OPERATING INSTRUCTIONS

MCR

Multi Code Reader

SICK
Sensor Intelligence.

Described product

MCR
Multi Code Reader

Manufacturer

SICK AG
Erwin-Sick-Str.1
79183 Waldkirch
Germany

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Original document

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1 About this document

Note

This document about the MCR:

- Contains information that is required during the life cycle of the system.
- Must be available to all those who work with the system.
- Should be read carefully, and the contents fully understood before working with the system.

1.1 Limitation of liability

Note

Applicable standards and regulations, the latest state of technological development, and our many years of knowledge and experience have all been taken into account when assembling the data and information contained in this document.
The manufacturer accepts no liability for damage caused by:

- Failure to observe this document.
- Non-compliance with notes and regulations.
- Unauthorized mounting and installation.
- Unauthorized technical and other changes.
- Use of unauthorized spare parts, wear and tear parts, and accessories.
- Unauthorized changes, adjustments, and/or manipulations of software.
- Failure to perform and document regular maintenance work.

The actual scope of delivery may differ from the features and illustrations shown here where special variants are involved, if optional extras have been ordered, or as a result of the latest technical changes.

1.2 Purpose of this document

This document describes the MCR - Multi Code Reader.

1.3 Target groups

This document is intended for qualified persons who perform the following tasks with the MCR:

- Commissioning
- Operation
- Maintenance

1.4 Further information

Special local conditions

The local laws, regulations, technical rules and internal company operating instructions at the operation site must be observed.

Storage of documents

This document and other relevant technical documentation/information:

- Must be kept available for reference.
- Must be handed over to new system operators/new specialist personnel.

1.5 Document conventions

▶ Action to be taken

2 Safety information

2.1 Intended use

The MCR Multi Code Reader is used for scanning and aggregating serialized bar codes, e.g. pharmaceutical packaging, according to the FMD (Falsified Medicine Directive) regulation.

Prerequisite:
The number of bar codes in the container to be read is known.

The MCR captures containers with up to 500 serialized packages at a time. The camera system scans the bar codes in up to three separate passes and sends them to a 3rd party cloud application. Aggregation and, if necessary, comparison with, for example, the NMVS (National Medicines Verification System) then takes place.

The bar codes to be scanned must be in GS-1 or AC format.

The system can accommodate containers up to maximum size of 640 x 400 mm; and has an optical depth of field of 31 cm measured from the base of the system.

The system must be set up in an environment where reading cannot be disturbed by ambient light, such as sunlight.

The 3rd party cloud application on which the aggregation or where the check against the EMVS takes place is not part of the system offered by SICK and must be provided by the operating entity.

Intended use also includes observance of these operating instructions, in particular the safety notes as well as the repair and maintenance requirements.

2.2 Supplementary safety notes

- Please read this document through carefully and observe all the safety notes and information before working on the MCR.
- Only qualified persons from the relevant departments are permitted to work on the MCR.
- Follow operating processes.
- Follow local regulations.
- Follow all local regulations relating to working with electrical components.
- Only authorized persons are permitted to access the MCR.

System damage/transport damage

Damage to the individual components can lead to malfunctions of the system as a whole.

- Do not ignore any damage caused to system components during transport.
- In case of damage, contact SICK Service.

2.3 Requirements for the qualification of personnel

Only qualified persons with the relevant technical expertise are permitted to work on the system.

- Qualified persons have the specialist training, skills, experience and knowledge of the relevant regulations and standards needed to be able to perform work assigned to them and to identify and avoid any potential dangers independently.
- Electricians have the professional training, skills, experience and knowledge of the relevant standards and provisions needed to work on electrical systems and to detect and avoid any potential dangers independently.

2.4 Sources of danger

Electrical voltage

Touching live devices, which may still be energized, can lead to death, burns or electrical shock.

LED illumination

The LEDs may cause eye injuries.

Hot surfaces

Risk of burns from hot surfaces.

2.5 System warranty

No warranty claims will be accepted if:

- ▶ The safety notes and measures in this document are not observed.
- ▶ Parts or components of the MCR have been installed, mounted or modified without authorization.
- ▶ The MCR has been altered or modified.
- ▶ The software has been modified, customized, and/or tampered with without authorization.

2.6 Safety conventions

The warnings used in this manual have the following meanings:

DANGER

Identifies a situation presenting danger, which will lead to death or serious injuries if not prevented.

WARNING

Identifies a situation presenting danger, which may lead to death or serious injuries if not prevented.

CAUTION

Identifies a situation presenting danger, which may lead to minor or moderate injuries if not prevented.

WARNING

Identifies a situation that may lead to property damage to the system or products in its vicinity if not observed.

Note

Important information and useful notes.

2.7 Warning symbols

Warning symbols on the system must not be removed or covered. If warning symbols (labels) are missing, these must be affixed. Damaged labels must be replaced.

Symbol	Meaning
	Hazardous point warning
	Hazardous electrical voltage warning
	Hot surface warning
	Suspended load warning

2.8 Mandatory symbols

Mandatory symbols indicate a measure required to protect personal health and / or avoid the risk of personal injury.

Mandatory symbols on the system must not be removed or covered. If mandatory symbols (labels) are missing, these must be affixed. Damaged symbols must be replaced.

Symbol	Meaning
	Read document
	Disconnect before maintenance or repairs
	Wear safety gloves

2.9 Safety notes

DANGER
HAZARDOUS ELECTRICAL VOLTAGE
Contact causes death, burns or shock from electric shock.
- Electrical work may only be performed on the system by qualified personnel.
- Disconnect the voltage supply when working on the system.
- Check residual voltage on the system components.
- Use extra caution.
- Always connect equipotential bonding (earthing).
- Do not disconnect or remove the protective conductor.

DANGER
SUSPENDED LOADS
Serious injury or death from falling suspended loads.
- Never stand under suspended loads.
- Pay close attention when lifting loads.
- Comply with lifting instructions to prevent injuries and accidents.
- Use suitable lifting tools.
- Wear personal protective equipment (safety helmet, safety shoes).

WARNING
LED ILLUMINATION UNIT
Danger of eye injuries.
- Never look directly into the LEDs.
- During commissioning or maintenance work, suitable eye protection must be worn.
- Do not open the housing.

WARNING
HOT SURFACES
Burns caused by hot surfaces on system components.
- Wear suitable safety gloves.

3 System Overview

The MCR Multi Code Reader is used for scanning and aggregating serialized bar codes, e.g. pharmaceutical packaging, according to the FMD regulation.

The system simultaneously reads containers holding up to 500 serialized packages and sends the codes to a cloud application provided by the operating entity, for example for NMVS connection.

The system operator receives optical feedback on the display on the number of scanned codes and on the scanning field of the scanned container.

