OPERATING INSTRUCTIONS

SICK Augmented Reality Assistant

Software for Integration

SICK
Sensor Intelligence.

Described product

SICK Augmented Reality Assistant

Manufacturer

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Original document

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1 About this document

1.1 Information on the operating instructions

To become familiar with the product and its functions, read the operating instructions carefully before starting any work.

The operating instructions are an integral part of the product. Keep the manual accessible to personnel at all times. If the product is passed on to third parties, the operating instructions must also be handed over.

1.2 Scope

This document applies to the following products:

- SARA Bundle version 4.1 and above
- SICK AR Assistant App version 1.2.2 and above

1.3 Target groups of these operating instructions

This document is intended for persons who commission, install, operate and maintain the product.

1.4 Related applicable documents

Description	Source
Online documentation docker	https://docs.docker.com/

1.5 Further Informations

The product page with further information can be found at the **SICK Product ID** under: pid.sick.com/{**P/N**}.

P/N corresponds to the part number of the product.

The following information is available depending on the product:

- Data sheets
- This document in all available language versions
- CAD data and dimensional drawings
- Certificates (e.g. declaration of conformity)
- More publications
- Software
- Accessories

1.6 Symbols and document conventions

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 Intended use

SICK Augmented Reality Assistant (SARA) enables data to be visualized directly at the location of use. The associated app for mobile devices merges real-time data with the real-life environment. Data visualization speeds up troubleshooting and facilitates commissioning, for example by displaying warning fields and detection points.

SARA is not limited to the visualization of sensor data. All data available on the network can be visualized under certain circumstances, e.g. from MES systems or databases.

2.2 Qualification of personnel

Any work on the product may only be carried out by personnel qualified and authorized to do so.

Qualified personnel are able to perform tasks assigned to them and can independently recognize and avoid any potential hazards. This requires, for example:

- technical training
- experience
- knowledge of the applicable regulations and standards

3 Product description

3.1 Structure and function

SICK Augmented Reality Assistant (SARA) enables data to be visualized directly at the location of use. Using a mobile device (e.g. smartphone), users can view visualized data in an augmented reality.

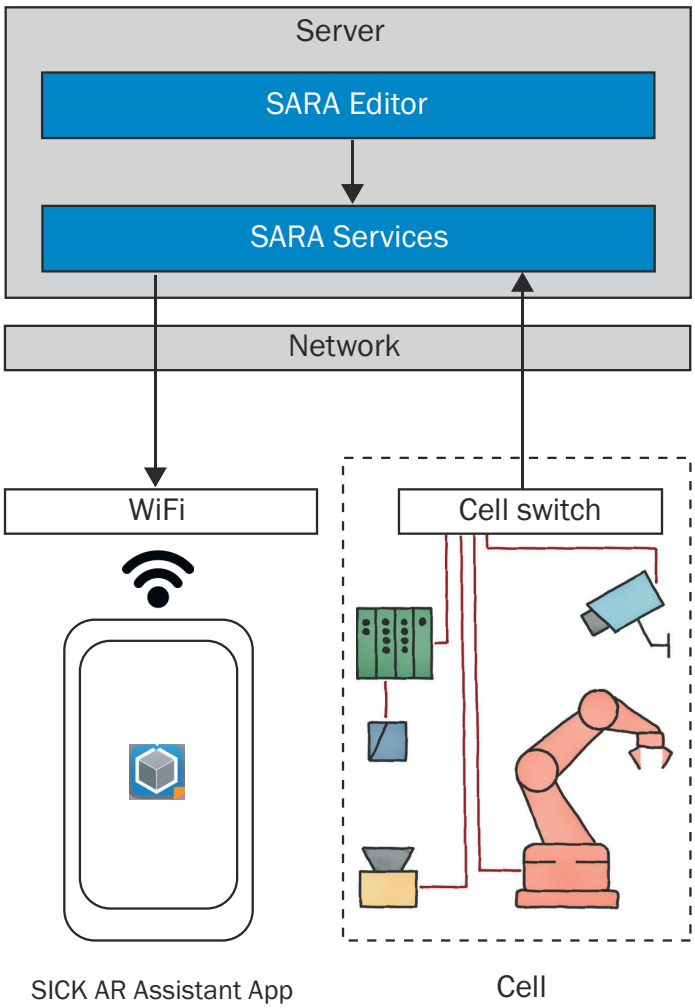
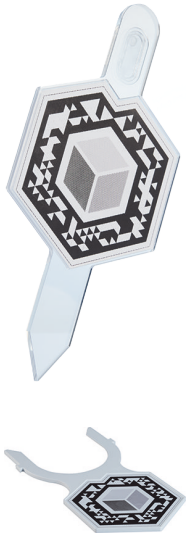


Figure 1: Overview of how SARA works

Table 1: Definition of terms

Name	Description	Image
Cell	A cell is a virtual construct. The cell represents a location where users should have access to information. For example: robot cell, AGV, etc.	
SARA Services	Services running on the server that enable data to be exchanged and SARA to be configured.	
SARA Editor	This is where the administrator selects, among other things, data sources, assigns them to a cell, and configures the type of data display.	
SICK AR Assistant App	App for a mobile device, e.g. smartphone or tablet. The app uses the camera to capture cell markers. The administrator uses the app to define the exact position of the data display within a cell. Users use the app to view the data display.	

Name	Description	Image
Cell marker	Code applied in a cell. Is read via a camera to identify the cell. This can be used to determine in which cell the user is currently located.	
Registration plate	Temporarily used code for placing data displays in the cell. Available in different types: • Registration pointer • Registration plates for sensors from SICK, e.g. 2D LIDAR sensors or safety laser scanners	

4 Installation

4.1 Requirements on the IT infrastructure

Requirements on the network

NOTE
You must ensure that SARA Services (server) has network access to the data from the sensors. In addition, the data must be routed to the WLAN used to access the mobile devices.

