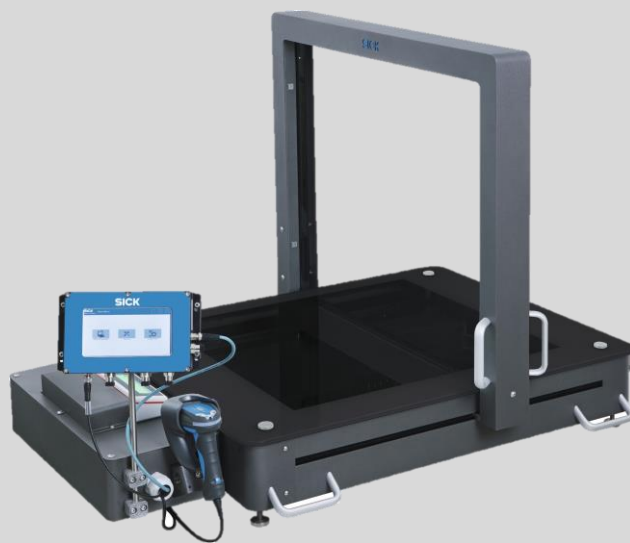# Master Data Analyzer

Track and trace systems

SICK
Sensor Intelligence.

Product described   Product name: Master Data Analyzer

Document identification   Title: Operating instructions for Master Data Analyzer
Part number: 8020065-1F65
Version: 2022-03

Manufacturer   SICK AG
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Contents

CONTENTS

1   About these operating instructions

Please read through this chapter carefully before you use the documentation and work with the Master Data Analyzer (also abbreviated to MDA in these operating instructions).

1.1   Purpose of this document

These operating instructions are intended for people who install, connect, commission, operate, and maintain the Master Data Analyzer.

Activities	Target group
Mounting, electrical installation, maintenance, and replacement of components	Qualified personnel, such as service technicians or industrial electricians
Commissioning	Qualified personnel, such as service technicians or industrial electricians
Operation	Qualified personnel

Tab. 1: Target group

1.2   Information depth

Note   These operating instructions contain information on the Master Data Analyzer relating to the following topics:

- Safety
- System description
- Transport, setup, and mounting
- Electrical installation
- Commissioning
- Operation
- Maintenance and repair
- Fault diagnosis and troubleshooting
- Technical data and dimensional drawings

1.3   Abbreviations used

CF	Custom fields
FTP	File Transfer Protocol
HTML	Hypertext markup language
LED	Light emitting diode
MDA	Master Data Analyzer
MLG	Modular light grid
MSC	Modular system controller (MSC800)
PoE	Power over Ethernet

1.4 Symbols used

Recommendation   Recommendations are intended to help you make a decision regarding the use of a particular function or technical feature.

Note   Notes provide information about the features of a device, application tips, or other useful information.

1. / 2. …   Instructions that must be carried out in the described order are referred to as step-by-step instructions and are indicated by numbered lists. Carefully read and follow the instructions for action.

➢   Instructions requiring specific action are indicated by an arrow. Carefully read and follow the instructions for action.

● ☀ , ○   LED icons describe the status of a diagnostics LED. Examples:
●   The LED is illuminated continuously.
☀   The LED is flashing.
○   The LED is off.

2   On safety

This chapter provides information that concerns your own safety as well as the safety of the plant operator.

▶ Please read this chapter carefully before you begin working with the Master Data Analyzer.

2.1   Qualified safety personnel

The Master Data Analyzer must only be set up, commissioned, operated, and maintained by adequately qualified personnel.

The following qualifications are necessary for the various tasks:

Activities	Qualification
Mounting and maintenance	▪ Practical technical training ▪ Knowledge of the current safety regulations in the workplace
Electrical installation and device replacement	▪ Practical electrical training ▪ Knowledge of current electrical safety regulations
Commissioning, operation, and configuration	▪ Basic knowledge of data transmission ▪ Basic knowledge of the design and setup (addressing) of Ethernet connections when connecting the system to the Ethernet ▪ Basic knowledge of how to use an HTML browser (e.g., Internet Explorer) to access the online help ▪ Basic knowledge of 1D / 2D code technology ▪ Basic knowledge of the Windows operating system used

Tab. 2: Qualified safety personnel

2.2   Applications of the system

The Master Data Analyzer is a stationary DWS system (**D**imensioning-**W**eighing-**S**canning). It enables master data for products to be logged in a standardized manner for goods entry or shipping, for example. The products are measured, weighed, identified, and visualized in a single operation. Data are processed in real time, regardless of their shape, surface, and material properties.

Operating modes

The Master Data Analyzer is set up at the factory to support two **operating modes**:

● **Operating mode with bar code scanning**: The object is identified using its bar code and is then measured. In this case, the Master Data Analyzer supplies the complete set of master data with bar code, weight, and dimensions.

● **Operating mode without bar code scanning**. This variant assumes that the bar code for the object is already available, meaning that only the weights and dimensions have to be logged. The measurement results are assigned to an existing bar code in the customer's system.

Note   The master data set can be supplemented in both operating modes before the measurement process to include additional information such as information on the measurement staff or location or on company-specific object information.

Brief description

- The object is placed on a rugged glass plate. The object does not need to be aligned.

- In the operating mode with bar code scanning, the object is identified using a wired bar code scanner. An electronic scale measures the weight of the item.

  In the operating mode without bar code scanning, the measuring process starts with the system detecting a stable weight value. There is no hand-held scanner.

- To measure the dimensions, a gantry with two pairs of light grids is moved manually over the object using two linear guides. Measurements can be taken in both directions. The object's dimensions and volume are measured.

- The data are sent to the warehouse management system in a stationary solution via Ethernet. An external PC or screen is not required.

- In mobile use, the Master Data Analyzer saves the data offline and outputs it as soon as an Ethernet connection is available. Up to 1,000 data sets can be temporarily stored. With the optional WLAN module, data can be output independently of the location via the WLAN access point.

- All system components are pre-assembled in a rugged industrial design and are ready for operation immediately after commissioning.

Note   The majority of the images and screenshots in these operating instructions visualize the Master Data Analyzer in the operating mode with bar code scanning.

2.3 Intended use

The Master Data Analyzer may only be used as described in *2.2 Applications of the system*. It may only be used by qualified personnel in the environment in which it was mounted and initially commissioned by qualified safety personnel in accordance with these operating instructions.

The equipment may only be operated in an industrial environment. Operation of the system is not allowed outdoors or in an explosion-protected environment.

If used in any other way or if alterations are made to the system or the devices are opened – including in the context of mounting and installation – this will void any warranty claims directed to SICK AG.

Examples of non-intended use:

- Measurement of products not defined in the contract or in these operating instructions.
- Non-observance of the permitted parameters for measuring objects.
- Failure to observe the operating instructions.
- Use of parts other than original spare parts.

⚠	***WARNING***

Danger due to non-intended use

Non-intended use of the device can lead to danger to the life and limb of persons and damage to the plant.

The device must only be used for the intended use.

2.4 General safety notes and protective measures

2.4.1 Safety notes and icons

The following safety and hazard symbols are used for your own safety, for the safety of third parties, and for the safety of the system. You should therefore observe them at all times.

⚠	**DANGER**

Denotes an immediate hazard that may result in severe to fatal injuries.

The symbol shown on the left-hand side of the note refers to the type of hazard in question (the example here shows a risk of injury resulting from electrical current).

⚠	**WARNING**

Denotes a potentially dangerous situation that may result in severe to fatal injuries.

The symbol shown on the left-hand side of the note refers to the type of hazard in question (the example here shows a risk of injury resulting from suspended loads).

⚠	**CAUTION**

Denotes a potentially dangerous situation that may result in minor personal injury or possible material damage.

The symbol shown on the left-hand side of the note refers to the type of hazard in question (the example here shows a risk of damage to the eye by laser beams).

	NOTE

Denotes a potential risk of damage or functional impairment of the device or the devices connected to it.

This symbol refers to supplementary technical documentation.

2.4.2   **General safety notes**

General, recognized safety-related rules and regulations were taken into account in the design and manufacture of the Master Data Analyzer. However, risks for the user resulting from the MDA cannot be completely ruled out. The safety notes below must therefore be observed.

> ⚠️ **WARNING**
>
> **Safety notes**
>
> Observe the following to ensure the safe use of the system as intended.
>
> - The notes in these operating instructions (e.g., regarding use, mounting, installation, or integration into the machine controller) must be observed.
> - All official and statutory regulations governing the operation of the system must be complied with.
> - The national and international legal specifications apply to the installation and use of the system, to its commissioning, and to recurring technical inspections, in particular:
>   – The accident prevention regulations and work safety regulations
>   – Any other relevant safety regulations
> - The manufacturer and user of the system are responsible for coordinating and complying with all applicable safety specifications and regulations in cooperation with the relevant authorities.
> - The checks must be carried out by qualified safety personnel or specially qualified and authorized personnel, and must be recorded and documented to ensure that the tests can be reconstructed and retraced at any time.
> - These operating instructions must be made available to the operator of the system. The system operator must be instructed by qualified safety personnel and must read the operating instructions.
> - Maintenance and repair work may only be performed by trained and authorized SICK AG service technicians or qualified safety personnel of the customer.

2.4.3   **Additional operating instructions**

Other operating instructions of the individual components are enclosed along with these operating instructions.

When working on or with these components, please observe the notes in the operating instructions of the relevant manufacturer.

2.4.4   Dangers connected with handling of the device

The Master Data Analyzer has been designed and built in a way that allows for safe operation. Protective devices reduce potential risks to the maximum possible extent. Furthermore, the system has been subjected to an internal safety check.

However, certain residual risks apply in the event of misconduct or misuse.

Awareness of potential sources of danger in the Master Data Analyzer will help you to work in a safer manner and thus prevent accidents.

That is why all persons involved with the transport and storage, mounting, commissioning and decommissioning, operation, maintenance, and repair must carefully read and observe the following safety notes.

In order to avoid danger, also follow the special warning information in the individual chapters as well as the current national accident prevention regulations and any company work, operation, and safety regulations.

2.4.4.1   Danger due to electrical current

> ⚠️ **DANGER**
>
> **Risk of injury due to electrical current**
>
> The Master Data Analyzer is connected to the power supply (AC 100 to 264 V / 50 to 60 Hz) via an external power supply unit.
>
> Only a qualified electrician or trained persons working under the guidance and supervision of a qualified electrician are permitted to work on electrical plants or equipment and must comply with electrical regulations when doing so.
>
> Improper handling of live devices may lead to severe personal injury or death by electric shock!
>
> **Measures**
>
> ▶ Electrical installation and maintenance work must only be performed by electrically qualified personnel.
>
> ▶ Standard safety requirements must be met when carrying out any work on electrical systems or equipment.
>
> ▶ Do not touch any live parts.
>
> ▶ In the event of danger, immediately disconnect the device from the grid.
>
> ▶ Electrical connections may only be made or disconnected when there is no power in the system.
>
> ▶ Only switch on the supply voltage when the connection tasks have been completed and the wiring has been thoroughly checked.
>
> ▶ Only carry out maintenance and repair work when the power is off.
>
> ▶ Always use original fuses with the specified current rating.

2.4.4.2 Risks during transport and installation

⚠️ **WARNING**

Risk of injury from suspended load

The Master Data Analyzer is delivered in a transport crate on a pallet. Use a suitable lifting device to unload and transport the device.

During transport, tipping or falling loads pose a risk of severe injury or damage to property.

Measures

▶ Only use lifting equipment which is suitable for the weight and dimensions of the freight.

▶ Make sure that the center of gravity is in the center between the forks of the lifting device and the forks are completely entrenched under the transport pallet.

▶ Do not stop underneath the suspended load.

▶ Wear safety shoes in addition to your personal protective equipment.

⚠️ **WARNING**

Risk of injury due to components falling over

The side panels and lid of the transport crate are heavy and difficult to handle.

Falling objects pose a risk of crushing during dismantling.

Measures

▶ Always use **2** people to mount the side panels and lid.

▶ Wear protective shoes in addition to your personal protective equipment.

⚠️ **WARNING**

Risk of injury when lifting heavy objects.

There is a risk of injury when lifting heavy objects.

Depending on the system variant, the MDA weighs around 65 kg to 80 kg.

Measures

▶ Use **4** people to lift the MDA.

▶ In order to do this, use the four handles on the two long sides of the MDA.

▶ Lift and carry the MDA according to ergonomic principles.

▶ Wear protective shoes in addition to your personal protective equipment.

⚠️ **WARNING**

Impermissible handling of the device

There is a risk of damage to the device when lifting the MDA using the measurement gantry.

Measures

▶ Do not lift the MDA using the measurement gantry under any circumstances!

> ⚠️ **WARNING**
>
> **Risk of crushing when settings down the MDA**
>
> The adjustable feet are designed so that the safety distance between the bottom of the device and the tabletop can be observed.
>
> There is a risk of crushing when installing the MDA on the tabletop.
>
> **Measures**
>
> ▶ Do not put your hands under the base of the housing when installing the MDA.

> ⚠️ **WARNING**
>
> **Risk of crushing due to the device tipping over**
>
> There is a risk of the MDA tipping over during installation. An unsuitable surface may also lead to the device tipping over.
>
> The device tipping over can lead to the severe crushing or even loss of limbs.
>
> There is also the risk of inflicting damage to the device.
>
> **Measures**
>
> ▶ Place the MDA on a sufficiently stable and steady table.
>
> ▶ Secure the table against rolling away.
>
> ▶ Make sure that all four adjustable feet are completely on the tabletop.

2.4.4.3   Risks during operation

> ⚠️ **WARNING**
>
> **Risk of injury and/or material damage caused by incorrect operation!**
>
> Risk of injury and/or material damage due to absence of qualification and/or incorrect and non-intended use.
>
> **Measures**
>
> ▶ Follow the instructions on proper operation.
>
> ▶ Only use the device in perfect working order and for its intended purpose, keeping safety and potential dangers in mind, and in compliance with the operating instructions.
>
> ▶ Never exceed the permitted technical limit values.
>
> ▶ Do not do work on the device
>
> • You do not have the required qualification.
>
> • You have not received full instructions from the operating entity.
>
> • You have not completely read or understood these operating instructions.

> ⚠️ **WARNING**
>
> **Risk of injury when lifting heavy objects.**
>
> There is a risk of injury when placing down and removing the objects to be measured. Objects weighing up to 30 kg can be measured.
>
> **Measures**
>
> ▶ Consider ergonomic aspects when placing down and removing the objects.

⚠️ **WARNING**

Risk of injury when moving the measurement gantry

There is a risk of crushing when moving the measurement gantry.

Hands may be crushed between the measurement frame and the side recesses in the housing.

The device has been designed with sufficient safety distances to prevent fingers from being crushed.

Measures

▶ Always use the handles to move the measurement gantry.

▶ Do not grip onto the side recesses in the housing.

⚠️ **WARNING**

Risk of tripping due to cables. Risk of damage to cables

Exposed cables on the floor in areas used by people can pose a risk.

Measures

▶ Lay the connecting cables for the hand-held scanner and the voltage supply so that there is no risk of people tripping over them and the cables are protected against damage.

⚠️ **WARNING**

Risk of injury when transporting the MDA to the place of use

The measurement gantry may accidentally be damaged when the MDA is transported on a sliding table. Hands may be crushed between the measurement frame and the side recesses in the housing.

Measures

▶ Use cable ties to secure the handles of the measurement gantry so that it does not move accidentally during transport.

⚠️ **WARNING**

Danger due to malfunction!

Cease operation if the cause of the malfunction has not been clearly identified!

Measures

▶ Immediately stop system operation if you cannot clearly identify the fault and if you cannot safely remedy the problem.

> ⚠️ **WARNING**
>
> **Risk of injury caused by accidental movement of the measurement gantry**
>
> Whenever work is performed on the housing interior, there is a risk of crushing if the measurement gantry moves accidentally.
>
> There is also a risk of damage to the wire draw encoder.
>
> **Measures**
>
> ▶ Use cable ties to secure the handles of the measurement gantry so that it does not move accidentally during maintenance and repair work.

> **NOTE**
>
> **Claims under the warranty rendered void**
>
> If the device is opened, any warranty claims against SICK AG will be void.
>
> **Measure**
>
> ▶ Do not open the device housing.

2.4.5 Protective devices

The Master Data Analyzer has been built in a way that allows for safe operation. Protective devices reduce potential risks to people and the device to the maximum possible extent.
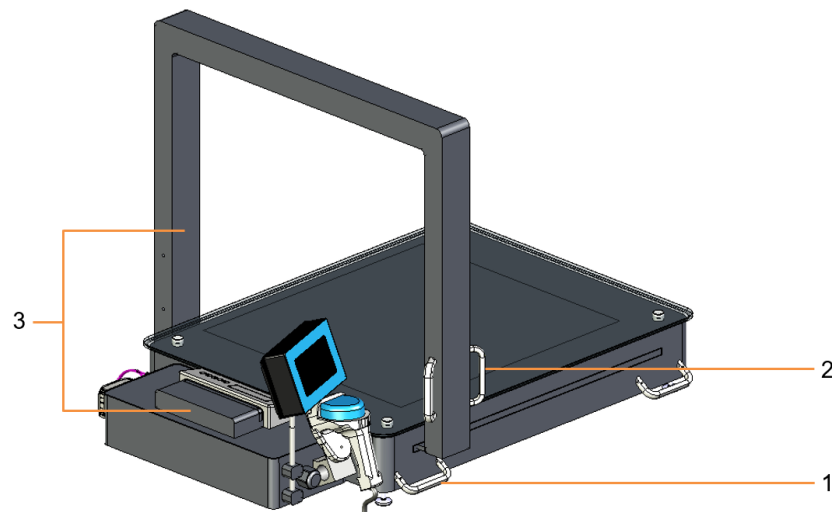
Fig. 1: Protective devices

- Four handles (1) make it easier to unpack and lift the MDA in line with ergonomic principles.
- Handles (2) allow the measurement gantry to be moved safely over the object to be measured.
- Cover plates (3) protect cables and electronic components.

| 2.4.6 | **Working area** |

The work station for measuring objects is located on the side of the display and the hand-held scanner. The handles for moving the measurement gantry are also located on this side.
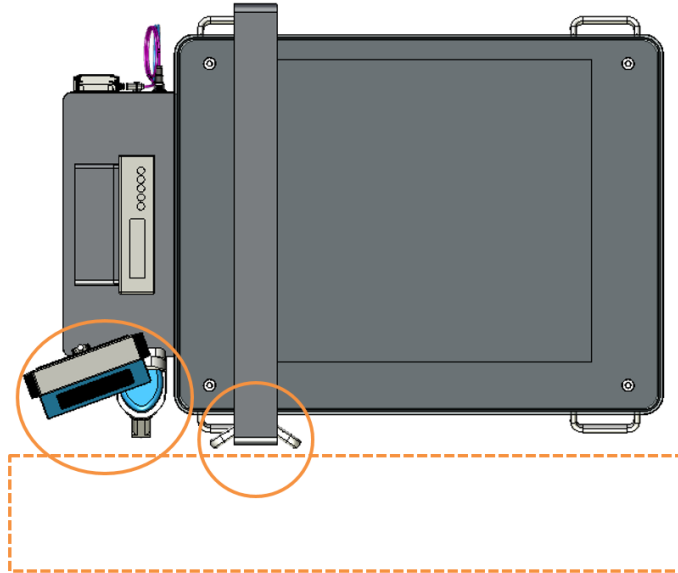
Fig. 2:   *Work station*

We recommend placing the Master Data Analyzer on a sufficiently stable and steady table so that the measuring objects can be loaded and unloaded in line with ergonomic principles. The table must be secured against rolling away.

A sliding table is available as an accessory.

| 2.4.7 | **Protective equipment** |

The operating entity must wear personal protective equipment (PPE) in accordance with the locally applicable safety regulations.

Personal protective equipment for transport and installation

► Wear safety shoes in addition to your basic safety equipment during transport and installation.

| 2.4.8 | **Operating entity's responsibilities** |

The operating entity must execute the electrical installation in compliance with the respective provisions of the local electricity supply company as well as applicable standards.

The following directive applies to the Master Data Analyzer:

- EMC Directive: 2014/30/EU

3   System description

This chapter provides information on the special properties of the DWS system. It describes the design and operating principle of the system solution.

3.1   Scope of delivery

System variants

Master Data Analyzer **MDA800 Image - 2,5 mm** with permanently installed IP camera
- Monitoring length: 790 mm
- Beam separation: 2.5 mm

Master Data Analyzer **MDA800 Image** with permanently installed IP camera
- Monitoring length: 790 mm
- Beam separation: 5 mm

Optional accessories

- WLAN module with mounting kit for mobile applications
- Sliding table
- Sliding table with built-in rechargeable battery

3.2   System components

The Master Data Analyzer consists of:

1. One **hand-held scanner** for scanning bar code information (only in the operating mode <u>with</u> bar code scanning).

2. One set of rugged **electronic scales** with a **glass panel** for supporting the measuring object.

3. One moving **measurement gantry** with two **pairs of light grids** for recording the object's dimensions and a wire draw encoder for calculating the length.

4. One **controller** for recording the measurement data and emitting the measurement results to the customer's system.

5. One **display** for entering additional customer-specific information and visualizing the measurement results.

6. One **IP camera** (only for **MDA800 Image**).

7. One **stable mechanism** for holding the components

8. One **WLAN module** available as an accessory for mobile applications of the MDA.
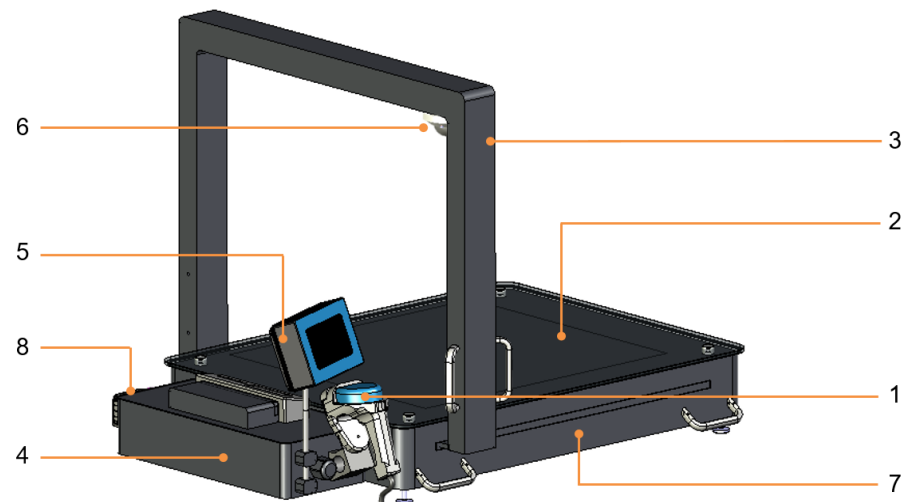
Fig. 3:   System components

1 – Hand-held scanner

In the operating mode <u>with</u> bar code scanning, the number used to identify the object is detected using a wired hand-held scanner. The hand-held scanner recognizes 1D and 2D bar codes and all common stacked codes.
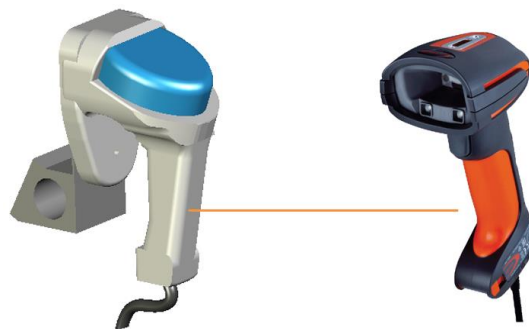
Fig. 4:   Hand-held scanner

The hand-held scanner is connected to the MDA's controller by a cable. This cable is used to both supply the hand-held scanner with voltage and transmit data.

2 – Electronic scales

The electro-mechanical scales consist of a glass panel as the weighing surface (1), four weighing cells at the corners (2), one electronic evaluating system, and a separate display (3).
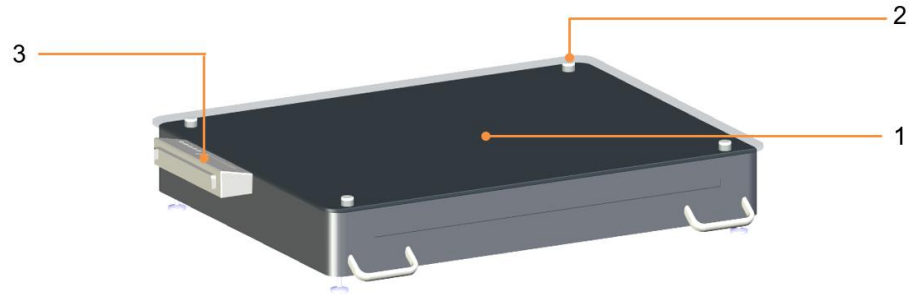
Fig. 5:   Electronic scales

Four positioning points are used for measurement. These points transfer the force to the weighing cells installed on the corners. The glass panel makes sure the force is distributed evenly on all four corners.

The scales' display only visualizes the recorded object weight.

3 – Measurement gantry with MLG-2 light grids and wire draw encoder

The measurement gantry consists of a horizontal and vertical pair of light grids, which are arranged at right angles. Both pairs of light grids determine the object's contour based on the principles of shadows.

