INXPECT

Inxpect Safety Studio

User manual
v1.0 - EN

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Manual updates

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User manual (this manual)	Inxpect SAF-UM-00434_en_v1.0	AGO 2025	Online PDF and online help
Inxpect SRE 200 Series Instruction manual	Inxpect SAF-IM-200S_7_00047_en	JUL 2025	Online PDF PDF downloadable from the site https://tools.inxpect.com
Inxpect SRE 200 Series - 9 meters range sensors Instruction manual	Inxpect SAF-IM-200S_9m_7_00240_en	JUL 2025	Online PDF PDF downloadable from the site https://tools.inxpect.com

Intended users of this manual

The recipients of this manual are the following:

- the machinery manufacturer onto which the system will be installed
- the system installer and configurator
- the machinery maintenance technician

Message concepts

Following are conventions for the messages used in this manual:

CAUTION! Indicates a risky situation which, if not avoided, may cause data loss.

IMPORTANT: Provides essential indications on task completion that should not be ignored.

***Note**: Neutral and positive information that emphasize or add information to the main text. They provide information that can only be applied in special cases.*

Indicates the path in the software to access the page described.

Contents

1. Introduction

Contents

This section includes the following topics:

1.1 Get to know Inxpect Safety Studio

1.1.1 Description

Inxpect Safety Studio is a desktop application for configuring the Inxpect SRE 200 Series and validating the installed and configured system.

1.1.2 Offline configuration

Inxpect Safety Studio allows the offline configuration of the control unit(s) and related sensors. The configuration can be sent to the control unit later, when it is physically connected to the computer where Inxpect Safety Studio is installed.

1.2 Work in Inxpect Safety Studio

1.2.1 Macro-procedure

Below, the most common workflow to create a project, configure it and validate it.

Phase	Description	Reference
1	Create a project.	"Create a project" on page 13
2	Add 3D models and/or a 2D image, if available. Then, position them inside the 3D area and scale them, if necessary.	"Configure a 3D model" on page 15 "Configure a 2D image" on page 16
3	Add one or more control units to the project.	"Configure a control unit" on page 16
4	Add sensors to the control unit(s).	"Add sensors to a control unit" on page 18
5	Set the control unit(s) and related sensors parameters.	"Set a control unit parameters" on page 16 "Set a sensor parameters" on page 19
6	Connect the control unit(s) to the computer.	"Connect a control unit to the computer" on page 16
7	Pair the project sensors with the corresponding sensors physically connected to the control unit.	"Perform the sensor pairing" on page 17
8	Send the configuration to the control unit(s).	"Upload the configuration to the control unit" on page 18
9	Validate the project.	"Validate a project" on page 23

1.3 Install and access the application

1.3.1 Installation requirements

- Microsoft Windows 64 bit 11 or later / Apple OS X 14.0 Sonoma or later
- Intel Core i5 processor
- 8G RAM
- SSD 256G

1.3.2 Installation

1. Download the application from the https://tools.inxpect.com website and install it on the computer.
2. With Microsoft Windows operating system, download and install from the same site the driver for USB connection

