

Safety Designer

Configuration software

Installation and operation

SICK
Sensor Intelligence.



Described product

Safety Designer configuration software

Manufacturer

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Original document

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1 About this document

1.1 Function of this document

These operating instructions outline the following:

- Installation
- Operation

1.2 Scope

These operating instructions are included with SICK part number 8018178 (all available language versions of the operating instructions).

1.3 Target groups

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

1.4 Further information

<http://www.sick.com>

The following information is available via the Internet:

- Further language versions of these operating instructions
- Guide for Safe Machinery (six steps to a safe machine)
- Safety Designer (software for configuring safety solutions made by SICK AG)

1.5 Symbols and document conventions

The following symbols and conventions are used in this document:

Safety notes 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

Indicates useful tips and recommendations.

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

This chapter contains general safety information about Safety Designer.

Further information about specific product use situations can be found in the relevant chapters.

Additional safety information about configured devices can be found in the operating instructions for the relevant devices.



DANGER

Hazard due to lack of effectiveness of the protective device

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.

- ▶ Please read this document carefully and make sure that you understand the content fully before working with the device.
- ▶ Follow all safety notes in this document.

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 Safety Designer to design, configure, commission, and diagnose safety-related devices, device groups or system configurations.

Project planning

For project planning, a person is considered competent when he/she has expertise and experience in the selection and use of protective devices on machines and is familiar with the relevant technical rules and national work safety regulations.

Configuration

For configuration, 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 work safety aspects.

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

For operation and maintenance, 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 and has been instructed by the machine operator in its operation.

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 Setup and function

Safety Designer comprises the following components:

- The Safety Designer frame with Device tile(s) ([see "User interface", page 11](#))
- One or more Device windows ([see figure 7, page 27](#))

The **Safety Designer frame** includes all the devices in a project, shown as Device tiles. Reports for the entire project can be created in the **Safety Designer frame**.

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



NOTE

These operating instructions describe the functions of the Safety Designer frame.

For a description of configuration in the Device windows, please refer to the operating instructions for the relevant device.

Configuring devices online (device connected to computer):

If devices are connected to the computer, Safety Designer will detect these devices. You can then configure the devices **online**. In this case, you can transfer the configuration to the devices directly and use monitoring and diagnostic functions.

Configuring devices offline (no device connected to computer):

If no devices are connected to the computer, select the devices from the Safety Designer Device Catalog. You can then configure the devices **offline**.

You can either save the configuration data in a project file and transfer it later, or connect the computer to the devices and transfer the configuration immediately afterwards.

4 Installation

4.1 Installation assistant

An installation assistant will help you to install Safety Designer.

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.

5 Operation

5.1 Start

Overview

Following startup, Safety Designer displays the Home screen.

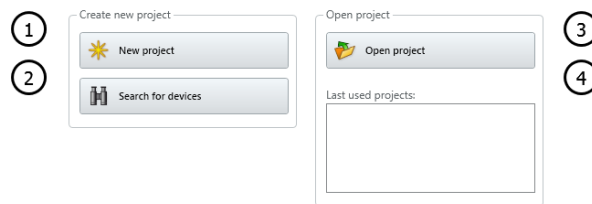
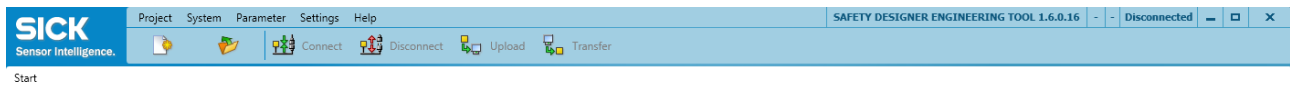


Figure 1: Home screen

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

Important information

Certain functions (for example verification) can only be performed on a PC 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.

Approach

- Select one of the options.
- ✓ Safety Designer switches to its user interface.