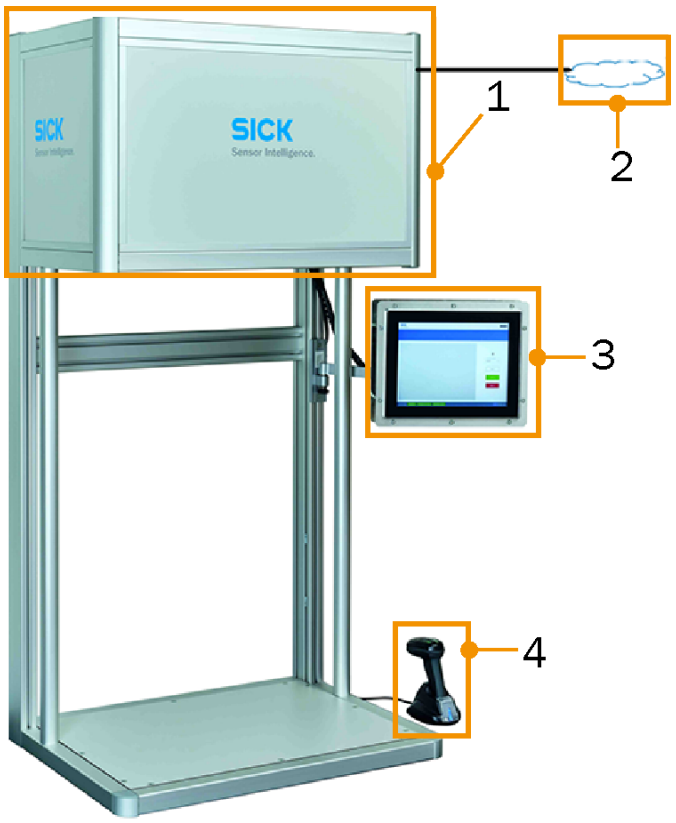

Fig. 1: System components

Legend	
1	Camera system
2	3rd party cloud application
3	Touch HMI - display and operation of the scanner
4	Hand-held scanners

4 Installation

The system may only be commissioned by SICK service technicians.

The system may only be configured by a SICK service technician or a trained IT specialist.

Configuration is done during the first commissioning process or during a later reconfiguration.

4.1 System assembly

- ▶ The system must be firmly mounted on a table or similar work surface. Mounting material is not included in the SICK scope of delivery.
- ▶ The operating entity of the system must ensure that the company-specific ergonomic requirements are adhered to when setting the height of the work surface.

4.2 Provided by operating entity

- 230 V AC voltage supply unit in close proximity to the system.
- Network connection or WLAN access with enabled port 22 TCP (SSH), 80 TCP (HTTP) and 443 TCP (HTTPS), each for outgoing connections.
- Access including password (credentials) to the 3rd party cloud, or a QR code to log into the 3rd party panel.

5 Commissioning

5.1 System start

- Connect the power supply unit (230 V) and attach it to the MCR.
  The system starts automatically.
  The System startup screen appears.

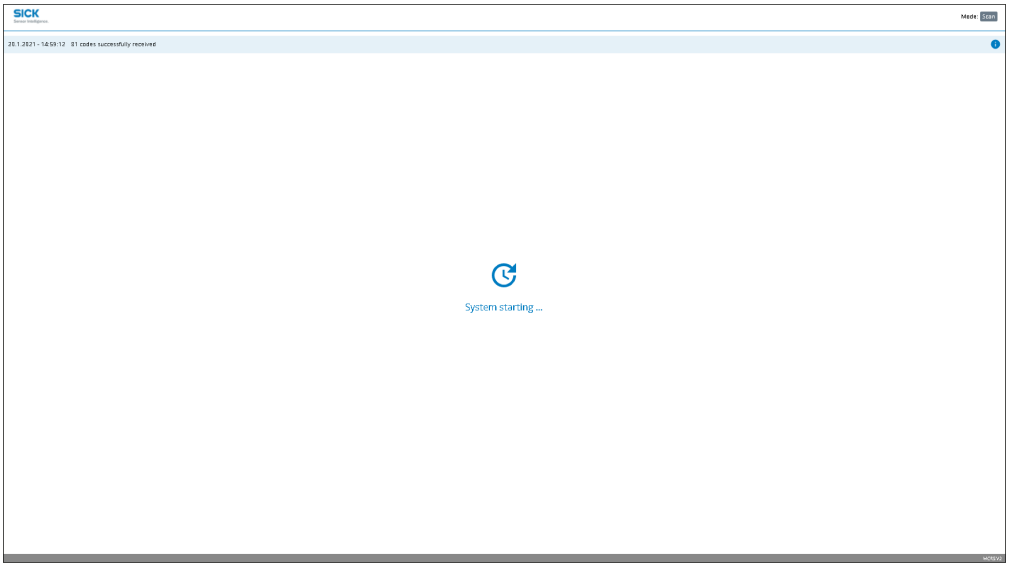

Fig. 2: System startup screen

After the boot process, the individual login screen appears depending on the cloud provider with which the system is to be connected.

5.1.1 Arvato login process

The login process at Arvato is two-step and consists of:

- Device initialization
- User login

The information to be performed during the process is visible on the Arvato cloud.

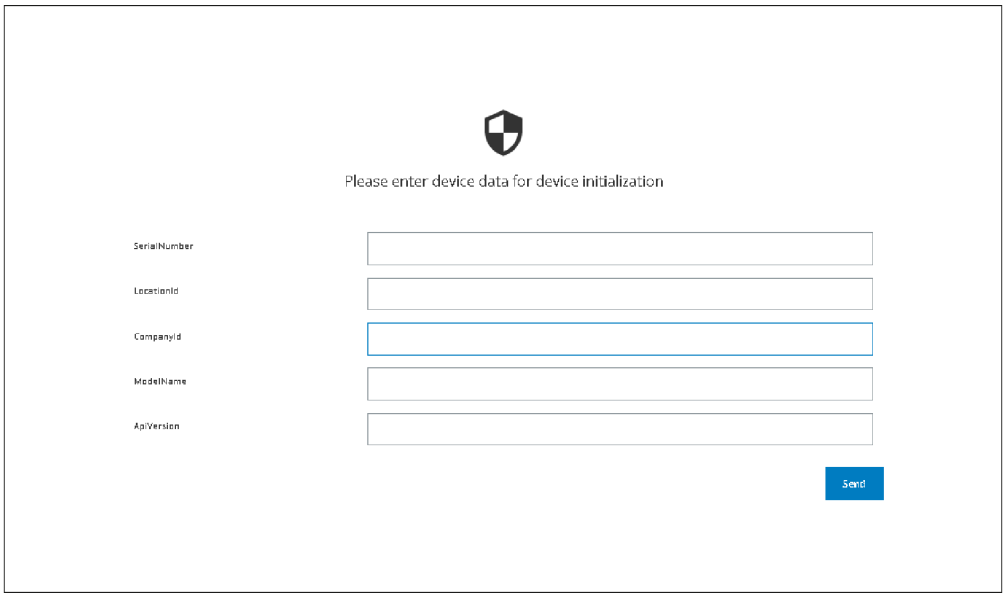

Fig. 3: Information screen, Arvato device initialization

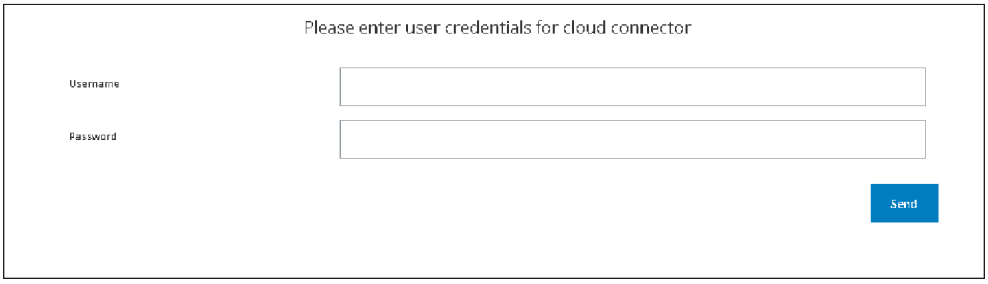

Fig. 4: Information screen, Arvato user login

5.1.2 medAspis and Metacarp login process

The login process for Metacarp and medApsis is single-step and consists of so-called “enrollment”.