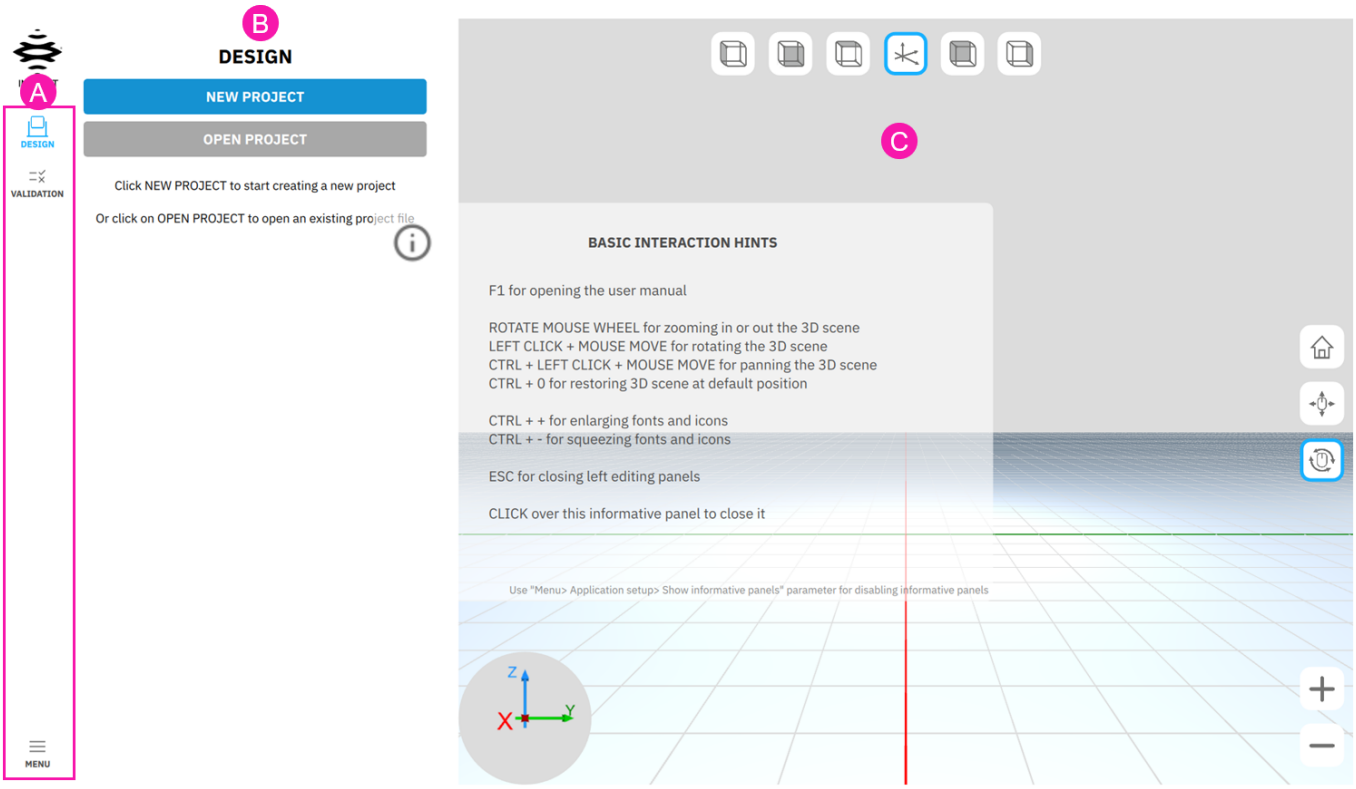
1.3.3 Access

Click : the DESIGN section is displayed. A window with basic keyboard shortcuts is also displayed. To close it, click anywhere in the window.

1.4 Interface structure

1.4.1 What it looks like

The application interface consists of three sections:



Section	Description
A	Tool bar
B	DESIGN or VALIDATION section
C	3D area. See "3D area structure" on page 9.

1.4.2 Tool bar

Button	Function
DESIGN	Shows the DESIGN section. See "DESIGN section" on page 14.
VALIDATION	Shows the VALIDATION section. See "VALIDATION section" on page 21.
MENU	Shows the system actions. See "System actions" below.

1.4.3 System actions

MENU

Button	Function
FILE	
New	Allows creating a new project.
Open File	Allows opening an existing project.
Save	Saves changes to the project.
Save As	Saves the project.
Undo	Undoes the last action performed.
Exit	Closes the application.
USER MANAGEMENT	
Current user settings	Allows setting a new password for the current user account.
SETUP	
Application setup	Shows the interface settings.
HELP	
Manual (F1)	Opens the application manual.
Support Request	Allows sending a support request via e-mail.
Regulatory Certifications	Shows the regulatory certifications of Inxpect products.
General Terms and Conditions for Software products	Shows the terms and conditions of software products.

1.4.4 Keyboard shortcuts for navigating the interface

Action	Shortcut
Open the user manual.	**F1**
Enlarge fonts and icons.	**CTRL** + **+**
Squeezing fonts and icons.	**CTRL** + **-**
Close left editing panels.	**ESC**
Save changes.	**CTRL** + **S**
Create a project.	**CTRL** + **N**
Open a project.	**CTRL** + **O**
Exit the application.	**CTRL** + **Q**