Requirements on the server

Table 2: Requirements on the server

Operating system	Linux (e.g. Ubuntu, Debian)
Architecture	amd64, arm32v7
Docker engine	≥ 17.12.0
Docker compose	≥ 1.18.0
CPU	Quad Core
Random Access Memory	≥ 4 GB
Memory	> 20 GB

Requirements on the mobile device

Table 3: Requirements on the mobile device

Operating system	iOS (version 14 or higher) iPadOS (version 14 or higher) Android (version 9 or above)

Ports used

Port	Use	Port forwarding required
443	API Gateway	Yes
1883	MQTT broker	Yes
8070	Service Registry	Yes
8080	SARA Cockpit Frontend	For remote installation only
8090	SARA Installer Service	For remote installation only
8883	MQTT Broker (MQTTS)	Yes
22352	Codemeter Service (License Tool)	No
24224	Fluentd	No

4.2 Installation management via SARA Cockpit

Functions of the SARA Cockpit

The installation is managed via SARA Cockpit. The following actions are possible:

- Initial installation (incl. WIBU for license management) or update of existing installation
- Deinstallation
- Add SSL or TLS certificates
- Status display for the services
- Status display for the licenses

Remote access

For servers without their own user interface (e.g. screen and keyboard), SARA Cockpit can also be called remotely.

1. Start the tool via a shell (e.g. remote via SSH connection).
   Include the sudo password as an additional parameter. Password is needed for installing system relevant packages and creating log files. Example:
   /usr/lib/sara-cockpit/sara-cockpit pw=<password>
2. In the address line of the browser, enter the IP address of the server together with the port of SARA Cockpit. Example: `http://192.168.1.1:8080`

4.2.1 Performing an initial installation or update

Prerequisites

- When running and installing SARA Cockpit for the first time, the server must have access to the Internet.
- Installation of SARA Services does not require a internet connection. One of the following requirements must be met:
  - Online: Server has a connection to the Internet; SICK ID account is available
  - Offline: SARA Services installation package is stored on the server.
    Latest installation files can be accessed here: **https://repo.cloud.sick.com/**
    The highest version number indicates the most recent release.

Approach

1. Download the .deb file
   https://www.sick.com/sick_augmented_reality_assistant
   Downloads > **Software**
2. Copy the executable .deb file to the server.
3. Execute the following command to install SARA Cockpit:
   sudo dpkg -i /absolute/path/to/sara cockpit deb/file
4. Execute the following command to install the dependencies:
   sudo apt-get install -f

✓ SARA Cockpit is installed and opened.

5. Click on the following icon.

✓ SARA COCKPIT checks if an installation already exists. If an installation is found, the mode changes from **INSTALL** to **UPDATE**.

6. Select whether the installation or update is to be performed with or without an online connection
   - **Installation (online)** or **Update (online)**: The latest installation data are obtained directly from SICK.
   - **Installation (offline)** or **Update (offline)**: A path to the installation files must be specified.
7. Click on **Install** or **Update**.
8. Follow the instructions of the installer.

✓ The SARA services are executed. This may take several minutes depending on the performance of the server hardware.

4.2.2 Uninstalling SARA Services

Approach

1. Run the .deb file.

✓ SARA COCKPIT opens.

2. Click on the following icon.

3. Click **Uninstall**.
4. Follow the instructions of the installer.

✓ SARA Services and, if applicable, WIBU are uninstalled. This may take several minutes depending on the performance of the server hardware.

4.2.3 Managing certificates

Overview

This is where company-internal IT certificates for secure data communication can be stored or removed.

Approach

1. Run the .deb file.

✓ SARA COCKPIT opens.

2. Click on the following icon.

3. Enter the code of the certificate in the **cert.pem** field. Multiple certificates must be merged into one certificate beforehand.
4. Enter the private key in the **key.pem** field.
5. Enter the authority in the **ca.pem** field.

4.2.4 Displaying the status of services

Approach

1. Run the .deb file.

✓ SARA COCKPIT opens.

2. Click on the following icon.

✓ A list of all services and their current status is displayed.

3. To start the services, click on **Start**.
4. To stop the services, click on **Stop**.

4.2.5 Displaying the license status

Approach

1. Run the .deb file.

✓ SARA COCKPIT opens.

2. Click on the following icon.

✓ A link to the web interface of the license server is displayed.

4.3 Licenses

4.3.1 Activating the license

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 number of the license order is available.

Important information

NOTE

SARA installs a separate license container. If several license containers are installed, it is not directly recognizable which license container originates from SARA.

You can access the web interface of the Codemeter server via the following link:

`http://[Server IP adress]:22352`

This is where all installed license containers are listed.

Approach

1. Open a browser and go to the following address: https://www.license.sick.com
2. Enter the Ticket ID and confirm with **OK**.

✓ The CodeMeter License Central WebDepot opens in your browser.

3. Select the binding for the licenses:
   - Binding to a computer
   - Binding to a dongle (available from WIBU-Systems)
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. Select the license container. The correct license container is selected automatically in most cases.
6. Activate the licenses by clicking the **Now activate the selected licenses** button.
7. Follow the instructions.

Complementary information

- It is also possible to activate a license offline. To do so, following the **File-based license transfer** instructions in the WebDepot.
- Licenses cannot be copied or transferred. Transferring licenses, e.g. back to the computers, is not possible. Returning a license is possible.

Further topics

- "Distributing licenses", page 12

4.3.2 Distributing licenses

Overview

If you have purchased a license package and only want to activate specific licenses in it, you need to first distribute the licenses.

Prerequisites

- A license package has been purchased and a Ticket ID is available.

Approach

1. Opening the **CodeMeter License Central WebDepot**: https://license.sick.com/
2. Enter the Ticket ID and click on **Next**.
✓ The **My Licenses** tab is displayed.
3. Select **Distribute licenses**.
4. Follow the instructions for distributing the licenses in WebDepot.

4.4 Installing the SICK AR Assistant App

Prerequisites

- Mobile device has one of the following operating systems:
  - iOS 14.0 or above
  - Android 9.0 or above

Approach

1. Open the App Store on the mobile device.
2. Enter the following in the search field:
`SICK AR Assistant`
✓ The SICK AR Assistant App is displayed in the App Store.
3. Install the SICK AR Assistant App.

4.5 Starting the SICK AR Assistant App for the first time

Prerequisites

- Mobile device is connected to the WLAN where the SARA Services are available.
- SICK AR Assistant App is installed on the mobile device.
- The administrator has provided a QR code for registration.
- The administrator has provided access data.