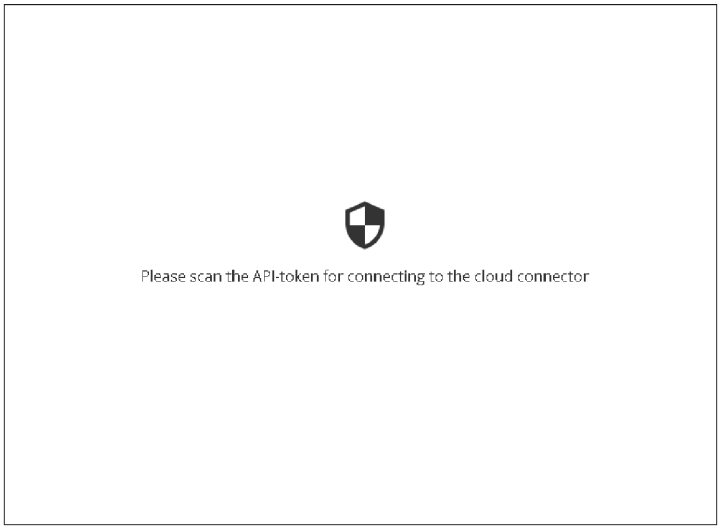

Fig. 5: Information screen, device enrollment for medApsis and Metacarp

5.1.3 Login process for the 3rd party cloud application

To use the MCR, the system must be connected to a cloud application.

- ▶ Generate enrollment code from 3rd party cloud.
- ▶ Scan enrollment code with mobile hand-held scanner.

The user and device data for the login process is displayed in the “Device data” area on the Settings page.

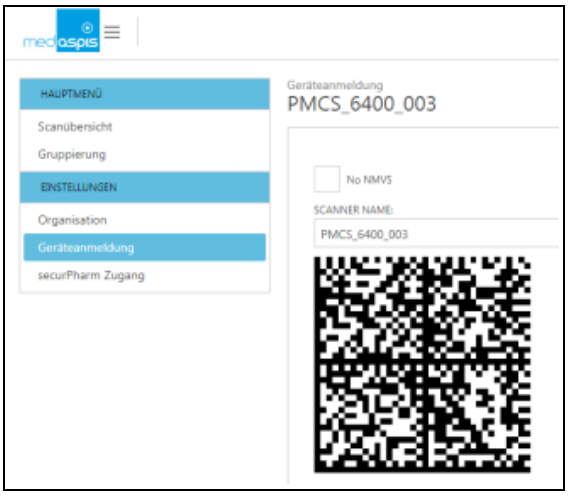

Fig. 6: Enrollment code

Note

The MCR cannot be used without logging into the 3rd party cloud.

5.2 System configuration

System configuration or changes to the system may only be performed by SICK service technicians or power users.

- ▶ Configuration is done via a PC/laptop (web browser) which is located in the local network of the MCR.
- ▶ Connect network cable. Connect PC/laptop to free port on MCR Ethernet switch.
- ▶ The IP address of the PC/laptop must be 192.168.168.1.
- ▶ Web browser configuration address: http://192.168.168.221/#!page=settings-page

Note

The **Settings** page of the MCR is divided into 8 sub-pages:

- Application
- Connector
- Notification history
- Camera
- Network
- Device language
- Logs
- Version info

The network settings for the system are configured by a SICK service technician during commissioning.

5.2.1 Application settings

The following basic settings can be configured in the Application tab of the **Settings** page.

- **Device data**: Login data to the respective cloud provider.
- **Parameters**: Switching between the “Aggregation” and “Scan” operating modes. Aggregation is currently supported only by medAspis.
- Pre-select the FMD modes that the operator can choose from on his screen.
- Enable/disable “NoReads” feature to indicate possible faulty read processes.

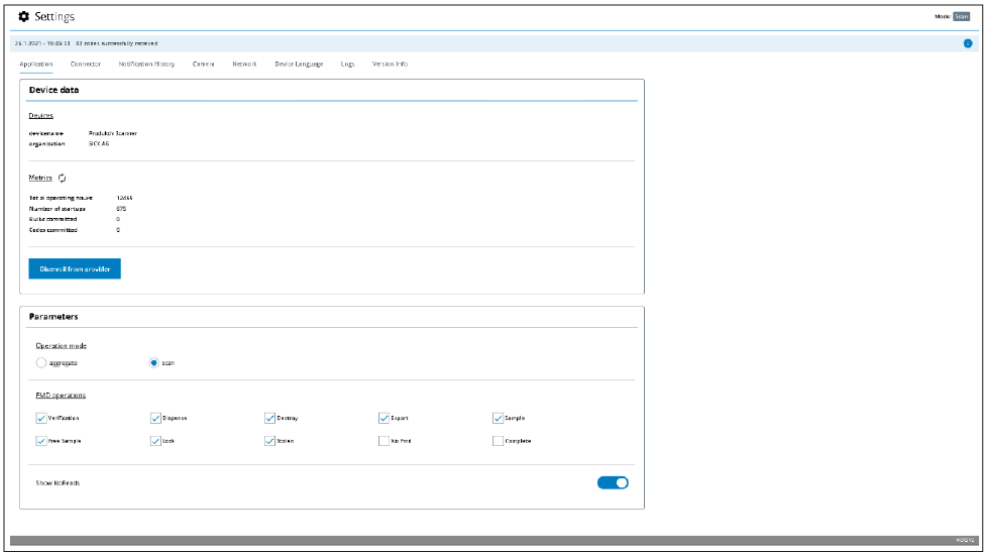

Fig. 7: Application settings

5.2.2 Connector settings

In the “Connector” tab, the relevant active connector to the cloud provider is selected.

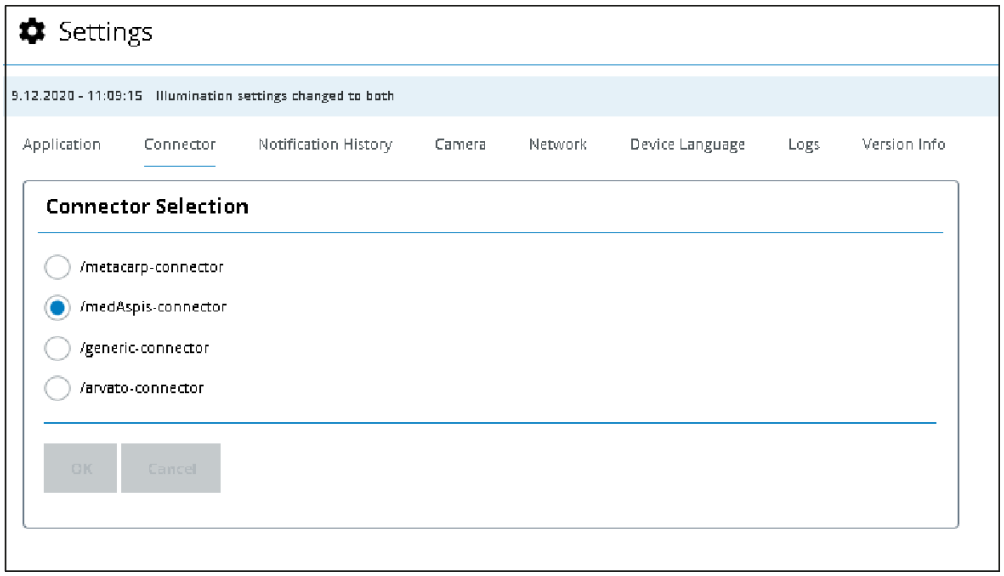

Fig. 8: Connector settings

▶ Confirm the selection with the “OK” button.