Each pair of light grids consists of a sender unit with emitting diodes and a receiver unit with receiving diodes.
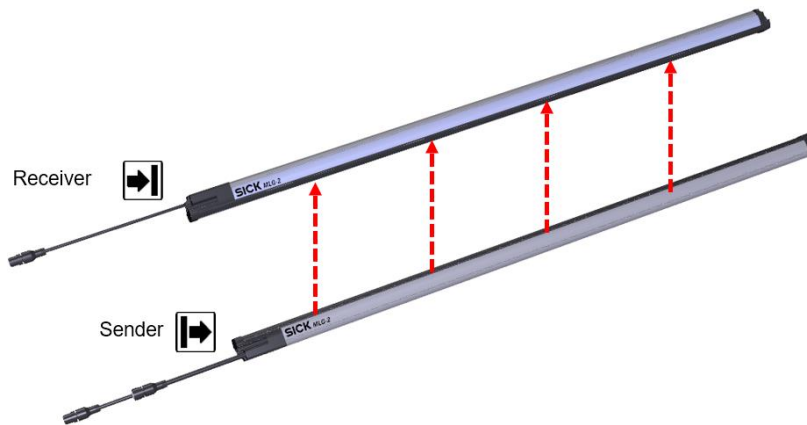
Fig. 6:   MLG-2 light grids

The horizontal light grid's is mounted on the frame underneath the glass plate with the receiver above it. This minimizes any interference caused by ambient light or dirt. The beam from the lower light grid passes through the glass plate to the upper light grid. The vertical light grid's sender is secured to the frame with two handles.
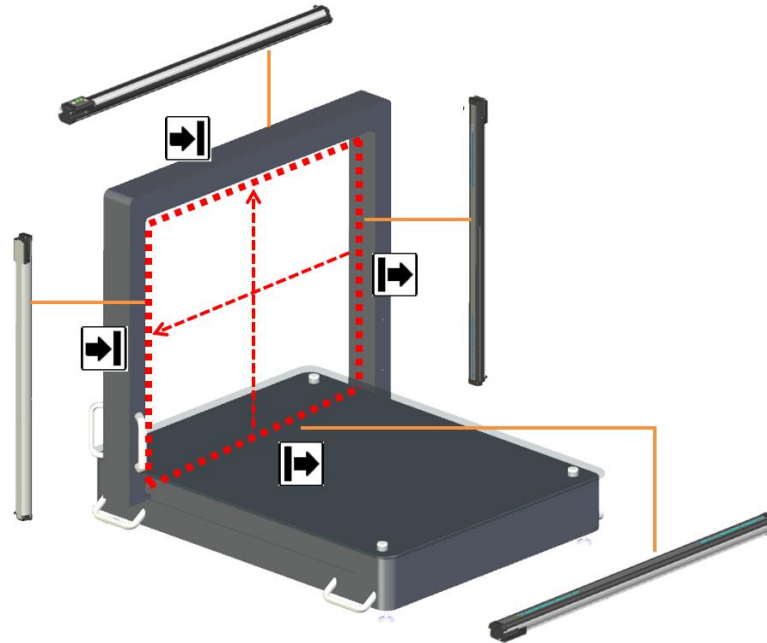
Fig. 7:   Measurement gantry with light grids

Wire draw encoder   A wire draw encoder mounted in the housing interior supplies the positional data of the light grids above the object which is required for measuring lengths. The encoder transfers the linear movement obtained from the path of the measurement gantry into a rotational movement. The drum rotation, which is proportional to the length, is output to the controller via corresponding incremental signals regarding the exact positioning of the light grids.
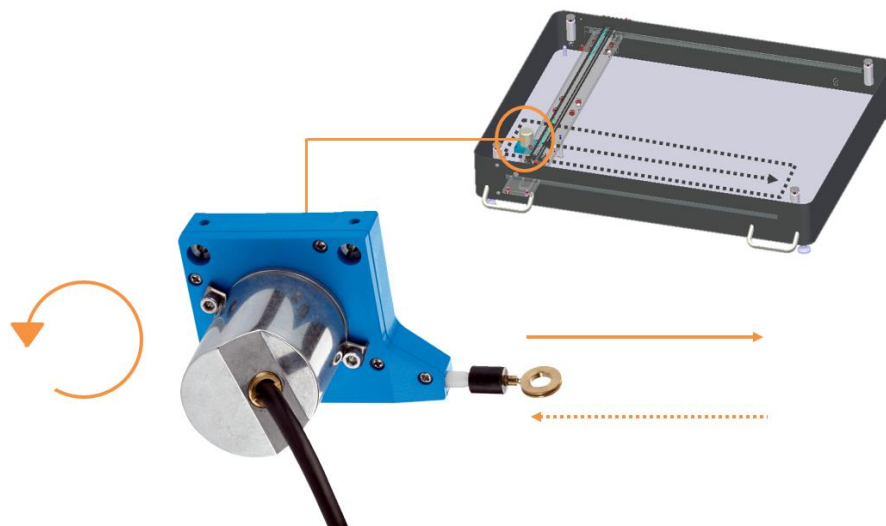
Fig. 8:   Wire draw encoder

4 – Controller MSC800

The controller housing contains the MSC800 system controller and the power supply unit for the central voltage supply.
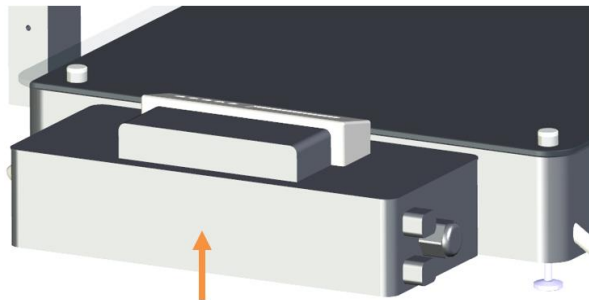
Fig. 9:   Controller MSC800

The MSC800 is the system's central control unit. It controls the coordination of the individual components and processes all incoming signals. The measurement results are transmitted via the Ethernet interface to the higher-level customer system.

5 – Display

The display is the system's central visualization unit. It displays the measured values from the various components during operation and allows for the convenient handling of error messages.

Fig. 10:   Display

6 – IP camera (MDA800 Image only)

An IP camera mounted on the measurement gantry generates a photo-realistic image of the object during the measurement process. The photo is transmitted to the higher-level customer system together with the measurement data.

The IP camera is supplied with power via PoE (power over Ethernet).

Fig. 11:   IP camera (MDA800 Image only)

7– Housing

All of the Master Data Analyzer's components are integrated into a stable mechanical system.

The recesses on the long sides of the housing are required for the measurement gantry to travel along the linear guides. The recesses are sealed on both sides with brushes.
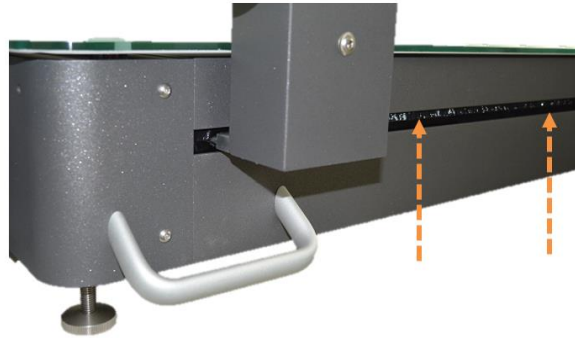
Fig. 12:   Housing

8 – WLAN module

The WLAN Ethernet Port Adapter, which is available as an accessory for the controller housing, enables the Ethernet interface to be connected wirelessly to a WLAN access point. This enables measurement results to be transmitted to the customer system when using the MDA in a mobile setup, regardless of the measurement location.
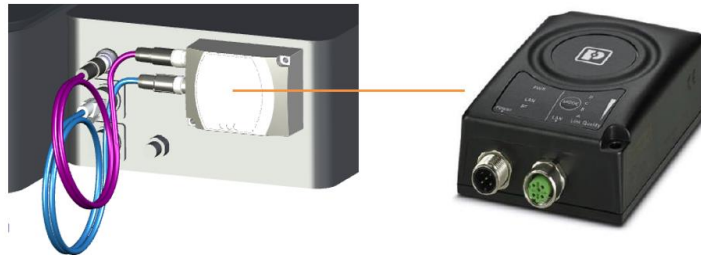
Fig. 13:   WLAN module

The WLAN Ethernet Port Adapter has a circular, polarized 5 dB directional antenna that also enables it to be used in surroundings with a high number of reflections from metals.

9 – Sliding table

On request, the Master Data Analyzer is available with a sliding table, with or without a rechargeable battery.

The rechargeable battery is pre-assembled on the base plate of the sliding table.

Fig. 14:   Sliding table with rechargeable battery

3.3   The system's operating principle

The Master Data Analyzer is designed for stationary and mobile use. In stationary use, the Master Data Analyzer is placed at a fixed location and connected (e.g., at the receiving work station).

In mobile use, data can be recorded at any chosen location (e.g., right on the high-bay racking). The Master Data Analyzer saves up to 1000 data sets. As soon as an Ethernet connection is made, the data is output and the memory bank is emptied. With the optional WLAN module, data can be output independently of the location via the WLAN access point.

The measurement process depends on the operating mode in question.

Operating mode with bar code scanning	Operating mode without bar code scanning
Positioning an object	Positioning an object
Scanning a bar code → A valid bar code starts the measuring process	Determining the weight → A stable weight starts the measuring process
Determining additional information	Determining additional information
Volume measurement +Determining the weight	Volume measurement
Completing the measurement	Completing the measurement
Data output With temporary storage	Data output Without temporary storage
Removing the object	Removing the object

Fig. 15:   Measurement process for each operating mode

In the operating mode with bar code scanning, the measuring process starts once the object has been placed on the measurement field and the bar code has been scanned. The volume and weight are then measured in one procedure.

In the operating mode without bar code scanning, the measuring process starts with the weight measurement. The volume cannot be measured until a stable weight value is present.

In both variants, additional customer-specific information such as the user name or location name can be added before volume measurement.

Placing an object in the measurement field

The measurement object is placed on the glass panel. The measurement field is labeled with engraving on the glass panel. The measurement field defines the area in which the object can be captured by the light grids. If the object, or any part of it, is outside of the measurement field, an error message will be issued.
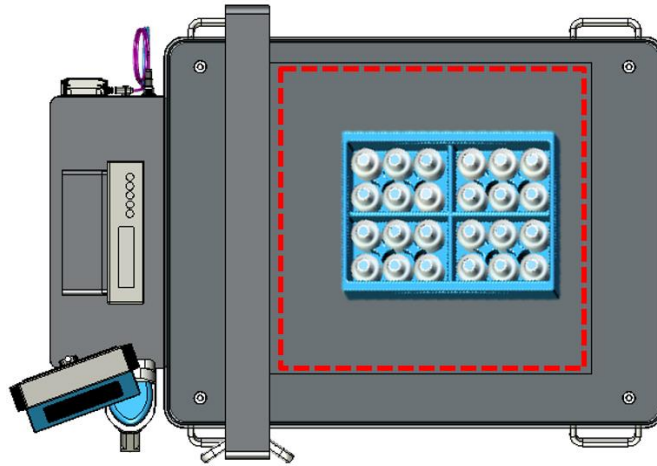
Fig. 16:   Marked measurement field on the glass panel

Bar code reading (only for operating mode with bar code scanning)

The wired hand-held scanner identifies the object and transmits the shipping number to the controller. The scanner creates a scan line on the object using a red light to read the bar code. The bar code that is read is then shown on the display.
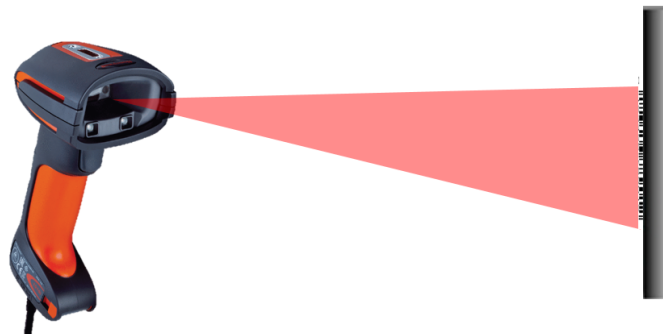
Fig. 17:   Operating principle – bar code reading

Note   The bar code can also be entered manually using the display.

Weight measurement (only for operating mode with bar code scanning)

In the operating mode without bar code scanning, the measuring process starts with the system detecting a stable weight value. Bar codes cannot be scanned or processed.

Volume measurement

The volume measurement is carried out if a valid bar code or stable weight value is available.

To do so, the light grids mounted on the measurement gantry are manually moved over the measurement object using the two linear guides. Measurements can be taken in both directions, stopped whilst doing so, and then recommenced.

If the monitoring field is interrupted by an object, the shadowing and the resulting number of interrupted light beams on the receiver lines can be used to detect the profile of the object.

The change in the number of beams on the receiver lines as a result of the shadowing is transmitted via the light grids' interfaces to the MSC800 as a digital signal.

Two-dimensional cross sections are created by moving the light grids across the object. The controller then combines the individual 2D cross sections of the object.
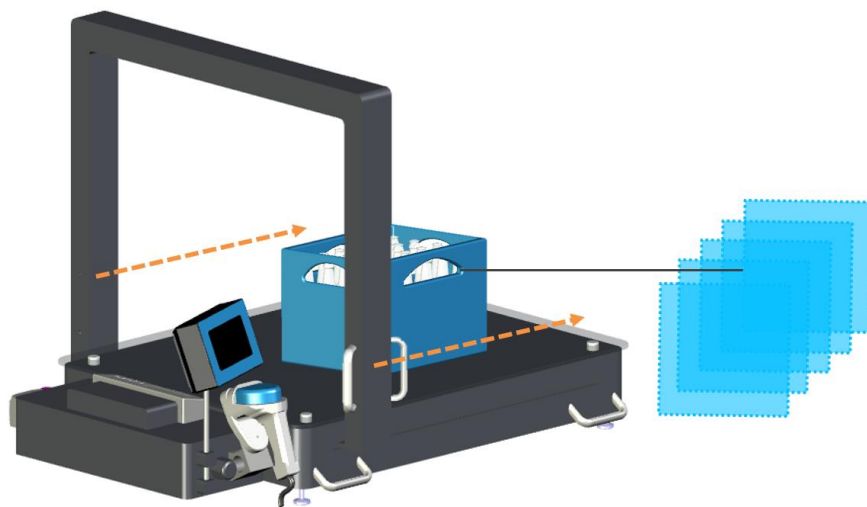
Fig. 18:   Operating principle – volume measurement

By taking into consideration the speed with which the measurement gantry is moved across the object and the respective position of the light grids above the object, a spatial image is produced which is used to calculate the smallest possible cuboid which could surround the object as well as its volume.

Weighing process

In the operating mode <u>with</u> bar code scanning, the weighing process takes place in parallel to the volume measurement; in the operating mode <u>without</u> bar code scanning, the weight is calculated once the object has been positioned, i.e., before the volume measurement.

The weighing cells determine the weight of the object by using the four recording points at the corners of the glass panel whilst the object is situated on the glass panel.
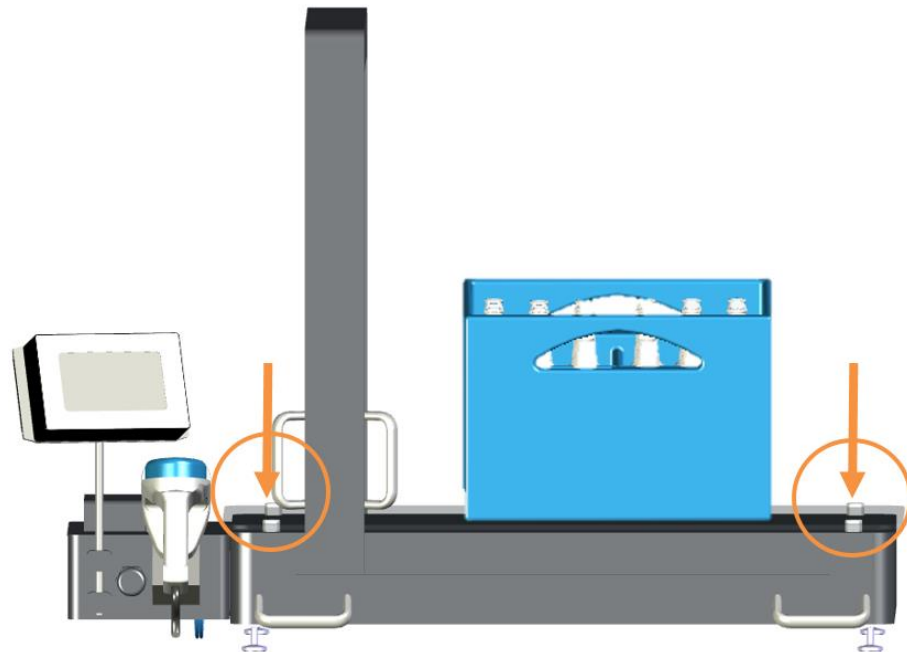
Fig. 19:   Operating principle – Weighing process

The weight recorded is then shown on the display. It is added to the bar code already displayed.

If the weight value of an object is outside of the pre-configured absolute limit values, this is output as an error in the measurement report.

Visualization of measurement results

All of the measurement data recorded by the MDA is constantly shown on the display. The measurement is additionally displayed in the form of a 2D visualization.

If the **MDA 800 Image** system variant is in use, the symbol for the photo display appears on the right, next to the measurement field. It provides a snapshot of the object currently being processed.

Output of measured values

All information converges in the MSC800 central control unit. The MSC800 processes the encoder signals and assigns the measurement results from the individual systems to the respective object.

Depending on the system variant, the output of measured values are sent to the higher-level customer system via Ethernet (LAN) or via a WLAN access point.

When using the **MDA800 Image**), a photo-realistic image of the measuring object can be emitted with the measurement results.

Note
- In the operating mode <u>with</u> bar code scanning, the measurement results are stored temporarily during the output of measured values if the device is not connected to the customer server. This allows multiple measurements to be carried out in sequence, even without a connection. Data are transmitted automatically as soon as the connection is available again.
- In the operating mode <u>without</u> bar code scanning, the data must be transferred directly after the measurement otherwise the data cannot be allocated to the bar code in the customer system. The temporary storage of measurement results is not supported.

3.4   Project planning

System requirements

The following conditions must be met to operate the Master Data Analyzer:

- Supply voltage: AC 100 to 264 V/50 to 60 Hz
- Ethernet connection of WLAN access point for forwarding the measurement results to the customer's system

Requirements for the operation site

- Closed room
- Flat and firm surface
- Low-vibration environment
- Protected from wind and free of drafts
- Well-lit
- Clean and dry
- Room temperature below 40 °C

Regardless of the space requirements of the MDA, there must be enough space at the operation site for the following activities:

- Operating the system
- Cleaning, repair, and service

Ethernet connection requirements

In the operating mode <u>without</u> bar code scanning, a **permanent Ethernet connection** must be in place otherwise the measurement results will not be able to be assigned to the bar code in the customer's system.

Object requirements

Dimension	Explanation
Minimum object size (L x W x H)	10 mm x 10 mm x 5 mm
Maximum object size (L x W x H) MDA800 / MDA800 Image	 790 mm x 590 mm x 590 mm
Object rotation	Omni
Minimum object weight	20 g
Maximum object weight	30,000 g
Singulation	Yes

Tab. 3 Conveying system and object requirements

Notes   If the object moves suddenly or vibrates on the MDA during the measurement process, the accuracy may be reduced and less data may be recorded by the system.

Interfaces

The Master Data Analyzer has two Ethernet interfaces.

Name	Description
Data	The measurement results are transmitted to the customer's higher-level system using the **Data** Ethernet data interface. The TCP/IP and FTP protocols can be configured for this interface.
Service	The separate **Service** configuration interface is available for configuring the system.

Tab. 4:   MSC800 Ethernet interfaces

4   Transport, setup, and mounting

All system components are delivered assembled and cabled to each other.

The system must be transported by the customer to the place of utilization.

It can then be removed from the box, put into position, and operated.

4.1   Accepting the delivery

4.1.1   Packaging

The Master Data Analyzer is delivered in a strong wooden crate on a transport pallet. This protects the system against the impacts of transportation such as sudden jolts and knocks, dirt and dust or moisture such as rain, snow or condensed water throughout the entire transportation process, during loading and unloading, and whilst in storage.

Signs with notes ensuring secure transportation

The packaging bears signs with notes to ensure the system is securely transported and appropriately stored. These symbols must be observed.

Icon	Meaning
⇧⇧	Transport the crate with this side facing up!
🍷	The contents of this transport crate are fragile!
☂	Keep dry!
⊠	Do not place anything on top of this box!

Tab. 5:   Signs with notes ensuring secure transportation

4.1.2   Checking delivery for visible transport damage

The package should be checked immediately after unloading to ensure all items have been delivered by using the delivery note as well as checking for any external damage.

If visible external transport damage is discovered on receipt of the package, we recommend you take the following action:

Visible damage
- ▶ Immediately record the discovered transport damage in the freight documents and ask the delivery carrier to countersign this.
- ▶ In the event of serious damage, the manufacturer and insurance company should be notified immediately.
- ▶ Do not attempt to make any changes to the damage from when it is discovered and keep the packaging material until the transport company or transport insurance company have come to a decision whether to visit your location.
- ▶ If possible, take photos of the damage to packaging and packaged goods.

4.2 Transporting the MDA to its location of use

It is best to transport the package in its packaging until you reach the location where the device is to be used.

The transport crate must always be kept upright and in a horizontal position when being transported.

Under no circumstances, and not even for a short time, should it be turned over or stored on its side.

⚠	**WARNING**

Risk of injury from suspended load

The Master Data Analyzer is delivered in a transport crate on a pallet. Use a suitable lifting device to unload and transport the device.

During transport, tipping or falling loads pose a risk of severe injury or damage to property.

Measures

- ▶ Only use lifting equipment which is suitable for the weight and dimensions of the freight.
- ▶ Make sure that the center of gravity is in the center between the forks of the lifting device and the forks are completely entrenched under the transport pallet.
- ▶ Do not stop underneath the suspended load.
- ▶ Wear safety shoes in addition to your personal protective equipment.

Transport with manned forklift truck/lifting truck

Use a manned forklift truck or a suitable lifting truck to transport the crate.

1. Pick up the pallet with the forks.

Note   ▶ Make sure that the center of gravity is in the center between the forks and the forks are completely entrenched under the transport pallet.

Fig. 20:   Transporting with a lifting device

2. Transport the load to the place of use.
3. Carefully set down the pallet at the operation site.

4.3 Unpacking and setting up the device

4.3.1 Unpacking the MDA

Instructions for unpacking can be found on the outside of the transportation crate which is used to deliver the device.

▶ While unpacking, follow all stages in the unpacking instructions.

NOTE

All work relating to the installation of the device must only be done in consideration of the relevant safety regulations.

⚠ WARNING

Risk of injury due to components falling over

The side panels and lid of the transport crate are heavy and difficult to handle.

Falling objects pose a risk of crushing during dismantling.

Measures

▶ Always use **2** people to mount the side panels and lid.

▶ Wear protective shoes in addition to your personal protective equipment.

⚠ WARNING

Risk of injury when lifting heavy objects.

There is a risk of injury when lifting heavy objects.

Depending on the system variant, the MDA weighs around 65 kg to 80 kg.

Measures

▶ Use **4** people to lift the MDA.

▶ In order to do this, use the four handles on the two long sides of the MDA.

▶ Lift and carry the MDA according to ergonomic principles.

▶ Wear protective shoes in addition to your personal protective equipment.

⚠ WARNING

Impermissible handling of the device

There is a risk of damage to the device when lifting the MDA using the measurement gantry.

Measures

▶ Do not lift the MDA using the measurement gantry under any circumstances!

Disassembling the transport crate

The lid and side panels are secured with screws.

1. Unscrew and remove the screws from the lid and lift the lid from the transportation crate.

2. Unscrew and remove the screws in order from the four side panels and then remove them.

3. The Master Data Analyzer can now be accessed from all sides.

Removing the device from the pallet

1. Remove all of the secondary packaging.

2. Use 4 people to each hold the MDA by one of the handles on the long side of the housing.
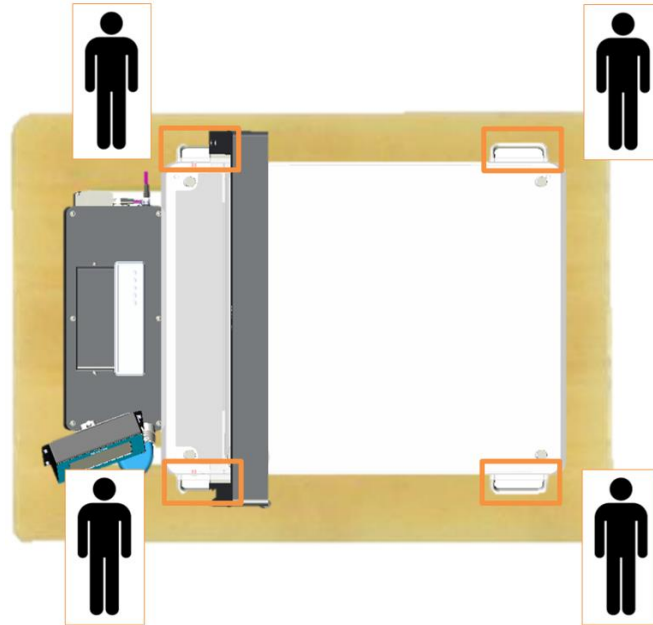

Fig. 21:   Lifting the MDA from the transport pallet

3. Lift the device straight from the pallet taking ergonomic aspects into account.

> *NOTE*
>
> **Storing packaging**
>
> The packaging should be kept for the period of the warranty.
>
> The steps should be repeated in reverse order if the package is to be sent back.