Approach

1. Start the SICK AR Assistant App on the mobile device.
2. Select the desired menu language and select **Continue** to confirm.
3. When prompted, allow access to the camera. Alternatively, access to the camera of the mobile device can be granted later.
4. Scan the QR code provided.
ⓘ **NOTE** | For mobile devices with the iOS or iPadOS operating system only: A popup may be displayed to confirm network access. Acknowledge the popup. Next scan the QR code again.
✓ The app establishes a connection to SARA Services. If the connection is successful, a check mark is displayed on the screen. The login window then opens.
5. Enter the access data and select **Login** to confirm.
Access data in the delivery state:
   - admin
   - Test123#

Further topics

- "Generating a QR code for app access", page 15
- "Opening User Management", page 14

5 Configuration

5.1 Opening User Management

Overview

User Management is used to create, manage and define the roles of users (e.g. administrator). Passwords can also be reset here.

Important information

NOTE
In the delivery state, there are no stored certificates. That is why the browser displays that the connection is not secure when the page is accessed.

Approach

1. Enter the following address in the browser to open the page:
   `https://{Server IP adress, e. g. 192.168.1.1}:443/user-management`
2. Select **Login**.
3. Enter and confirm the access data.
   Access data in the delivery state:
   - admin
   - Test123#

✓ SARA User Management opens.

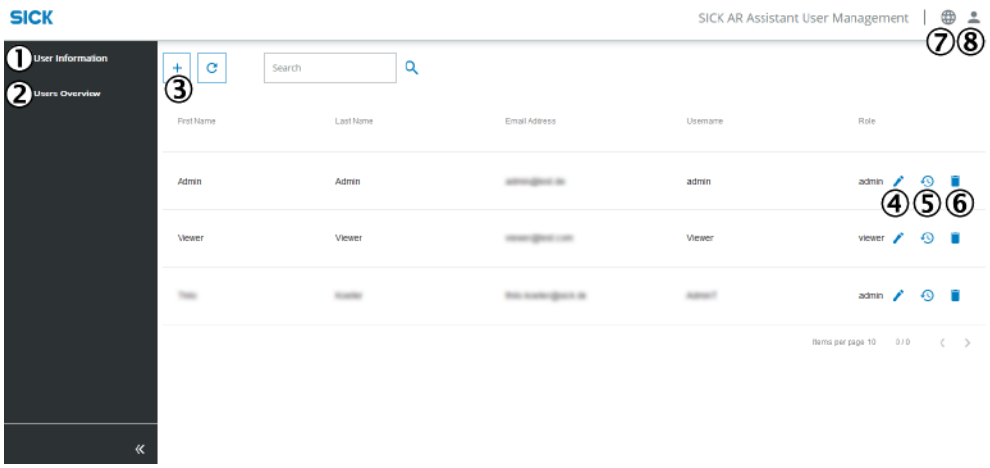


Figure 2: Overview of User Management

① This is where users can view their data and change the password.
② This is where administrators can manage the users.
③ Add new user
④ Edit user
⑤ Reset the user's password
⑥ Deleting users
⑦ Change language
⑧ Logout

5.2 Opening and logging into SARA Editor

Important information

NOTE
In the delivery state, there are no stored certificates. That is why the browser displays that the connection is not secure when the page is accessed.

Prerequisites

- Access data with administrator rights are available.
  Access data in the delivery state:
  - admin
  - Test123#

Approach

1. Enter the following address in the browser to open the page:
   `https://{Server IP adress, e. g. 192.168.1.1}:443/sara-editor`

✓ A waiting indicator appears if the SARA Editor is not yet ready.

2. Select **Login**.
3. Enter and confirm the access data.

✓ SARA Editor opens.

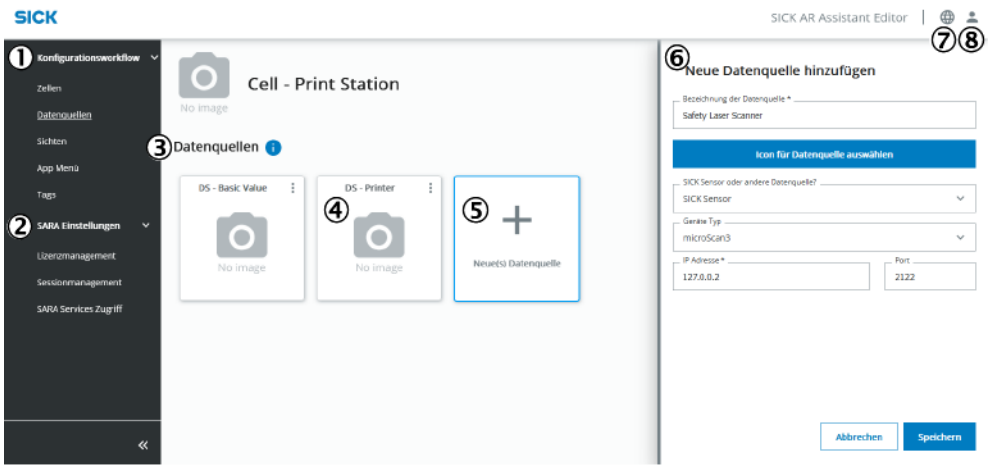


Figure 3: Overview of SARA Editor

① Configuration of the data display
② Settings
③ Currently selected menu
④ Tiles represent already configured elements
⑤ Tile to add new elements
⑥ Tab to configure elements
⑦ Change language
⑧ Logout

5.3 Generating a QR code for app access

Overview

To use the SICK AR Assistant App for any purpose, it must be connected to SARA Services. A QR code can be generated in SARA Editor. The QR code is read using the camera of the mobile device. The app will then automatically create the connection.

Prerequisites

- You are logged in as administrator.

Approach

1. **SARA Settings** > **SARA Services Access**
2. Enter the IP address of the server. If the IP address is routed, append the port for the gateway to the IP address. Default port: 443.
   `http://[Server IP adress]:12345`
3. Select **Create SICK AR Assistant QR Code** .

✓ QR code is generated and displayed.

4. If necessary, save the QR code using **Download SICK AR Assistant QR Code** .

5.4 Configuring the data display

Overview

A data display enables information to be displayed in the app. A data display is configured in a multi-step process. The administrator defines which data are to be displayed in a cell and how. Which data display should be shown to which users is also defined.