Note

Connector settings

▶ The selected connector must match the cloud application used.

▶ After rebooting, the system must be paired with the corresponding cloud. Have login data ready.

5.2.3 Notification history settings

Representation of the chronological sequence of:

- System messages
- Cloud messages
- Operator messages

▶ By clicking on the filter icon , the messages are filtered based on categories, chronological order and importance.

▶ By clicking on the export icon , all messages can be exported to csv format.

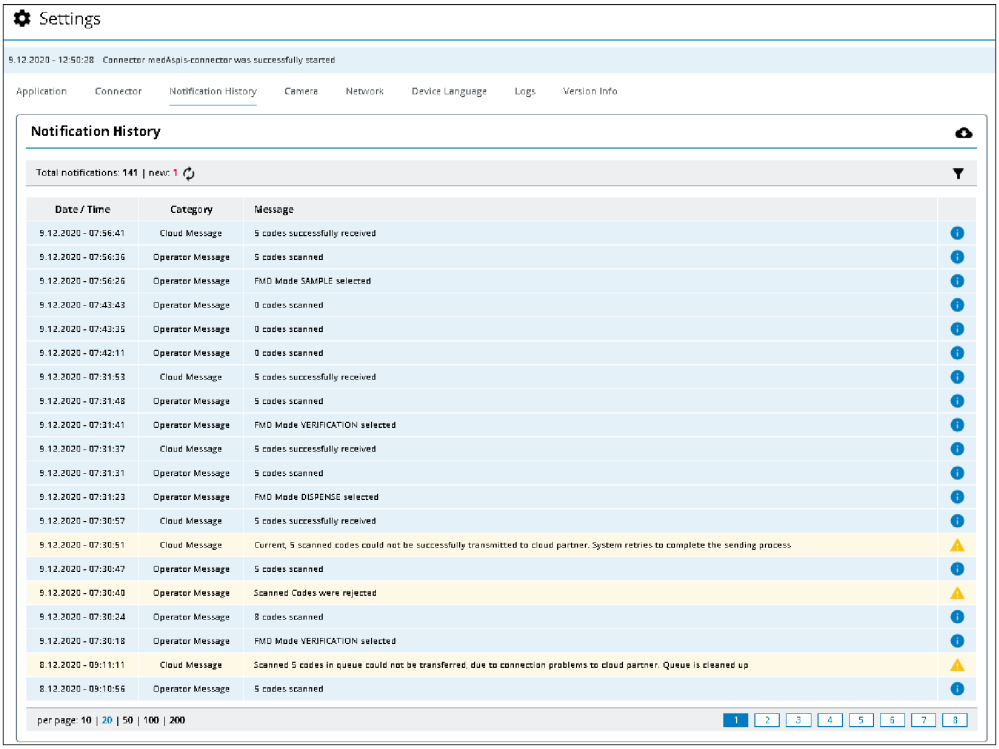

Fig. 9: Notification history settings

5.2.4 Camera settings

In the “Camera” tab, the camera settings are adjusted and optimized so that the system delivers the best possible reading quality.

Note

Camera settings may only be made by SICK service technicians or experienced users.

The ambient light affects the camera settings, so it is important that the system be installed in a location with stable light conditions.

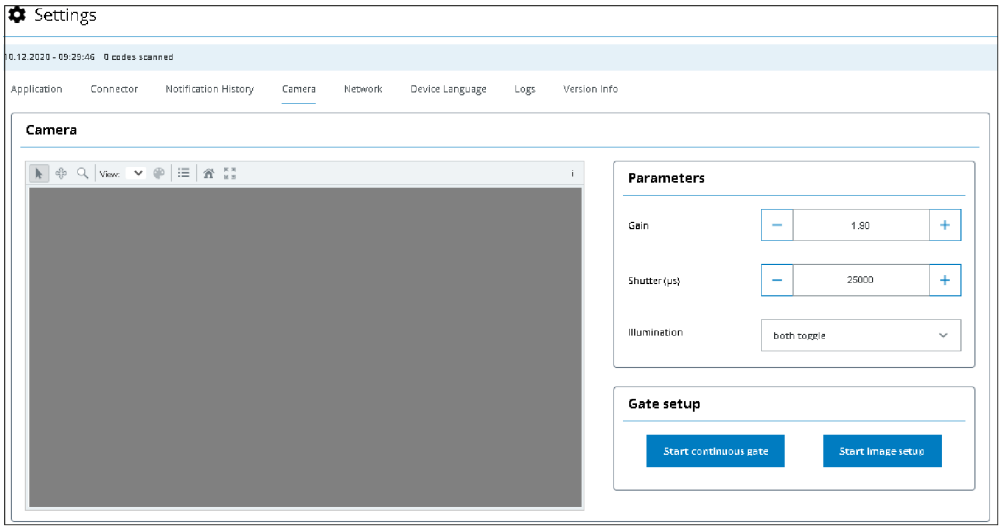

Fig. 10: Camera and lighting settings

- ▶ To set up the camera, the grid sheet on page 21 must be printed out on a white paper in DIN A4 format.
- ▶ Create a higher level surface in the center of the MCR work surface. It must have a size of at least 30 x 21 cm and be approx. 14 to 20 cm above the work surface
- ▶ Place the grid sheet on this surface; the strips on the sheet must be parallel to the lateral edges of the working surface of the MCR, see Fig. 11.

Fig. 11: Grid sheet for camera adjustment

- ▶ Press the “Start image setup” button in the Settings camera screen.

Control elements

Control element	Location	Description
Focus	Lower lens ring	Setting the distance between camera and subject
Aperture	Upper lens ring	Adjustment of the lighting conditions
Gain	Settings page	Gain factor of the camera
Shutter	Settings page	Shutter speed of the camera (specified in µs)

Fig. 12: Setting up the camera

Step by step guide

- Loosen the locking screws on both lens rings.
- Close the aperture completely (turn the upper lens ring clockwise).
- Set start values for gain and shutter: Gain: 2.0 Shutter: 20,000.
- Adjust the aperture by turning the lens ring to the highest possible avg. value (95%).
  - If it is not possible to achieve an avg. value of 95% or more, the values for gain and shutter can be varied slightly.
    Recommended maximum values: 2.5 for gain and 30,000 for shutter.
- Adjust the focus (lower lens ring) so that the modulation (Mod bar graph) is as high as possible. Required minimum value for good reading performance is 70%.
- Check whether the avg value is still at least 95%, correct by adjusting the gain value if necessary.
- Close the locking screws on both lens rings.
- Stop set-up by pressing the “Stop continuous gate” function.

Stop continuous gate

Note

Incorrect display values due to shading.

During adjustments to the camera settings (focus and aperture), deviating values may briefly be displayed on the screen as a result of shading.