> *NOTE*
>
> **Disposing of the packaging**
>
> The packaging used for the Master Data Analyzer is made from wood and plastic.
>
> The customer is responsible for proper disposal of the packaging.
>
> The national regulations at the operation site must be observed.

4.3.2   Checking delivery for hidden transport damage

We recommend that the MDA is thoroughly checked for all types of (hidden) transport damage once it is unpacked. Any damage should then be reported.

▶ All components should be examined for mechanical damage.

▶ Inspect all cableways to the connected components.

▶ Make sure that all cable connections are secure.

Note   ▶ Always document the damage by taking photographs.

4.3.3 Setting up the MDA

The Master Data Analyzer is set up on a table.

⚠ **WARNING**

Risk of injury due to the device tipping over

There is a risk of the MDA tipping over during installation. An unsuitable surface may also lead to the device tipping over.

The device tipping over can lead to the severe crushing or even loss of limbs.

There is also the risk of inflicting damage to the device.

Measures

▶ Place the device on a sufficiently stable and steady table.

▶ Secure the table to prevent rolling away.

▶ All four of the adjustable feet must be completely on the table.

⚠ **WARNING**

Risk of crushing when settings down the MDA

The adjustable feet are designed so that the safety distance between the bottom of the device and the tabletop can be observed.

There is a risk of crushing when installing the MDA on the tabletop.

Measures

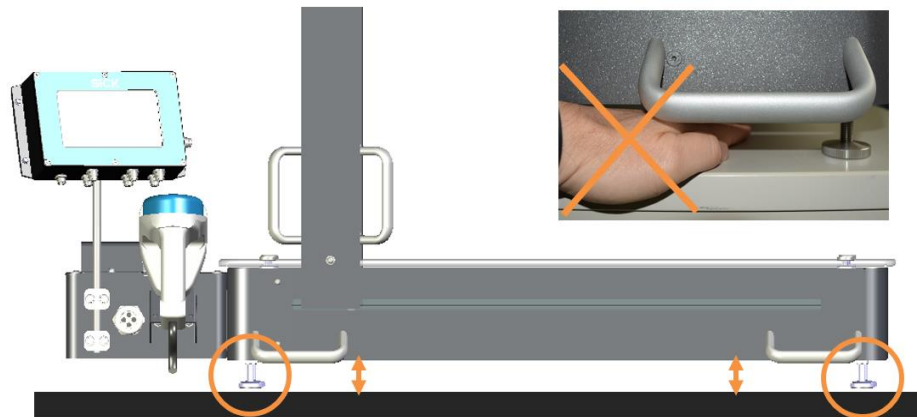▶ Do not put your hands under the base of the housing when installing the MDA.

Fig. 22: Risk of crushing when settings down the MDA

Placing the MDA on a table

1. Put the MDA with the four adjustable feet on a table. The table must be stable, of a sufficient size and secured against rolling away.

   A non-slip base is recommended.

Note   Make sure that all four adjustable feet are completely on the tabletop.

2. Align the Master Data Analyzer. Use a spirit level to do so.

Note   A sliding table is available as an accessory with or without a rechargeable battery (see also chapter *3.1 Scope of delivery*).

The sliding table is equipped with milling grooves at the factory. The milling grooves in the table panel enable slip-free positioning of the MDA in the respective dimensions.
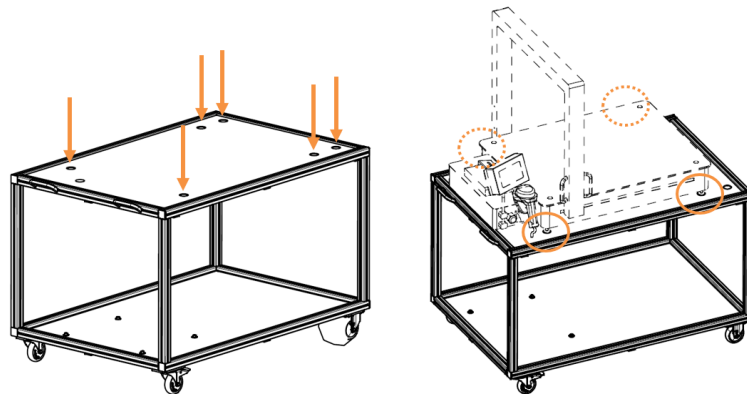

Fig. 23:   Slip-free positioning of the MDA using milling grooves in the table panel

4.4 Removing the transport locks

The scales, measurement gantry, and hand-held scanner are protected against damage whilst being transported.

The transport locks must be removed before commissioning the MDA.

Removing the transport lock on the electronic scales

The glass panel is locked to the housing in order to protect the weighing cells.

1. Unscrew the screws in the transport locks. The non-removable screws cannot be completely unscrewed.

2. Swivel the transport locks downwards and tighten the screws once again. The transport locks remain on the housing and can be returned to their initial position in case the device is transported again.
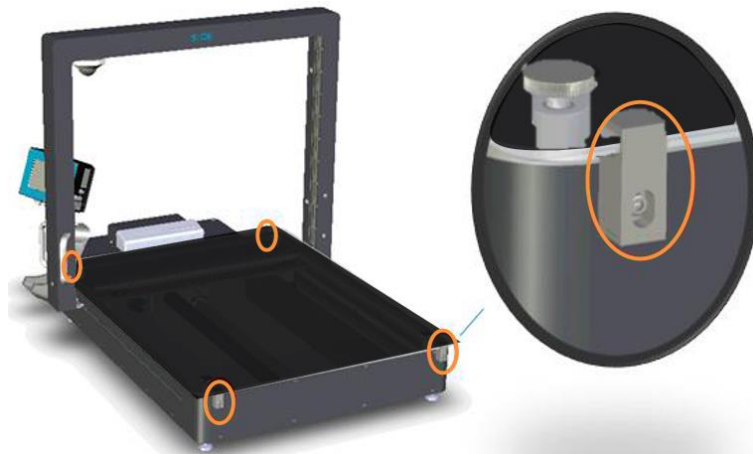

Fig. 24:   Removing the transport locks on the electronic scales

Removing the transport lock on the measurement gantry

The measurement gantry is secured to the handle with a cable tie on the operator's side.

▶ Use a suitable tool to cut the cable tie (e.g., wire cutters).

Removing the transport lock on the hand-held scanner

The hand-held scanner is secured in its holder with a cable tie.

▶ Use a suitable tool to cut the cable tie (e.g., wire cutters).

> ⚠ **CAUTION**
>
> **Risk of damage to the connecting cables**
>
> The connecting cable is attached together with the hand-held scanner.
>
> ▶ When cutting the cable tie, please take care not to damage the connecting cable for the hand-held scanner.

4.5   Mounting

4.5.1   Ready to go

All components of the Master Data Analyzer are attached to the housing with mounting kits and are cabled together. The light grids are mounted in the gantry and aligned with each other. The hand-held scanner is ready for operation in its holder.

If you are using the **MDA800 Image**, the IP camera is pre-installed on the upper frame of the measurement gantry.

No further mounting work is required.

4.5.2   Mounting the WLAN module

A WLAN module is available as an accessory for mobile use of the Master Data Analyzer. The WLAN module is mounted directly onto the housing of the MDA.

The MDA housing wall has two drill holes with the required spacing on the connection side to accommodate the WLAN module. Two fixing screws are included with delivery for this purpose.
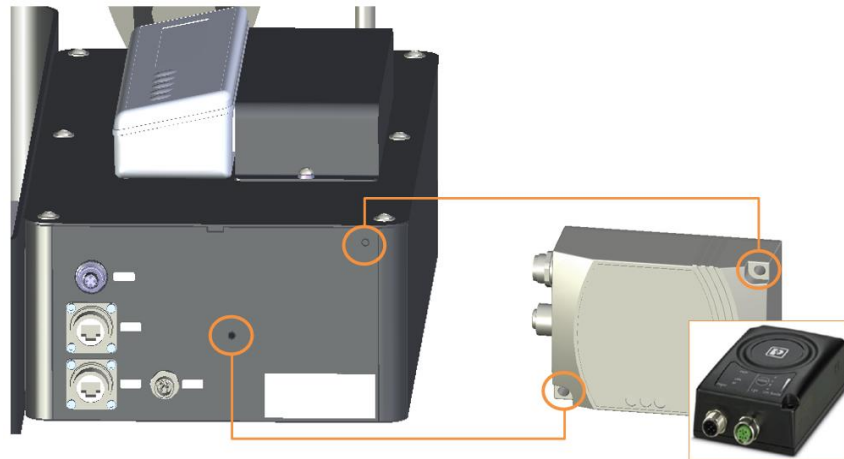

Fig. 25:   Mounting the WLAN module

Mounting

1. Place the WLAN adapter with the two drill holes over the drill holes on the MDA housing.

2. Fasten the device with the two fixing screws.

5   Electrical installation

All components of the Master Data Analyzer are connected with each other at the factory.

The system only needs to be connected to the voltage supply.

⚠ **DANGER**

Risk of injury due to electrical current

The Master Data Analyzer is connected to the power supply (AC
100 to 264 V/50 to 60 Hz) via an external power supply unit.

Only a qualified electrician or trained persons working under the guidance and supervision of a qualified electrician are permitted to work on electrical plants or equipment and must comply with electrical regulations when doing so.

Improper handling of live devices may lead to severe personal injury or death by electric shock!

Measures

▶ Electrical installation and maintenance work must only be performed by electrically qualified personnel.

▶ Standard safety requirements must be met when carrying out any work on electrical systems or equipment.

▶ Do not touch any live parts.

▶ In the event of danger, immediately disconnect the device from the grid.

▶ Electrical connections may only be made or disconnected when there is no power in the system.

▶ Only switch on the supply voltage when the connection tasks have been completed and the wiring has been thoroughly checked.

▶ Only carry out maintenance and repair work when the power is off.

▶ Always use original fuses with the specified current rating.

5.1 Connections on the MDA

5.1.1 Components connected as standard

If the Master Data Analyzer is operated in the mode with bar code scanning, the hand-held scanner and display are already connected to the controller upon delivery. The components' connecting cables are fed into the controller's housing interior with the M cable gland.

The hand-held scanner is connected via a cable. The display is connected to the controller via two separate cables (voltage supply and Ethernet).
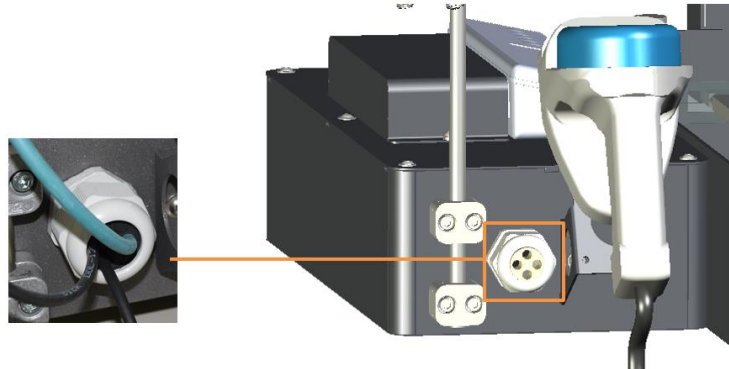

Fig. 26: Hand-held scanner connected as standard

MDA800 Image   The IP camera is also already connected for the **MDA800 Image** devices. The connecting cable is fed into the controller housing by the drag chain in the housing interior.

5.1.2 Connections on the controller housing

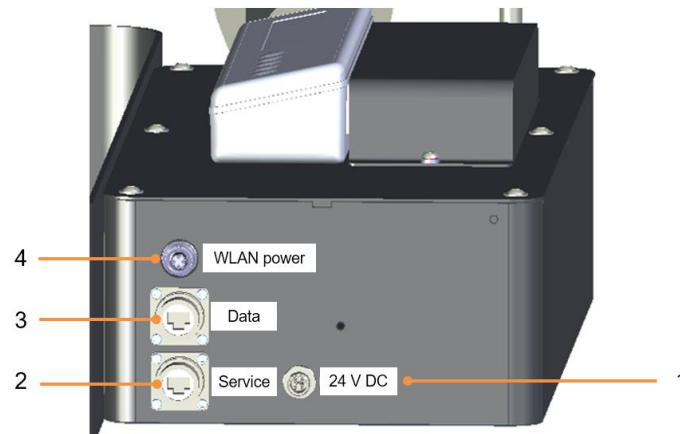The connection to the voltage supply and the company network must be established manually.

Fig. 27: Connections on the controller housing

The following plug connections are available on the MDA.

No.	Connection	Description
1	24 V DC	MDA voltage supply
2	Service	Ethernet connection for the configuration PC
3	Data	Ethernet connection for transmitting the measurement results to the higher-level customer system
4	WLAN power	Voltage supply to the WLAN module (optional)

Tab. 6: Connections on the controller housing

5.2 Connecting the MDA to the supply voltage

The Master Data Analyzer is either connected to the local voltage supply or to the rechargeable battery of the sliding table. When connecting the MDA to the local voltage supply, the power supply unit with the respective power plug which is available as an accessory must be used. This connecting cable supplies voltage to the controller and all of the components connected to it.
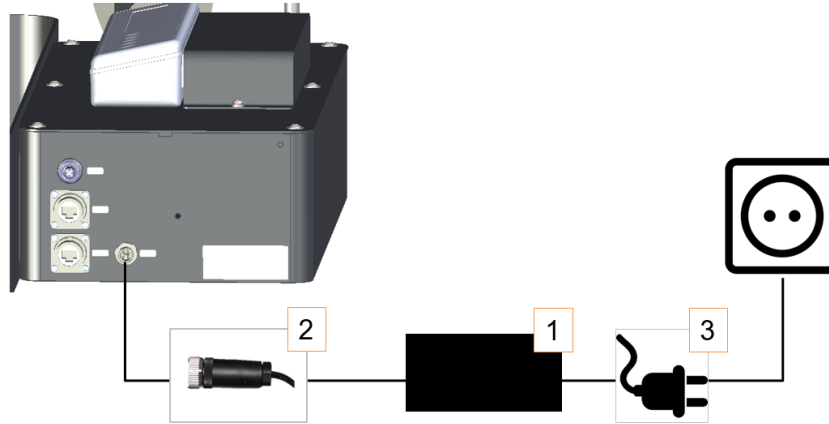

Fig. 28:   Connecting the MDA to the voltage supply

No.	Description
1	Power supply unit
2	Cable with M12 plug connector for connection to the MDA.
3	Cable with power plug for connection to the power network. Cables with different power plug types are available.

Tab. 7:   Power supply unit with connecting cables

⚠ *DANGER*

Check voltage information before connection

Before connecting the device to the energy grid, check whether the required voltage information as per the technical data match the mains voltage at the installation site.

This also applies to battery operation.

If this is not the case, you must not establish the connection!

▶ Only connect the device using the supplied power cable and to a grounded power socket with protective contact.

Creating connections

1. Connect the M12 female connector for the cable feeding out of the power supply unit to the **24 V DC** male connector on the MDA.
2. Tightly screw in the plug connector.
3. Use the cable with the male connector to establish a connection to the local power network.

5.3   Connecting the MDA to the target network

Data is transmitted to the target network using the **Data** Ethernet interface as standard. The Ethernet cable is not included with the delivery.

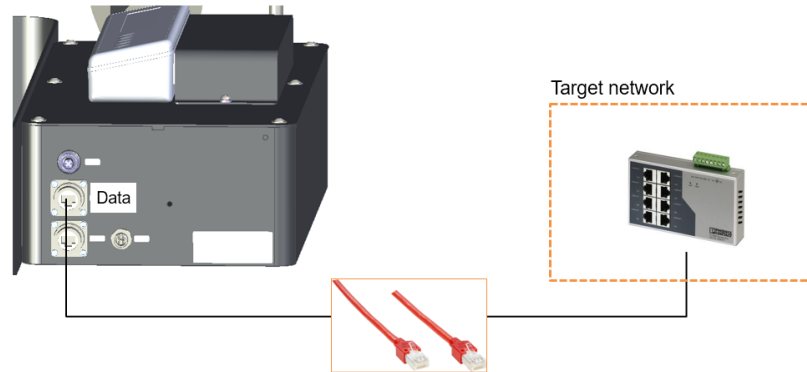### Creating connections

Fig. 29:   Connecting the MDA to the Ethernet

1. Plug the Ethernet cable's RJ45 male connector into the **Data** female connector on the MDA.
2. Route the cable to a free Ethernet female connector for the target network.
3. Establish the Ethernet connection to the target network.

5.4   Connecting the sliding table with rechargeable battery

If you would like to operate the Master Data Analyzer on the sliding table with an integrated rechargeable battery, the MDA should be connected to the battery rather than the mains voltage supply.

An unconnected cable end has been fed out of the rechargeable battery housing for the connection. The cable end has an M12 plug connector.
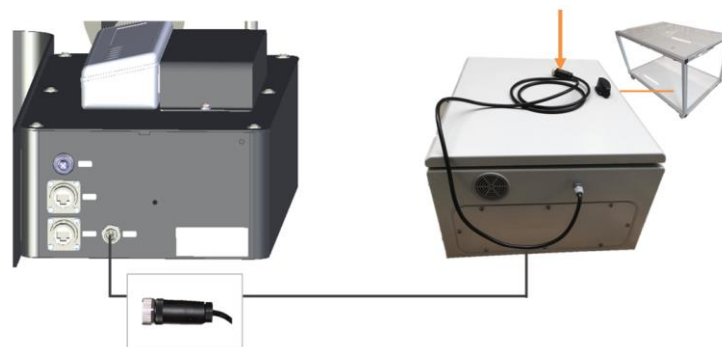

Fig. 30:   Connecting the sliding table to the rechargeable battery

1. Connect the M12 female connector for the cable feeding out of the rechargeable battery housing to the **24 V DC** male connector on the MDA.
2. Screw in the plug connector.
3. Make sure the connection is secure.

5.5   Connecting the WLAN adapter

The WLAN module that is available as an accessory is connected to the supply voltage and MDA's data interface.

Both connections are established using the connecting cables included with the delivery.
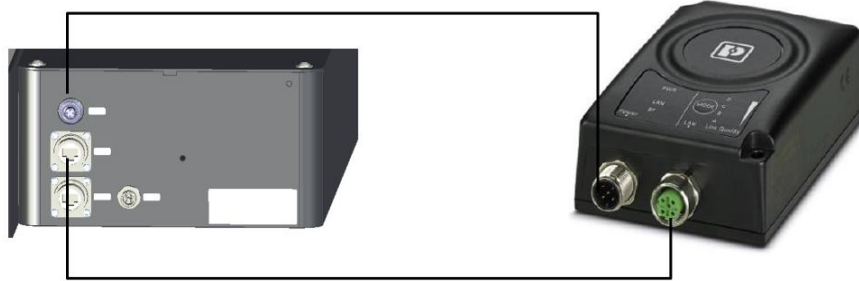

Fig. 31:   Connecting the WLAN adapter

Connecting the supply voltage

The connecting cable for the supply voltage has an M12 plug connector on both sides.

1. Connect the M12 female connector on the WLAN adapter to the **Power** male connector.

2. Connect the other end of the cable to the **WLAN Power** M12 female connector on the MDA.

3. Connect the two plug connectors and make sure the connection is secure.

Connecting the Ethernet interface

The cable has an M12 male plug connector on one side for the connection to the WLAN module and an RJ45 male connector on the other side for the connection to the MDA.

1. Connect the M12 male connector on the WLAN adapter to the **LAN** male connector.

2. Connect the plug connector and make sure the connection is secure.

3. Plug the RJ45 male connector into the **Data** female connector on the MDA.

6   Commissioning

In principle, the Master Data Analyzer is ready for operation when it is connected to the voltage supply. However, a small number of settings have to be adjusted first.

The IP address and exchange protocol must be set up in order to transmit the measurement results via the data interface. The MDA's display is not used to do this. Instead, a configuration PC connected to the MDA via Ethernet is used. The **SOPAS** configuration software must be installed on the configuration PC.

⚠ **WARNING**

Do not commission without testing by qualified safety personnel

Before you commission the Master Data Analyzer for the first time, you must have it checked and approved by qualified safety personnel.

Measures

▶ Observe the notes provided in chapter *2 On safety*.

6.1   Starting the MDA

6.1.1   Starting up the MDA

▶ Ensure that there are no objects on the glass panel.

▶ Establish the voltage supply. Insert the male connector on the connecting cable into the socket.

Note

All system components of the MDA system are started up and checked for operational readiness in a self-test.

- The start-up process lasts approx. 30 seconds without an IP camera.
- In the system variant with the IP camera (MDA 800 Image), the start process takes about 60 seconds.

Note   During the start-up phase, a window with a progress display appears on the touchscreen. This visualizes the progress of the start-up phase.

6.1.2   Checking operational readiness

Check that the device is working properly.

Component	Displaying operational readiness
Hand-held scanners	The status indicator LED lights up blue permanently.
Light grid	The green LED lights up on the sender and the receiver.
Display	The display shows the measurement screen once it has started up.
IP camera (only MDA 800 Image)	The status LED lights up green.
WLAN module (optional)	The **PWR** LED lights up green.

Tab. 8:   Checking operational readiness

Checking signal strength

The signal strength of the light grids is already set up at the factory.

If the signal strength is sufficient, the yellow LED on both receiving units will be off.

If the yellow LED flashes, the signal that is being received is too weak. A teach-in process must be carried out (see chapter *7.9.2.3 Performing teach-in*).

Checking whether objects are detected

▶ Move an object or your hand into the monitoring field of the light grids. The yellow LED must light up on the receiver of each of the light grid pairs.

The yellow LED lights up if at least one beam of light is interrupted. Once the object is removed, the yellow LED should go out.
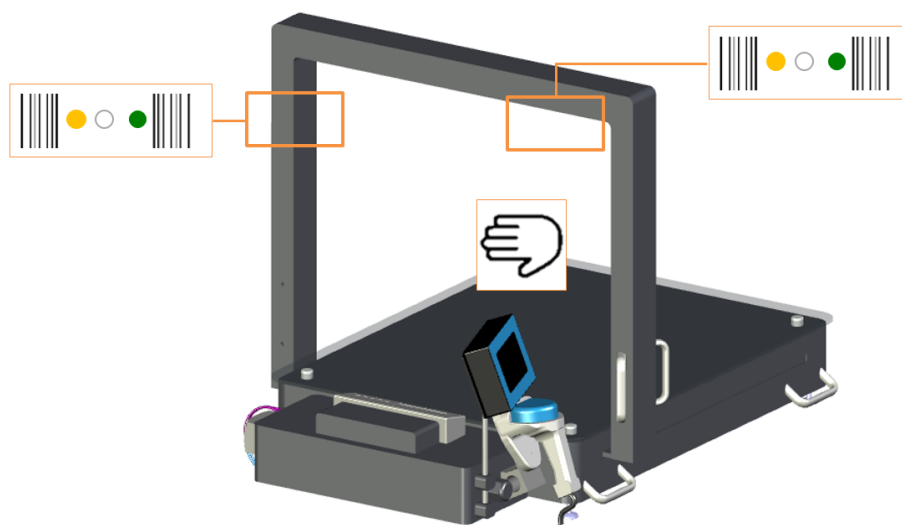

Fig. 32:   Checking whether objects are detected

6.2 Preparing the configuration PC

6.2.1 Establishing a connection with the configuration PC

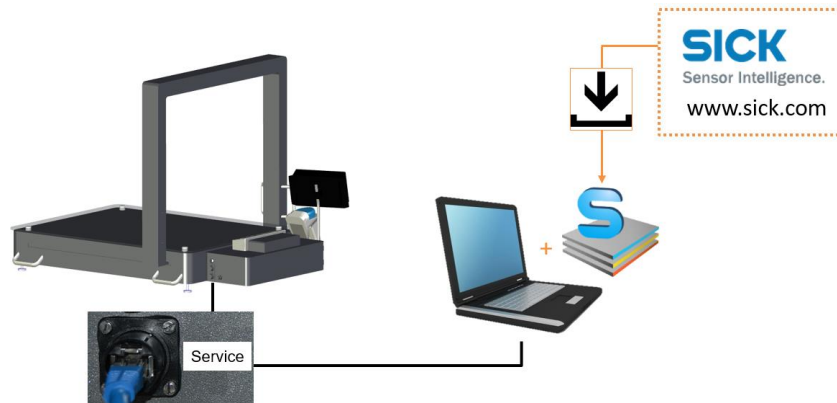The MDA is configured via a configuration PC.

Fig. 33: Connection with the configuration PC

Connecting the configuration PC

▶ Use an Ethernet cable to connect the MDA's **Service** socket to the configuration PC.

6.2.2 Service and data interface

The Master Data Analyzer is addressed via the service interface and the factory default IP address of 192.168.0.32. In order for the MDA to be automatically located by the configuration software, the configuration PC must also be in the same address range.

The IP address of the data interface must be different to the IP address of the service interface. The IP address of the **data interface** determines how the MDA is contacted within the higher-level customer network.
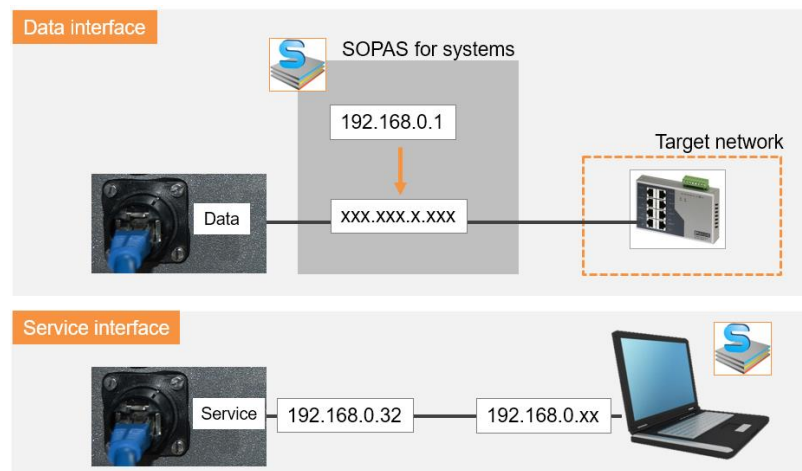

Fig. 34: Service and data interface

Note   If the number range of the MDA and configuration PC do not correspond with each other, the IP address of the configuration PC must first be changed to the 192.168.0 MDA network.