Overview of configuration

① Configuration in SARA Editor (server)

1 Create cell. A cell is a virtual construct. The cell represents a location where users should have access to information.
2 Configure data sources.
3 Combine data sources into a view. In a view, data sources are filtered and the type of display is configured.
4 Define a menu for users.
5 Create a tag. A tag is a container that contains one or more views. The data display is later positioned above the tag in space.

② Configuration in SICK AR Assistant (app)

1 Register a cell marker. In this step, cell markers are connected to a cell. The cell markers are set as reference points for augmented reality.
2 Register the tag. In this step, the data display is positioned in space.

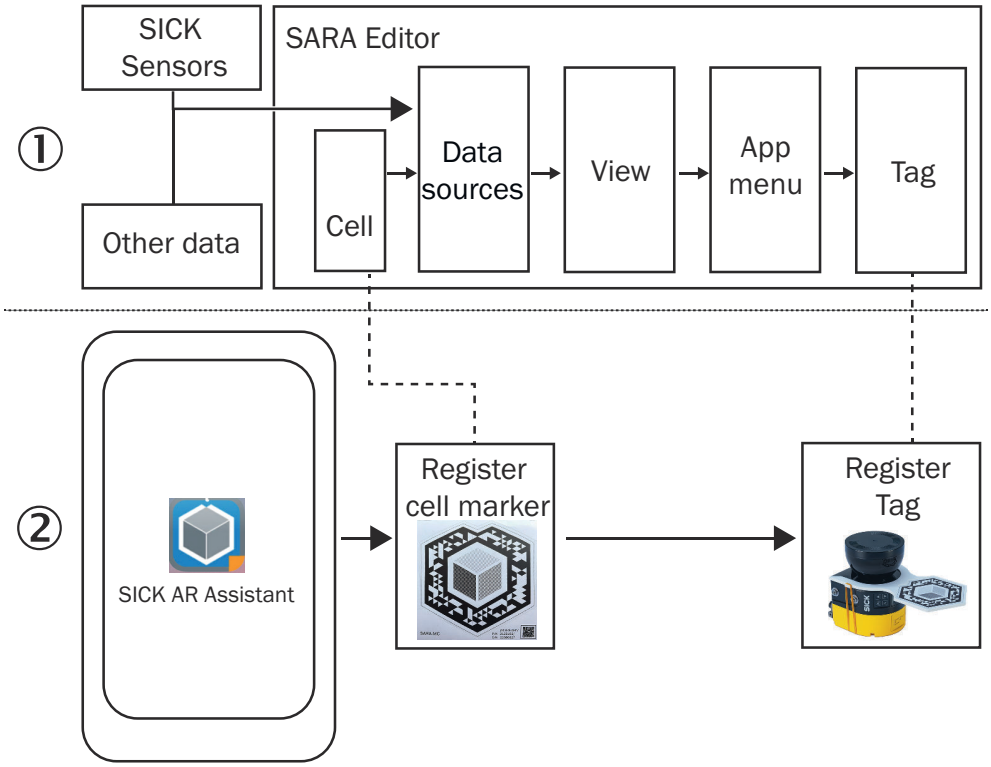


Figure 4: Overview of configuring the data display

Further topics

- "Create a cell", page 17
- "Adding data sources", page 18
- "Creating a view", page 21
- "Setting up a menu for users", page 21
- "Creating a tag", page 22
- "Registering cell markers", page 23
- "Registering a tag", page 25

5.4.1 Configuring the data display in SARA Editor

5.4.1.1 Create a cell

Overview

A cell is a virtual construct. The cell represents a location where users should have access to information. Users use the camera of the mobile device to read a code on a cell marker. This cell marker is used to determine which cell a user is currently in.

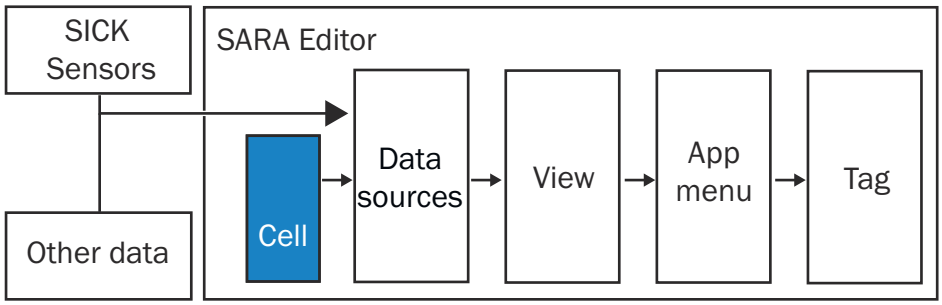


Figure 5: Configuration in SARA Editor

Prerequisites

- You are logged in as administrator in SARA Editor.

Approach

1. **Cells** > **New cell**
2. On the **Add new cell** tab, enter a name. Optionally add an icon.
3. Select **Save**.

✓ New cell is created and selected for further configuration.

Complementary information

To modify or delete an existing element, you can click on the 3 dots in the corner of a tile.

5.4.1.2 Adding data sources

Overview

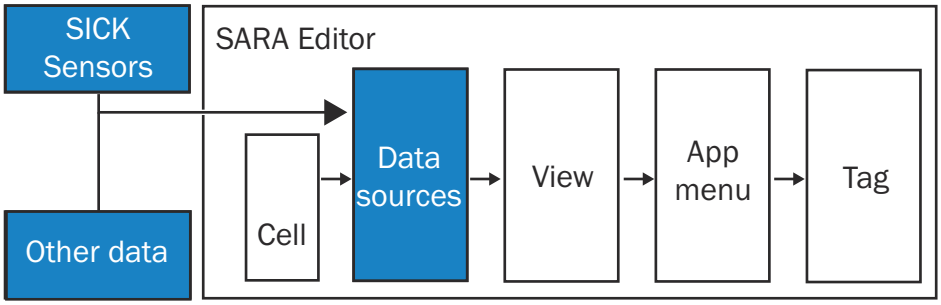


Figure 6: Configuration in SARA Editor

Prerequisites

- You are logged in as administrator in SARA Editor.
- The desired cell is selected under **Cells**.

Approach

1. **Data Sources** > **New data source**
2. On the **Add Data Source** tab, enter a name. Optionally add an icon.
3. Select whether the data source is a sensor from SICK or something else. The further configuration options depend on the selected data source.
4. Configure the data source fully.
   For sensors from SICK only:
   - The port only needs to be specified if the port is different, e.g. if the port is routed.