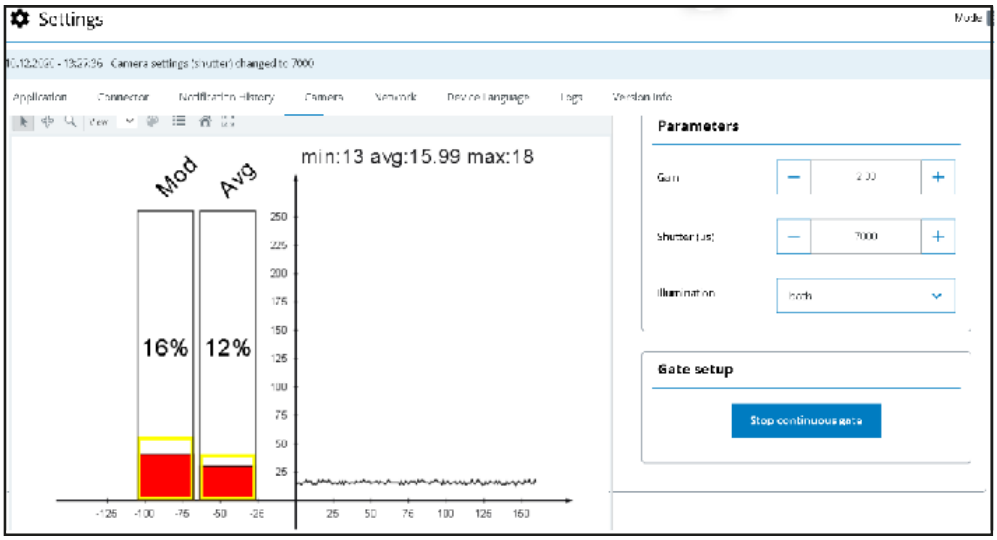

Fig. 13: Camera settings – camera set-up with closed aperture

Note

The camera settings are saved automatically.

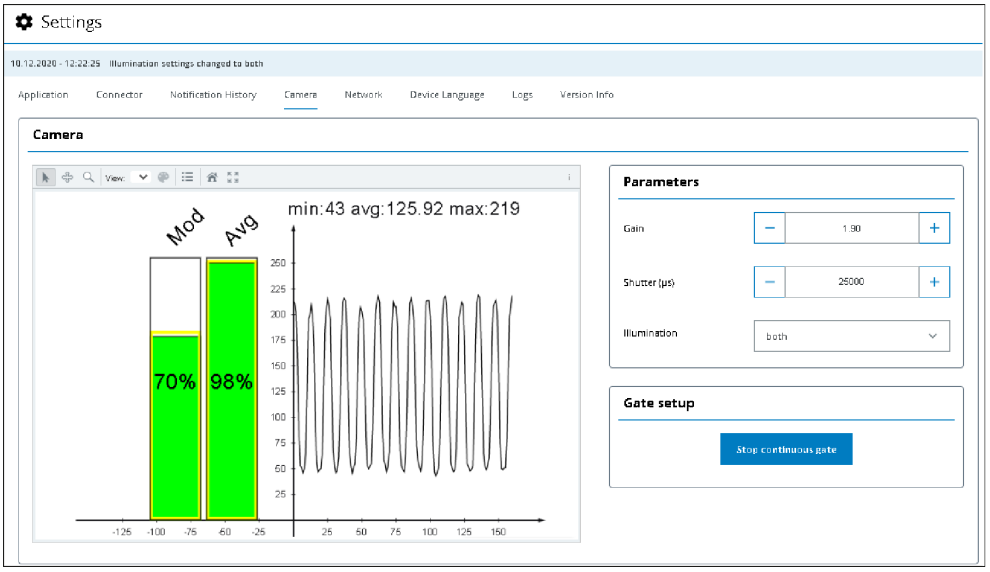

Fig. 14: Final set-up of the camera

5.2.5 Network settings

The Network tab on the Settings page is used to set the system external network interface for communicating with the cloud provider.

Other optional entries are:

- Time server
- Name server

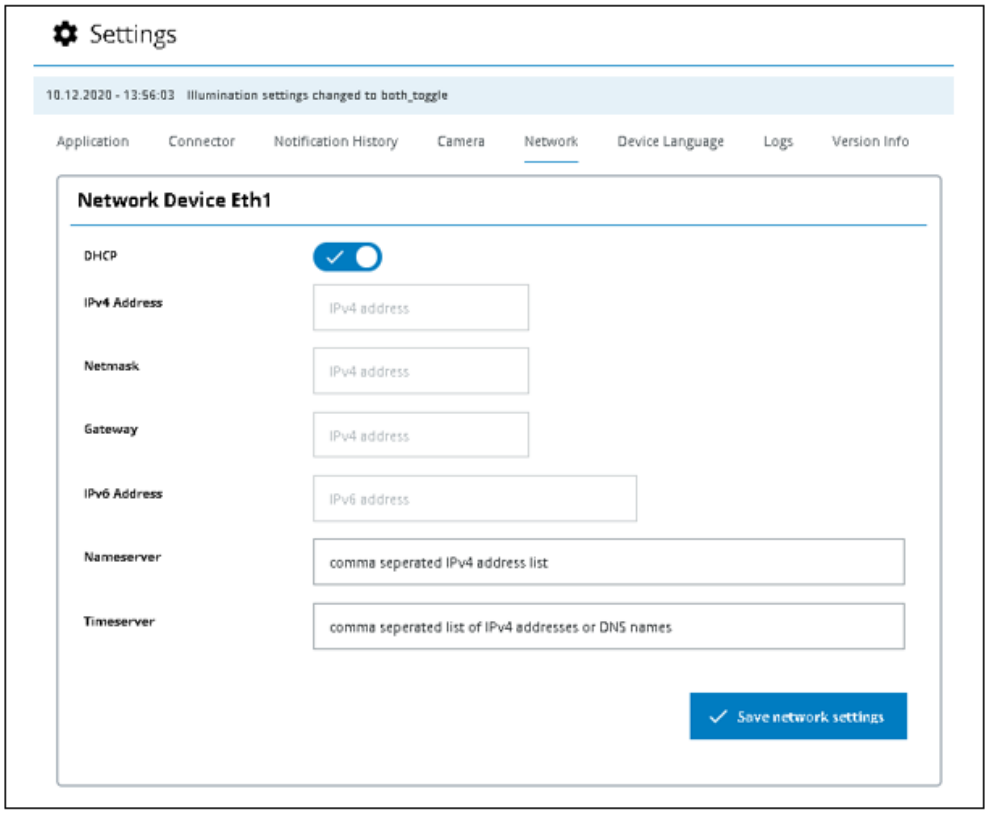

Fig. 15: Network settings

5.2.6 Logs

The Logs tab on the Settings page displays the system logs for the corresponding system component.

It is filtered by SIM, CONNECTOR and UI.