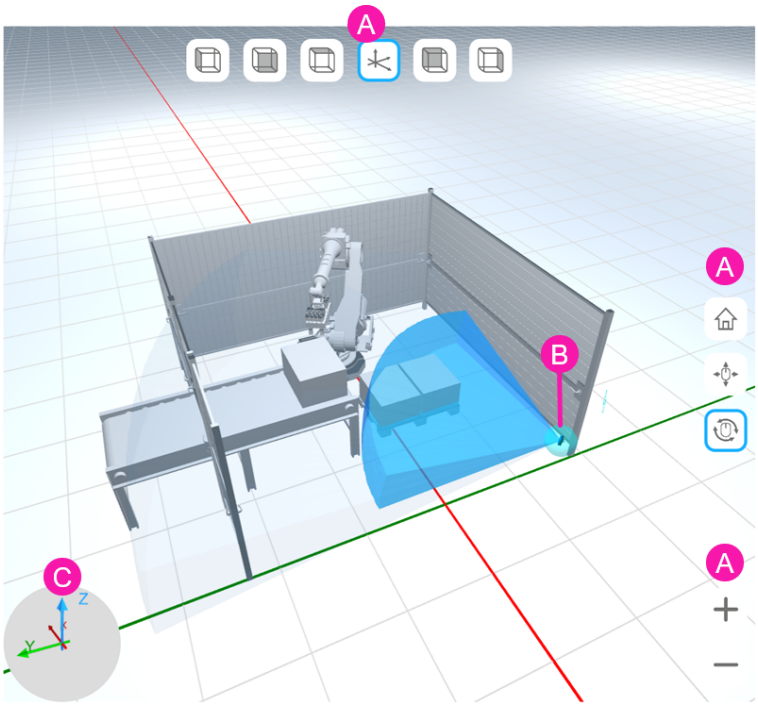
1.5 3D area structure

1.5.1 Introduction

In the design phase, the 3D area allows reconstructing the overall plant/machine in 3D, positioning the sensors and adjusting the relevant detection fields.

In the validation phase, it shows the target inside the field of view in real time, to verify that the entire coverage of the dangerous area is achieved.

1.5.2 What it looks like



Part	Description
A	Actions for adjusting the 3D scene. See "Actions in the 3D area" below.
B	Indicator of the sensor/3D model. Displayed only when the item is selected. • Left click: for sensors, shows the setup parameters of the sensor. For 3D models, shows the parameters for setting the model geometry properties. • Right click: opens the quick circular menu. See "Quick circular menu" on the next page.
C	Axes for adjusting the visual

1.5.3 Actions in the 3D area

Button	Function	Shortcut
	Shows the scene left view.	CTRL + L
	Shows the scene front view.	CTRL + F
	Shows the scene upper view.	CTRL + U
	Shows the scene perspective view.	CTRL + P
	Shows the scene back view.	-

Button	Function	Shortcut
	Shows the scene right view.	-
	Restores the 3D scene at default position.	CTRL + 0
	Allows dragging the scene.	-
	Allows rotating the scene.	Left click + mouse move
	Zooms in the scene.	Rotate the mouse wheel
	Zooms out the scene.	Rotate the mouse wheel

1.5.4 Quick circular menu

Button	Function	Reference for sensors	Reference for 3D model
	Allows dragging the item.	"Drag a sensor" below	"Drag a 3D model" on the next page
	Allows rotating the item.	"Rotate a sensor" on the next page	"Rotate a 3D model" on the next page
	Shows the setup parameters of the item.	"Set a sensor parameters" on the next page	"Set a 3D model geometry properties" on the next page
	Removes the item.	"Remove a sensor" on the next page	"Remove a 3D model" on page 12
DF[n]	Shows the setup parameters of the detection field number [n] of the sensor.	"Set a sensor detection field parameters" on the next page	-
	Closes the menu.	-	-

1.6 Work in the 3D area: sensors

1.6.1 Drag a sensor

1. Right-click the sensor indicator > : the arrows corresponding to the x, y, z axes are displayed.
2. Select and hold an arrow: it turns yellow.
3. Drag the sensor to the desired position.

4. To exit the drag function, click anywhere in the area.

1.6.2 Rotate a sensor

1. Right-click the sensor indicator > : the arrows corresponding to the different directions of rotation are displayed.
2. Select and hold an arrow: it turns yellow.
3. Rotate the sensor as desired.
4. To exit the rotation function, click anywhere in the area.

1.6.3 Set a sensor parameters

There are several methods to perform this procedure.

- Click the sensor indicator: parameters are displayed in the DESIGN section.
- Right-click the sensor indicator > : parameters are displayed in the DESIGN section.

1.6.4 Set a sensor detection field parameters

There are several methods to perform this procedure.

Method 1

1. Click the sensor field of view: parameters are displayed in the DESIGN section.
2. In **SELECTED FIELD**, select the detection field to be set.

Method 2

Right-click the sensor indicator > **DF[n]**: parameters are displayed in the DESIGN section.

1.6.5 Remove a sensor

Right-click the sensor indicator > > **YES**.

1.7 Work in the 3D area: 3D models

1.7.1 Drag a 3D model

1. Select the model: its indicator is displayed.
2. Right-click the indicator > : the arrows corresponding to the x, y, z axes are displayed.
3. Press an arrow: it turns yellow.
4. Drag the model to the desired position.
5. To exit the drag function, click anywhere in the area.

1.7.2 Rotate a 3D model

1. Select the model: its indicator is displayed.
2. Right-click the indicator > : the arrows corresponding to the different directions of rotation are displayed.
3. Press an arrow: it turns yellow.
4. Rotate the model as desired.
5. To exit the rotation function, click anywhere in the area.

