ether-Net/IP CIP safety device", page 23.
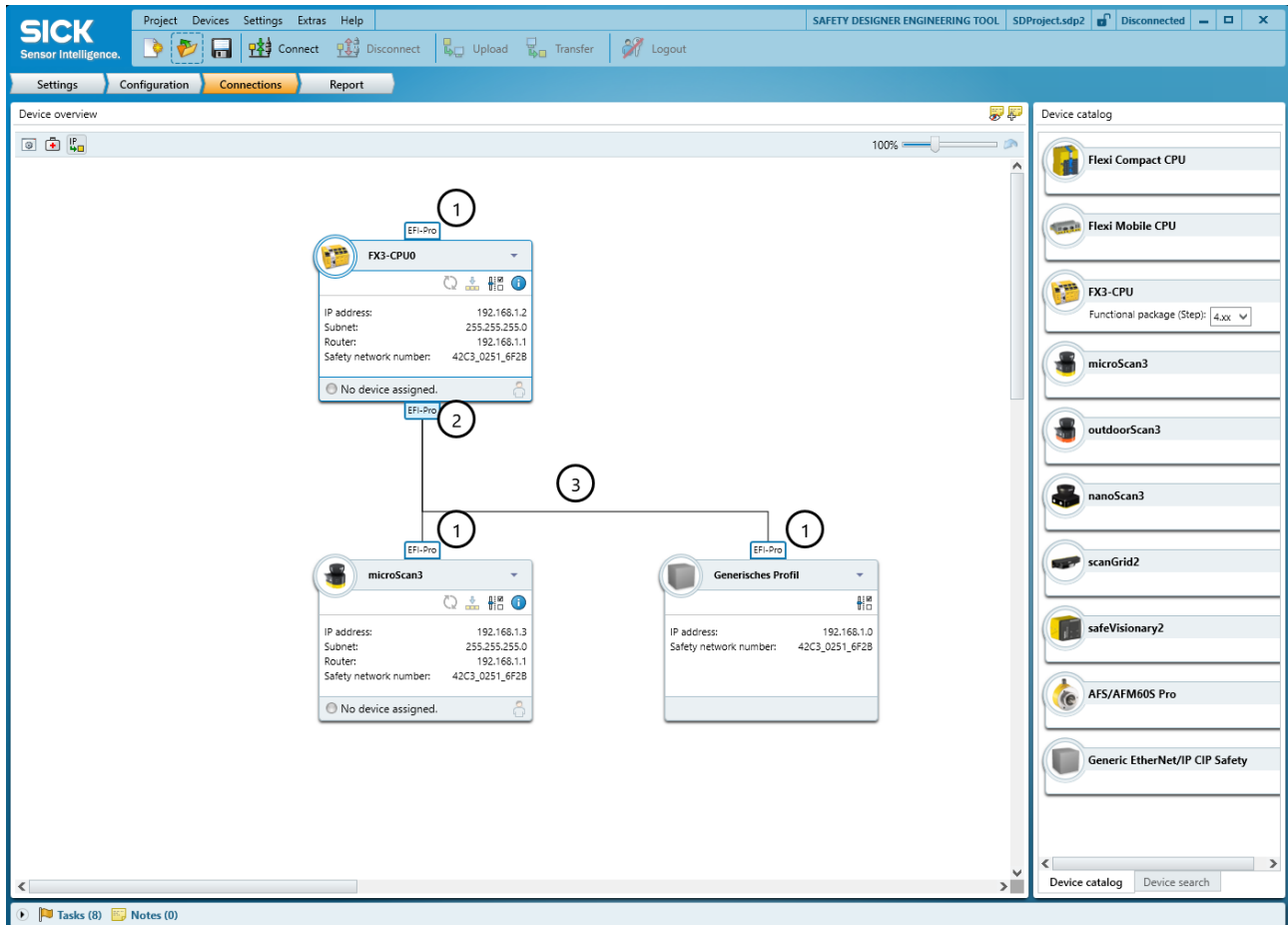
Figure 11: Networking

① Networking icon for CIP-Safety™ target
② Networking icon for CIP-Safety™ originator
③ Networking between devices

5.6.1 Configuring network

Important information

ℹ️ **NOTE**
- An originator must always be networked to a target. Networking two originators or two targets is not possible.
- If you click on a networking icon, then the networking icons with which a network can be established are highlighted.
- Double-clicking on the EFI-pro interface of a device tile opens the associated configuration page in the device window for this device.
- Double-clicking on the EFI-pro networking line opens the associated configuration page in the device window for the originator of this network.

Procedure

1. In the main Safety Designer window, create a project with the desired devices and configure these as required.
2. Click on **Networking** in the Safety Designer main window.
✓ The networking view opens.
   In the networking view, the tile of every EFI-pro-enabled device contains one or two networking icons for EFI-pro networks.
   - A networking icon on the upper edge of the device tile indicates that the device can act as a CIP Safety™ target.
   - A networking icon on the lower edge of the device tile indicates that the device can act as a CIP Safety™ originator.
3. Click on a networking icon and establish a network by dragging it to another networking icon. During the drag and drop process, possible connection points for networks are highlighted in blue.