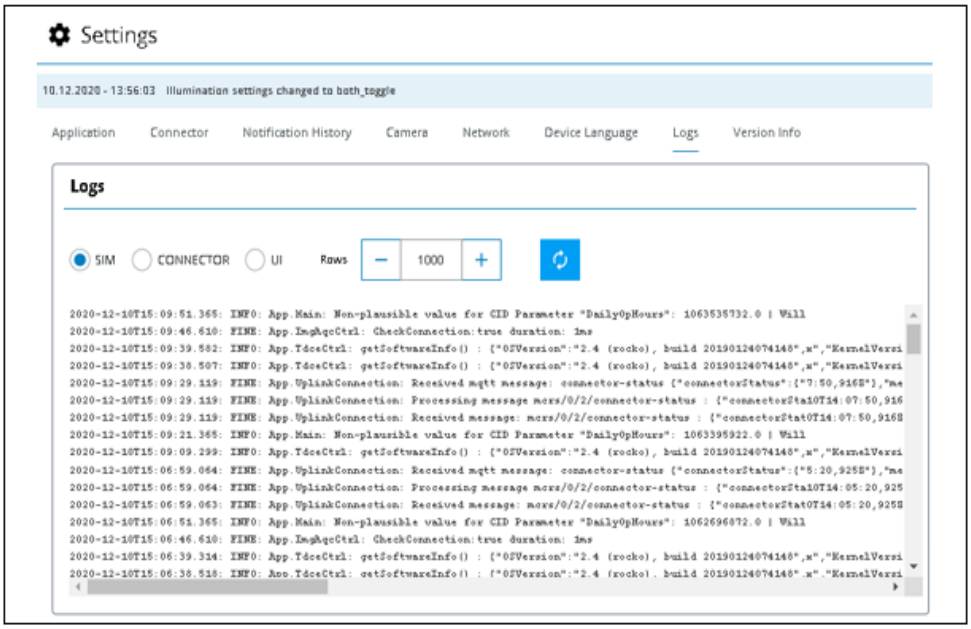

Fig. 16: Error log settings

5.2.7 Version info settings

The Version info tab on the Settings page clearly displays the version statuses of the individual components.

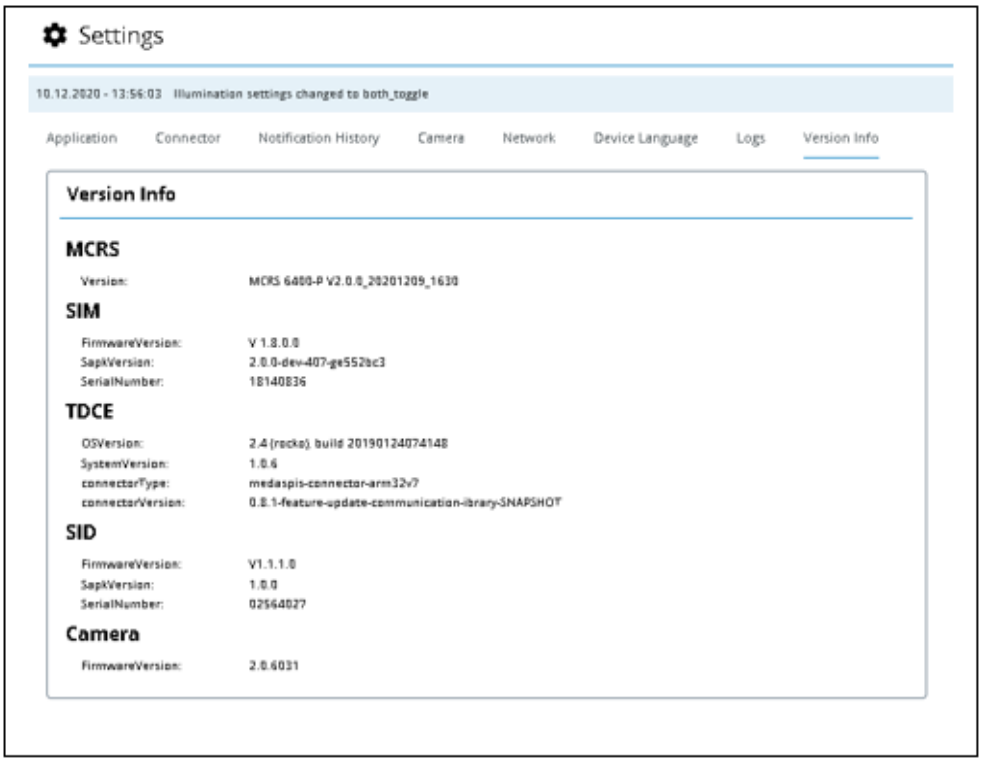

Fig. 17: Version info

6 Operation

6.1 Scan operating mode

- Select the **Scan** operating mode on the Settings page.
  The Scan screen appears on the user interface.

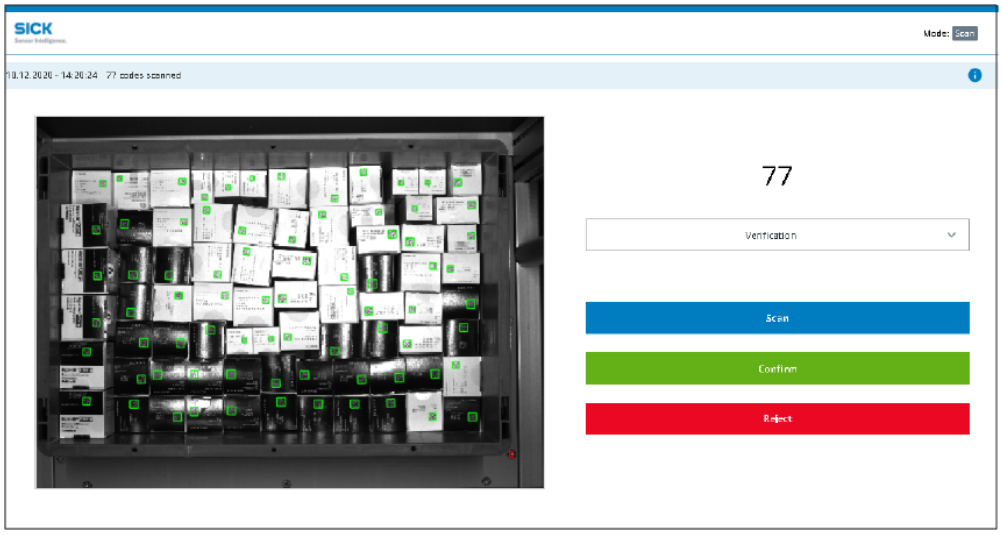

Fig. 18: Scan screen

6.2 Scanning individual packages

- Position the container so that the entire contents are in the reading field of the camera. Bar codes must not be obscured.
- In the Operating mode drop-down menu, the FMD modes can be selected for all bar codes of the respective scan.
  The list of available operating modes can be preset on the Settings page.
- Start the scan with the blue Scan button on the user interface.
- The number of codes read is shown in the reading field on the right and can increase over the duration of the image acquisitions.

Note

Do not move the container during the reading process.
Ensure that no objects (e.g. hands) are in the reading field (area between the camera and container).

As soon as the illumination goes out, the scan is finished. The reading result is displayed on the user interface.

Note

If the positioning of the container is not optimal, the scan can be repeated at any time.

Identified valid bar codes are marked with a green rectangle.

Red squares indicate that the system has detected a potential bar code but could not read it.

If the number of read codes matches the number of codes expected, then the red squares do not matter at all – they are then only relevant for manual reworking.

Note

In order for incorrectly read codes (so-called NoReads) to be displayed, this function must first be activated on the Settings page.

If the number of codes read does not correspond to the expected number of codes per reading process, it is possible to manually read individual bar codes within the container using the hand-held scanner.

The red squares within the reading result help to localize the relevant packaging.

Note

To prevent the rechargeable battery of the hand-held scanner from being completely discharged, it must be plugged into the base station after scanning.