5.2 User interface

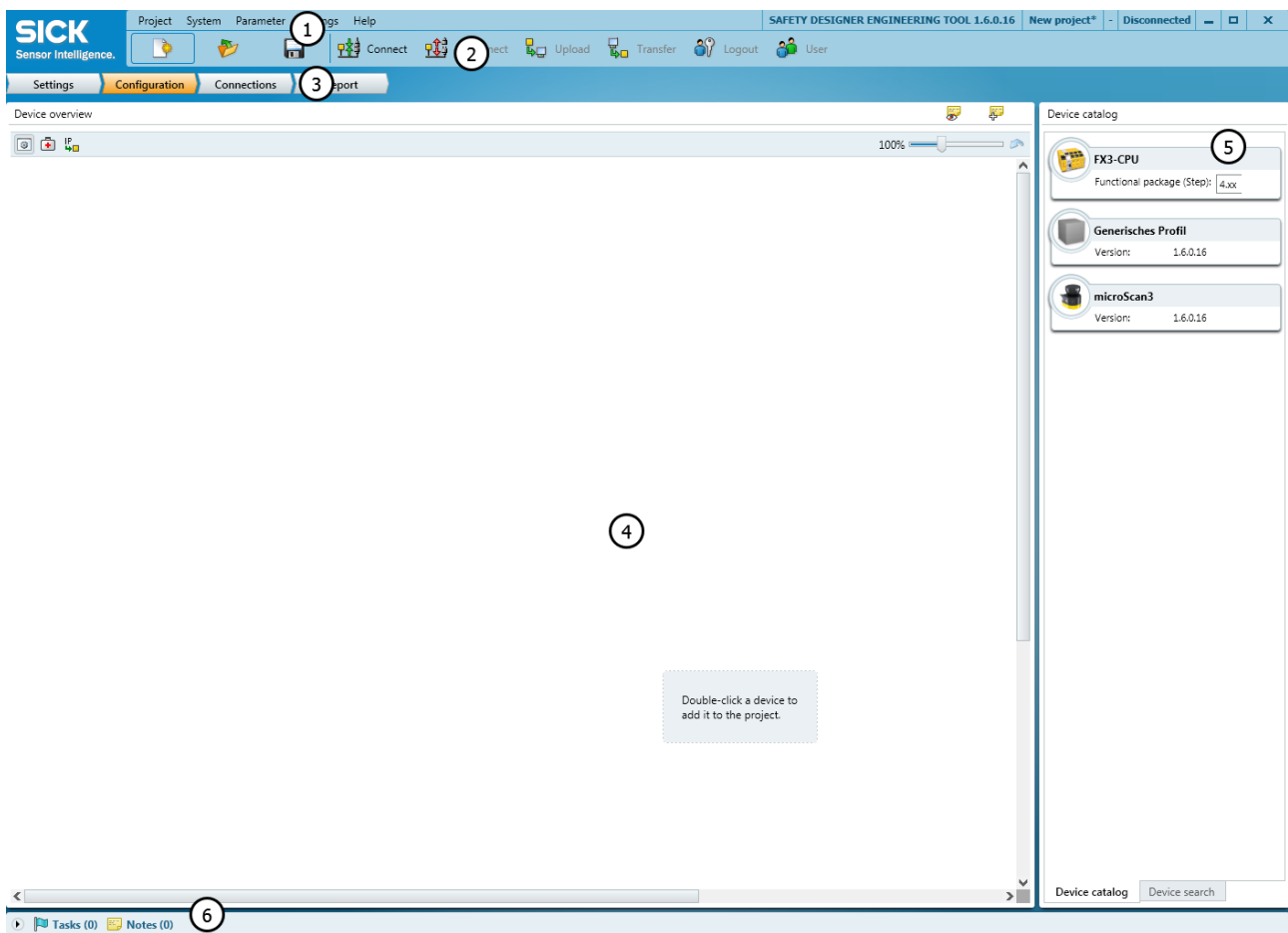


Figure 2: Software controls

- 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 a new project
 - Open
 - Open last projects used
 - Save
 - Save as
 - Close project
 - End Safety Designer
- **System**
 - Connect to a project
 - Terminate the connection to a project
- **Parameter**









- Read from device
- Transfer to device
- **Settings**
 - Select language
 - Call up options
- **Help**
 - Call up help (operating instructions)
 - Call up information on software version
 - Update device catalog
 - 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:

- Settings (see ["Settings", page 16](#))
- Configuration (see ["Configuration", page 20](#))
- Networking (see ["Networking", page 28](#))
- Report (see ["Report", page 30](#))

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.