1.7.3 Set a 3D model geometry properties

There are several methods to perform this procedure.

Method 1

Click the model: parameters are displayed in the DESIGN section.

Method 2

1. Select the model: its indicator is displayed.
2. Right-click the indicator > : parameters are displayed in the DESIGN section.

1.7.4 Set a 3D model position and orientation

Right-click the model: parameters are displayed in the DESIGN section.

1.7.5 Remove a 3D model

1. Select the model: its indicator is displayed.
2. Right-click the indicator > > **YES**.

2. Design phase

Contents

This section includes the following topics:

2.1 Manage projects

2.1.1 Create a project

DESIGN

1. Click **NEW PROJECT**.
2. Set the project password > **PROCEED**.
3. Select the country of installation > **PROCEED**.
4. Select the application type > **PROCEED**.
5. Configure the project as described in "Macro-procedure" on page 6.

2.1.2 Open an existing project

There are several methods to perform this procedure.

Method 1

DESIGN

1. Click **OPEN PROJECT** or click **MENU** > **Open File** or press CTRL + O.
2. Search for the project .iss3d file and open it.
3. Enter the project password > **CONFIRM**.

Method 2

1. Open the project .iss3d file directly from the computer file explorer.
2. Enter the project password > **CONFIRM**.

2.1.3 Save changes to the project

There are several methods to perform this procedure.

- Press CTRL + S.
- Click **MENU** > **Save** or **Save As**.

Any unsaved changes, are marked with an asterisk next to the filename, in the page header.

2.2 DESIGN section

DESIGN

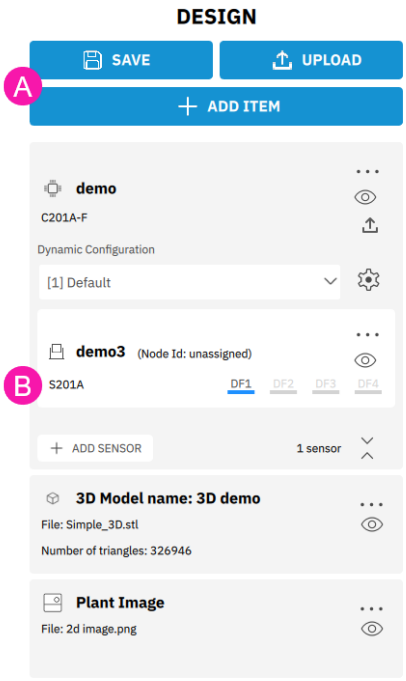
2.2.1 Introduction

This section allows doing what follows:

1. Create a project or open an existing one.
2. Configure a project.
3. Send the configuration to the control unit.

2.2.2 What it looks like

This is what this section looks like after creating a project or opening an existing one.



Part	Description
A	Actions on the project
B	Cards of the added items with specific information. Each item is marked by an icon. • : Control unit • : Sensor • : 3D model • : 2D image

2.2.3 Actions on items

Button	Function
	Opens the item menu.
	Shows/hides the item in the 3D area. In the control unit card, shows/hides all sensors.
	Uploads configurations to the control unit.
	Allows setting dynamic configurations.
+ ADD SENSOR	Allows adding a sensor to the control unit.
	Collapses/expands the list of sensors of the control unit.

2.3 Add items to a project

DESIGN

2.3.1 Add a control unit

1. Open an existing project or create a project. See "Manage projects" on page 13.
2. Do what follows:

If...	Then...
one or more control units are connected to the computer	1. Click **+ ADD ITEM** > **CONNECTED DEVICE**. 2. Select the control unit to be added to the project > **CONFIRM**.
no control unit is connected to the computer	1. Click **+ ADD ITEM** > **CONTROL UNIT**. 2. Select a control unit from the list. 3. Enter a name > **CONFIRM**.

2.3.2 Add a 3D model

1. Open an existing project or create a project. See "Manage projects" on page 13.
2. Click **+ ADD ITEM** > **3D MODEL**.
3. Enter a name > **Confirm**.
4. Search for the file to import: when the import is finished, the model is displayed in the 3D area.

   ***Note**: the supported files are *.stl, *.stp, *.step. It is not recommended to upload files larger than 100 MB.*

2.3.3 Add an image

***Note**: you can add only one image per project.*

1. Open an existing project or create a project. See "Manage projects" on page 13.
2. Click **+ ADD ITEM** > **2D IMAGE**.
3. Search for the image file to import: the image is displayed in the 3D area.

   ***Note**: the supported files are *.png, *.jpg, *.dxf; *.svg.*

2.4 Configure a 3D model

2.4.1 Set the 3D model geometry properties

There are several methods to perform this procedure.