   For other data sources only:
   - The format under **Data model** corresponds to the description format for the WOT (Web of Things). For all supported formats there is a tooltip with a link to the full description.
5. Select **Save**.

Complementary information

To modify or delete an existing element, you can click on the 3 dots in the corner of a tile.

Further topics

- "User-defined data sources", page 19

5.4.1.2.1 User-defined data sources

To enable custom data sources to be processed by SARA, they must be passed as JSON to the MQTT broker of SARA.

- MQTT: mqtt://{IP address of the server}:1883
- MQTTS: mqtt://{IP address of the server}:8883

Different profiles are available for selection depending on the type of data. For each profile there are separate JSON schemas, which can be accessed via the tooltip of each entry in the Data model drop-down menu.

Example Basic value

This profile can be used to display simple 2D data (e.g. text or value).

Schema:

```
{
   "icon": "<base64 encoded image>",
   "unit": "%",
   "label": "Machine Yield",
   "value": "100",
   "category": "<Custom | Default>"
}
```

Table 4: Basic value - Properties

Name	Description	Data type	Example values
unit	Unit behind the value	STRING	–
label	Name of the value	STRING	–
value	Value	STRING	–
category	Type of data, e.g. to define an icon.	STRING	• Temperature • Contamination • Count • Pressure • Custom = Can be used to specify a custom base64 encoded icon; the “icon” property must be defined. • Default = Default value; a default icon (info) is displayed for the icon value. The value of the “icon” property is ignored.
icon	Required if the “category” property is set to the value “Custom”.	STRING	–

Example Line

This profile can be used to display lines, arrows, texts and connected geometries (grid model). This can be used, for example, to specify directional instructions in space.

Schema:

```
{
     "segments":
      [{
         "start": {
             "x": 0,
             "y": 0,
             "z": 0
         },
```

```
            "end": {
                "x": 0.1,
                "y": 0,
                "z": 0
            },
            "text": {
                "text": "Test",
                "lmr": "m",
                "size": 1,
                "color": {
                    "r": 255,
                    "g": 255,
                    "b": 255
                },
                "intensity": 1,
                "bgColor": {
                    "r": 255,
                    "g": 0,
                    "b": 0
                },
                "bgIntensity": 0
            }
        },
        ...
        ],
        "color": {
            "r": 0,
            "g": 255,
            "b": 0
        },
        "thickness": 0.01,
        "intensity": 1,
        "arrow": "both",
        "rotate": false
    }
```

Table 5: Line - Properties

Name	Description	Data type	Example values
lmr	Alignment of the text	STRING	• l = left • m = middle • r = right
size	Text thickness relative to line thickness	NUMBER	• 1 = Text thickness corresponds to line thickness • 2 = Text thickness twice as large as line thickness
intensity	Value	NUMBER	• 0 = 100% transparency (invisible) • 0.5 = 50% transparency (partially visible) • 1 = 0% transparency (completely visible)
thickness	Line width in meters	NUMBER	0.01
arrow	Arrowhead at the end of the line	STRING	• none • start • end • both
rotate	Defines whether the line should rotate to always face the camera.		• true = Line rotates to camera • false = Lines is fixed

5.4.1.3 Creating a view

Overview

In a view, data sources are filtered and the widget type is configured. The widget type determines the way the information is displayed.

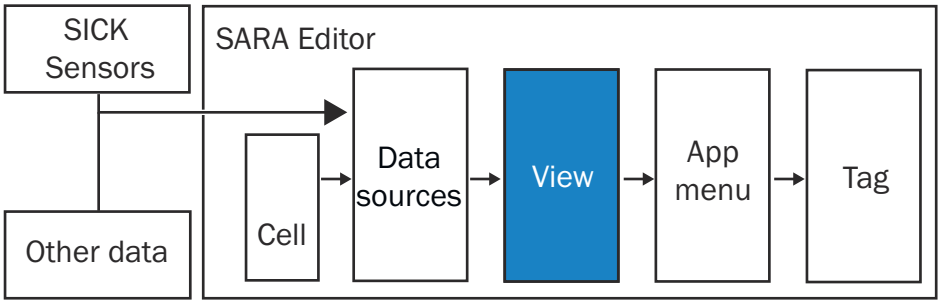


Figure 7: Configuration in SARA Editor

Prerequisites

- You are logged in as administrator in SARA Editor.
- Desired data source is configured.
- The desired cell is selected under **Cells**.

Approach

1. **Views** > **New view**
2. Enter a name for the view.
3. First tile: select the desired data source.
4. Second tile: select the desired data from the data source.
5. Third tile: Select the widget type. The widget type determines the way the information is displayed. The available widget types depend on the selected data source. Often only one widget type can be selected.
6. If applicable, enter a value for **Focus Filter** and **Distance Filter**.
   These are thresholds that determine how the widget is displayed depending on the distance X between the mobile device and the widget:
   - X > Distance Filter:
     no display of data. A * symbol shows the user that a widget will be displayed when approached.
   - Distance Filter > X > Focus Filter:
     reduced display of the widget
   - X < Focus Filter:
     full display of the widget
7. Select **Save**.

Complementary information

- To modify or delete an existing element, you can click on the 3 dots in the corner of a tile.
- A view can contain only one record from a data source.

5.4.1.4 Setting up a menu for users

Overview

You can configure the SICK AR Assistant App individually for each user. This can be used, for example, to restrict access to certain data. User-specific menus can also be used to implement role profiles (e.g. maintenance personnel).

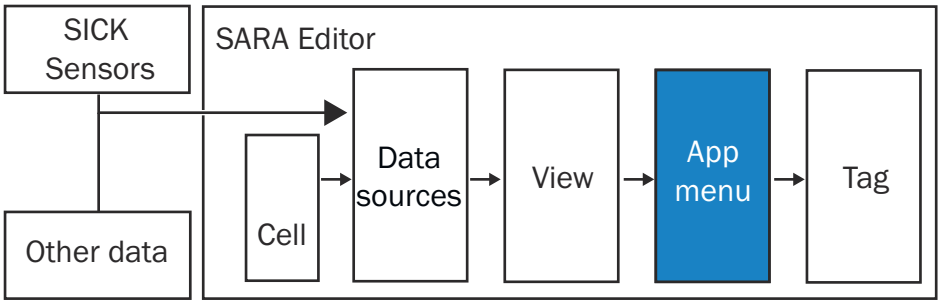


Figure 8: Configuration in SARA Editor

Prerequisites

- You are logged in as administrator.
- The desired user has been created.
- The desired cell is selected under **Cells**.