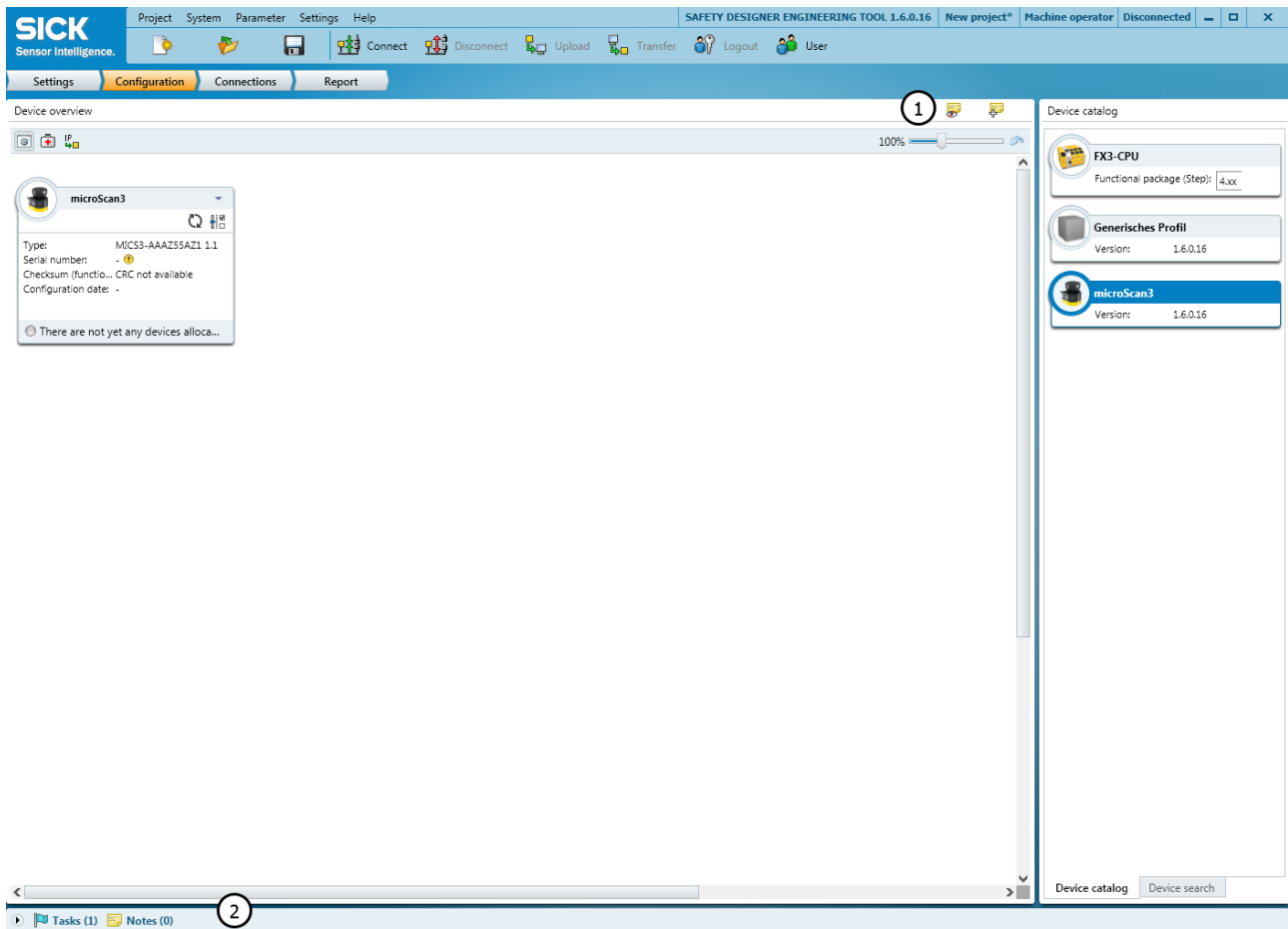





Figure 3: Notes

- ① Display/hide/create notes
- ② Notes on a project

Table 2: Buttons for notes

Button	Meaning
	Show notes

Button	Meaning
	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 Safety Designer frame.
- 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.

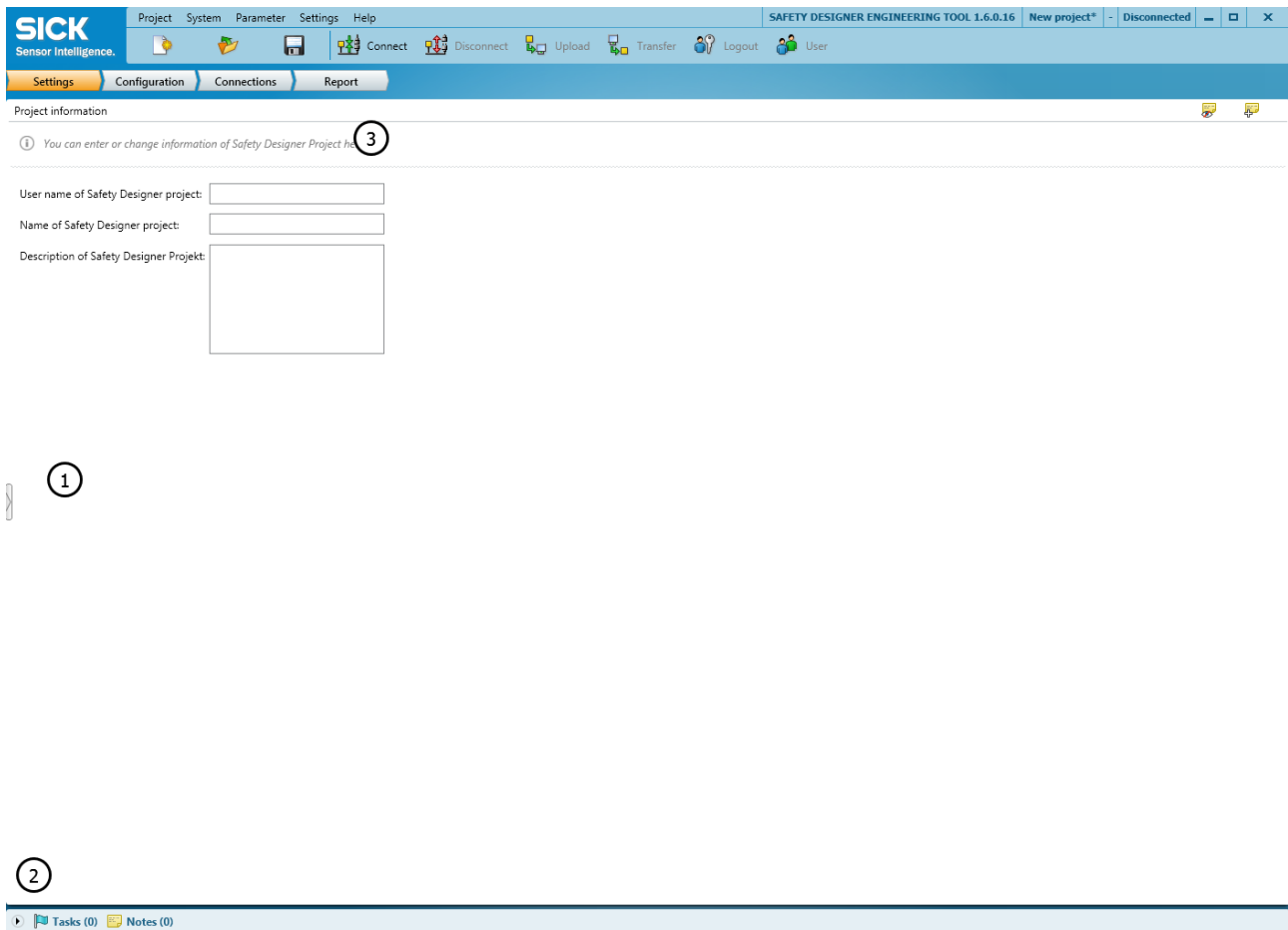


Figure 4: Adjust user interface

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

Select desired language

Safety Designer offers a number of languages for the user interface:

- German
- English
- Spanish
- Italian
- French
- Portuguese
- Czech
- Polish
- Chinese
- Japanese
- Turkish

- 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.

5.3 Manage projects

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

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.
- 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.