- (DESIGN (in the 3D model card)) Click ··· > **View details**.
- (In the 3D area) See "Set a 3D model geometry properties" on page 11.

2.4.2 Set the 3D model position and orientation

There are several methods to perform this procedure.

- (DESIGN (in the 3D model card)) Click ··· > **Position and orientation**.
- (In the 3D area) Right-click the model.

2.4.3 Remove the 3D model from the 3D area

DESIGN (in the 3D model card)

Click ··· > **Remove Plant 3D model** > **YES**.

2.5 Configure a 2D image

2.5.1 Set the image properties

DESIGN (in the 2D image card)

Click ··· > **View details**.

2.5.2 Remove the image

DESIGN (in the 2D image card)

Click ··· > **Remove Plant 2D image** > **YES**.

2.6 Configure a control unit

2.6.1 Set a control unit parameters

DESIGN (in the control unit card)

Click ··· > **Settings**.

See "Control unit parameter list" on page 19.

2.6.2 Connect a control unit to the computer

DESIGN (in the control unit card)

1. If you haven't already, with Microsoft Windows operating system, download and install from the https://tools.inxpect.com website the driver for USB connection.
2. Connect the control unit(s) to the computer where Inxpect Safety Studio is installed using a data USB cable with a micro-USB connector or the Ethernet cable (if an Ethernet port is available).
3. Set the connection mode as follows:

If the connection is established via...	Then...
USB cable	1. Click ··· > **Connection setup**. 2. In **Configuration interface**, select **USB**.
Ethernet cable	1. Click ··· > **Connection setup**. 2. In **Configuration interface**, select **Ethernet**. 3. Set the IP address and the TCP Port. ***Note**: the default IP address for the Ethernet connection is 192.168.0.20. The computer and the control unit must be connected to the same network.*

4. Save changes. See "Save changes to the project" on page 13.

2.6.3 Read the system status

DESIGN (in the control unit card)

Click ··· > **Device info**.

2.6.4 Replace a control unit

DESIGN (in the control unit card)

This procedure allows replacing the control unit model while leaving the existing configurations unchanged.

1. Click ··· > **Replace device**.
2. Select the new control unit > **CONFIRM**.

2.6.5 Remove a control unit

DESIGN (in the control unit card)

Click ··· > **Remove device** > **YES**.

2.6.6 Add a dynamic configuration

DESIGN (in the control unit card)

This procedure allows creating additional configurations which allow a dynamic real-time reconfiguration of the monitored area.

1. Click ⚙ > **ADD**.
2. Enter a name > **CONFIRM** > **CLOSE**.

2.6.7 Actions on dynamic configurations

DESIGN (in the control unit card)

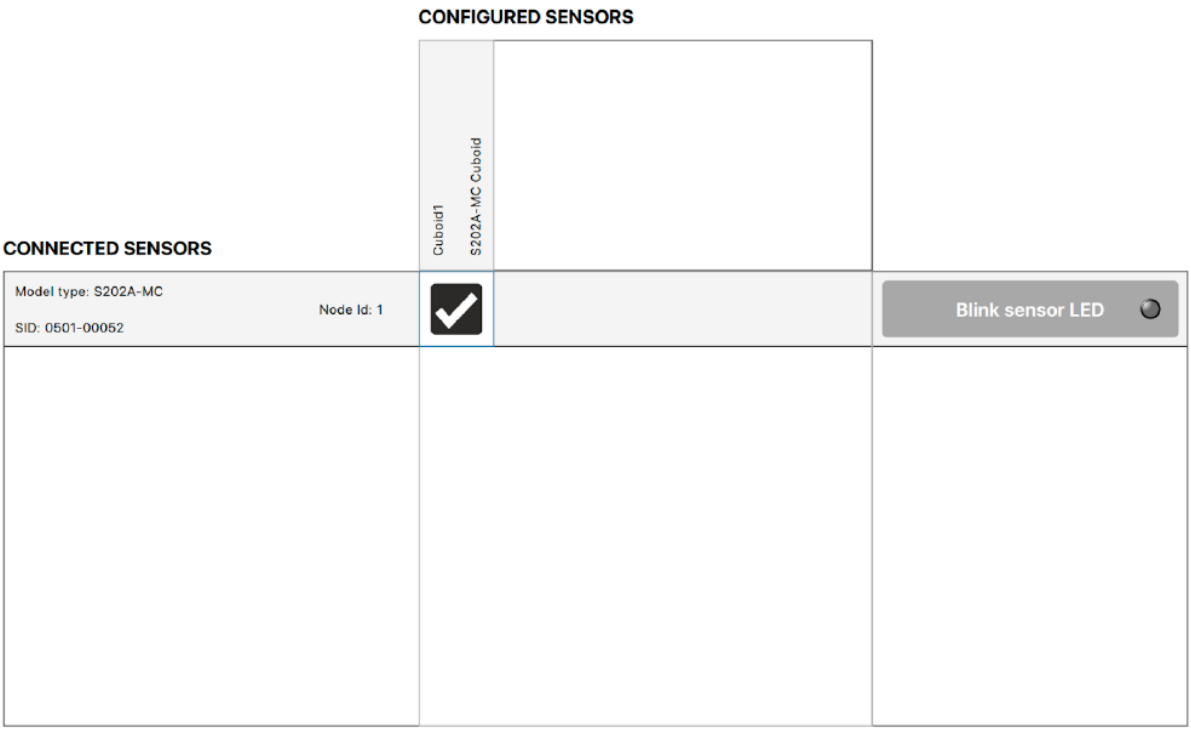
To...	Then...
set a configuration	1. **Dynamic Configuration**, select the configuration to be set. 2. In the sensor card, click ··· > **Settings** > **DETECTION FIELDS**. 3. Repeat the previous step for all the sensors.
rename a configuration	1. Click ⚙ > **RENAME**. 2. Enter a new name > **CONFIRM**.
duplicate a configuration	1. Click ⚙ > **DUPLICATE**. 2. Enter a new name > **CONFIRM**.
delete a configuration	Click ⚙ > 🗑 > **CONFIRM**.