- ▶ The number of scanned codes can be reset at any time by pressing the red **Reject** button.
- ▶ The green **Confirm** button transmits the scanned codes to the cloud provider.

6.2.1 Notification bar

The actions performed by the operator are displayed in the notification bar at the top of the user interface:

- Selection of FMD mode
- Confirmation of a scan
- Successful completion of a scan
- Successful receipt of the codes by the cloud provider

- ▶ Clicking on the notification bar will expand it and show the history of messages over time, see Chapter 5.2.3 Notification history settings/page 21.
- ▶ Another click on the notification bar will hide it.

6.3 Aggregation operating mode

After the system has been configured and **Aggregation** operating mode has been selected in the Settings page, the Start screen appears in the user interface.

In order to use the system, a valid and unique “AggregationCode” must be scanned with the hand-held scanner.

Valid aggregation codes can be obtained from the operating entity of the 3rd party cloud application.

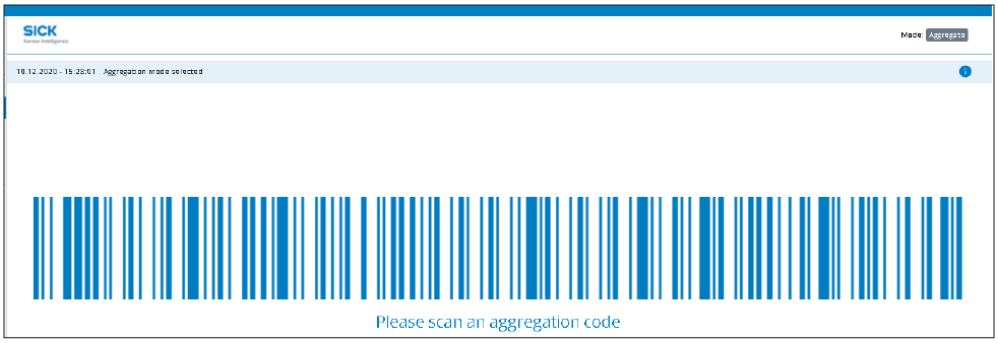

Fig. 19: Aggregation code

6.4 Switching to Aggregation mode

As soon as a valid aggregation code has been scanned, the user interface switches to Aggregation mode.

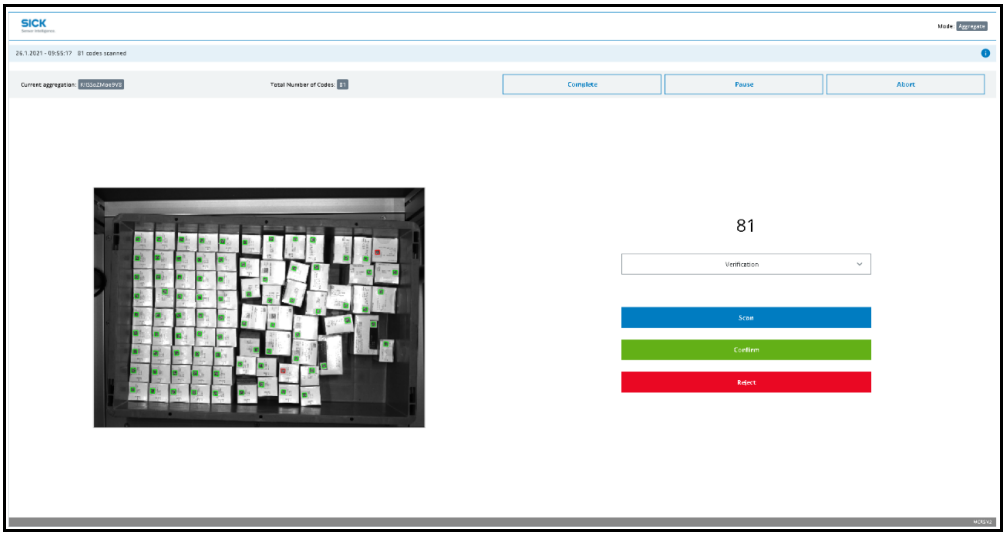

Fig. 20: Aggregation mode screen

6.5 Scanning individual packages to the aggregation

Once Aggregation mode has been opened, the current aggregation code is shown in the **Current aggregation field**.

- ▶ Position the container so that the entire contents are in the reading field of the camera.
- ▶ Bar codes must not be obscured.
- ▶ The scan can be started with the blue Scan button.
  The number of codes read is shown in the reading field on the right and can increase over the duration of the image acquisitions.
  As soon as the illumination goes out, the scan is finished.
  The inline image is displayed.

Note

Do not move the container during the reading process.
Ensure that no objects (e.g. hands) are in the reading field (area between the camera and container).

If the positioning of the container is not optimal, the scan can be repeated at any time.

Identified valid bar codes are marked with a green rectangle.

Red squares indicate that the decoder has recognized a potential bar code but could not decode it.

If the number of read codes matches the number of codes expected, then the red squares do not matter at all – they are then only relevant for manual reworking.

Note

To prevent the rechargeable battery of the hand-held scanner from being completely discharged, it must be plugged into the base station after scanning.

6.5.1 Terminating scan

If the number of scanned bar codes corresponds to the number expected, the reading process can be terminated with the green **Confirm** button in the user interface.

After that, the number of scanned codes appears in the Scanned codes field for the respective aggregation.

All scanned codes are posted to the open aggregation of the cloud application.

6.5.2 Adding bar codes

After the scan has been confirmed, there is an option of adding as many bar codes as you want to the opened aggregation.

6.5.3 Canceling scan

The scan can be canceled at any time.
Press the red **Reject** button on the user interface.

6.5.4 Completion of aggregation - Complete

Once all relevant codes for the opened aggregation have been scanned, pressing the **Complete** button finalizes the opened aggregation on the cloud.

Note

Completion of aggregation - Complete

The aggregation is completed on the MCR and the cloud and is provided with an FMD command.

6.5.5 Pausing aggregation - pause

Once all codes relevant to the open aggregation have been scanned, the open aggregation can be closed on the MCR by pressing the **Pause** button on the user interface; the aggregation remains open in the cloud.

Note

Pausing aggregation - pause

Aggregation is paused on the MCR. On the cloud, the aggregation is still present, open and not yet provided with an FMD command.

6.5.6 Cancellation of aggregation - Abort

- Pressing the **Abort** button cancels the aggregation.
  Bar codes that have already been transmitted to the cloud are deleted there.

6.6 Hand-held scanners

After exchanging a component of the hand-held scanner, it may be necessary to "re-pair" the scanner with the base station.

Observe the corresponding operating instructions for the hand-held scanner.
An excerpt is printed below.

2.3.1 PAIR Mode

In PAIR mode, one smart cradle will work with one scanner. The smart cradle does not only provide the Bluetooth radio link with the scanner, but also offers the legacy cabled interfaces to the host device, including USB HID, USB COM, and RS-232 serial.

Use IDM Hand-held scanner in PAIR Mode:

1. Ensure the battery is fully charged. Refer to the section of "2.1.2 Charging the battery" for details.
2. Choose the interface cable, plug it into the smart cradle and connect it to the host device. (Refer to chapter "1.1 Connectivity" for details.)
3. Turn on the power of your host device.
4. Note that if the scanner is shipped together with a smart cradle, they are pre-paired already. You will see the link indicator of the scanner shows 1 blue blink per 2.5 seconds and the central (IDMx41)/ upper (IDMx61) power indicator of the smart cradle turns steady blue. If the scanner and smart cradle just give alternative red and green blinks ("Uninstall" state), please follow step 5 to establish the connection between scanner and smart cradle.
5. Scan the "PAIR mode" command. The status indicator of the scanner will turn steady red immediately.