5.4 Settings

The **Settings** area contains the following configuration options:

- Project information
- Network
- Connections via router
- Time synchronization
- Data recorder

5.4.1 Entering project information

Overview

The project information contains details that are used, 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.

Approach

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 Configuring the network settings

Under **Network Settings** you can configure the presets for network-compatible devices.

5.4.2.1 Configuring the presets for IP addresses

Overview

The following items are configured under **Preset for IP addresses**:

- 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.

Approach

- ▶ Enter the lowest and highest IP addresses which are to be assigned in the **IP address range** fields.
 - ▶ If applicable, enter a deviating **subnet mask**.
 - ▶ If applicable, enter the IP address of a **router**.
 - ▶ Activate the **Automatically assign an IP address from this IP range to every new project device** option.
- ✓ Every device which is added to the project from the device catalog is assigned an IP address from the configured IP address range with the configured subnet mask and the configured router.

5.4.2.2 Configuring the safety network number

Overview

The safety network number (SNN) for a project is assigned under **Preset for the SNN**. The safety network number should be identical for all devices in a safety-related Ether-Net/IP network.

You can take the following actions:

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

Approach

- ▶ Activate the **Automatically assign this Safety Network Number to every new project device** option.
- ✓ Every device which is added to the project from the device catalog is assigned the configured SNN.
- ▶ Click on **Generate**.
- ✓ The **Safety Network Number** dialog box opens.
- ▶ Click on **Time-based**.
- ✓ A SNN which contains the current time stamp is generated and displayed in the **Result** field.
- ▶ In the **Manual** field, enter a number between 1 and 9,999 and click on **Generate**.
- ✓ A SNN based on manual entry is generated and displayed in the **Result** field.
- ▶ Click on **OK**.
- ✓ The **Safety Network Number** dialog box closes and the SNN is adopted.

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.

Approach

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 EtherNet/IP™ devices to the router.
- You can only assign EtherNet/IP™ 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.

Approach

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 master for all other devices. All other devices obtain the time from this device.
- A UTC server acts as the time master for all devices. All devices obtain a so-called coordinated universal time from the UTC server.

Prerequisites

- To use a UTC server as the time master, all devices must support SNTP (Simple Network Time Protocol).

Approach

1. Deactivate the **Detect based on the devices** option.
2. Activate the **Time server as time master** option.
3. Enter the IP address of the time master (a device on the network, or the UTC server) in the **Time server IP address** field.
4. If applicable, configure the **Synchronization interval for slaves**.

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.

Approach

- ▶ 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

In the **Configuration**, area you can compile the devices for a project. The available devices can be found in the Device Catalog. The devices are displayed as Device tiles in the working area.