▶ In this case, a static IP address from the Master Data Analyzer's number range should be assigned to the configuration PC.

6.2.3   Installing SOPAS

Install the latest version of the configuration software from the SICK homepage on the configuration PC.

1. Open the www.sick.de website in the browser.

2. Enter SOPAS into the search field and start the search.

3. Download the latest version of the **SOPAS Engineering Tool** software and save this in a temporary directory on the configuration PC.

4. Start installation by double-clicking the **setup.exe** file.
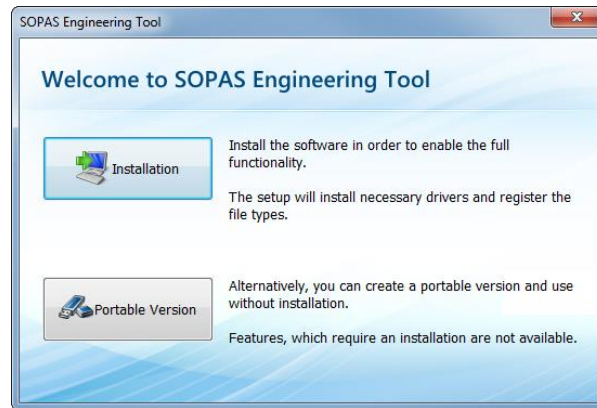
5. Select the **Installation** installation type. The installation is prepared.

6. Select the user language of the wizard.

7. Click **OK** to confirm. The Setup Wizard opens.

8. Follow the Setup Wizard and perform the installation. Depending on the configuration, a program group is created and an icon is placed on the desktop.

6.2.4   Launching SOPAS

You have already connected the configuration PC to the Ethernet switch.

▶ Launch SOPAS. The corresponding icon is located in the Windows start menu and on the desktop by default.

The initial screen is displayed. A new **project** is automatically created in SOPAS.
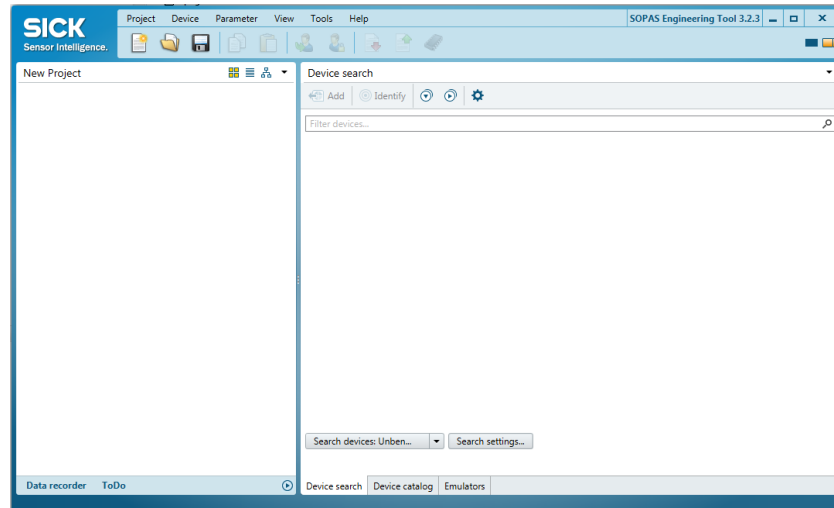
One or more devices are combined and edited in a single project.

6.3 Adding the MDA to the SOPAS project

### 6.3.1 Starting the device search

Use the device search to add the MDA controller to the project.

Configuring the device search

1. Click the **Search settings** button. The Connection Wizard starts. This helps you to establish a link with a connected device.

2. Select the **Device family oriented search (recommended)** option and click **Next** to confirm.
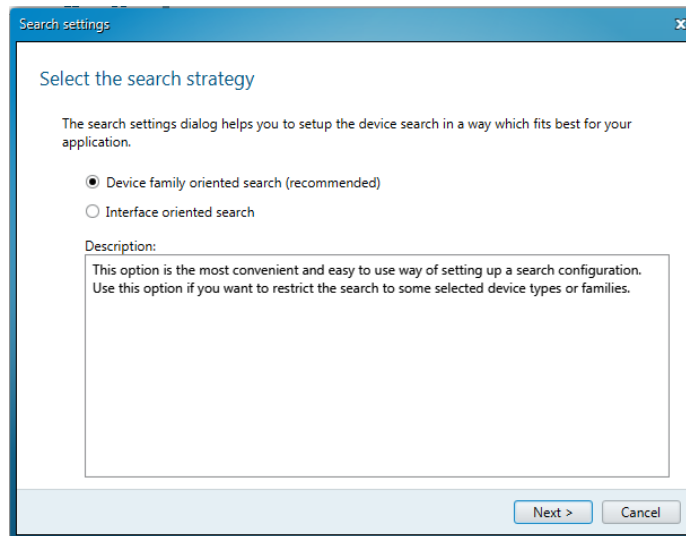
3. Select the device family from the list. This restricts the search for connected devices to devices from that family. Press **Next** to confirm.
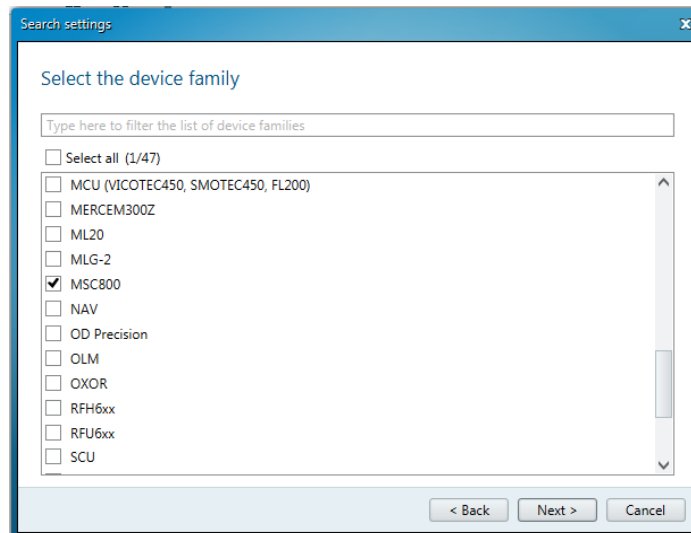
4. Specify which interface is to be used for the configuration work. If, as shown in the example, the configuration is to take place using an Ethernet cable, the check box labeled **Ethernet communication (TCP/IP)** is automatically activated.
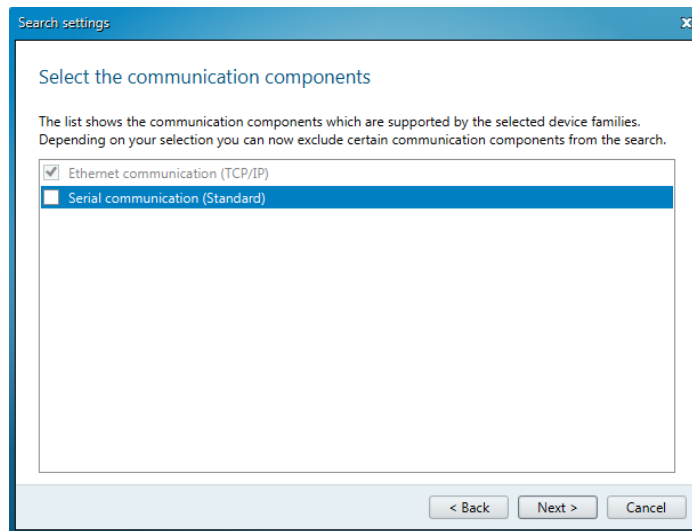
5. Confirm the following pages of the wizard by pressing **Next** each time and click **Complete** to finish configuring the search settings.

If the number ranges for the configuration PC and the MDA controller match, then the controller is detected and displayed in the device list on the right-hand side.
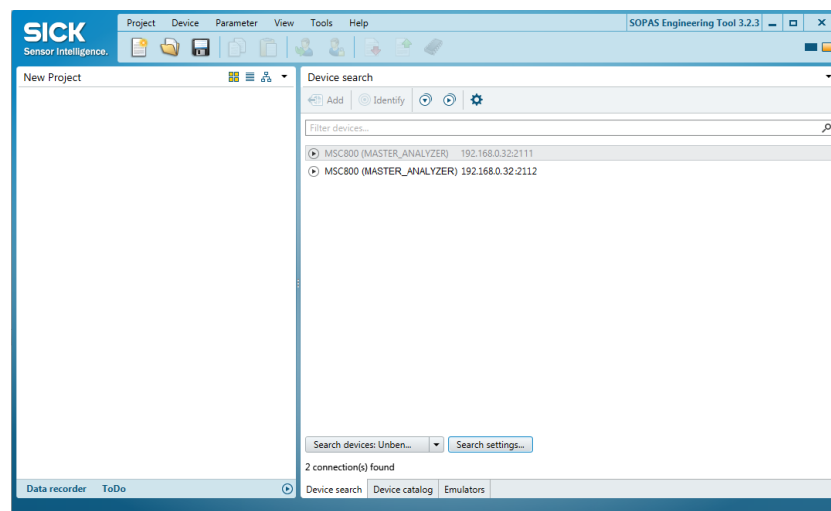
Note The **MSC800 (MASTER_ANALYZER)** controller uses two ports (like all SICK devices). Ports are part of the network address and can be used to establish various connections between the devices. Port **2112** is freely configurable but port **2111** is a fixed port for outputting data. It is used for device configuration.

6.3.2   Transferring the controller to a SOPAS project

Add the detected controller to the SOPAS project.

1. In the list, select the controller with the port **2111**.

2. Click the **Add** icon to transfer the controller into the project.

   Alternatively, you can transfer by double-clicking on the list entry or dragging and dropping.

The transferred controller is displayed in the left-hand window as a **tile**.
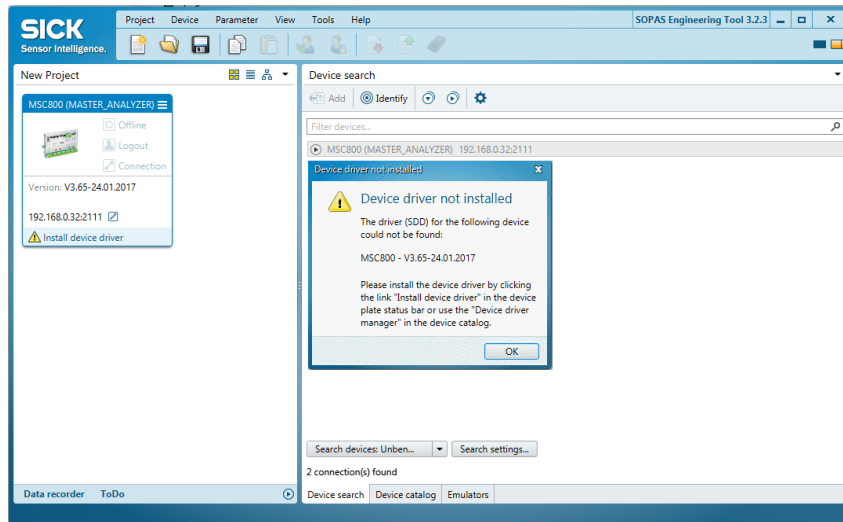
Note   A notification will appear if the device drivers for the controller are not yet known in the SOPAS project.

6.3.3   Loading device drivers into the SOPAS project

Install the device driver for the controller. The device drivers can be transferred directly from the device to SOPAS.
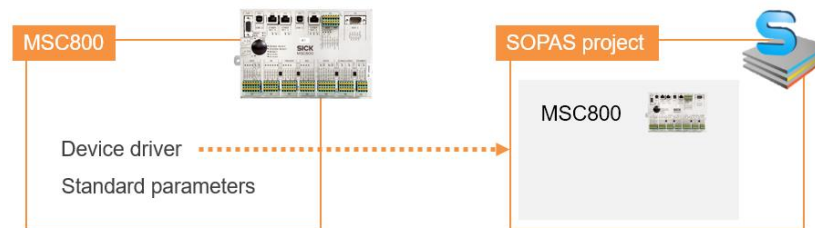
Fig. 35:   Loading device drivers into the SOPAS project

Getting started

1. Press **OK** to confirm you have seen the notification.

2. Click **Install device driver** in the tile.
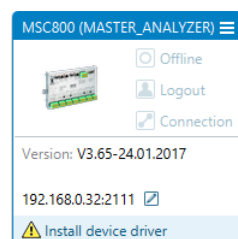
3. You will be asked where you want to get the device drivers from. Load the device drivers from the device and select the **Device upload** option.
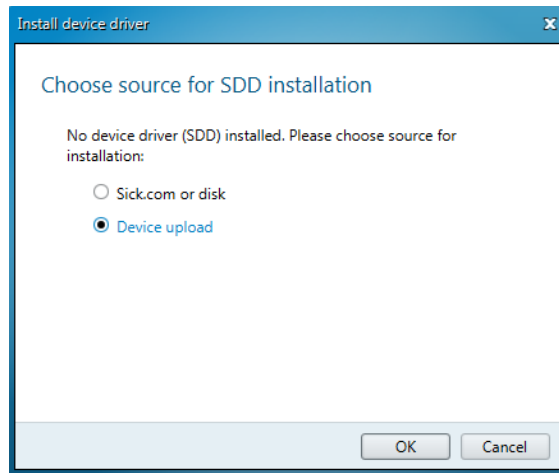
4. Click **OK** to confirm. The device drivers are downloaded and installed in the SOPAS project.

It can be inferred from the tile of the controller that the controller is now recognized by the configuration PC but is not yet connected to the system, meaning that it is still **offline**.
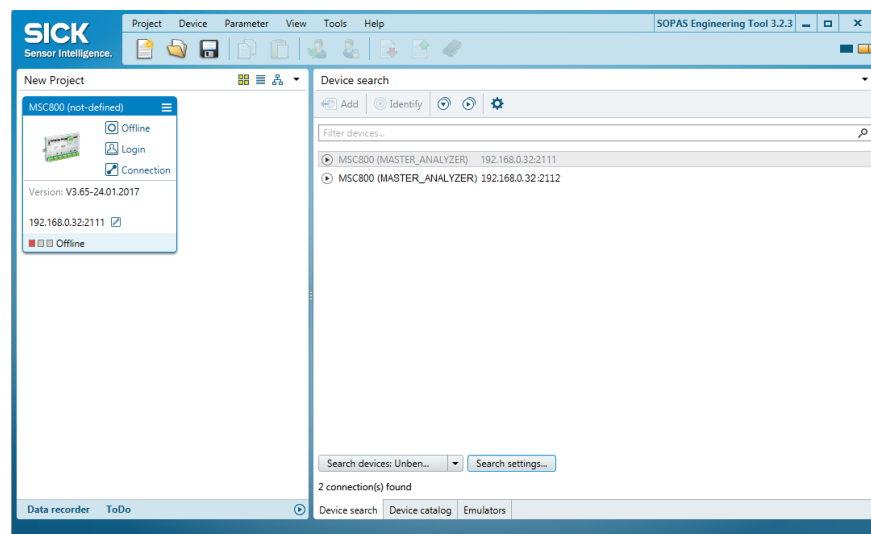
6.3.4 Setting the controller to online

Establish a connection between the SOPAS project and the controller. This connection will make it possible to subsequently read controller parameters and configuration data in the SOPAS project or write these to the controller from SOPAS.

During the initial commissioning, the standard parameters saved on the controller at the factory are transferred to the SOPAS project and then adapted to the requirements of the relevant application there.
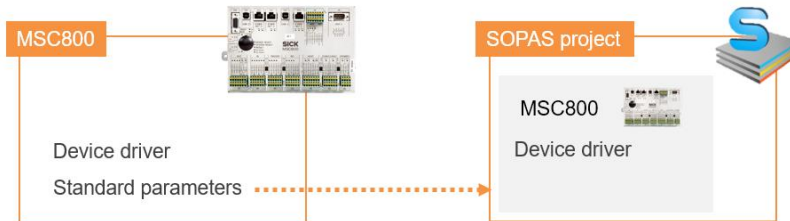
Fig. 36: Loading standard parameters into the SOPAS project

1. Click the **Offline** button in the device tile.
2. You are prompted to synchronize the controller's device data with the device data of the SOPAS project.
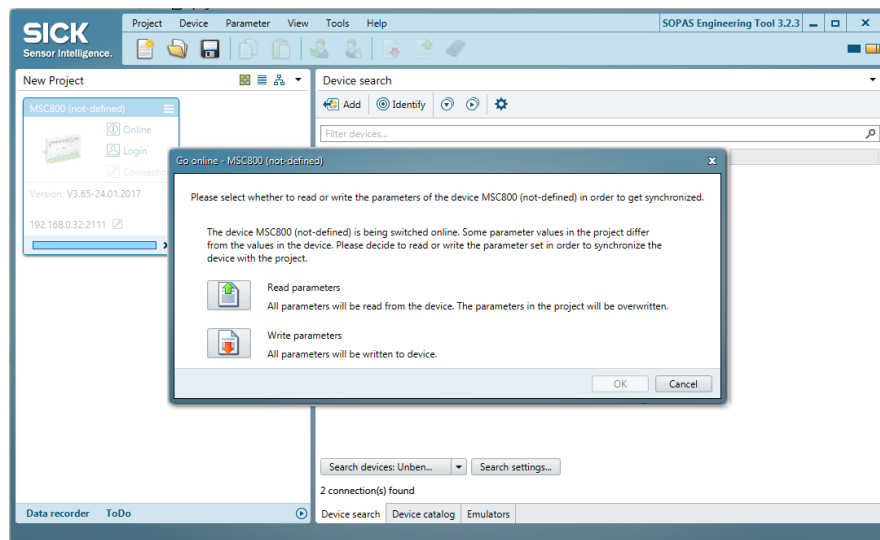
3. As the standard parameters are currently only available in the controller and are not yet in the SOPAS project, click the **Read parameters** option.

The connection between the controller and the configuration PC is now established. The standard parameters are transferred from the controller into the SOPAS project.

Online appears in the tile. The LED lights up green.
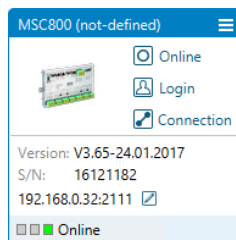
6.4 Configuring the MDA in SOPAS

Now open the configuration interface in SOPAS.

▶ To do so, double-click the tile in the project tree.

All configurable parameters of the controller are compiled together in a corresponding device description for the SOPAS configuration software. The project tree of the device description is used as an aid for configuration.
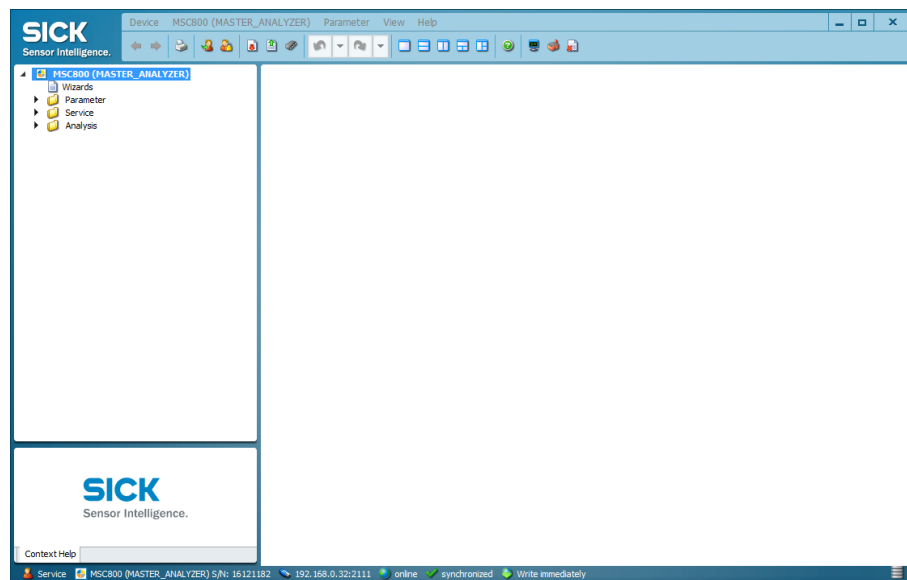
Configuring the parameters

You can open the individual functional areas of the configuration via the project tree structure.

1. Click the plus symbols to expand the tree.
2. Select a functional area in the project tree.

⚠️ **WARNING**

Only ever adjust the parameters described in the following sections.

All other parameters must remain **unchanged**.

6.4.1   Incorporating the MDA controller into the customer's network

6.4.1.1   Issuing the Data interface IP address

Start by integrating the MDA controller into the customer's network. To do this, change the IP address for the data interface that is used to connect the MDA to the customer server.

Note   If the customer server is already connected to the MDA via the data interface, you can test the connection directly after changing the IP address.

1. In the project's tree structure, select the function **Parameter →**
   Network/Interfaces/IOs → Ethernet.
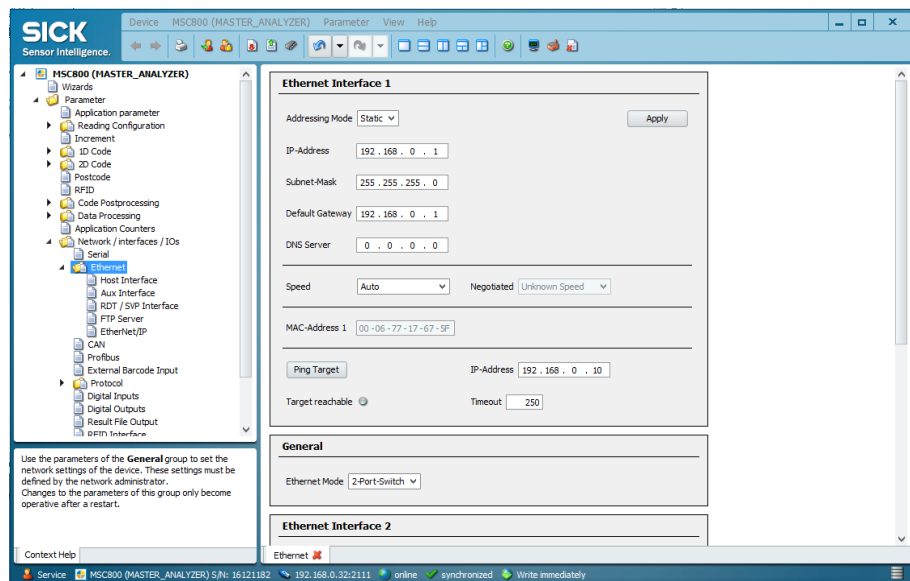
2. Please issue a static IP address. Please therefore leave the default input **Static** unchanged under the **Addressing Mode**.

3. Define the IP address and sub-network under which the MDA's controller should be reached in the customer's network. In the **IP address** field, assign a free IP address from the address range of the customer network.

4. Press **Apply** to confirm.

Note   Add the gateway's IP address if you wish to establish a network outside of the target network.

Enter the DNS server's IP address if the data is going to be transmitted to a domain. The DNS server (DNS = Dynamic Name Service) is responsible for assigning the domain name to the IP address.

6.4.1.2   Testing the server connection

Make sure that the Master Data Analyzer is addressed correctly via the data interface in the target network.

You can test the connection between the controller and the customer server in SOPAS.

1. Close the configuration interface in SOPAS. The software takes you back to the project window.
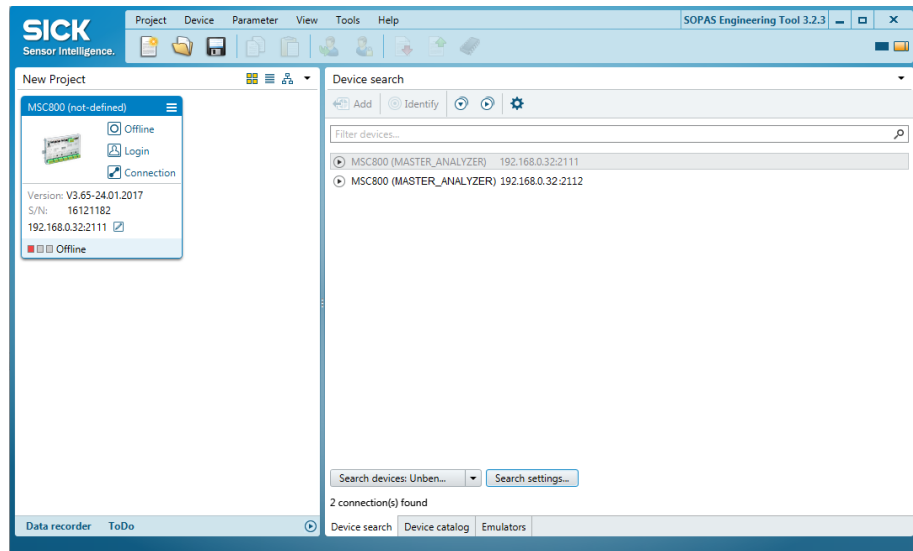
Following the change to the IP address for the data interface, the device tile has the status **Offline**.