2.6.8 Perform the sensor pairing

DESIGN (in the control unit card)

This procedure is only possible if the control unit is connected to the computer (see "Connect a control unit to the computer" on the previous page). It allows pairing the sensors added to the project with the corresponding sensors physically connected to the control unit.

1. Click ··· > **Sensor pairing**: the application scans all sensors connected to the control unit. When the scan is completed, a matrix is displayed with the connected and the configured sensors.



2. To pair the configured sensor to the corresponding connected sensor, select the relevant check box.
3. To physically recognize a connected sensor, click **Blink sensor LED** to make the sensor LED blink.
4. Click **CONFIRM**: each sensors is assigned a node ID.

2.6.9 Upload the configuration to the control unit

This procedure is only possible if the control unit is connected to the computer (see "Connect a control unit to the computer" on page 16). It allows sending the control unit configuration performed offline to the physical control unit.

1. Pair the project sensors with the corresponding sensors physically connected to the control unit. See "Perform the sensor pairing" on the previous page.
2. Do what follows:

To send the configuration to...	Then...
a single control unit	in the control unit card, click ··· > **Upload configuration** or click ⬆.
all control units added to the project	in the **DESIGN** section, click **UPLOAD**.

3. Save changes. See "Save changes to the project" on page 13.

At the end of the uploading process, a configuration report is generated.

2.7 Add and configure sensors

2.7.1 Add sensors to a control unit

DESIGN (in the control unit card)

1. Click **+ ADD SENSOR**.
2. Select the sensor to be added.
3. Enter the sensor name.
4. To set the color of the sensor detection field, click **SET** and select a color.

5. Click **CONFIRM**: the sensor is displayed in the control unit card with no node ID.
6. Configure the sensor.
7. Repeat the previous steps for all the sensors to be added.
8. Pair the sensors to the corresponding plant sensors. See "Perform the sensor pairing" on page 17.

2.7.2 Set a sensor parameters

DESIGN (in the sensor card)

Click ··· > **Settings**.

See "Sensor parameter list" on the next page.

2.7.3 Set a sensor position and orientation

DESIGN (in the sensor card)

Click ··· > **Position and orientation**.

2.7.4 Set a sensor detection field parameters

There are several methods to perform this procedure.

- (DESIGN (in the sensor card)) Click ··· > **Settings** > **DETECTION FIELDS**.
- (In the 3D area) "Set a sensor detection field parameters" on page 11.

2.7.5 Remove a sensor

DESIGN (in the sensor card)

Click ··· > **Remove device**.