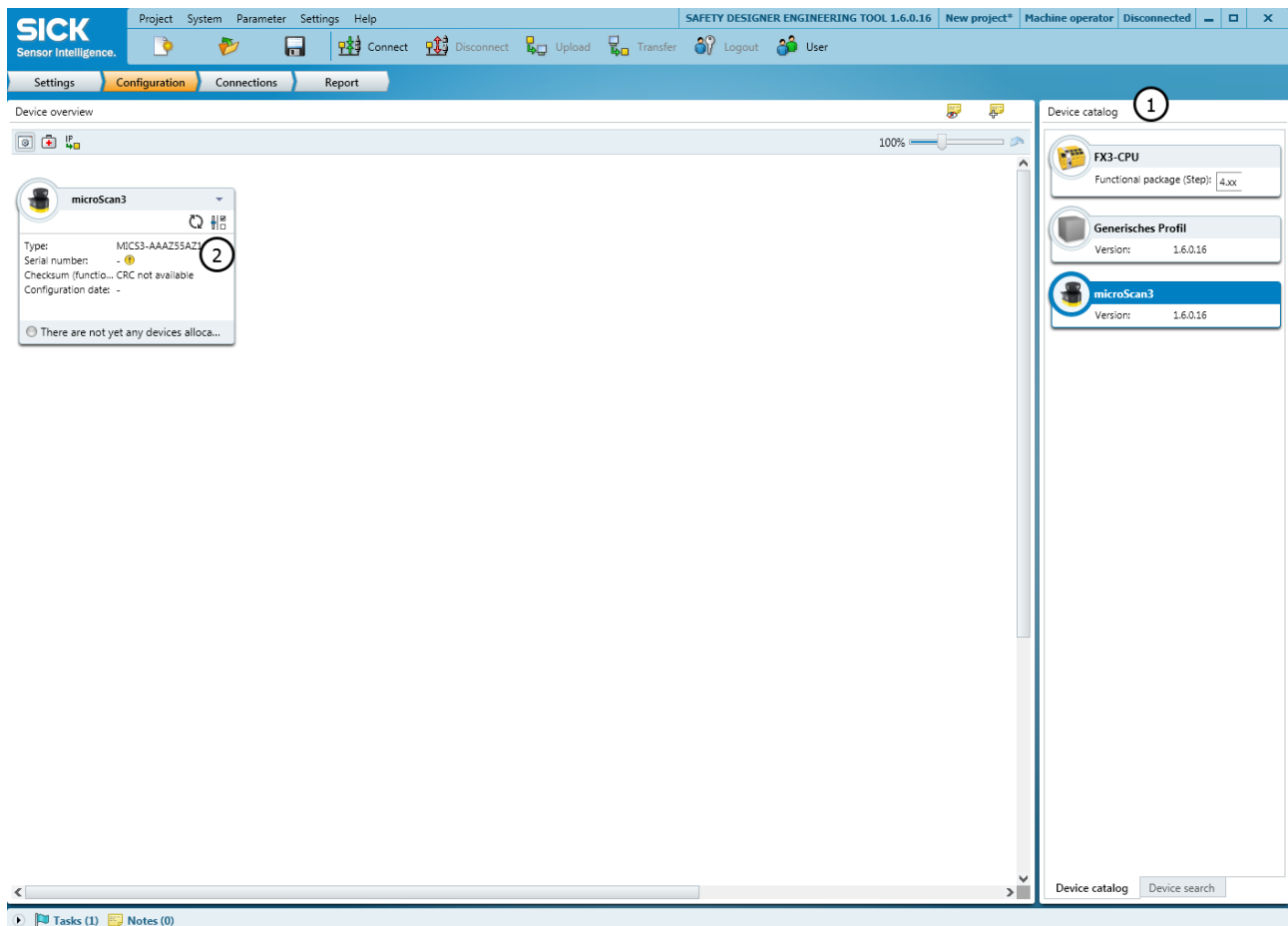


Figure 5: Configuration

- 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

A so-called **generic EtherNet/IP CIP safety device** can be created in Safety Designer. Using this device, it is possible to integrate devices from third-party manufacturers into a Flexi Soft system via EtherNet/IP™.

Possible EtherNet/IP™ connections

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

Creating a generic EtherNet/IP CIP safety device

- ▶ Double-click on **Generic EtherNet/IP CIP safety device** in the device catalog in Safety Designer. A device tile for the generic EtherNet/IP CIP safety device is added in the device overview.

Configuring a generic EtherNet/IP CIP safety device

- ▶ In Safety Designer, click on the device tile for the generic EtherNet/IP CIP safety device to open the associated device window.
- ▶ On the **General** tab, 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**.

- ▶ 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.
- ▶ Optionally, you can also enter a **configuration signature** under **Default settings**.
- ▶ In the **Connections** tab, 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.





5.5.2 Device tiles

The devices from the device catalog can be compiled in a project in the working area.

- ▶ Drag a device into the working area using drag and drop.
- Or:
- ▶ Double-click on a device in the device catalog. ¹⁾
- ✓ The device is shown as a tile in the working area.

Using the buttons in the top right-hand corner of the working area you can display different information on the tiles:

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

Button	Meaning
	Display configuration information on the tile
	Display diagnosis information on the tile
	Display network information on the tile
	The size of the tiles can be adjusted using the slider.

Functions and displays of the Device tiles

¹⁾ When a device is configured offline for the first time, the device selection assistant opens. This is where you select the type of device to be configured.

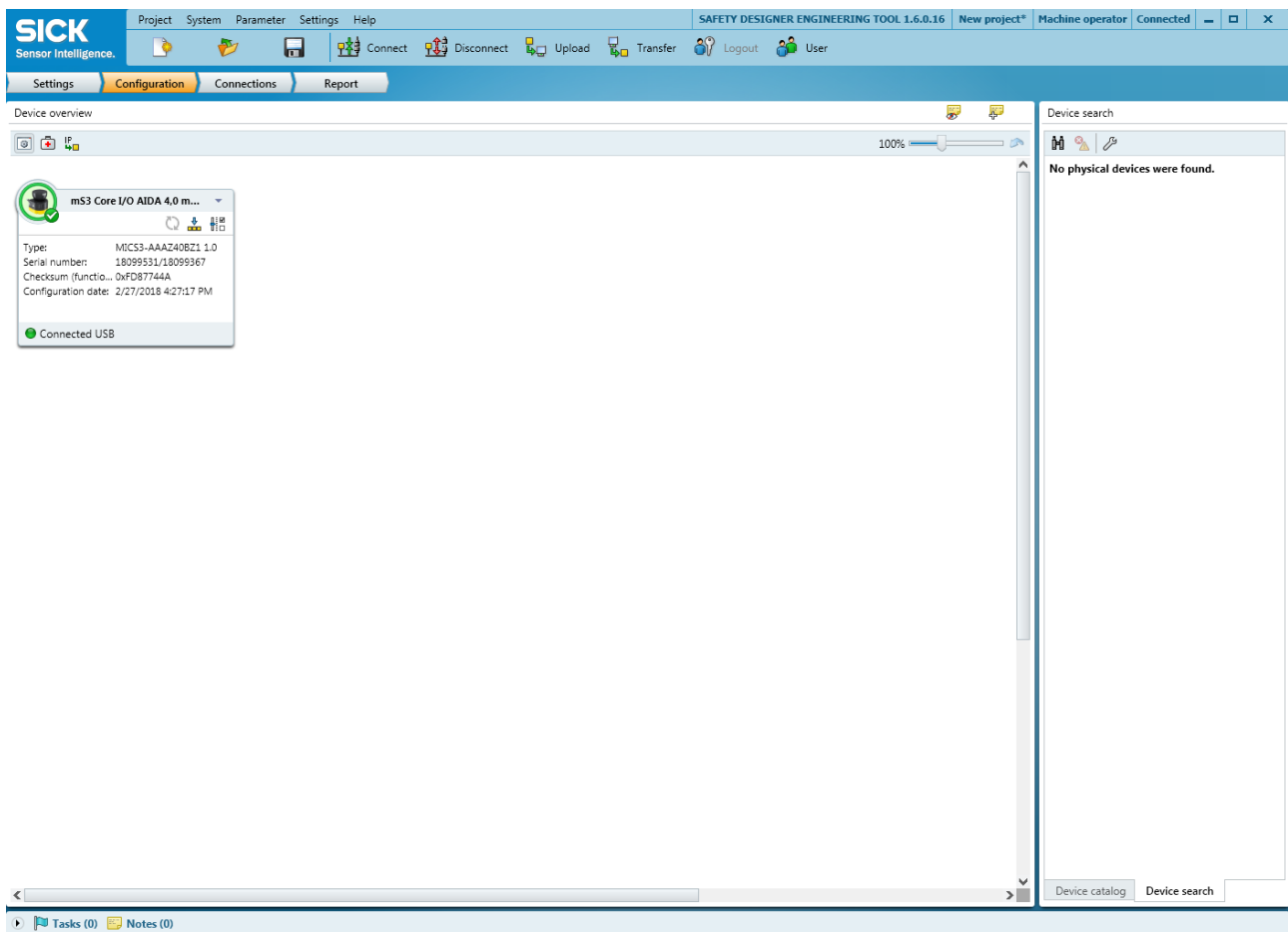


Figure 6: Functions and displays of the Device tiles

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

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.