5.6.2 Deleting network

► In this context window of the networking line, click on the Delete button.

5.7 Report

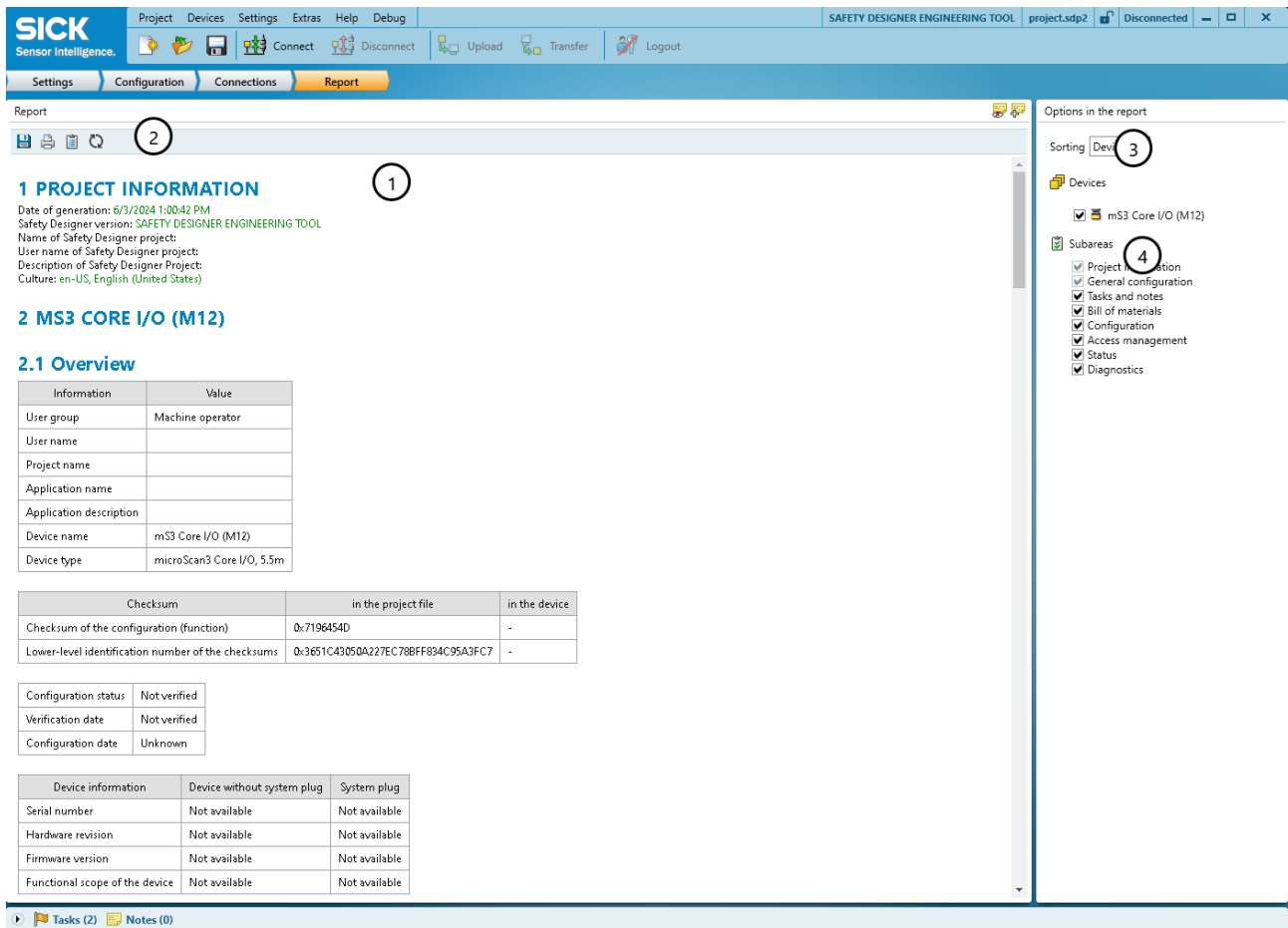Using reports, you can compile information about all the devices in a project, save it as a PDF and archive it.

Figure 12: Example of a report

① Contents of the report

② Buttons on the report

③ Sorting

④ Compilation of the contents

You can create reports on individual devices in the relevant device window:

① Contents of the report
② Compilation of the contents

Buttons on the report

Table 10: Buttons on the report

Button	Meaning
💾	Save report as a PDF
🖨	Print report
📋	Save project components
🔄	Update report

Sorting

► Select Sort **devices**.
✓ The contents will be compiled by individual device.

► Select Sort **chapters**.
✓ The contents will be compiled in chapters according to theme, e.g., configuration, parts list etc.