2. Connect the SOPAS project by double-clicking the device tile with the MDA's controller again.

3. In the configuration interface's tree structure, select the function **Parameter → Network/Interfaces/IOs → Ethernet**.

4. To the right of the **Ping Target** button, enter the customer server's IP address.
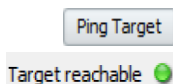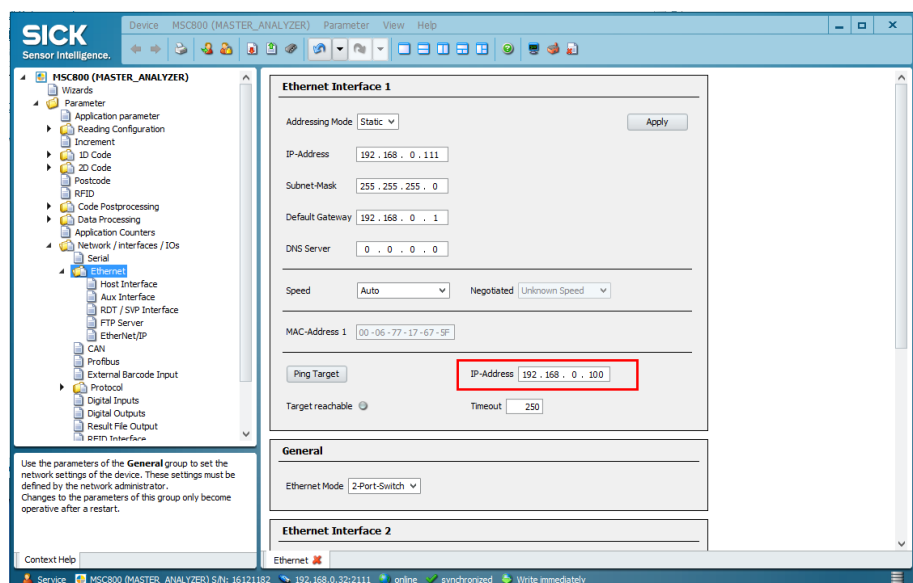
5. Now click the **Ping Target** button.

6. If the connection between the controller and the customer server can be successfully established, this is visualized by a green circle symbol for the indicator **Target reachable** indicator underneath the button.

6.4.2   Storing connection data for the customer server

In the second step, store the FTP connection data for the customer server to which the measurement results should be transmitted. The measurement results with image data are stored on the FTP server in freely definable directories. Access to the FTP server is normally protected with a username and password.

▶ In the configuration interface's tree structure, select the function **Parameter** → **Application parameter**.

The FTP protocol relevant for data transmission is pre-selected as standard under the **Data Host Output** field.

Note   This setting must not be changed.

The following parameters **must** be **adjusted** to the customer's requirements.

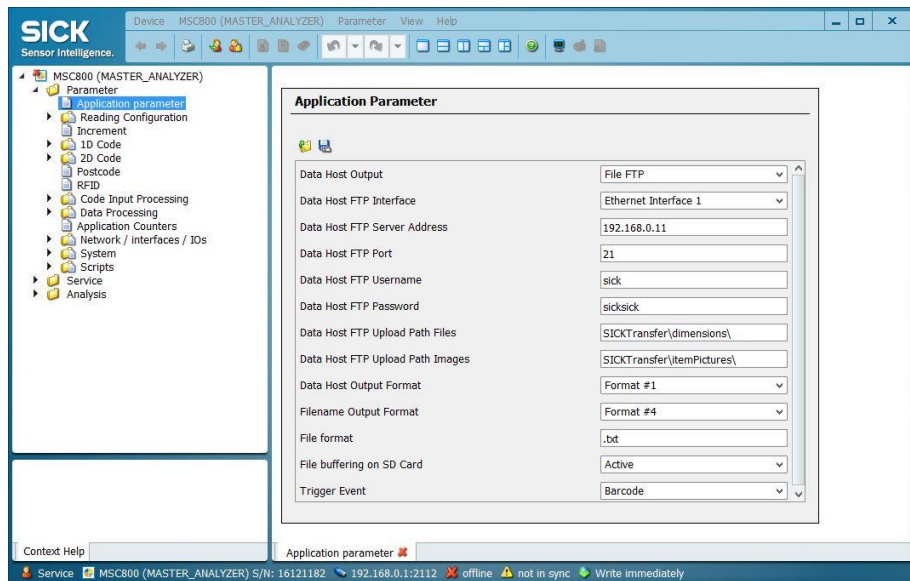| Parameter	Meaning
Data host FTP server address	Enter the IP address for the server to which the measurement results should be transferred.
Data host FTP port	Add the port that should be used to connect to the server.
Data host FTP username Data host FTP password	Enter the FTP username and password which are used to access the FTP server.
Data host FTP upload path files Data host FTP upload path images	Enter the directories that should be used to store the measurement results with the corresponding image files (only when using the IP camera) on the FTP server. Measurement data and image files can be stored in different directories. As the default setting, the directories **SICKTransfer/dimensions** and **SICKTransfer/itemPictures** are suggested under the FTP root directory. ▶ Change these suggestions accordingly. **Notes** ▪ Make sure that the directories you enter here actually exist on the FTP server and that the specified FTP user has write access for these directories. ▪ If you do not enter any information under these fields, measurement data and images are stored directly in the FTP server's root directory.

Note   All other parameters **must** be **accepted** with their **default** value.

6.5   Saving data permanently

All parameters which you enter in SOPAS are transferred to and executed on the connected controller with the **Immediate Download** option. However, the data is only saved **temporarily** in the controller.

Saving the configuration in non-volatile memory

To retain the changes after the Master Data Analyzer is restarted, the configuration must be permanently saved in the controller.

1. To do this, click on the **Permanently Save** icon in the SOPAS toolbar. The configuration is transferred to the MDA's controller and saved there permanently.
2. The configuration that is saved permanently in the device is loaded whenever the Master Data Analyzer is restarted.

Saving the configuration on the PC

You can also save the configured and displayed settings in a configuration file on your PC in the format ***.spr**. The settings within this file can be loaded subsequently (if required) and transferred to the controller.

1. Go to the project window toolbar and click the **Save Project** button.
2. Select a directory and file name and then confirm your choice.

6.6   Performing a test run

Finish commissioning the system by performing a test run. The test run must make sure that all components of the Master Data Analyzer are working correctly and that they are delivering plausible measured values.

Performing a test run

Test the measurement accuracy of the Master Data Analyzer using a test object.

▶ Place the test object on the inside the measurement field on the glass panel.

▶ Move the measurement gantry over the test object.

▶ Rotate the test object in different directions and perform a measurement in each position.

Displaying measurement results

All measurement results are listed on the display.

▶ Compare the recorded measured values with the defined measured values.

▶ If a valid bar code is read with the hand-held scanner this will also be displayed in the list of measured values.

What to do if no dimensions are displayed

▶ Ensure that nothing is permanently in the way of the beam path of the light grids.

▶ Check for a **force shunt** in the system. No parts are permitted between the glass panel and housing.

Checking data output

Check to see whether the measurement results have been correctly transmitted to the customer system with the configured connection settings.

6.7 Setting up the IP camera

Upon delivery of the **MDA 800 Image** system variant, the IP camera is integrated into the MDA's internal sensor network and connected to the MSC800 controller. The IP camera is not integrated into the customer's network.

The controller triggers the IP camera to take a photo upon commencement of the volume measurement.

Like the data with the measurement data, the image files are transmitted to the customer's interface via the Ethernet interface where they are addressed accordingly. The directories are defined in the SOPAS configuration software (see chapter *6.4.2 Storing connection data for the customer server*).
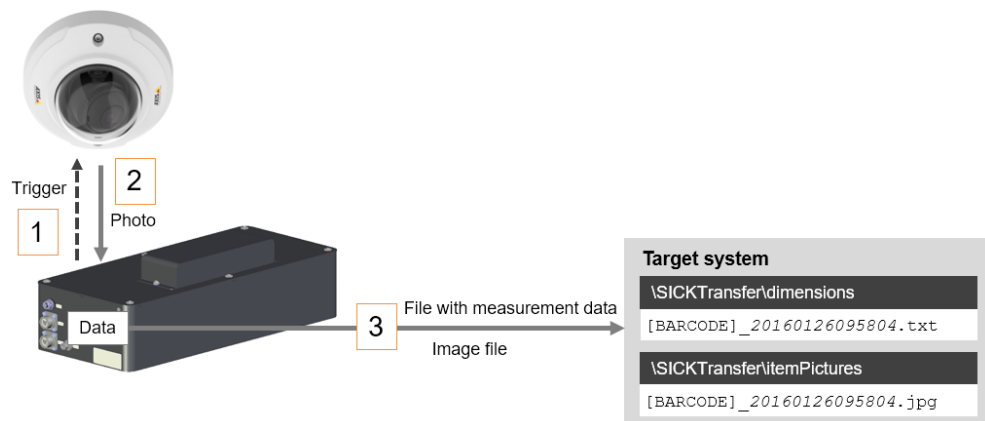
Fig. 37:   Integration of the IP camera

The file designation uses the following time stamp:
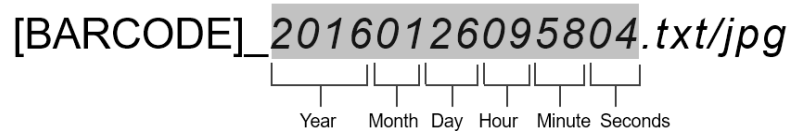
Fig. 38:   Time stamp format

NOTE

Do not change any configurations for the IP camera yourself

The IP camera interacts directly with the MSC800 controller.

▶ Do not perform any manual alterations on the IP camera.

▶ Do <u>not</u> alter the IP camera's predefined IP address. If it is altered, the MSC80 will no longer be able to recognize the IP camera.

6.8　　　　Configuring the WLAN module

Commission the WLAN module according to the operating instructions included with the delivery from the manufacturer of the device.

To configure the WLAN module, a graphical user interface is available which is accessible via a web browser.

Connecting the configuration PC to the WLAN module

Establish a direct connection between the WLAN module and the configuration PC.

Fig. 39:　Connecting the configuration PC to the WLAN module

1. To do this, unplug the RJ45 male connector on the WLAN module from the **Data** connection.
2. Plug the male connector into the configuration PC's network socket.
3. Follow the instructions given in the operating instructions supplied by the device manufacturer.

Testing the configuration

▶ Reconnect the WLAN module to the Master Data Analyzer following device configuration.

7 Operation

7.1 Safety information

> ⚠️ **_ATTENTION_**
>
> **You are responsible!**
>
> ▶ Observe the notes provided in chapter *2 Safety information*!

> ⚠️ **_ATTENTION_**
>
> **Personnel requirements**
>
> All activities may only be carried out by trained and authorized personnel.

> ⚠️ **_WARNING_**
>
> **Risk of injury and/or material damage caused by incorrect operation!**
>
> Risk of injury and/or material damage due to absence of qualification and/or incorrect and non-intended use.
>
> **Measures**
>
> ▶ Follow the instructions on proper operation.
> ▶ Only use the plant in perfect working order and for its intended purpose, keeping safety and potential dangers in mind, and in compliance with the operating instructions!
> ▶ Never exceed the permitted technical limit values.
> ▶ Do not do work on the system if:
>   - You do not have the required qualification
>   - You have not received full instructions from the operating entity
>   - You have not completely read or understood these operating instructions.

> ⚠️ **_WARNING_**
>
> **Risk of injury when lifting heavy objects.**
>
> There is a risk of injury when placing down and removing the objects to be measured. Objects weighing up to 30 kg can be measured.
>
> **Measures**
>
> ▶ Consider ergonomic aspects when placing down and removing the objects.

<table>
<tr><td></td><td>

⚠ WARNING

Risk of injury when moving the measurement gantry

There is a risk of crushing when moving the measurement gantry. Hands may be crushed between the measurement frame and the side recesses in the housing.

The device has been designed with sufficient safety distances to prevent fingers from being crushed.

Measures

▶ Always use the handles to move the measurement gantry.

▶ Do not grip onto the side recesses in the housing.
</td></tr>
</table>

⚠ WARNING

Risk of tripping due to cables. Risk of damage to cables

Exposed cables on the floor in areas used by people can pose a risk.

Measures

▶ Lay the connecting cables for the hand-held scanner and the voltage supply so that there is no risk of people tripping over them and the cables are protected against damage.

⚠ WARNING

Risk of injury when transporting the MDA to the place of use

The measurement gantry may accidentally be damaged when the MDA is transported on a sliding table. Hands may be crushed between the measurement frame and the side recesses in the housing.

Measures

▶ Use cable ties to secure the handles of the measurement gantry so that it does not move accidentally during transport.

⚠ WARNING

Danger due to malfunction!

Cease operation if the cause of the malfunction has not been clearly identified!

Measures

▶ Immediately stop system operation if you cannot clearly identify the fault and if you cannot safely remedy the problem.

7.2   Steps for preparing for your first measurement

7.2.1   Adjusting the display and operating position

Before you begin working with the Master Data Analyzer, it is recommend that the display is positioned in an optimum display and operating position.

Getting started

The display is mounted to a pole. The pole is fixed to the controller housing with two brackets.

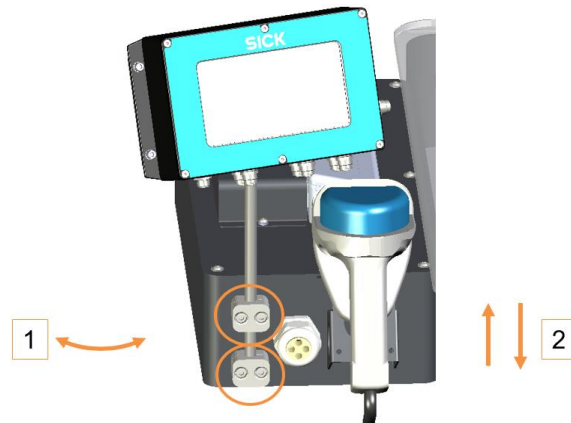▶ Unscrew the fixing screws for the brackets.

Fig. 40:   Adjusting the display and operating position of the monitor

Changing the position

1. Turn the display to the required position.

2. Move the pole up or down.

Securing the display

▶ Tighten the fixing screws for the brackets.

NOTE

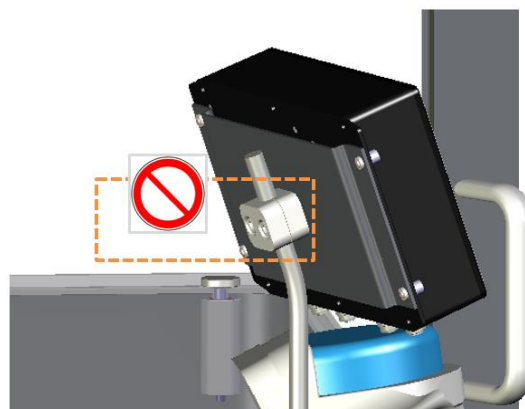The display can tilt if the screws on the upper bracket are unscrewed.

Fig. 41:   Careful when removing the upper bracket

▶ Do not unscrew the fixing screws on the upper bracket!

▶ The display and operating position should only be altered by following the instructions for the lower brackets.

7.2.2   Starting up the MDA

All components of the Master Data Analyzer are started up together as soon as the voltage supply is connected.

Connection via mains cable

Ensure that no objects are located on the glass panel.

▶ Insert the male connector on the connecting cable into the socket.

If you are using the sliding table with rechargeable battery, please read chapter *7.8 Using the sliding table with rechargeable battery*.

Component self-test

All system components of the Master Data Analyzer are started up and checked for their operational readiness by way of a self-test.

▶ You can follow the process on the display by checking the progress bar.
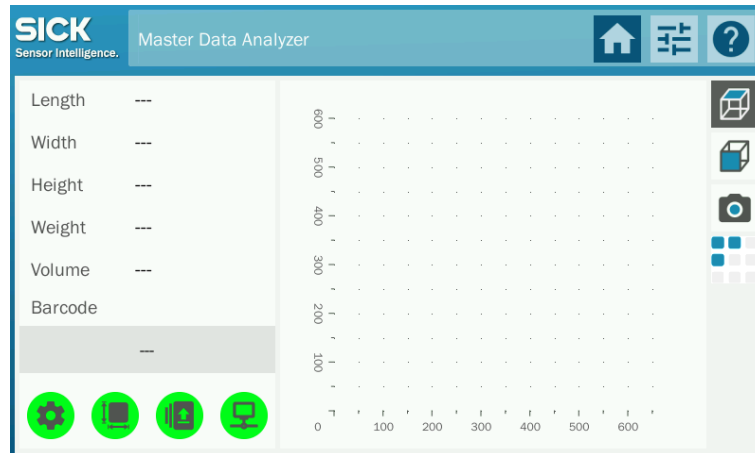
The main screen

The start-up process takes about 30 seconds with an IP camera, about 60 seconds with.

During the start-up phase, a window with a progress display appears on the touchscreen. This visualizes the progress of the start-up phase.
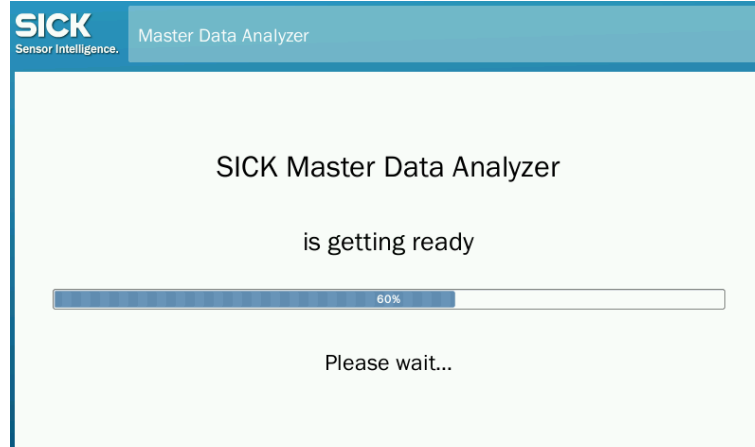
7.2.3 Structure of the measurement window

The measurement screen appears on the display at the end of the start-up process.

Display of the measurement results and the measured object

The measurement results and the bar code are displayed in the top left corner of the measurement screen (only for the operating mode with bar code scanning). All values are set to zero when the system is started up.

If a measurement has already been carried out, the measurement data from the last measurement are shown on the display. The display will be overwritten by the new measurement.

The graphic display on the right-hand side shows a 2D view of the measured object. The symbols to the right of the measurement window enable you to switch between a 2D display from above and one from the side. In addition, you can display a photo of the current measurement situation as well as additional customer-specific fields.

A measurement scale helps you to quickly verify the object's measured values.

Icons to indicate readiness for measurement and operation

The bottom left corner of the screen uses colored circles to visualize the system's measurement and operating status. If all of the circles are green following the system start-up, you can start with the first measurement.

Icon	Meaning
	Visualizes the **system status**. A green circle indicates that the Master Data Analyzer is ready for operation.
	Visualizes the **measurement status**. Depending on the sequence of operations, a green circle indicates that a measurement has been successfully completed or that you can start the next measurement process.

Icon	Meaning
	Visualizes the **storage status** (operating mode <u>with</u> bar code scanning)
	A green symbol indicates that there is sufficient memory available to temporarily store the measurement data if the device is not connected to the server.
	Visualizes the status of **data transmission** (operating mode <u>without</u> bar code scanning)
	The internal memory bank is not available in the operating mode without bar code scanning. In this case, the symbol visualizes the data transmission status. A green symbol with the upload arrow indicates that the measurement results could be successfully transmitted to the customer's server when the device is connected to the network.
	Directly after the system start-up, the green symbol shows that the data can be transmitted if the device is connected to the customer server.
	Visualizes the **connection status**.
	A green symbol means that a connection to the customer server has been established and that data can be emitted to the customer system over the defined interface.
	The connection status is checked and updated every 30 seconds. When the system has started up, the symbol lights up yellow until the connection has been established.

Note   Pressing on one of the symbols opens a window with more in-depth status information. The window contains the status name, brief information about the status, an in-depth description of the status, and the status code (see chapter *9.2 Status indicator on the display*).

Toolbar in the header row

The toolbar is visible in the header row of the screen in all areas.

Icon	Meaning
	Opens the measurement screen to display the measured values. The measurement screen automatically appears when the system starts up.
	Enables settings for the user interface and user navigation to be adjusted. Provides various functions for adjusting the measurement system (teach-in and zero-point correction).
	Shows a helpful description for the current page.

7.2.4   **Moving the measurement gantry to a start position**

The measurement gantry must be located in a suitable start position before the first measurement.

▶ Use the handle to move the measurement gantry into a position which enables comfortable positioning of the object on the glass panel.

Fig. 42:   Measurement gantry in the end position

7.2.5 Positioning a measuring object

The system begins preparing for a measurement when an object is placed on the device.

▶ Position the object to be measured on the glass panel.
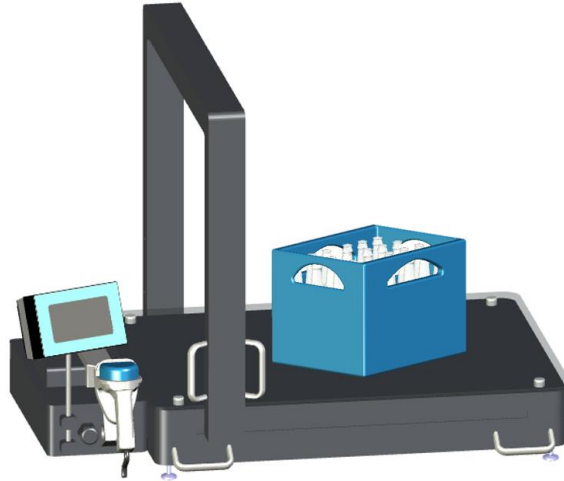
Fig. 43: Measuring object on the glass panel

Please observe the following rules:

- Never place more than **one object** on the glass panel's measurement field at a time. The object may be made up of several parts. However, these parts must all be recognized as one object.
- The entire object has to be within the measurement field (engraving).
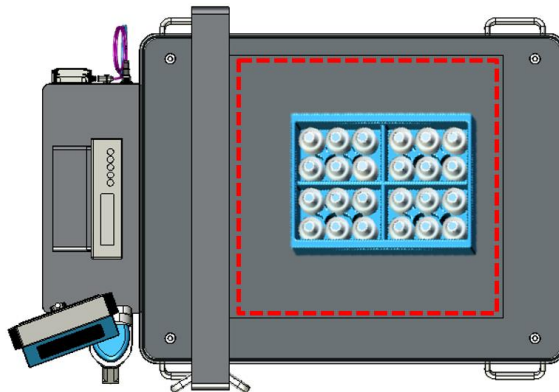
Fig. 44: Placing the entire measuring object on the measurement field

- The object must not be placed underneath the measurement gantry.
- When performing measurements <u>with</u> bar code scanning, the object must be positioned so that the **bar code** points towards the operator, i.e., so that it is easily accessible from the workstation.

⚠️ **ATTENTION**

Risk of damaging the display

If the measurement gantry is at the end position, there is a risk that the display could become damaged when placing the object.

▶ Please place the object carefully in the measuring range.

7.3 Performing measurements

7.3.1 Starting the measurement process

The start of the measurement process will vary depending on whether you are using the measurement system with or without bar code scanning.

7.3.1.1 Scanning the bar code (only for the operating mode with bar code scanning)

If you are using the operating mode <u>with</u> bar code scanning, the measurement process starts as soon as a valid bar code is detected. The bar code can be scanned with the hand-held scanner or entered manually.

The bar code is the starting signal for a new measurement process. When the bar code is scanned, the system generates a new measurement data set. The bar code and the measured values recorded in the subsequent measurement are assigned to this data set.

Scanning bar code

1. Position the object to be measured in the measurement field, as described above.
2. Remove the hand-held scanner from its holder.
3. Position the hand-held scanner towards the object.
4. Hold down the trigger on the scanner's handle to activate the light source for the scanner.

Fig. 45:   Scanning the bar code with the hand-held scanner

5. Move the hand-held scanner over the bar code printed on the object. A beep will indicate that the bar code has been successfully read.
6. Place the scanner back in the holder.

Entering a bar code manually

If the hand-held scanner is unable to read the bar code, the bar code can also be entered manually.

1. On the touchscreen's user interface, touch the **Barcode** field or the symbol with your finger.

   A keyboard will then appear on the touchscreen.
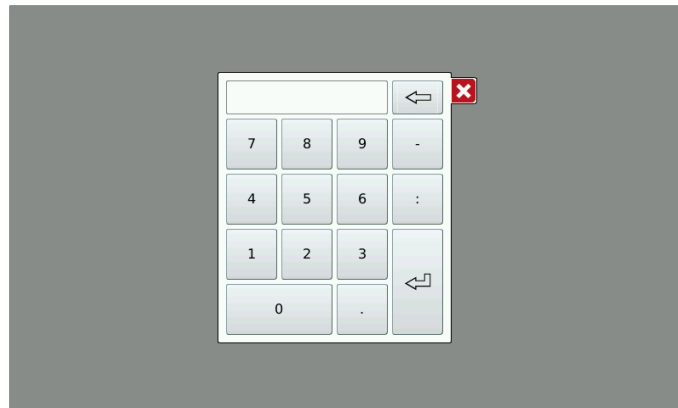

2. Enter the bar code using the displayed keyboard.

Note

Where appropriate, you can modify the keyboard to only show the numeric keyboard by using the arrow key on the right. This option must be activated in the configuration window (see chapter *7.9.3 Display settings*).