Using the buttons inside a tile you can carry out the following functions:

Table 7: Tile buttons dependent upon device status

Button	Meaning
	Establish connection with device














Button	Meaning
	Disconnect from device
	Write the configuration into the device
	Import configuration from the device
	Verify configuration
	Start application (function is device-specific (see "Device-specific functions", page 28))

Table 8: Tile buttons not dependent upon device status

Button	Meaning
	Open device window
	Make device display or LEDs flash (function is device-specific (see "Device-specific functions", page 28) 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)

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

Table 9: Status of connection

Icon	Meaning
	Disconnected
	Addressable
	Connected
	Connection broken
	Device is not reachable

Removing Device tiles

You can remove a Device tile from the working area.

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

For a new project without Device tiles:

- ▶ In the **System** menu, select the **Connect** command or click on **Connect** in the toolbar.
- ✓ The Safety Designer changes to the **Device search** tab in the **Device catalog**.
- ✓ The detected devices are displayed after a successful scan (see "Device Catalog", page 20).
- ▶ Drag the found device or devices from the Device catalog to the working area.
- ✓ The device or devices are shown as Device tiles in the working area.
- ✓ The status of the tile will show **Connected** or **Addressable** (see figure 6, page 23).

For a new project with Device tiles created offline:

- ▶ In the **System** menu, select the **Connect** command or click on **Connect** in the toolbar.

- ✓ The Safety Designer changes to the **Device search** tab in the **Device catalog**.
- ✓ The found device or devices are displayed after a successful scan (see "Device Catalog", page 20).
- Drag the found device or devices from the Device catalog to the respective tile.
- ✓ The status of the tile will change to **Connected** (see figure 6, page 23).

For an existing configured project with Device tiles:

- In the **System** menu, select the **Connect** command or click on **Connect** in the toolbar.
- ✓ The Safety Designer changes to the **Device search** tab in the **Device catalog**.
- ✓ The found device or devices are displayed after a successful scan (see "Device Catalog", page 20).
- ✓ If the device that matches a Device tile is found (matching serial number), the status of the tile will change to **Connected** (see figure 6, page 23).
- ✓ Not-yet assigned devices can be assigned to a tile with a matching type code using drag and drop.

The following functions can be carried out with a connected device:

- Assign Device tiles to physically present devices
- Remove allocation
- Import configuration
- Open the device window – configure devices
- Transfer configuration
- Verify configuration
- Perform device-specific functions
- Disconnect

5.5.4 Assign 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 working range.

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

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.

Connecting a device to a device tile

- Drag a found device from the device catalog to the respective device tile.
- ✓ The device is now associated with the device tile, and the tile displays the status **Connected** (see table 9, page 24).
- ✓ 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 working range (using drag and drop).
- ✓ A device tile is placed in the working range, and the tile displays the status **Connected** (see table 9, page 24).
- ▶ Import the configuration from the device.
- ▶ In the Tile menu (triangle in the top right-hand corner of the tile), select the **Remove allocation** 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 9, page 24).
- ▶ 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 allocation** function to remove this automatic connection and prevent it from happening in future.

5.5.5 Import configuration

Safety Designer can import the configuration from connected devices.

- ▶ In the **Parameter** menu, select the **Read from device** command or click on **Read from device** in the toolbar.
- ✓ The **Import devices** dialog box is opened. The connected devices are displayed in this dialog box.
- ▶ Click on **Import devices**.
- ✓ Safety Designer imports the configuration from connected devices.

5.5.6 Open the device window – configure devices

Open a device window to configure a device, perform diagnostics, or create reports. You have the following options:

- ▶ Click on the Device tile.
- Or:
- ▶ Open the tile menu and choose **Configure**.
- ✓ The device window opens. ²⁾

You can open several device windows at the same time.

²⁾ When a device is configured offline for the first time, the device selection assistant opens. This is where you select the type of device to be configured.