User-specific compilation of contents

► Mark the desired **devices** or **working areas** of the report in the list.
✓ All selected information is displayed.

5.8 User groups

Overview

The devices contain a hierarchy of user groups that regulate access to the devices.

For certain actions (e.g., transferring a configuration to the device), you are requested to log onto the device with the respective user group.

Depending on the device, 3 or 4 user groups are available.

Important information

> **!** **NOTICE**
> When you log into a device, the configuration software stores the password so that you do not need to re-enter it for other configuration steps.
>
> If you do not change any other settings in the login dialog, the password is deleted as soon as you exit the configuration software, or log out in the main window or Device window.
>
> If you enable the **Temporarily store password for login on additional devices.** function, the password will be retained even if you log out in the device window only.
>
> If you leave the computer unattended, you must log off to prevent unwanted access to the device.

Device with 3 user groups

Table 11: User groups

User group		Password	Authorization
	Operator	Does not need a password (anyone can log in as a machine operator).	• May read configuration from the device (if not blocked).
	Maintenance personnel	Does not have a factory-set password. The password is created by the authorized client (namely, it is not possible initially to log in as a maintenance technician).	• May read configuration from the device. • May transfer verified configuration to the device.
	Authorized client	The password SICKSAFE is created at the factory. Change this password to protect the device against unauthorized access.	• May read configuration from the device. • May transfer verified and unverified configuration to the device. • May verify configuration. • Can set a password for maintenance technicians.

Devices with 4 user groups

Table 12: User groups

User group		Password	Authorization
	Operator	No password required. Anyone can log on as a machine operator.	• May read configuration from the device.
	Maintenance personnel	Deactivated ex-works, i.e. it is not initially possible to log on as a maintenance technician. The user group can be activated by the user group administrator and provided with a password.	• May read configuration from the device. • May transmit verified configuration to the device. • Change own password allowed.

User group		Password	Authorization
	Authorized client	Deactivated ex-works, i.e. it is not initially possible to log on as an authorized customer. The user group can be activated by the user group administrator and provided with a password.	• May read configuration from the device. • May transmit verified and unverified configuration to the device. • May verify configuration. • Resetting the safety function and communication settings to factory defaults is allowed. • Change own password allowed. • Changing the password of the **Maintenance personnel** user group is allowed.
	Administrator	The password SICKSAFE is created at the factory. ▶ Change this password to protect the device against unauthorized access.	• May read configuration from the device. • May transmit verified and unverified configuration to the device. • May verify configuration. • Resetting whole device to factory settings allowed. • Activating and deactivating device functions is allowed. • Activating and deactivating the **Maintenance personnel** and **Authorized client** user groups is allowed. • Change own password allowed. • Changing the passwords of the **Maintenance personnel** and **Authorized client** user groups is allowed.

Complementary information

The configuration of the device is saved in the system plug. Therefore, the passwords are retained when the device is replaced if the system plug is still used.

5.9 Updating Safety Designer

Overview

You can use the Update icon in the menu bar to check whether a newer version of Safety Designer is available.

Update

Procedure

1. Click the Update icon in the menu bar.
✓ Safety Designer shows the currently installed version and the latest available version.
   If a new version is available, then update Safety Designer as follows:
2. Select **Open website for download**.
3. Download the Safety Designer version from the SICK website.
4. Install Safety Designer.

Further topics

6 Deinstallation

6.1 Uninstalling Safety Designer

Procedure

▶ In the Windows Start menu, select the **Remove Safety Designer Package <version-num-ber>** command in the **SICK/Safety Designer** program folder and follow the instruc-tions.

Or:

▶ Uninstall the Safety Designer Package <version-number> in the system control.

7 Technical data

7.1 System requirements

Overview

Certain functions (for example verification) can only be performed on a computer that meets all the system requirements.

When starting up, the Safety Designer checks the hardware and the operating system. The Safety Designer reports any issues that were found.

Prerequisites

Hardware requirements:
- Processor with 2 GHz
- 4 GB RAM (64-bit)
- 1 GB of free memory on hard drive
- Screen: XVGA High Color

Operating system:
- Windows 10, Version 22H2 (64 Bit)
- Windows 11, Version 22H2

Other:
- Microsoft .NET Framework 4.7.2

Complementary information

To ensure compatibility and a high level of security, SICK recommends upgrading to the latest Windows service pack and installing important updates. You can find the necessary components on the Windows update website.

7.2 Compatibility

The Safety Designer checks the compatibility of the connected devices and, if applicable, requests you to download the latest version of the Safety Designer.

7.3 System data

Table 13: Safety Designer system data

	Safety Designer
Communication protocols	TCP/IP UDP/IP
Requests to devices	TCP port 2122 UDP port 30718
Response from devices	TCP port 2123 UDP port 30719
Time synchronization	TCP port 123 UDP port 123

8 List of figures

9 List of tables

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