Approach

1. Select **App Menu**.
2. Select the desired user from the drop-down menu.
3. Select **New Entry**.
4. Enter a name for the menu item.
5. At **Menu Item Position**, enter a number. The number determines the order of the menu items in the app.
6. Optionally select an icon.
7. At **Views**, select which views are active for the user when the menu item is selected in the app.
8. Optionally select an Menu item is active by default.
9. Select **Save**.

Further topics

- "Opening User Management", page 14

5.4.1.5 Creating a tag

Overview

A tag is a container that contains one or more views. The data display is later positioned above the tag in the augmented reality.

A tag is comparable to a sticky note. A sticky note is used to position written information at a location. A tag is used to position views at a location.

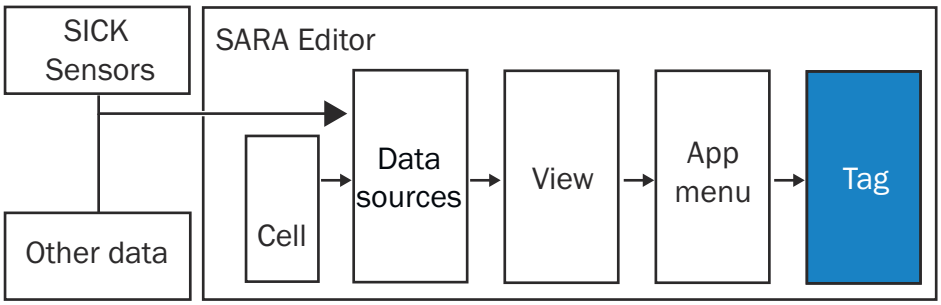


Figure 9: Configuration in SARA Editor

Prerequisites

- You are logged in as administrator in SARA Editor.
- The desired cell has been selected under **Cells**.
- A view has been created.

Approach

Adding a new tag

1. **Tags** > **New Tag**
2. Enter a name for the tag. Optionally add an icon.
3. Select the desired views.
   When multiple views are assigned to a tag, it has the following effects:
   - When registering the tag, multiple views can be positioned in one step.
   - The views cannot overlap each other.

   Therefore: If data displays are positioned in different locations, they should also be assigned to different tags.
4. Select **Save**.

Complementary information

To modify or delete an existing element, you can click on the 3 dots in the corner of a tile.

5.4.2 Configuring the data display in SICK AR Assistant App

5.4.2.1 Registering cell markers

Overview

The cell markers are used to identify a cell and as reference points for the data display. The position of the cell markers must first be planned. The cell markers are then attached and registered via the SICK AR Assistant App.

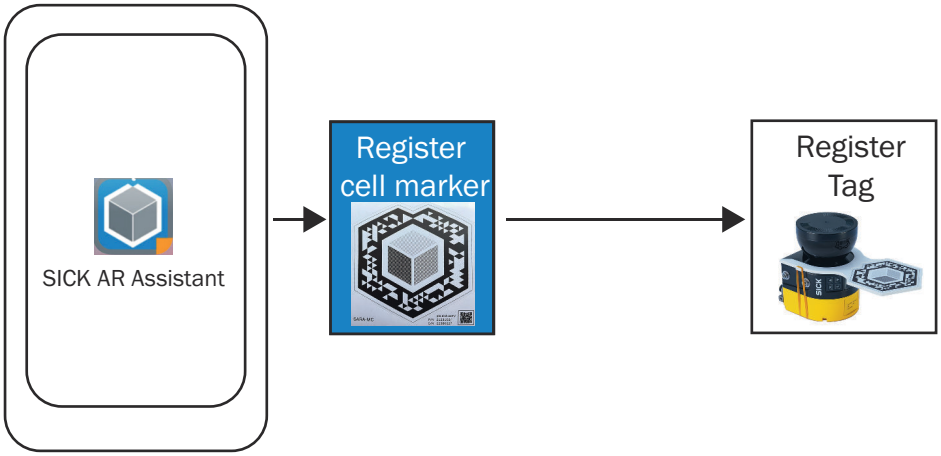


Figure 10: Configuration in SICK AR Assistant App

Prerequisites

- The data display is fully configured in SARA Editor.
- Cell markers are ready.
- Optional: The tripod is ready.
- SICK AR Assistant App is running on the mobile device. You are logged in as administrator.
- SICK AR Assistant App has a connection to SARA Services. The connection data are read via a QR code provided by the administrator.

Important information

NOTE
There are 2 different types of cell markers:

- Permanent cell markers (labels)
- Temporary cell markers (plastic)

Approach

Planning the position of the cell markers

► Take into account the planned position of the data display. The closer a cell marker is positioned to the data display, the easier it is for users to find the data display.
► Ensure that cell markers are clearly visible at the planned position.
► Ensure a distance of 150 cm ... 200 cm between cell markers. (see figure 11)
► To bridge large gaps, incorporate temporary cell markers. (see figure 11).
► Take into account that in very large plants, the cell markers are not needed along the entire length of the plant. Cell markers only need to be placed where needed.
► Place the cell markers. For temporary cell markers, use a tripod if necessary.

Registering cell markers

1. Start the SICK AR Assistant App on the mobile device.
2. Select **Localization**.
3. Select the desired cell.
4. Select **Register cell markers**.
5. Follow the instructions on the screen to register the first two cell markers.
6. Ensure that all cell markers are connected by a line.
7. Ensure that a check mark is displayed above all registered cell markers.
8. Register the first two cell markers and select **Confirm** to confirm.
9. If applicable, select **Yes** to register more cell markers. Otherwise select **No** to continue.
10. If applicable, select **Proceed** to delete temporary cell markers. Otherwise select **Confirm** to complete the registration.
11. If applicable, immediately continue registering tags.