2.8 Parameter list

2.8.1 Control unit parameter list

*DESIGN (in the control unit card) > ··· > **Settings***

- **CONFIGURATION INTERFACE**
  - **FROM TOOL TO DEVICE**: parameters for configuring the communication between the control unit and Inxpect Safety Studio
  - **FROM DEVICE TO TOOL**: parameters for configuring the Ethernet network
- **FSoE FIELDBUS**
- **MODBUS**
- **DIGITAL INPUTS**
- **DIGITAL OUTPUTS**
- **MUTING OPTIONS**
- **DETECTION FIELD GROUPS**
- **RESTART FUNCTION**
- **OTHER OPTIONS**
  - **MULTI-CONTROL UNIT SYNCHRONIZATION**
  - **STATIC OBJECT DETECTION SENSITIVITY**
  - **ELECTROMAGNETIC ROBUSTNESS**
- **ACTIVITY HISTORY**

2.8.2 Sensor parameter list

DESIGN (in the sensor card) > ··· *>* ***Settings***

- **DETECTION FIELDS**
- **POSITION AND ORIENTATION**
- **ANTI-TAMPERING**
- **OPTIONS**
  - **MUTING**
  - **DETECTION FIELDS DEPENDENCY**

3. Validation phase

Contents

This section includes the following topics:

3.1 VALIDATION section

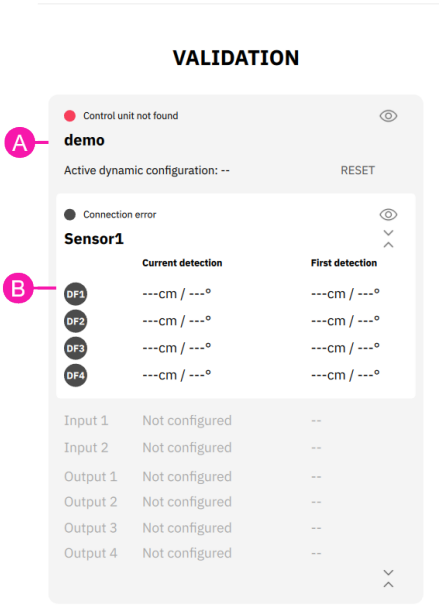
VALIDATION

3.1.1 Introduction

This section allows validating a project, that is verifying in real time that the safety functions are activated/deactivated as expected and that the dangerous area is monitored by the system.

3.1.2 What it looks like

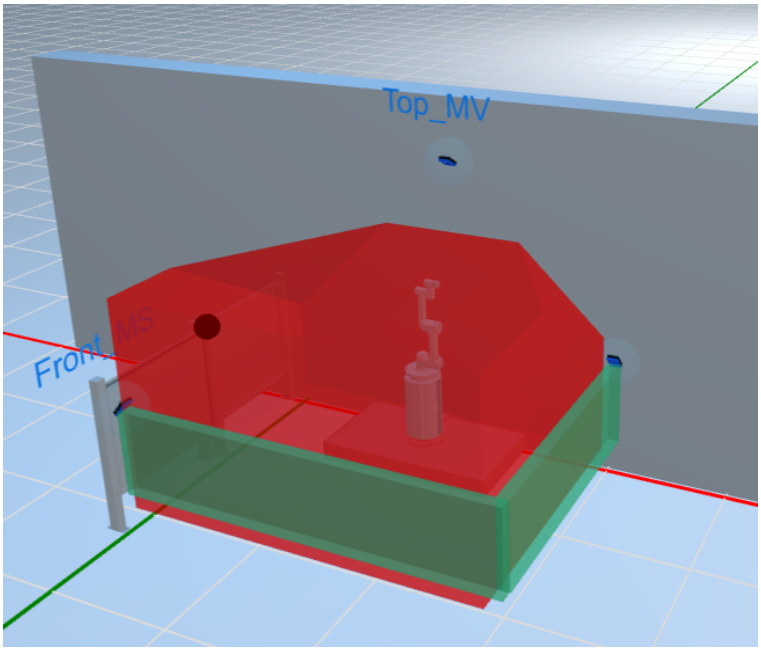
This is what the section looks like with only one control unit connected to the application and only one sensor connected to the control unit.



Part	Description
A	Control unit card with the following information: • Control unit status (see "Control unit status" on the next page) • Connected sensors • Status of the control unit inputs and outputs
B	Sensor card with the following information: • Sensor status (see "Sensor status" on the next page) • Detection fields status and related information (see "Detection field status" on the next page)

3.1.3 What it looks like in the 3D area

The 3D area shows the target inside the field of view and the status of the detection fields in real time (see "Detection field status" on the next page). A black dot represents the position where the target is detected.



3.1.4 Control unit status

Color	Description
Gray	Connection in progress
Red	Control unit in error
Green	Control unit running properly
Orange	At least one sensor of the control unit is in error

3.1.5 Sensor status

Color	Description
Red	Sensor in error
Green	Sensor running properly
Gray	Sensor muted

3.1.6 Detection field status

Color	Description
Red	Detection
Green	No detection
Gray	Sensor muted

3.1.7 Actions on items

Button	Function
	• In the control unit card: shows/hides all sensors in the 3D area. • In the sensor card: shows/hides the sensor in the 3D area.
RESET	Resets the information shown in the "First detection" field.
	• In the control unit card: collapses/expands the information on the control unit (connected sensors, inputs, outputs) • In the sensor card: collapses/expands the information on the sensor detection fields.