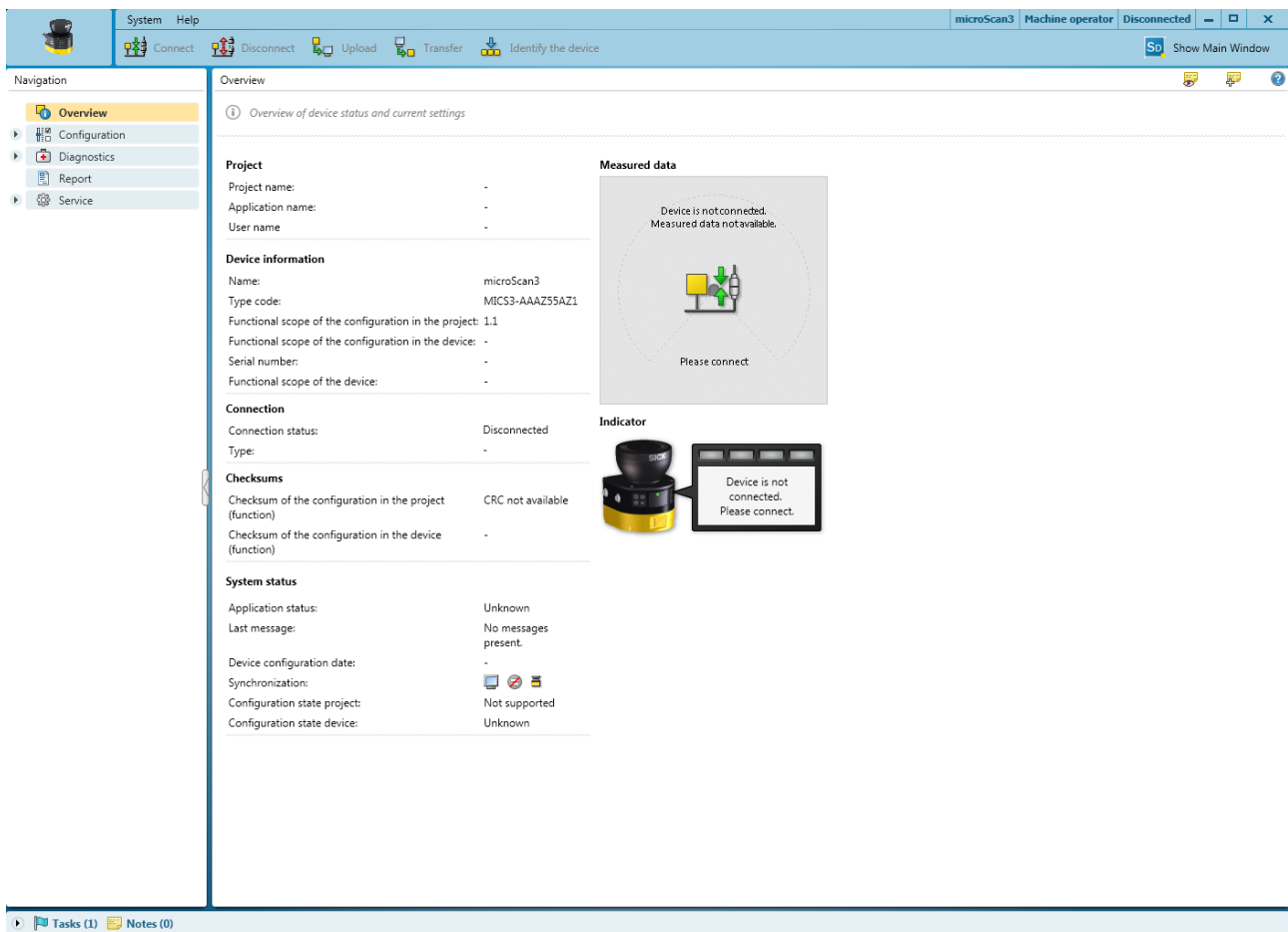


Figure 7: Example of a device window

In a device window you can configure the parameters of individual devices, devices in a device group, or devices in a system configuration. You can also create device-specific reports and, if necessary, carry out a device diagnosis.

5.5.7 Transfer configuration

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

At first, a configuration only exists as a project, i.e., as a configuration file; it needs to be transferred to the device. The compatibility of the configuration is checked during the transfer.

- ▶ In the **Parameter** menu, select the **Transfer to device** command or click on **Transfer to device** in the toolbar.
- ✓ The **Transfer devices** dialog box is opened. The connected devices are displayed in this dialog box.
- ▶ Click on **Transfer devices**.
- ✓ The **Log in** dialog box will open (see "User groups", page 31).
- ▶ 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 8: Progress display

5.5.8 Verify configuration

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

- ▶ 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.



Figure 9: Symbol for “device configuration verified”



NOTE

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

5.5.9 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)

5.5.10 Disconnect

Disconnect the Safety Designer from all devices:

- ▶ In the **System** menu, select the **Disconnect** command or click on **Disconnect** in the toolbar.
- ✓ The status of the Safety Designer and the status of the Device tiles will change to **Disconnected**.
- ✓ The device symbols in the **Device search** tab are deleted.

Disconnect the Safety Designer from one single device:

- ▶ Select the **Disconnect** command in the Tile menu for the respective Device tile.
- ✓ The status of the Device tile will change to **Disconnected** (see table 9, page 24).



NOTE

Once the last connected Device tile has been disconnected, the status of the Safety Designer will then also change 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 EtherNet/IP CIP safety device”, page 21.