Example

In the following example, a large cell is being set up. 3 cell markers are placed permanently (①, ② and ③). The distance between the cell markers ② and ③ is correct for registration. The distance between the cell markers ① and ② is too large for registration. Therefore, a temporary cell marker ④ must be placed between them. After registration, the temporary cell marker can be removed.

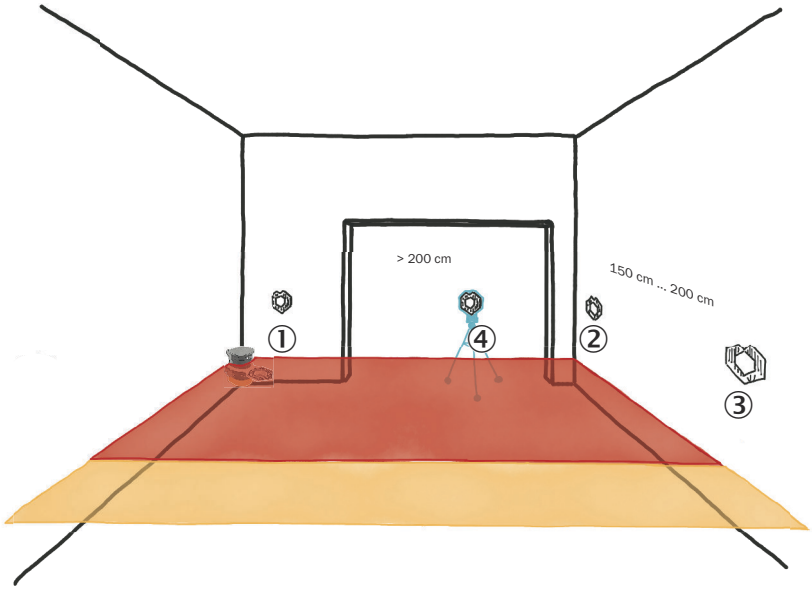


Figure 11: Example use of permanent and temporary cell markers

5.4.2.2 Registering a tag

Overview

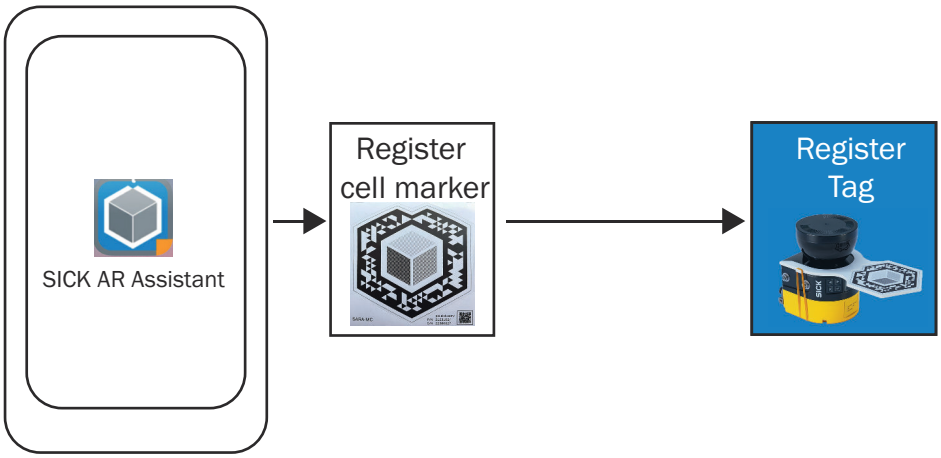


Figure 12: Configuration in SICK AR Assistant App

Prerequisites

- The data display is fully configured in SARA Editor.
- The cell markers are registered.
- Suitable registration plate is ready (registration pointer or registration plate for a specific sensor from SICK).

Approach

1. Select **Localization**.
2. Select the desired cell.
3. Select **Register Tags**.
4. Select the desired tag.
5. Scan the cell marker with a camera. The cell marker must belong to the cell where the data display should be visible.
6. Position the registration plate.

- The registration plates for 2D LiDAR sensors and safety laser scanners are used to register tags for visualizing fields. The registration plate is positioned at the lower end of the optics cover.
- The registration pointer is used to register tags for positioning data displays freely in space.

7. Scan the registration plate.
8. Select **Confirm** > **Finish** to complete the registration.
9. Remove the registration plate.

6 Operation

6.1 Scanning cell markers

Prerequisites

- Mobile device is connected to the WLAN where the SARA Services are available.
- SICK AR Assistant App is running on the mobile device.
- SICK AR Assistant App has a connection to SARA Services (QR code).
- Data display has been fully configured in SARA Editor.

Approach

1. Select **Diagnostic**.
2. Scan the cell marker with a camera.

✓ Green check mark: Cell marker detected. Data display available. The menu is available in the app.

✓ Orange check mark: Cell marker detected. However, no data are available.

3. Tap the button at the bottom right to open the menu wheel.
4. Select the desired menu item. If necessary, swipe to scroll through the menu wheel.
5. Search the surroundings for the data display. To do so, change the position and viewing direction of the mobile device.

✓ Data displays are shown on the screen. Depending on the configured minimum distance, data displays may be reduced or only displayed with a * symbol.

6. If necessary, approach the data display so all of the contents are displayed.

Further topics

- "Starting the SICK AR Assistant App for the first time", page 13
- "Configuring the data display", page 16

7 Troubleshooting

7.1 Possible faults

Errors in SARA Cockpit

Table 6: Errors in SARA Cockpit

Fault type	Troubleshooting
Message that ports are already assigned.	► Release used ports.
Installation aborts. Message that Docker and Docker Compose are not installed.	1. Check which version is needed. see "Requirements on the IT infrastructure", page 9 2. Install Docker and Docker Compose. 3. Repeat the installation.
Installation aborts. Message that no suitable installation package exists for the target architecture.	► Perform the installation on a server with a suitable system architecture. see "Requirements on the IT infrastructure", page 9
Installation aborts. Message that the software cannot be installed due to lack of disk space.	► Ensure there is sufficient free space on the server. see "Requirements on the IT infrastructure", page 9
Message: "Missing X Server or $Display"	SARA Services is used headless (without display) or no X server has been installed. ► Install a valid X server (for example, virtual X server xvfb). ► Set a variable if necessary: $DISPLAY := 0 ► Alternatively, use X11 Forwarding.