3. Press the **Enter** pushbutton to confirm the bar code you have entered. The keyboard disappears.

Measurement window display

The scanned or manually recorded **bar code** will be displayed in the measurement window with a green background. The **weight** of the current object will also be determined and indicated at the same time. The circle symbol for the measurement status indicator lights up yellow. The system's status is **Measurement**.
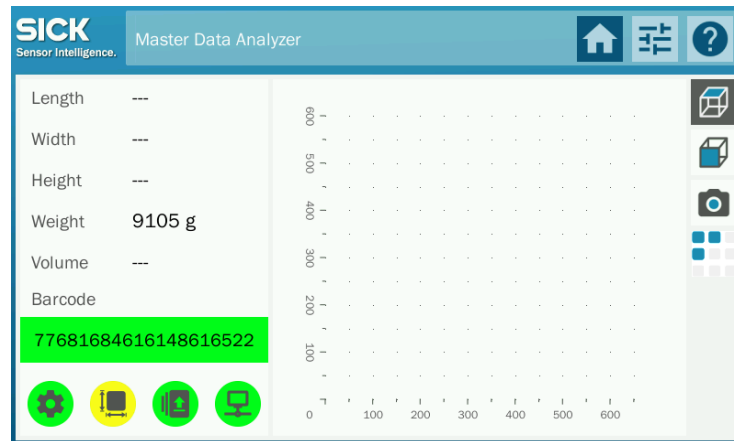
The scanning process will generate a measurement data set for the object in the MSC800 controller. Further measured values will be added to this dataset during the volume measurement process.

7.3.1.2 Weighing the object (only for the operating mode without bar code scanning)

In the operating mode <u>without</u> bar code scanning, the measuring process starts as soon as the system detects a stable weight.

1. Position the object to be measured in the measurement field, as described above. Each change to the weight appears immediately on the SIU's display.
2. Wait until a stable weight value appears on the scales.

Measurement window display

The circle symbol for the measurement status indicator lights up yellow. The system's status is **Measurement**.

The scanning process will generate a measurement data set for the object in the MSC800 controller. Further measured values will be added to this dataset during the volume measurement process.
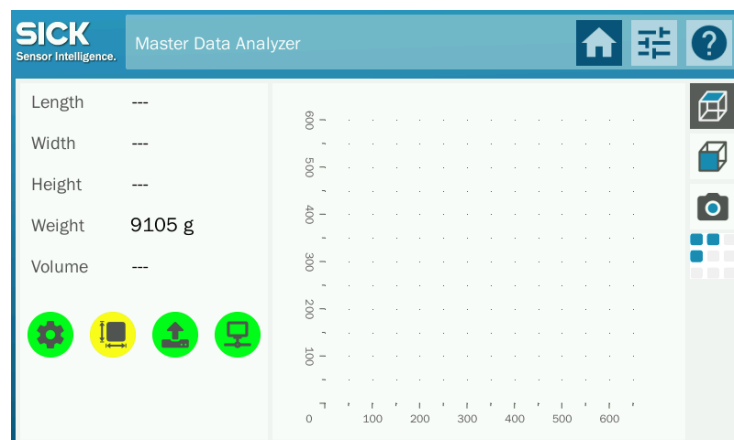
7.3.2   Determining additional information

Before measuring the volume, so-called additional fields make it possible to supplement the master data set to include customer-specific information, such as information on the measurement staff or location or on company-specific object information.

A maximum of three additional fields can be configured (for more, see chapter *7.9.4 Configuring additional customer-specific fields*).

There are three types of additional fields:

- Text fields enable the input of alphanumeric characters.

- Only numbers can be entered in numeric fields.

- No manual entry is possible in selection list fields. You have to make a selection from a pre-defined list here.

Displaying additional fields

1. Tap on the adjacent symbol in the right vertical toolbar.

   The symbol is only visible if additional fields are activated.

2. The additional fields appear.
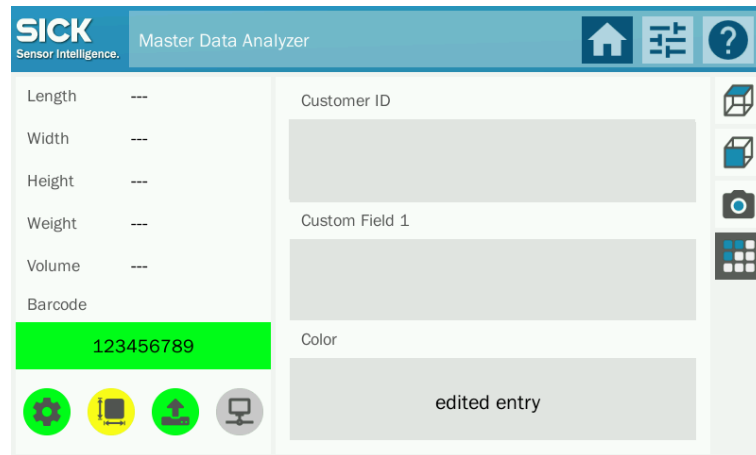
Determining additional information

The additional fields are highlighted in gray when the window is called up. They are either empty or contain the entries made before the last measurement.

- Check whether the current entries are still valid and change them if necessary.

- If additional information has been collected, enter it now.

Input

1. If you tap on the <u>text field</u> or in a <u>numeric field</u>, the <u>keyboard</u> for entering letters and numbers is displayed.

2. The additional field being edited is highlighted in green after entry. You can therefore immediately see if something has been changed.
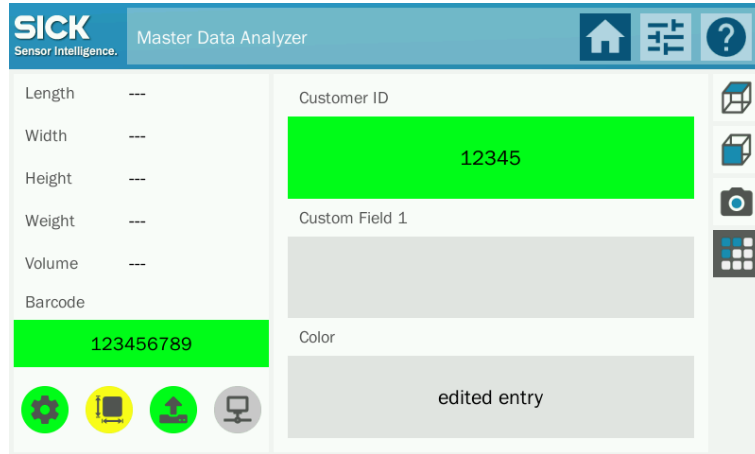
1. Tapping on a <u>selection list field</u> opens a window with the defined list entries.
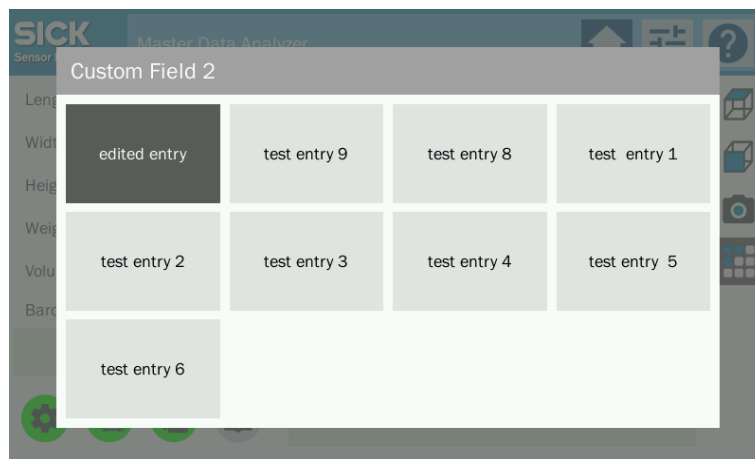
2. Tap on the desired entry. The window is automatically closed and the entry is applied to the additional field.

   The selection list field with the selected entry is now also highlighted in green.
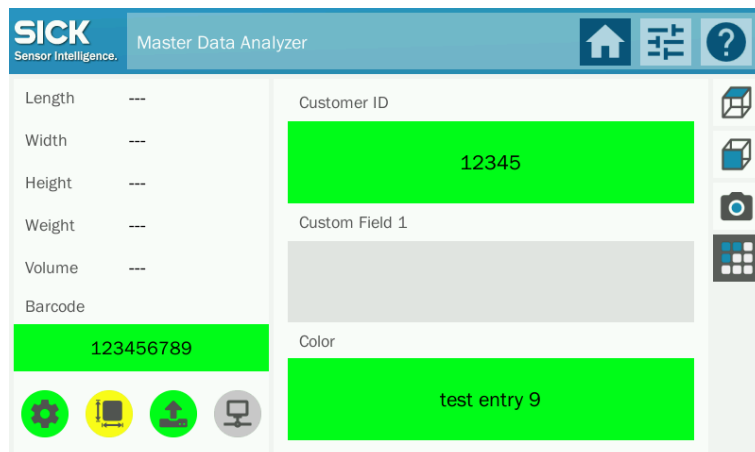
Note   Text fields and numeric fields for which entry has been activated can also be filled with the hand-held scanner. This procedure is useful when the names of the measurement staff are available in the form of a bar code list.

Changing display

▶ Change the display by calling up the 2D display using the symbols arranged on the right.

The detected customer-specific data is transmitted to the customer system together with the object master data after the measurement.

7.3.3   Measuring the volume

The volume measurement can be carried out as soon as a valid bar code or stable weight value is available and the additional information has been collected, if applicable.

Note   If the system is unable to detect a valid bar code (operating mode <u>with</u> bar code scanning) or a stable weight (operating mode <u>without</u> bar code scanning), the volume measurement is terminated and a corresponding error message appears.

You will receive a message saying that you require a valid bar code or stable weight before you can proceed.

Recording the object dimensions

1. Hold the measurement gantry using the handles and slowly move it over the object. The object's contours will be recorded by both light grids.
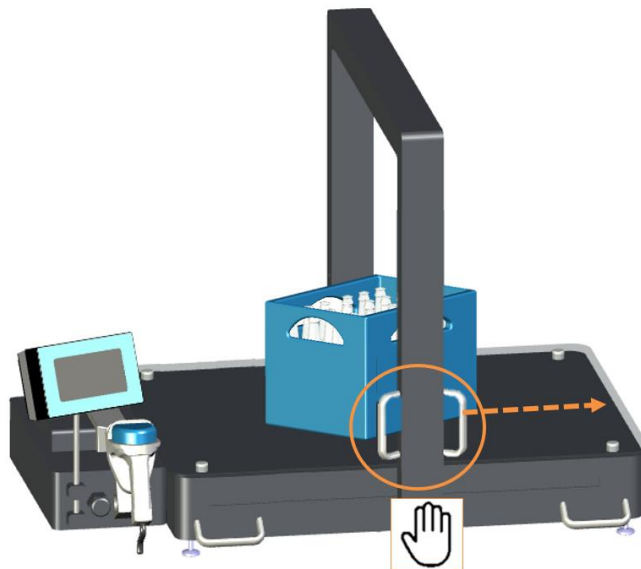
Fig. 46:   Moving the measurement gantry over the object

2. The circle symbol for the measurement status indicator still lights up yellow.

   In the measurement window, a 2D display of the measured object appears on the right-hand side during the measuring process.
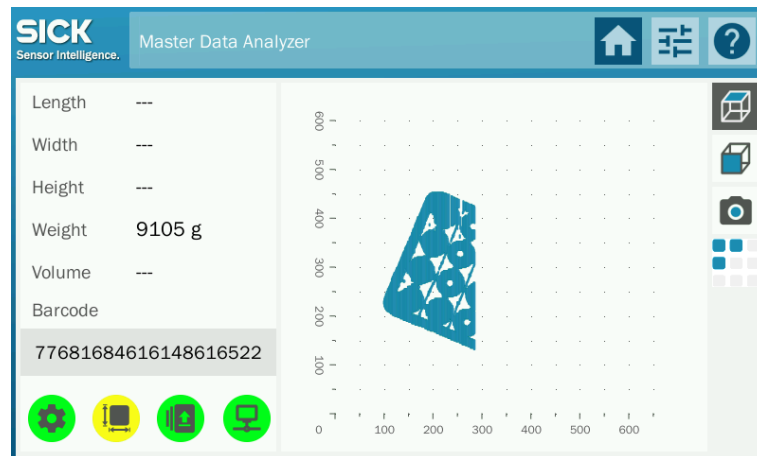
3. You can stop and continue moving the measurement gantry, and thus the measurement process, at any time. The recording of measurements will remain active as long as some of the diodes are shadowed by the object.

NOTE

Ensuring a smooth measurement process

- Do not reach into the light curtain of the light grids during the measurement process.
- Ensure that the object does not move during the measurement process.

7.3.4   Checking the measurement results

The measurement is complete when all of the diodes are no longer being shadowed by the object, meaning that no more measured values are being recorded.

Completing the measurement

▶ Stop moving the measurement gantry or move it all the way to the end position.

Indication of incorrect measurements

You will receive an error message if the measurement could not be successfully completed. For example, this may be the case if:

- The entire object is not placed on the measurement field
- The object to be measured is too large or too small

In these cases, the measurement must be repeated. For more information on how to deal with messages, see chapter *9.2 Status indicator on the display*.

7.3.4.1   Reading measurement data

All measurement data is immediately visualized on the display. In addition to the recorded bar code and object weight, the display now shows the length, width, height, and box volume.

If the measurement was successful, the circle symbol for the measurement status indicator now lights up green. The system's status is therefore **Measurement complete**.
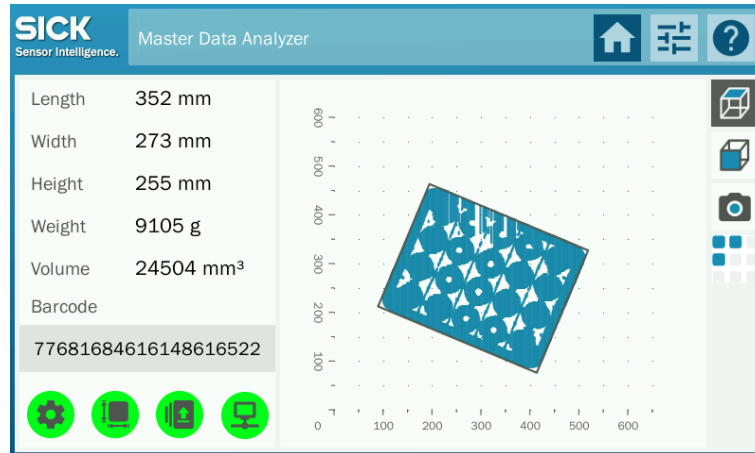
Recommendation   ▶ Use the scale in the measurement field to check whether the measured values are plausible.

7.3.4.2   Checking measurements with the 2D display

Depending on the current settings, the object is shown in a 2D display from above (top view) or from the side (side view).

    ▶ You can switch between the two 2D displays. To do so, press the symbols to the right of the measurement field.
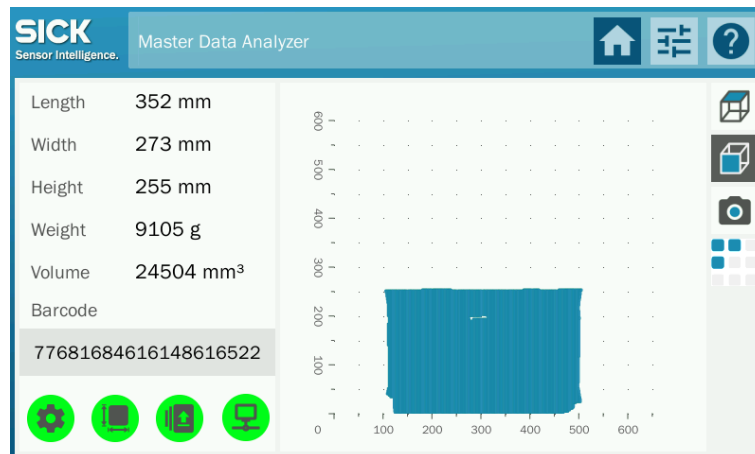
Note   The top view also visualizes the smallest enveloping cuboid (the box volume).

7.3.4.3   Displaying measuring object in the photo display

If the **MDA 800 Image** system variant is in use, the symbol for the photo display appears on the right, next to the graphic display.

▶ Press the symbol.

The graphic display shows an image of the current measuring situation.

The image is updated with each new measurement.

7.3.4.4   Displaying additional fields after the measurement process

▶ If you click on the adjacent symbol, the additional fields with the last entered data are displayed. The display gives you the option of identifying which customer-specific data has been transmitted to the customer system together with the object master data after the measurement.
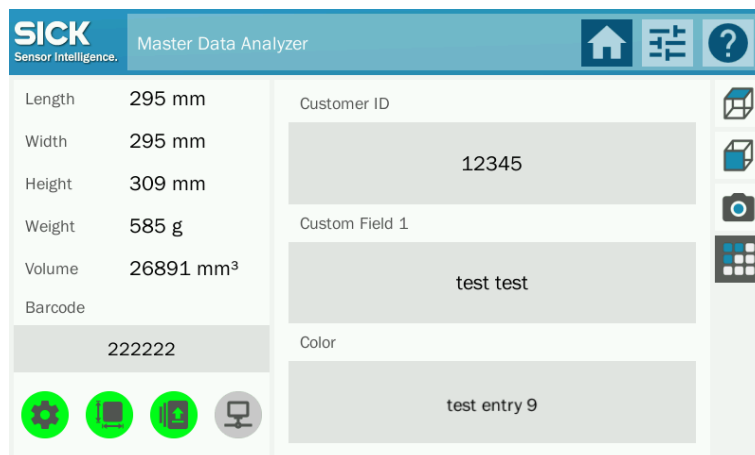
Note   The additional information cannot be changed at this point in the process. The additional fields are therefore dimmed.

If an object data set has been transmitted using the incorrect additional information, you must repeat the measurement. The additional fields do not allow entry until a bar code is detected or a stable weight value has been determined.

7.4 Transmitting measurement results

7.4.1 Direct data output if the device is connected to a server

If the circle symbol for the connection status lights up green, the device is connected to the customer server. After the measurement is taken, the measurement results are automatically transmitted to the customer system by the MSC800 controller via the defined interface.

The transmitted measured values remain on the display.
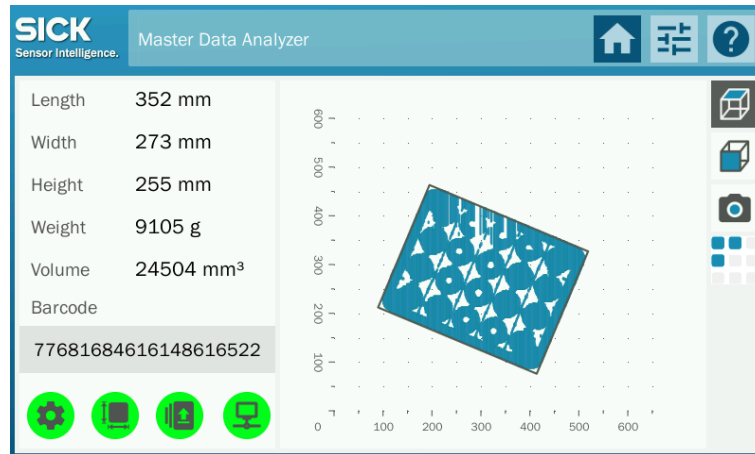
7.4.2 Saving measurement data internally (only for operating mode with bar code scanning)

If the device is not currently connected to the server, the circle symbol for the connection status is grayed out. The measurement results cannot be transmitted.

In this case, the measurement results are stored internally on the MSC800. Up to 1,000 measurement data sets can be stored.
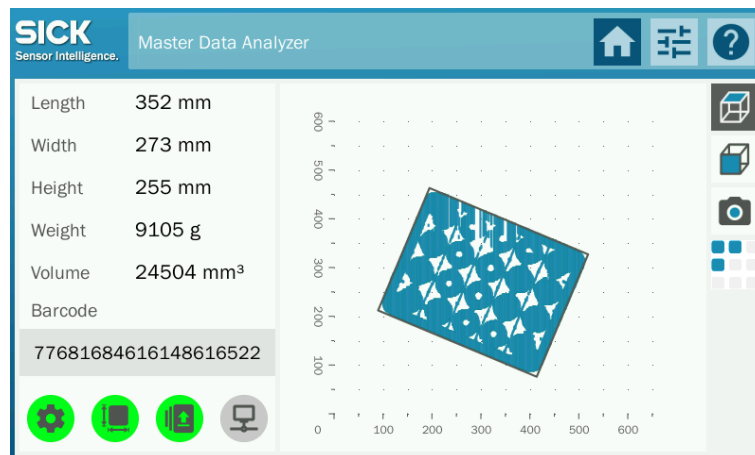
As soon as the connection is restored, the measurement data are automatically transferred to the customer server. The transmitted measured values are then deleted from the temporary memory bank.

Please ensure that, when restoring the connection, that it is maintained for the entire period of data transmission.

Note	The temporary memory bank is switched off in the operating mode <u>without </u>bar code scanning. The measurement results must be transmitted to the customer system so that they can be assigned correctly before a new measurement process can be started. Instead of the storage status, the symbol for the transmission status appears (see the next chapter *7.4.3 Displaying the transmission status (only for operating mode without bar code scanning)*.

Checking the internal data memory

If the device is not connected to the server over long periods, you must make sure that your system still has sufficient memory space available. Please check the circle symbol for the storage status for this purpose.

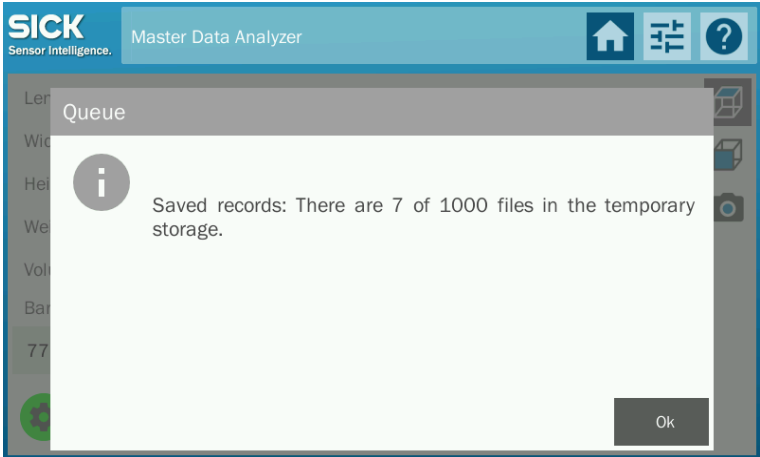| Icon	Meaning
	Green symbol – The internal memory is empty or contains a non-critical number of measurement data sets. ▶ Press the symbol to see the exact number of saved measurement data sets in the message window. Saved records: There are 7 of 1000 files in the temporary storage.
	Yellow symbol – There is very little memory space available. Over 950 measurement data sets have already been stored. You are only able to store up to 1,000 measurement data sets. Connect the device to the server so that the stored measurement results can be transmitted.
	Red symbol – The measurement data memory is full. No more measured values can be stored. You will not be able to start a new measuring process until the data in the internal measurement data memory has been transmitted to the customer system. Connect the device to the server to achieve this.

7.4.3   Displaying the transmission status (only for operating mode without bar code scanning)

If measurement data cannot be transmitted straight to the customer system following measurement in the operating mode <u>without</u> bar code scanning, you will receive an error message.
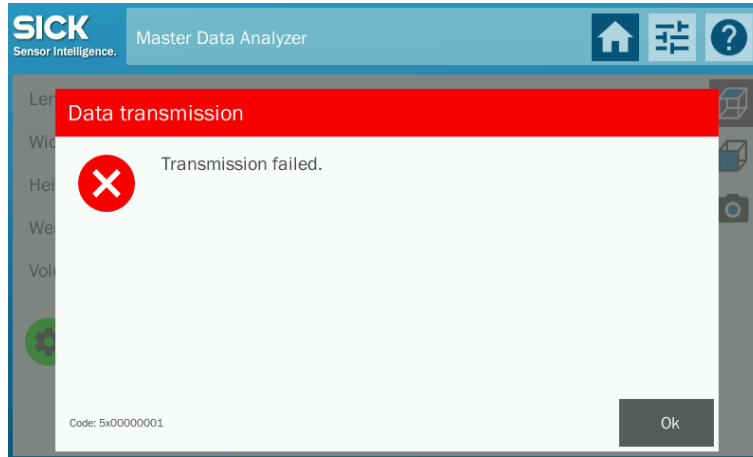
Note   The message may also appear if the device is connected to the customer server (connection status symbol is green) but, for example, the user does not have write access to the FTP directories to store the measurement data.

How to proceed

1. Press **OK** to confirm you have seen the notification.
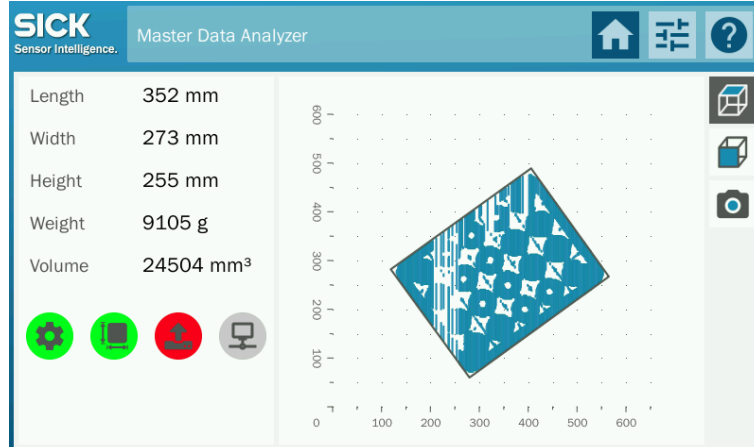
2. The symbol for the transmission status is red. No measurement data can be transmitted.