Uninstall **PAIR Mode**

Place the scanner into the smart cradle. You will hear one short beep to indicate the activation of the pairing process. The scanner will emit continuous short clicks and the link indicator of the scanner will flash blue quickly during the pairing process. When you hear 4 beeps in ascending tone, the pairing process is completed. You will see that the link indicator of the scanner gives 1 blue blink per 2.5 seconds and the central (IDMx41)/ upper (IDMx61) power indicator of the smart cradle turns steady blue. If the scanner pairing process failed or if the scanner is not placed into the smart cradle within 20 seconds, you will hear 2 "Di-do Di-do" beeps indicating that the pairing process was not successful. The scanner will return to the uninstall state automatically.

6. Scan the corresponding host interface quick set command (chapter 5.7) to complete the installation.

The default host interface of the smart cradle is preset to USB HID. If you want to set the host interface to USB COM you need to install the USB COM Port driver (available on www.sick.com) before using.

Source: Extract from SICK Operating Instructions IDM Corded / WPAN Hand-held Scanner / Document No.: 8017159

7 Maintenance

Maintenance may only be performed by qualified persons.

- Qualified persons have the specialist training, skills, experience and knowledge of the relevant regulations and standards needed to be able to perform work assigned to them and to identify and avoid any potential dangers independently.
- Electricians have the professional training, skills, experience and knowledge of the relevant standards and provisions needed to work on electrical systems and to detect and avoid any potential dangers independently.

7.1 Visual control

- ▶ Check electrical installations regularly.
- ▶ Make sure that all cable connections are secure.
- ▶ Replace any damaged plug connectors and connecting cables immediately.

7.2 Hand-held scanners

The hand-held scanner communicates wirelessly with the charging station connected to the MCR.

The hand-held scanner contains a rechargeable battery, which must be charged for operation by precise placement in the charging station.

7.3 Cleaning

7.3.1 Camera lens

- ▶ Carefully clean the camera lens regularly.
- ▶ Use a clean, lint-free and dry microfiber cloth. Do not make circular movements.
- ▶ Do not use solvents.
- ▶ Do not apply too much pressure to the lens.

7.3.2 Touchscreen

- ▶ Clean the touchscreen only when the MCR is switched off.
- ▶ Use a clean, lint-free and dry microfiber cloth. Do not make circular movements.
- ▶ Do not use solvents.
- ▶ Do not apply too much pressure to the touchscreen.

8 Fault Diagnosis

Fault diagnosis is done via a PC/laptop (web browser) which is located in the local network of the MCR.

- Connect the PC/laptop to a free port of the Ethernet switch on the MCR with a network cable.
- The IP address of the PC/laptop must be 192.168.168.1.
- The configuration address: http://192.168.168.221/#!page=settings-page

9 Disposal

Note

Only qualified persons with the relevant technical expertise are permitted to work on the system. Only specially trained staff may switch off, decommission, transport and dispose of the system.

Note

The applicable local and statutory environmental regulations and guidelines for the disposal of industrial and electrical waste must be observed.

Disposal of batteries, electrical and electronic devices

In accordance with international directives and regulations, batteries, accumulators, and electrical or electronic devices must not be disposed of with household waste.

The owner is obligated to dispose of the devices at the end of their service life via the appropriate public disposal points.

This icon on the product, packaging, or in this document indicates that a product is covered by these provisions.

The following assemblies may contain substances that need to be disposed of separately:

- **Electronics**: capacitors, accumulators, batteries
- **Displays:** Liquid in the LC displays

Australia
Phone +61 (3) 9457 0600
1800 33 48 02 – tollfree
E-Mail sales@sick.com.au

Austria
Phone +43 (0) 2236 62288-0
E-Mail office@sick.at

Belgium/Luxembourg
Phone +32 (0) 2 466 55 66
E-Mail info@sick.be

Brazil
Phone +55 11 3215-4900
E-Mail comercial@sick.com.br

Canada
Phone +1 905.771.1444
E-Mail cs.canada@sick.com

Czech Republic
Phone +420 2 57 91 18 50
E-Mail sick@sick.cz

Chile
Phone +56 (2) 2274 7430
E-Mail chile@sick.com

China
Phone +86 20 2882 3600
E-Mail info.china@sick.net.cn

Denmark
Phone +45 45 82 64 00
E-Mail sick@sick.dk

Finland
Phone +358-9-25 15 800
E-Mail sick@sick.fi

France
Phone +33 1 64 62 35 00
E-Mail info@sick.fr

Germany
Phone +49 (0) 2 11 53 01
E-Mail info@sick.de

Hong Kong
Phone +852 2153 6300
E-Mail ghk@sick.com.hk

Hungary
Phone +36 1 371 2680
E-Mail ertekesites@sick.hu

India
Phone +91-22-6119 8900
E-Mail info@sick-india.com

Israel
Phone +972-4-6881000
E-Mail info@sick-sensors.com

Italy
Phone +39 02 27 43 41
E-Mail info@sick.it

Japan
Phone +81 3 5309 2112
E-Mail support@sick.jp

Malaysia
Phone +603-8080 7425
E-Mail enquiry.my@sick.com

Mexico
Phone +52 (472) 748 9451
E-Mail mario.garcia@sick.com

Netherlands
Phone +31 (0) 30 229 25 44
E-Mail info@sick.nl

New Zealand
Phone +64 9 415 0459
0800 222 278 – tollfree
E-Mail sales@sick.co.nz

Norway
Phone +47 67 81 50 00
E-Mail sick@sick.no

Poland
Phone +48 22 539 41 00
E-Mail info@sick.pl

Romania
Phone +40 356-17 11 20
E-Mail office@sick.ro

Russia
Phone +7 495 283 09 90
E-Mail info@sick.ru

Singapore
Phone +65 6744 3732
E-Mail sales.gsg@sick.com

Slovakia
Phone +421 482 901 201
E-Mail mail@sick-sk.sk

Slovenia
Phone +386 591 78849
E-Mail office@sick.si

South Africa
Phone +27 (0)11 472 3733
E-Mail info@sickautomation.co.za

South Korea
Phone +82 2 786 6321
E-Mail info@sickkorea.net

Spain
Phone +34 93 480 31 00
E-Mail info@sick.es

Sweden
Phone +46 10 110 10 00
E-Mail info@sick.se

Switzerland
Phone +41 41 619 29 39
E-Mail contact@sick.ch

Taiwan
Phone +886-2-2375-6288
E-Mail sales@sick.com.tw

Thailand
Phone +66 2 645 0009
E-Mail marcom.th@sick.com

Turkey
Phone +90 (216) 528 50 00
E-Mail info@sick.com.tr

United Arab Emirates
Phone +971 (0) 4 88 65 878
E-Mail info@sick.ae

United Kingdom
Phone +44 (0)17278 31121
E-Mail info@sick.co.uk

USA
Phone +1 800.325.7425
E-Mail info@sick.com

Vietnam
Phone +65 6744 3732
E-Mail sales.gsg@sick.com

Further locations at **www.sick.com**

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