Errors in SARA Editor

Table 7: Errors in SARA Editor

Fault type	Troubleshooting
• Editor not available • Verification of services takes a very long time	► Use SARA Cockpit to check whether the services are running correctly. If not, restart the services and wait about 2 minutes.
Login failed	► Check the spelling of the username and password (typos) ► Create a user ► Configure the user permissions.
401 User data for authentication have expired.	► Log out and log in again.
500 Unexpected error during startup	► If the system is just booting up: Wait min. 3 minutes. ► Restart the system.
503 Too many requests to SARA Services. For security reasons, further requests are blocked for a short time.	► Wait 2 minutes.

Fault type	Troubleshooting

• Error message when editing the cells
• Error message when editing the data sources
  ○ Loading
  ○ Creating or editing a user-defined data source
• Error message when editing the views
  ○ Loading
  ○ Creating
  ○ Editing
• Error message when editing the menu items
• Error message when editing the tags
• Error message when displaying the active sessions
	► Log out and log in again.
	► Use SARA Cockpit to check whether the services are running correctly. If not, restart the services and wait about 2 minutes. Then log back into SARA Editor.

Error when creating the data source of a sensor from SICK	► Check the IP address. If necessary, configure in the sensor or in the editor. ► Check the port. If the port is not the default sensor port, it must be enabled. This may be necessary, for example, for port forwarding.
Error message when deleting a data source	► Log out. Log in again. ► Use SARA Cockpit to check whether the services are running correctly. If not, restart the services and wait about 2 minutes. Then log back into SARA Editor. ► Check the views and edit or delete if necessary. The data source is perhaps being used in one or more views.
Error when editing the data source of a sensor from SICK	► Log out and log in again. ► Use SARA Cockpit to check whether the services are running correctly. If not, restart the services and wait about 2 minutes. Then log back into SARA Editor. ► Check the IP address and configure in the sensor or editor if necessary. ► Check the port. If the port is not the default sensor port, it must be enabled. This may be necessary, for example, for port forwarding.
Error message when deleting a view	► Log out and log in again. ► Use SARA Cockpit to check whether the services are running correctly. If not, restart the services and wait about 2 minutes. Then log back into SARA Editor. ► Check the menu entries and/or tags and edit or delete if necessary.
Error message due to image size	► Use only icons with a file size < 2 MB. Compress the image if necessary.

Errors in User Management

Table 8: Errors in User Management

Fault type	Troubleshooting
User Management not accessible	► Use SARA Cockpit to check whether the services are running correctly. If not, restart the services and wait about 2 minutes.
Login fails	► Check for typos. ► Log in as administrator and check the user.

Errors in SICK AR Assistant App

Table 9: Errors in SICK AR Assistant App

Fault type	Troubleshooting
• No response when scanning the cell marker • No connection to SARA Services	► Check the WIFI settings of the mobile device. If this does not remedy the situation, inform the administrator: ► Check the IT data routing. ► Check the QR code for app access via SARA Editor and adjust if necessary.
No login possible	► Check for typos. If this does not remedy the situation, inform the administrator: ► Check the licenses via Codemeter and/or SARA Cockpit and order and activate licenses if necessary. ► Check the users in SARA User Management and create them if necessary. ► After repeated unsuccessful login attempts, restart SARA Services via SARA Cockpit.
When scanning the cell marker, only an orange tick is displayed. Despite waiting a bit, the green tick does not appear.	No data display available in the cell ► Wait until the menu loading animation is completed. If this does not remedy the situation, inform the administrator: ► Check the tag in the cell and re-register if necessary. ► Check the data source. ► Check the menu configuration.
A green question mark is displayed when scanning the cell marker.	Unknown cell marker ► Inform the administrator: ► The cell marker needs to be registered. ► Check the configuration in SARA Editor. ► It is not a cell marker, but rather a registration plate that has been left behind after configuration.
Version error detected between the app and SARA Services	► Check the version of the app and update if necessary. If this does not remedy the situation, inform the administrator: ► Check the SARA Services version via SARA Cockpit and update if necessary. ► Check the SARA Services status in SARA Cockpit and restart if necessary. Once all services are active again, restart the app.
Missing data display when using user-defined data sources	► Inform the administrator: ► Check the configuration of the data source(s) in SARA Editor and adjust if necessary. ► Add missing data source(s). ► Launch MQTT Broker. ► Check the views in SARA Editor and adjust if necessary.
WLAN connection is lost.	► Check the WIFI settings of the mobile device. ► Restart the app.
Localization menu does not appear.	► Inform the administrator. The user account requires administrator permissions.
• List of cells or tags in the **Localization** menu is empty. • Error message is displayed that the list of cells cannot be loaded.	► Check the WIFI settings of the mobile device. ► Check SARA Services via SARA Cockpits and restart if necessary. ► Check the configuration of the cells or tags in SARA Editor.

Fault type	Troubleshooting
• When registering a cell: after scanning the second cell marker, it is detected but there is no option to continue. The **Confirm** button is not visible.	► It is not a cell marker, but rather a registration plate.

8 Ordering information

8.1 Ordering information and scope of delivery

Table 10: Ordering information and scope of delivery

Part	Contents	Part number
Base		

SARA Base Package	• Software Package
	  ○ SICK AR Assistant App
	  ○ Backend Software
	  ○ Basic widgets
	  ○ SARA Editor
	  ○ SARA User Management
	• Ticket ID for software license 1 × unlimited floating license
	• Remote support during installation and commissioning
		1123700

Box		
SARA Box	• 1 × SARA Box • 1 × Registration pointer • 50 × cell marker • 2 × temporary cell markers • 1 × tripod	2125426
LiDAR		
LiDAR Package	• Device specific widgets	1123701
Registration plate – microScan3		2128498
Registration plate – nanoScan3		2128497
Registration plate – TiM		2128499
Registration plate – LMS		2128500
Licenses and maintenance contracts		
Floating license for SARA (annual)		1123699
Accessories		
Registration pointer		2128492
50 × cell marker		2125424
20 × cell marker		2125423
1 × temporary cell marker		2128496
Downloads		
SARA Services installation package	https://www.sick.com/sick_augmented_reality_assistant	
SICK AR Assistant App	Download on the App Store ANDROID APP ON Google play DEMO MODE	

8028175/1K4W/2023-04-28/en

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