3. Check the connection settings, the login data for the FTP server, or (if you are taking mobile measurements) the configuration of the WLAN module.

In the example, the device is not connected to the network. The symbol for the connection status is gray.

How to proceed

The controller checks whether the device is connected to the customer server at 30-second intervals. If the device is not connected, it automatically attempts to establish a connection.

You can also try to restore the broken connection manually (see the next chapter *7.4.4 Restoring a server connection manually*). Once you have restored the connection, you will have to measure the object again in the operating mode <u>without</u> bar code scanning.

Note   In the operating mode <u>with</u> bar code scanning, measurement data is automatically transmitted as soon as the interrupted connection is restored.

7.4.4   Restoring a server connection manually

Manually attempting to restore a connection to the customer server is particularly important in the operating mode <u>without</u> bar code scanning as the measurement data must always be transmitted before the next measurement can begin.

1. In the measurement window, click on the gray circle symbol for the connection status. A window opens containing further information about the status.
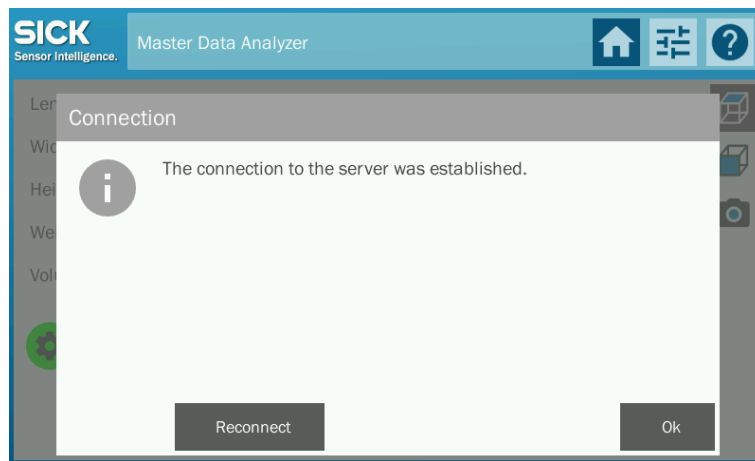
2. Click **Reconnect**. The window is closed.

   The system attempts to restore the connection. The symbol for the connection status is yellow while the system attempts to connect to the server.
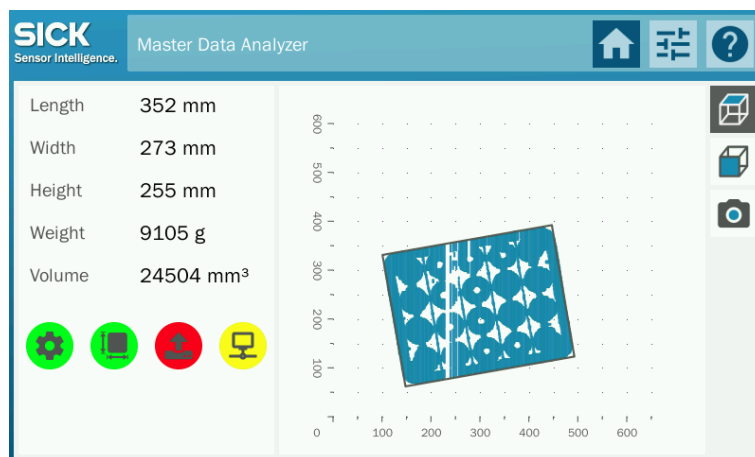
3. The symbol lights up green as soon as the connection is established.

Note   Measure the object again in the operating mode <u>without</u> bar code scanning.

7.5 Performing new measurements

You can start the next measurement as soon as you have removed the object.

Note
- As the operating mode <u>without</u> bar code scanning does not support the temporary memory bank, you must make sure that the measurement results have been transmitted before starting the next measurement.
- In the operating mode <u>with bar code scanning</u>, the data also can be stored temporary if you wish to continue with the next measurement. The data can also be transmitted at a later point once the device has been reconnected to the server.

Moving the measurement gantry to the end position

1. Move the measurement gantry to a position that enables you to remove the object easily without obstruction.

Note Do not move the measurement gantry back over the object otherwise the system will start a new measurement.

2. Remove the object from the glass panel.
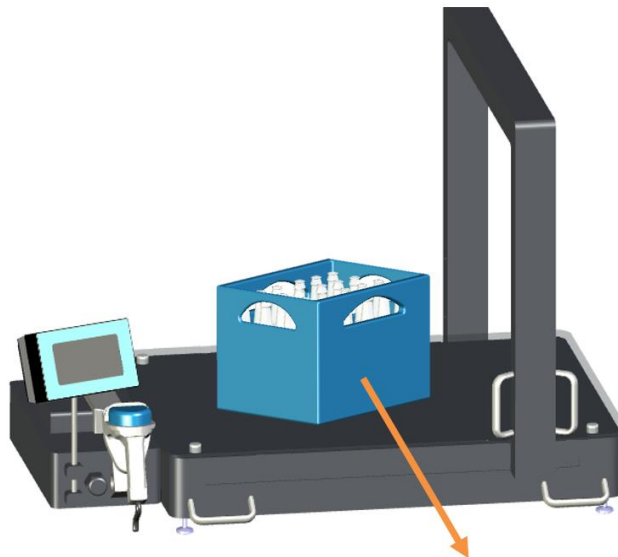
Fig. 47: Moving the measurement gantry to the end position

NOTE

Ensuring a smooth conclusion of the measurement process

▶ Provided that the measurement gantry is not located over the object, remove the object. The measurement is not yet complete.

▶ There is a risk that the light grids may be damaged when removing the object.

Positioning a new object

▶ Position the next object on the glass panel as described earlier in the document. The measurement results for the last measurement are still visible on the display.

Starting a new measurement

1. Depending on the operating mode, start the new measuring process by scanning the bar code or detecting a stable weight (see chapter *7.3.1 Starting the measurement process*).

   The graphic display of the measured values is reset.

   In the operating mode <u>with</u> bar code scanning, the measurement window now contains the scanned bar code and the weight of the new object. The new bar code has a green background.
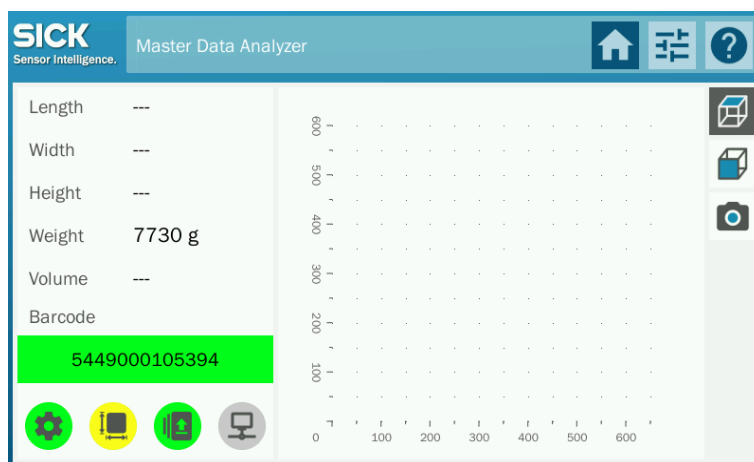
   The display only contains the weight in the operating mode <u>without</u> bar code scanning.
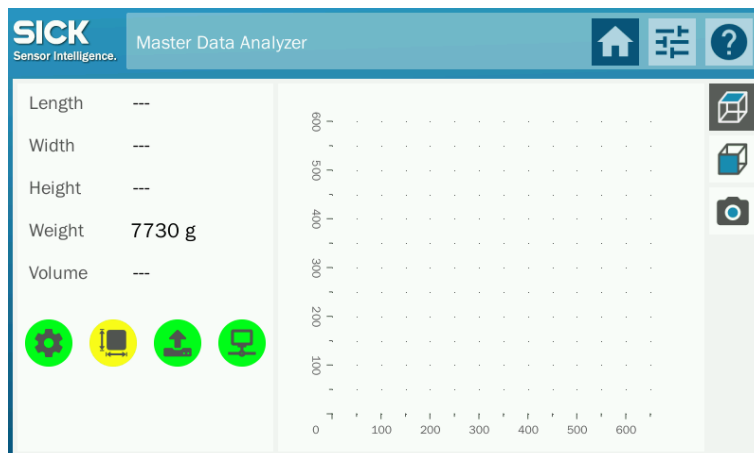
   In both cases, the MSC800 controller creates a new data set. The circle symbol for the measurement status indicator changes from green to yellow. The system's status is now **Measurement**.

2. Move the measurement gantry over the object.

   The measurement process is complete when all measured values are correctly displayed in the measurement window.

7.6 Repeating incorrect measurements

If a measurement has not been completed successfully, a message will appear on the SIU display, describing the error and providing information on the troubleshooting process.

In this case, you must rectify the problem and perform the measurement again. The following examples show the points to note when repeating measurements.

7.6.1 Object was positioned incorrectly

If the entire object was not placed in the measurement field, you will receive the following error message upon completion of the volume measurement:
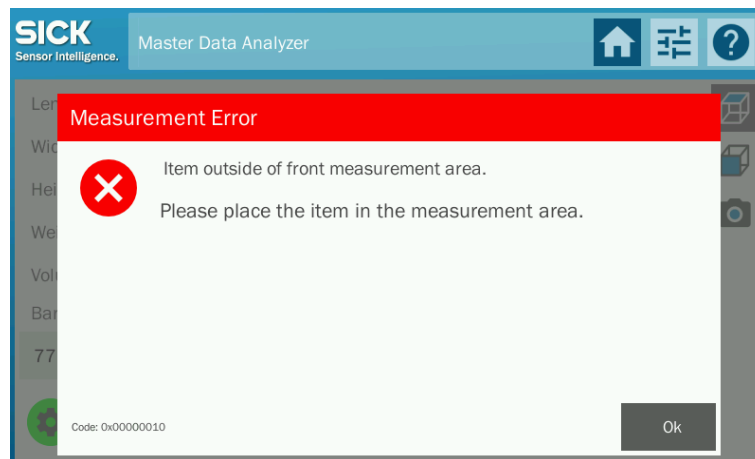
▶ Press **OK** to confirm you have seen the error message. The window containing the message closes.

Note   If you accidentally close the window without having read the error message, you can display the notes again. To do this, click on the red symbol for measurement status in the list of status indicators.

Repeat measurement in the operating mode with bar code scanning

In the operating mode <u>with</u> bar code scanning, the bar code must be scanned again before the measurement can be repeated. This creates a new measurement data set.

1. Position the entire object in the measurement field.
2. Record the bar code with hand-held scanner or enter it manually.
3. Move the measurement gantry over the object.

    Once the volume has been measured, all measured values appear on the display and are transmitted by the MSC800 controller to the customer system via the defined interface.

Repeat measurement in the operating mode without bar code scanning

Before repeating a measurement <u>without</u> bar code scanning, the object has to be removed from the glass panel and repositioned again. This creates a new measurement data set.

1. Remove the object from the glass panel.
2. Place the object correctly in the measurement field on the glass panel.
3. Wait until a stable weight is displayed.
4. Move the measurement gantry over the object.

    Once the volume has been measured, all measured values appear on the display and are transmitted by the MSC800 controller to the customer system via the defined interface.

You will receive a message if you have failed to remove the object from the glass panel before the repeat measurement.
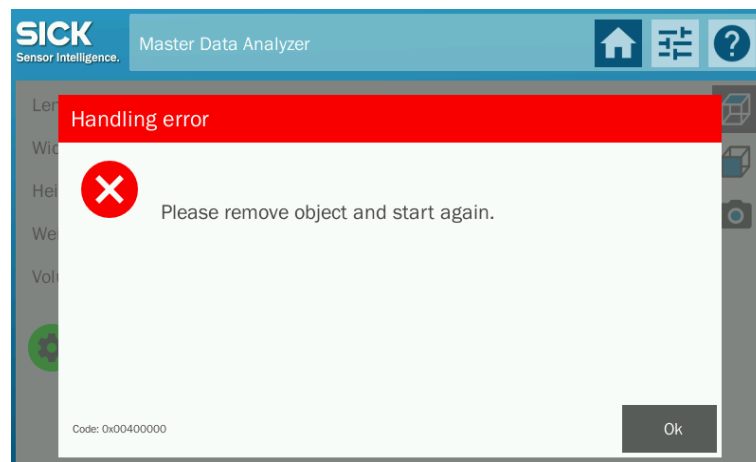
Note   You will also receive this message if you have accidentally measured the same object twice.

7.6.2   Volume measurement without bar code (only for operating mode with bar code scanning)

In the operating mode <u>with</u> bar code scanning, you may accidentally measure the volume before scanning the bar code. In this case, the following error message appears:
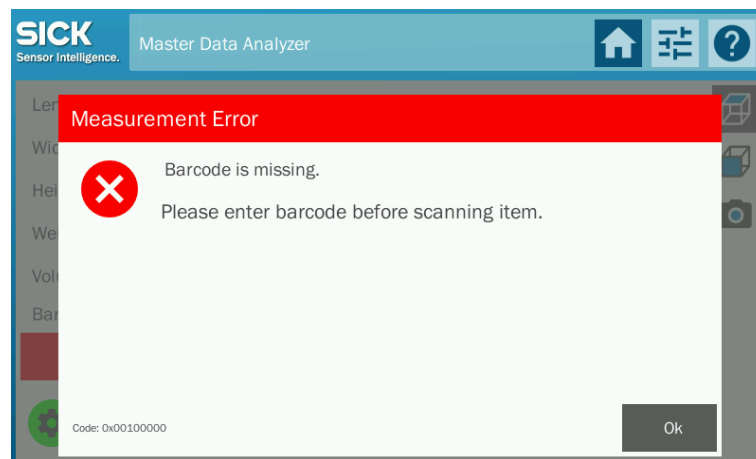
Repeating measurements

The bar code must be scanned again before the measurement can be repeated. This creates a new measurement data set.

1. Confirm the error message with **OK** and scan the bar code with the hand-held scanner or enter it manually.

Note   You can also record the bar code directly. The window containing the error message closes automatically.

2. Move the measurement gantry over the object.

   Once the volume has been measured, all measured values appear on the display and are transmitted by the MSC800 controller to the customer system via the defined interface.

7.6.3   Volume measurement without a stable weight (only for operating mode without bar code scanning)

In the operating mode <u>without</u> bar code scanning, the following error message appears if you have placed an object on the measurement field and performed the volume measurement too early. Too early means before the system has been able to detect a stable weight.

Repeating measurements

The error message disappears automatically as soon as a stable weight has been detected.

Before the repeat measurement, the object does not need to be removed from the glass panel and repositioned. You can <u>start</u> with the repeat measurement <u>straight away</u>. A new measurement data set does not need to be created.

1. If the measurement gantry is already located over the object, move it back to the start or end position.

2. Perform the volume measurement.

   Once the volume has been measured, all measured values appear on the display and are transmitted by the MSC800 controller to the customer system via the defined interface.

7.7   Performing mobile measurements

Using the WLAN module, which is available as an accessory, it is possible to transmit data regardless of the measurement location.

The only requirement: The WLAN module must be able to reach the WLAN access point from the measurement location.

Measurements are performed as described in chapter *7.3 Performing measurements*.

⚠️ **WARNING**

Risk of injury when transporting the MDA to the place of use

The measurement gantry may accidentally be damaged when the MDA is transported on a sliding table. Hands may be crushed between the measurement frame and the side recesses in the housing.

Measures

▶ Use cable ties to secure the handles of the measurement gantry so that it does not move accidentally during transport.

Note   As the operating mode without bar code scanning does not temporarily store measurement results, you must make sure that the data have been transmitted before starting the next measurement.

7.8   Using the sliding table with rechargeable battery

If you are using the sliding table with the rechargeable battery which is available as an accessory, you do not need an additional external voltage supply.

The current rechargeable battery capacity is shown on the display either in hours or as a percentage.

Fig. 48:   Operating elements on the rechargeable battery housing

No.	Meaning
1	Rocker switch for switching the charging process on and off.
2	Connection of the charging cable to the local voltage supply.
3	Display for reading off the current rechargeable battery capacity. The display can be shown either in hours or as a percentage using the plus/minus button.

Rechargeable battery alert
- The rechargeable battery has an integrated battery alert which automatically switches off the device when the battery capacity is at 50%.
- An alarm appears on the display when the battery capacity is at 55%.
- The rechargeable battery must then be charged. The MDA can be used during charging.

Note   If this does not happen, the rechargeable battery is discharged due to standby consumption of the battery alert, which results in deep discharge.

There is then the risk that the rechargeable battery will be irreparably damaged, voiding the manufacturer warranty.

Charging the rechargeable battery

1. Plug the power cable into the **AC 4AT** female connector.
2. Establish a connection to the local power network.
3. Press the rocker switch to **1**. The charging process gets started.

Charging time

- The rechargeable battery needs about 8-10 hours to completely charge.
- Charging to 80% takes about 6 hours.
- The last 20% takes longer.

Notes   Ensure that the rechargeable battery is sufficiently cooled before charging (< 40 °C).

Notes on storage/non-use

- Do not store batteries discharged to 50%.
- If the rechargeable battery is not used for several weeks (> 2 weeks), we recommend charging the battery before operation to prevent deep discharge.
- If the rechargeable battery is discharged to 50%, it must be recharged immediately (see above).
- The storage of the rechargeable battery must not be changed.

7.9 Configuration

7.9.1 Registering in the configuration area

A number of settings for the user interface and user navigation can be altered in the SIU's configuration area.

The configuration area is broken down into individual tabs, some of which can only be accessed by logging in with a username and password.

As the end customer, you will be able to access the **GENERAL**, **VIEW** and **CUSTOM FIELDS** tabs with the following user levels:

User levels	Password	Register	Settings
Operator	*No password*	GENERAL	▪ Program interface language ▪ Zero-point correction for the electronic scales ▪ Teach-in for the light grids
Operator	*No password*	VIEW	▪ Standard view (top view, side view, photo display, additional fields) ▪ Display/Hide box volume
Maintenance	Main	VIEW	▪ Set the operating mode (with bar code scanning/without bar code scanning) ▪ Deactivate manual bar code detection
Maintenance	Main	CUSTOM FIELDS	▪ Activate/Deactivate alignment aid ▪ Display additional fields

Tab. 9: User levels and standard passwords for the configuration area

1. Click the **Configuration** icon on the toolbar.

   The login window opens.
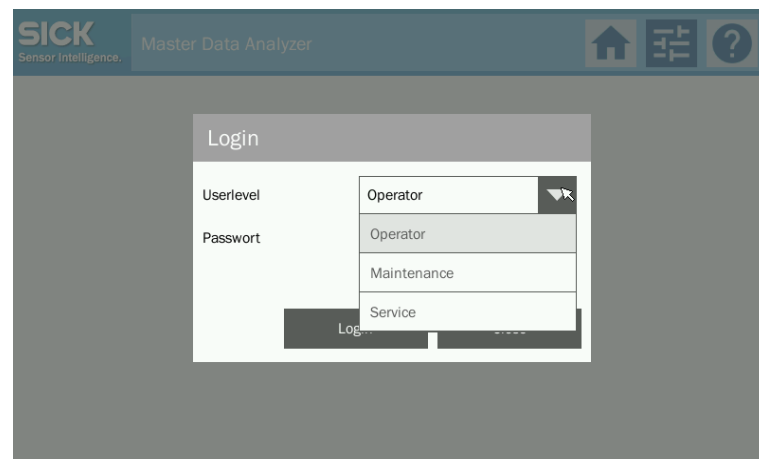
2. Select the user level, **Operator** in the example.

3. Press **Login**. The configuration area opens with the **GENERAL** tab.

7.9.2 **General settings**

7.9.2.1 **Selecting a language**

The user language of the program interface is available in the languages German and English. The user language is the language in which the user interface is displayed. English is selected as the default setting for the user interface.

1. In the **GENERAL** tab, use the **Language** field to select the required user language.

   You will receive a notice to restart the display.

2. Acknowledge the message.

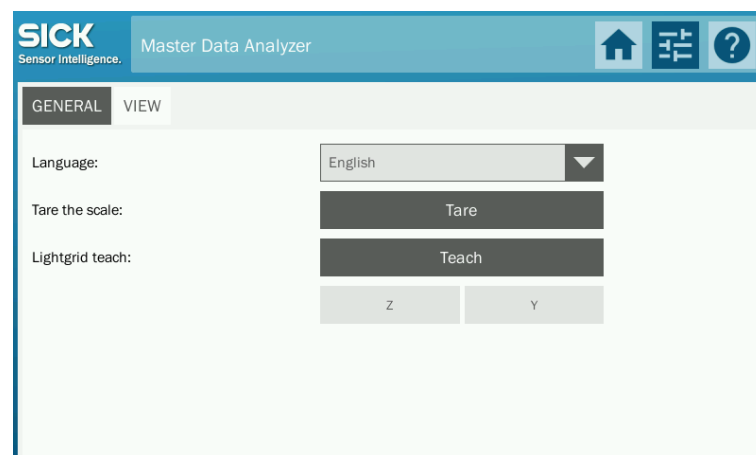   The user interface will now be displayed in the selected language.

7.9.2.2 **Correcting the zero point**

Using the **Tare** button enables you to manually correct the zero point of the electronic scales.

The zero-point correction process is intended to prevent dirt or other deposits on the measurement platform from distorting the measurement result. It also helps to eliminate smaller measuring tolerances when weighing.

Tare ▶ Tap the **Tare** button in the configuration window.
The weight displayed on the weighing scales display should now be exactly zero.

Note For the zero-point correction, only the display on the weighing scales is of significance.

The current weight values shown on the display are not affected by the zero-point correction. The weight on the display is always zeroed when the bar code is scanned.

7.9.2.3 **Performing teach-in**

A teach-in must be performed following any maintenance or repairs, such as changing a light grid. During the teach-in process, the switching thresholds for all beams are individually adjusted for the sensing range and the ambient conditions. This enables teach-in of the optimum sensitivity of the light grids.

Prerequisites

Before launching teach-in, ensure that the following requirements have been met.

▶ Beforehand, clean the front screen of the light grids.

▶ Remove all objects from the light grids' monitored area. **No objects should be located in the light path** during the teach-in.

Starting teach-in

There are two rectangles under the **Teach** button. Before the sensitivity is optimized, these buttons are **gray**.
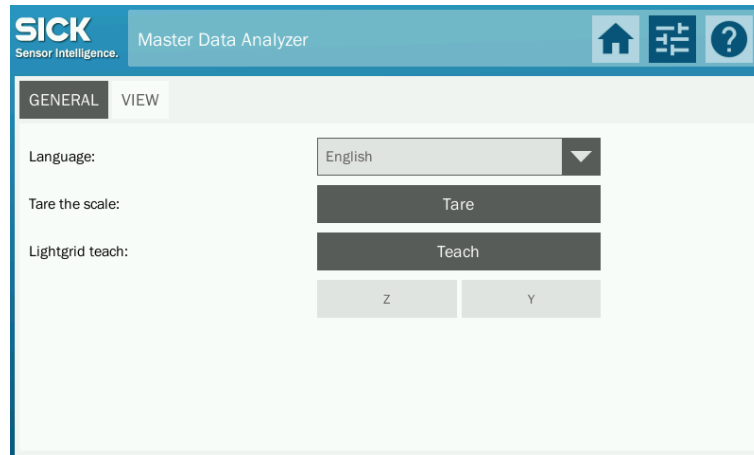
Teach

1. Touch the **Teach** button.

   All LEDs on the MLG-2 receivers will briefly illuminate one after the other. The yellow LED flashes slowly during the teach-in process.

2. If the teach-in process has been successful, the yellow LED on the receiver will go out. The Z and Y rectangles on the display will now be green.
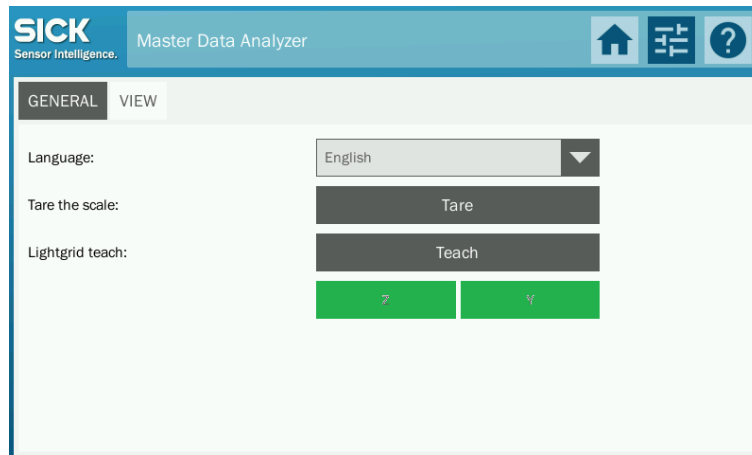
Teach-in failed

If the teach-in process for one pair of light grids has been unsuccessful, the red LED on the corresponding receiver will flash rapidly. This is reflected by a red rectangle on the display.

▶ In this case, please contact your SICK subsidiary.

7.9.3 Display settings

The **VIEW** tab can be opened in the **Operator** user level as well as in the **Maintenance** user level.