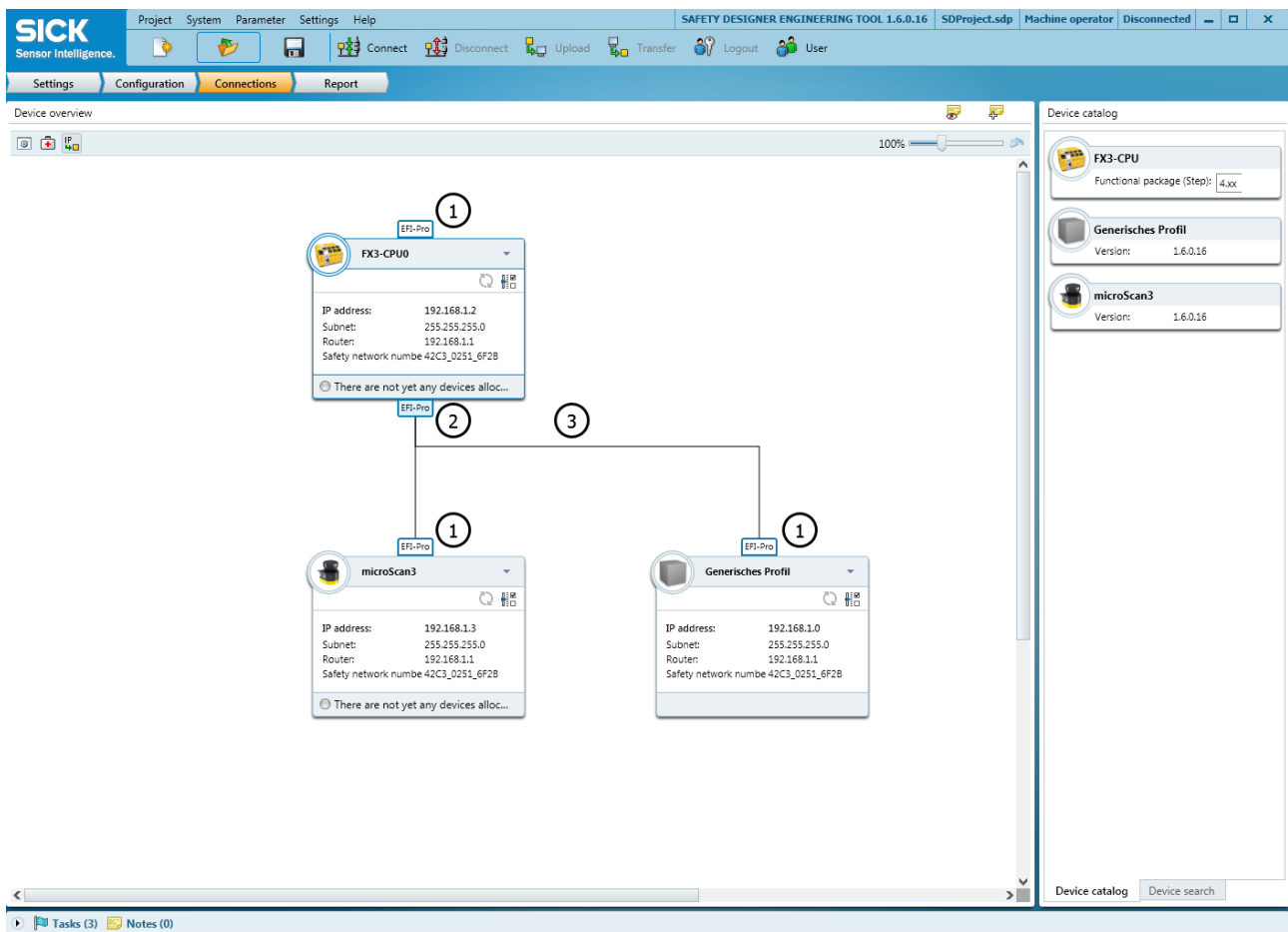


Figure 10: Networking

- 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



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.

Approach

1. In Safety Designer, create a project with the desired devices and configure these as required.
2. Click on **Connections** in Safety Designer.
- ✓ 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.

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

1 PROJECT INFORMATION

Date of generation: 10/22/2018 9:16:00 AM
 Safety Designer version: SAFETY DESIGNER ENGINEERING TOOL 1.6.0.16
 Name of Safety Designer project:
 User name of Safety Designer project:
 Description of Safety Designer Projekt:
 Culture: en-US, Englisch (USA)

Format example for language and culture dependent entry in this report:	value	Meaning
Date	5/1/2010	First of May, two thousand and ten
Time of day	1:15:33 PM	Thirteen o'clock, 15 minutes, 33 seconds
Separator for numbers (thousands, decimal)	1,000,000.00	One million

2 MICROSCAN3

2.1 Overview

User group	Machine operator	
User name		
Projektname		
Application name		
Application description		
Device name	microScan3	
Device type	microScan3 Core I/O, 5.5m	
Checksum	in the project file	in the device
Checksum of the configuration (function)	CRC not available	-
Lower-level identification number	CRC not available	-

Options in the report

Sorting: Devices

Devices

- ☒ microScan3

Subareas





- ☒ Project information
- ☒ General configuration
- ☒ Open ToDos and User notes
- ☒ Bill of materials
- ☒ Configuration
- ☒ Status
- ☒ Diagnostics
- ☐ Service

Figure 11: Example of a report

- ① Contents of the report
- ② Buttons on the report
- ③ Sorting
- ④ 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

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

The user groups' settings and passwords are part of the configuration stored in the device.

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

Table 11: User groups

User group	Password	Authorization
Machine operator	Does not need a password (anyone can log in as a machine operator).	May read configuration from the device (if not blocked).
Maintenance technician	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.

If a device's configuration is saved in its system plug, the passwords are preserved if the device is replaced.



NOTICE

If you leave a computer unattended, which is connected to devices, you must log out of the **maintenance technician** or **authorized client** user groups and change to the **machine operator** user group, so that unauthorized people cannot transfer configurations to the devices.

6 Deinstallation

6.1 Uninstalling Safety Designer

You can uninstall Safety Designer as follows:

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

Or:

- ▶ Uninstall the Safety Designer Package <version-number> in the Control Panel.

7 Technical data

7.1 System requirements

Important information

Certain functions (for example verification) can only be performed on a PC 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 operating at 2 GHz or faster
- 2 GB RAM
- 2 GB hard drive

Supported operating systems:

- Windows 7 SP1 (x86 and x64)
- Windows 8.1
- Windows 10 Anniversary Update (1607) or higher

Other:

- Microsoft .NET 4.7.x or higher

Complementary information

To guarantee the best possible level of compatibility and security, we recommend 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 12: 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

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