3.2 Validate a project

VALIDATION

3.2.1 Procedure

1. Click **VALIDATION**: the validation starts automatically.
2. Move in the monitored area. Refer to the system instruction manual for validation detailed instructions.
3. Check that the sensors behave as expected.

3. Appendix

Contents

This section includes the following topics:

3.3 Technical support

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3.4 System software

3.4.1 Introduction

The aim of this appendix is to provide and clarify the information related to the system software.

Considering that Inxpect SRE 200 Series is an embedded system provided with a firmware already deployed on board, no software integration is required by the system installer or by the end user.

3.4.2 Configuration

The system configuration can be performed by means of a PC-based configuration tool, called Inxpect Safety Studio.

3.4.3 Competence

Although no competence is required for software integration, a skilled person is required for system installation and configuration.

3.4.4 Installation instructions

The firmware is already deployed on the hardware, the PC-based configuration tool includes a self-explanatory setup installer.

3.4.5 Outstanding anomalies

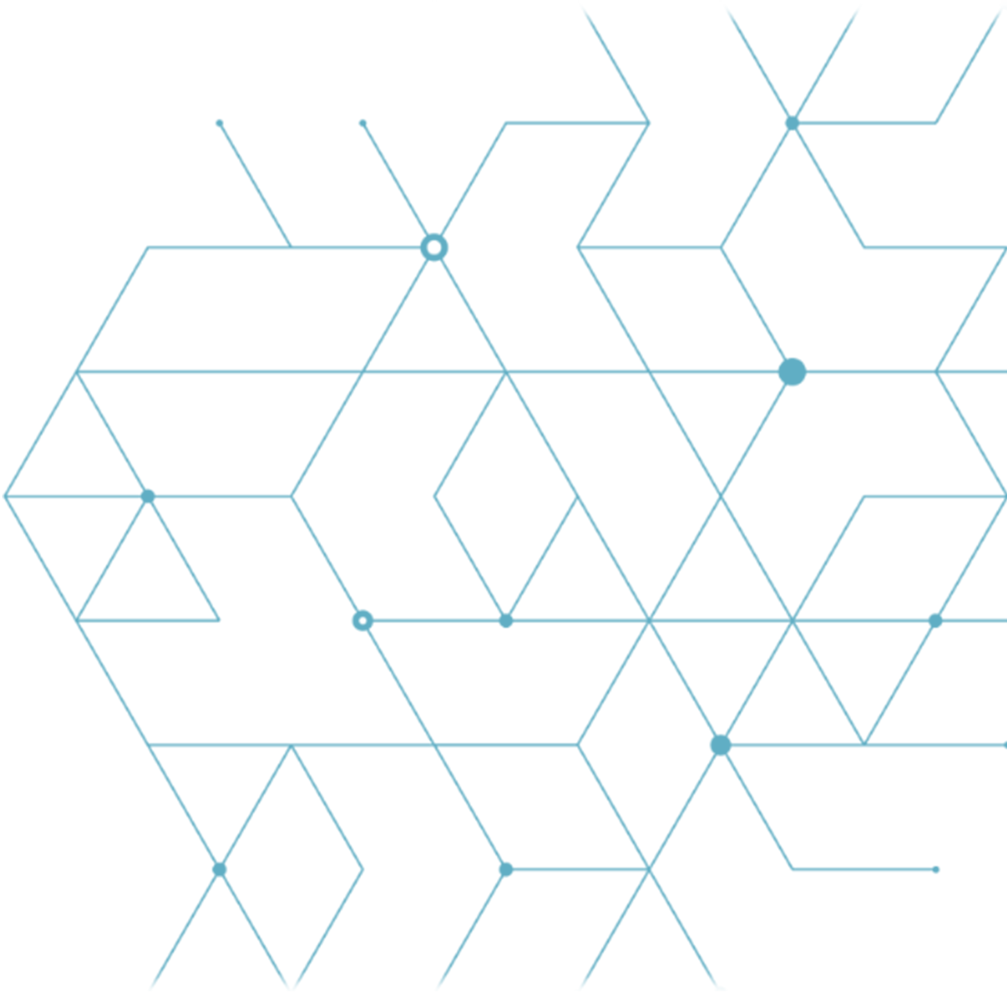
At the moment of the issue of this document, no software/firmware anomalies or bugs are known.

3.4.6 Backward compatibility

Backward compatibility is guaranteed.

3.4.7 Change control

Any change proposal suggested by the integrator or the end user should be forwarded to Inxpect and evaluated by the Product Owner.



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Inxpect SAF-UM-00434_en_v1.0

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