"Operator" user level
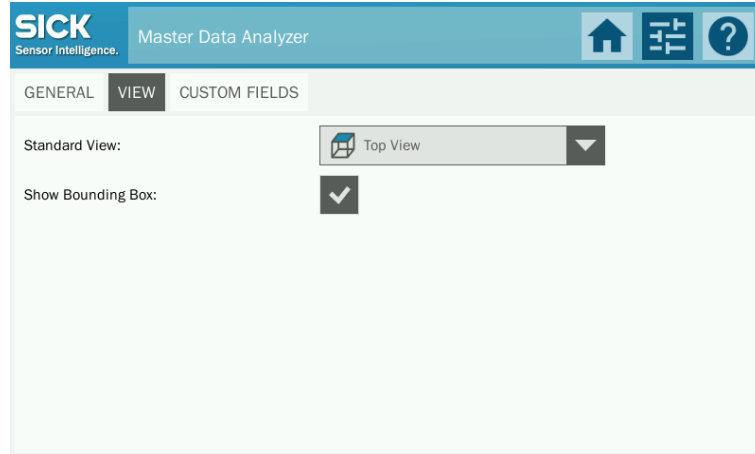
The following options are possible in the **Operator** user level:

- In the **Standard View** field, define the display in which the measurement window should be opened by default. You can select between a 2D display from above or the side, a photo display or the display of additional customer-specific fields.
- The top view visualizes the smallest enveloping cuboid (the box volume) as standard. If you do not want to use this display, you have to deactivate the **Show Bounding Box** checkbox.

"Maintenance" user level

GENERAL   VIEW   CUSTOM FIELDS

Standard View: Top View

Show Bounding Box: ✓

Barcode Input: ✓

Numpad for Barcode Entry: ✓
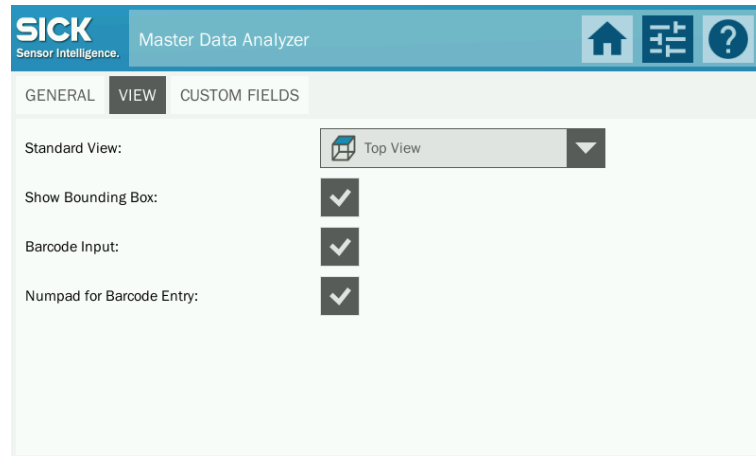
Log into the **Maintenance** user level with the password **main**. As opposed to the **Operator** user level, the following settings are also possible in this user level.

- If the **Barcode Input** checkbox is checked, the operating mode with bar code scanning is activated. The object is identified using its bar code and is then measured.

  If the checkbox is deactivated, the Master Data Analyzer is used in the operating mode without bar code scanning. Volume measure begins as soon as a stable weight value has been determined.

  If you deactivate the **Barcode Input** checkbox activated by default, the Master Data Analyzer can then be restarted. You will see a message to this effect.

- If the **Numpad for Barcode Entry** checkbox is checked, the bar code can also be detected manually.

  If the checkbox is deactivated, manual input is not possible. In this case, the bar code must be scanned using the hand-held scanner.

7.9.4   Configuring additional customer-specific fields

The **CUSTOM FIELDS** tab allows the configuration of additional fields to supplement the master data to include customer-specific information. You have to log into the **Maintenance** user level to do this.

Text fields, numeric fields and selection lists can be configured. Selection lists give users a list with fixed entries from which they can select an entry. The list entires can be freely defined.

Activating additional fields

Log into the **Maintenance** user level with the password **main**. A maximum of three fields can be activated and configured in the **CUSTOM FIELDS** tab.

All fields are deactivated when first called up.
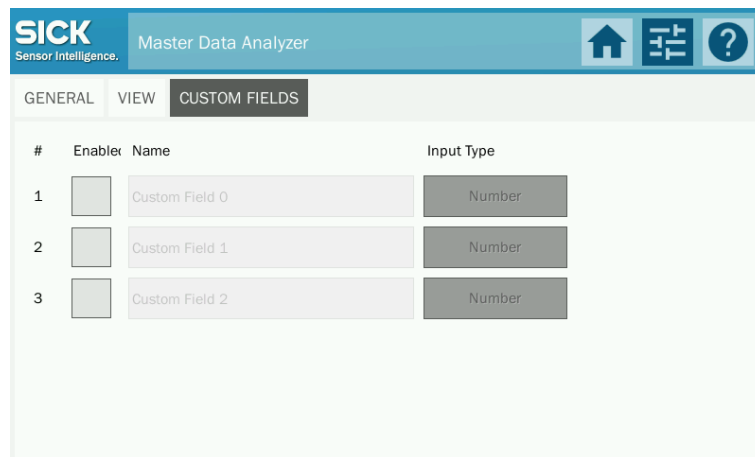
1. Set a checkmark in the respective line to activate an additional field. Only activated fields are displayed before the measurement process for input of the customer-specific data.
2. Now define the field name and field type. Newly-activated fields are initially the "numeric" type.
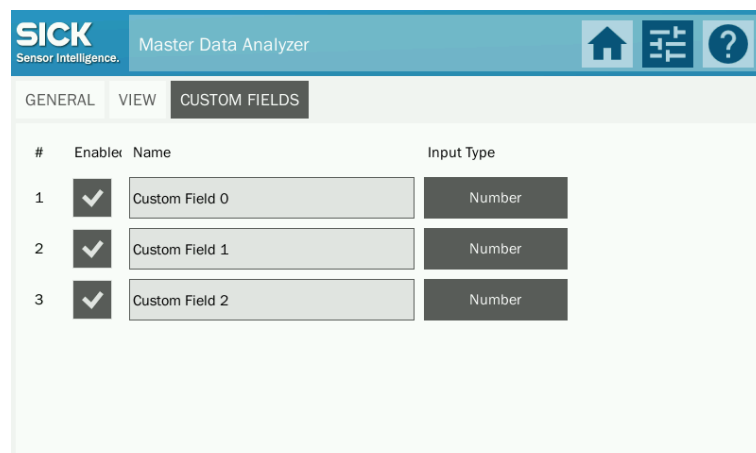
Defining the field type

1. Tap on the currently displayed field type. A window then appears in which you can select the desired field type from a list.
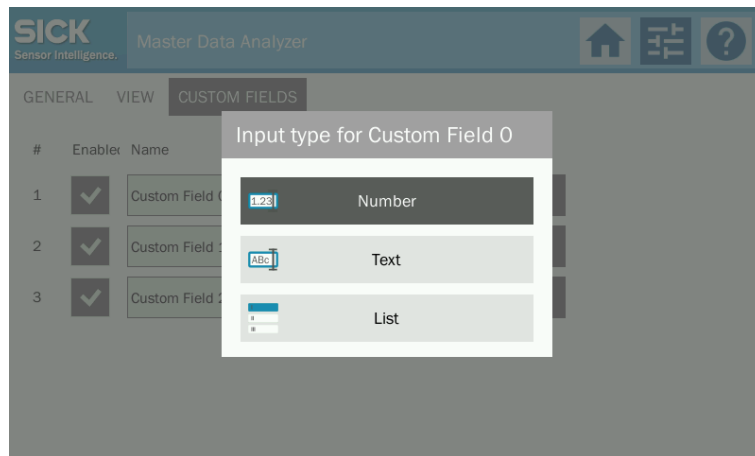
2. Additional fields of the **List** type must be configured in a separate step.
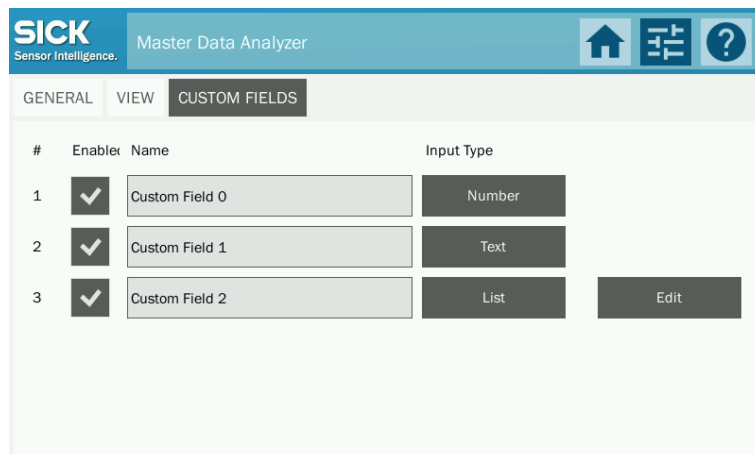
Defining entries of list boxes

1. Tap on **Edit** in a list box to define list entires. A separate window opens here. The window initially only contains one field.

2. Tap on the field and define the first list entry.

3. Tap on the plus sign. A second field for entering the next list entry is created. The new field is highlighted in gray, the field currently being edited in black.

4. Tap on the newly-created field to edit it. The field is now highlighted in black. Define the next list entry in this field.
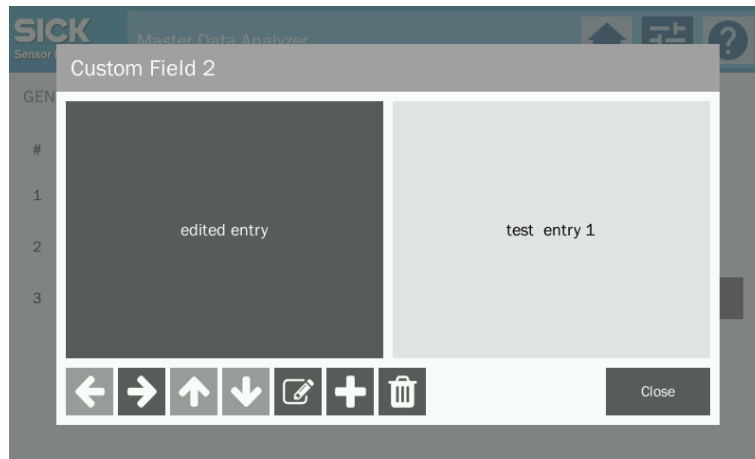
5. Record all entries in the selection list as described.
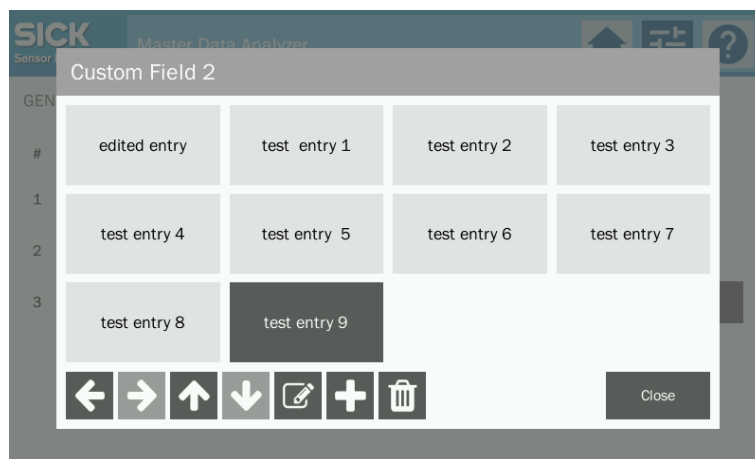
Sorting list entries

1. Change the order of the entries in the list.

2. To do so, tap on the arrow keys to move the field with the list entry within the window.
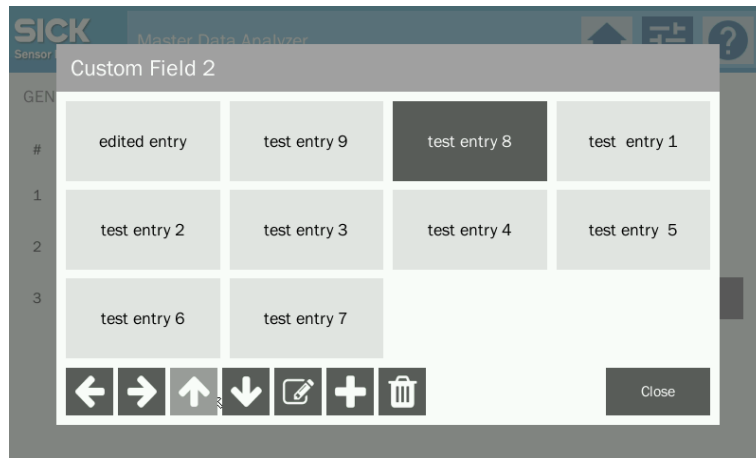
Editing list entries

1. Tap on the field to be edited. The field is now highlighted in black.

2. Then tap on the pencil symbol. The field is activated to edit the list entry.

Deleting list entry

1. Tap on the field to be deleted. The field is now highlighted in black.

2. Then tap on the delete symbol. The field is removed from the window.

Completing the editing of list entries

1. Tap on **Close**.

2. You then find yourself in the **CUSTOM FIELDS** register again.

8 Maintenance and repairs

The following maintenance work must be carried out at the specified time intervals:

Device	Maintenance task	Interval*	Performed by
Light grid	Cleaning the light grids	1x/month	Trained personnel
Glass panel	▪ Optical monitoring of the glass panel for foreign bodies/damage ▪ Visual inspection for contamination ▪ Removal of residue from labels ▪ Cleaning the glass panel	Daily	Trained personnel
Display	▪ Cleaning the display	4X/year (or earlier if it becomes contaminated)	Trained personnel
Housing	▪ Cleaning housing internal space	as required	Trained personnel
IP camera	▪ Cleaning the duct shield housing	4X/year (or earlier if it becomes contaminated)	Trained personnel
Cabling	▪ Visual inspection of the electrical cabling and wiring for damage	1x/year	Trained personnel
* The intervals depend on the ambient conditions and degree of contamination. In addition, the intervals must be defined according to how important they are for the customer process.			

Tab. 10: *Maintenance intervals*

8.1   Maintenance and repair

> **NOTE**
>
> Repair work on the individual components may only be performed by qualified and authorized service personnel from SICK AG.

> **⚠ DANGER**
>
> **Disconnect the power to the system**
>
> ▶ Make sure the voltage supply for the Master Data Analyzer is disconnected while you are carrying out maintenance and repairs.
>
> ▶ Remove the plug from the power outlet to disconnect the voltage supply.

> **⚠ DANGER**
>
> **Risk of injury due to electrical current**
>
> The Master Data Analyzer is connected to the power supply (AC 100 to 264 V / 50 to 60 Hz) via an external power supply unit.
>
> Only a qualified electrician or trained persons working under the guidance and supervision of a qualified electrician are permitted to work on electrical plants or equipment and must comply with electrical regulations when doing so.
>
> Improper handling of live devices may lead to severe personal injury or death by electric shock!
>
> **Measures**
>
> ▶ Electrical installation and maintenance work must only be performed by electrically qualified personnel.
>
> ▶ Standard safety requirements must be met when carrying out any work on electrical systems or equipment.
>
> ▶ Do not touch any live parts.
>
> ▶ In the event of danger, immediately disconnect the device from the grid.
>
> ▶ Electrical connections may only be made or disconnected when there is no power in the system.
>
> ▶ Only switch on the supply voltage when the connection tasks have been completed and the wiring has been thoroughly checked.
>
> ▶ Only carry out maintenance and repair work when the power is off.
>
> ▶ When using extension cables with open ends, ensure that bare wire ends do not come into contact with each other (risk of short-circuit when supply voltage is switched on!). Wires must be appropriately insulated from each other.

8.1.1 Visual inspection for mechanical and electrical damage

Inspect the measurement system for mechanical and electrical damage.

Visual inspection of the cables

▶ Make sure that all cable connections are secure.

⚠ **DANGER**

Hazards caused by damaged cable insulation

There is a risk of electrocution if the insulation on the connecting cables for the voltage supply is damaged.

Measures

▶ Report any damaged cables to the maintenance team without delay.

⚠ **WARNING**

Hazards due to loose connections or scorched cables

Defects such as loose connections or scorched cables must be rectified immediately.

Measures

▶ Report any loose or damaged cables to the maintenance team without delay.

Inspecting the linear guides

As opposed to a sliding guide, linear guides are hardly subject to any notable wear and tear.

▶ Nevertheless, it should still be ensured at regular intervals that the measurement gantry travels smoothly along the linear guides and with an equal level of resistance.

▶ Ensure that the movement is not hindered by contamination or objects.

⚠ **WARNING**

Risk of damage due to manual lubrication

The linear guides are self-lubricating.

Measures

▶ Do **not** oil or lubricate the linear guides.

🛈 **NOTE**

Risk of damage if measurement gantry is in slanted position

If the measurement gantry does not run smoothly even after removing any possible objects disrupting its path this may denote that the measurement gantry is in a slightly slanted position.

Measures

▶ Please contact the manufacturer directly in this case.

8.1.2   Cleaning the light grids

The MLG-2 modular light grids are maintenance-free. Depending on the ambient conditions, regular cleaning is required.

Fig. 49:   Cleaning – Light grids

To achieve the full optical output of the light grids, the front screens should be regularly checked for contamination. This particularly applies in harsh operating environments (dust, abrasion, humidity, fingerprints).

Static charges can cause dust particles to adhere to the front screen.

Contamination message

☼ 3 Hz yellow

The MLG-2 light grid has a contamination warning which is indicated via a flashing yellow light emitting diode on the receiver.

The yellow LED also displays the same flashing behavior during the teach-in process.

The contamination warning is shown on the display (see also chapter *9.2 Status indicator on the display*).

How to clean the front screen

▶ Use a clean, soft brush to remove dust from the front screen.

▶ Then wipe the front screen with a clean, damp cloth.

Recommendation

▶ For cleaning, use SICK anti-static plastic cleaner (part number 5600006) and SICK lens cloth (part number 4003353).

⚠️   *CAUTION*

Damage to the front screen

The front screen is made of plastic. The optical output is weakened by scratches and streaks on the front screen.

Measures

▶ Do not use aggressive cleaning agents.

▶ Do not use abrasive cleaning agents.

▶ Avoid any movements which may scratch or chafe the front screen.

NOTE

Do not move the light grids from their position

▶ Ensure that the light grids are not moved from their position whilst cleaning them.

8.1.3   Cleaning the display

To guarantee a long service life and full functionality, all greasy fingerprints and smear marks should be cleaned from the touch screen.

1. The Master Data Analyzer should be switched off before any cleaning is commenced.

Note   If the display is on whilst cleaning, this may unintentionally trigger functions and malfunctions.

2. Carefully wipe the areas that require cleaning with a clean, dry microfiber cloth. Use small circular movements when doing so.
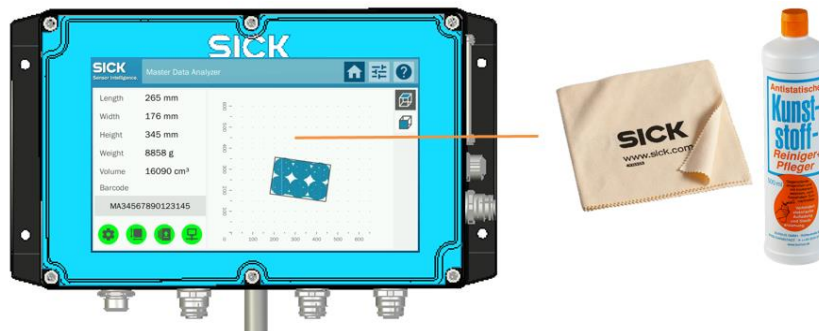
Fig. 50:   Cleaning – Touchscreen display

Recommendation   Use the SICK lens cloth (part no. 4003353).

> ⚠️ **CAUTION**
>
> **Damage caused by incorrect cleaning**
>
> The touchscreen is made of plastic. Scratches and streaks on the screen will impair the device's functionality.
>
> **Measures**
>
> ▶ Only use a soft, dry, lint-free cloth to clean the screen.
>
> ▶ Do not use any solvents during cleaning! These may damage the touchscreen.
>
> ▶ Do not exert too much pressure on the screen when cleaning.

8.1.4   Cleaning the glass panel

As the light beams from the horizontal sender are transmitted through the glass panel to the sender, we recommend that the glass panel is cleaned on a daily basis.

How to clean the glass panel

▶ Wipe the glass panel with a soft, wet sponge or cloth.

▶ The glass panel should then be dried with a clean cloth.

> ⚠ **CAUTION**
>
> **Damage to the front screen**
>
> The optical performance of the horizontal light grid is impaired by scratches and smears on the glass panel.
>
> **Measures**
>
> ▶ Do not use aggressive cleaning agents.
>
> ▶ Do not use abrasive cleaning agents.
>
> ▶ Avoid any movements which may scratch or cause any wear on the glass panel.

8.1.5   Cleaning the IP camera's dust shield housing

Regularly clean the IP camera's dust shield housing.

Please observe the cleaning instructions supplied by the camera manufacturer.

8.2   Replacing components

Faulty or damaged components must be dismantled and replaced with new or repaired components.

> **NOTE**
>
> Repair work on the individual components may only be performed by qualified and authorized service personnel from SICK AG.

> **⚠ DANGER**
>
> **Disconnect the power to the plant**
>
> ▶ Make sure the voltage supply for the Master Data Analyzer is disconnected while you are carrying out maintenance and repairs.
>
> ▶ Remove the plug from the power outlet to disconnect the voltage supply.

> **⚠ DANGER**
>
> **Risk of injury due to electrical current**
>
> The Master Data Analyzer is connected to the power supply (AC 100 to 264 V / 50 to 60 Hz) via an external power supply unit.
>
> Only a qualified electrician or trained persons working under the guidance and supervision of a qualified electrician are permitted to work on electrical plants or equipment and must comply with electrical regulations when doing so.
>
> Improper handling of live devices may lead to severe personal injury or death by electric shock!
>
> **Measures**
>
> ▶ Electrical installation and maintenance work must only be performed by electrically qualified personnel.
>
> ▶ Standard safety requirements must be met when carrying out any work on electrical systems or equipment.
>
> ▶ Do not touch any live parts.
>
> ▶ In the event of danger, immediately disconnect the device from the grid.
>
> ▶ Electrical connections may only be made or disconnected when there is no power in the system.
>
> ▶ Only switch on the supply voltage when the connection tasks have been completed and the wiring has been thoroughly checked.
>
> ▶ Only carry out maintenance and repair work when the power is off.
>
> ▶ When using extension cables with open ends, ensure that bare wire ends do not come into contact with each other (risk of short-circuit when supply voltage is switched on!). Wires must be appropriately insulated from each other.

8.2.1   Replacing the hand-held scanner (only in operating mode with bar code scanning)

The hand-held scanner is available under part number **6052563**.

Disconnecting the connecting cable

1. Remove the defective hand-held scanner from its holder.
2. Remove the cabling lock.
3. Remove the connecting cable from the faulty hand-held scanner.

Fig. 51:   Replacing components – Hand-held scanner

Connecting a replacement device

1. Insert the connecting cable into the replacement device.
2. Reattach the cabling lock and screw it in place.
3. Place the hand-held scanner in the holder of the MDA.

8.2.2   Replacing the display

A replacement display is available under part number **1071521**.

Notes

Fig. 52:   Replacing components – Display (removing the cables)

▶ Before replacing the display, you should make a note of how the cables are assigned to the connections.

▶ Unused connections are covered with protective caps. Leave these protective caps in place.

1. Disconnect the plug connections from both connecting cables and remove these from the display.

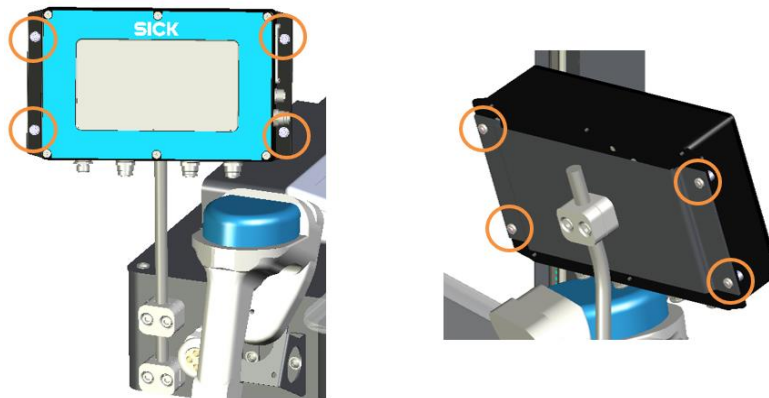2. Unscrew and remove the four fixing screws. In doing so, hold the device with one hand.

Fig. 53:   Replacing components – Display (dismantling/mounting)

3. Remove the display from the bracket.

Mounting the replacement device

1. Place the replacement device on the bracket.

2. Secure the display in place using the four fixing screws.

3. Reconnect the cables and screw the plug connector in place.

4. Ensure that the cables are securely fastened.

8.2.3   Replacing the glass panel

The glass panel is available under the following part number.

Part number	Meaning
4089559	Gray glass panel: 800 mm

⚠️ **WARNING**

Risk of injury when lifting heavy objects.

Depending on the system variant, the glass panel can weigh up to 15 kg.

▶ Remove and mount the glass panel with 2 people.

▶ Wear safety shoes in addition to your personal protective equipment.

▶ Lift and carry the glass panel taking ergonomic principles into account.

⚠️ **WARNING**

Risk of crushing when mounting the glass panel

There is a risk of crushing when placing the glass panel on the connecting bolts.

Measures

▶ Do not place fingers between the housing and the glass panel.

Bringing the measurement gantry to the end position and securing it in place

1. Move the measurement gantry to the end position on the controller housing.

Fig. 54:   Cleaning – Internal housing area (preliminary work)

Note   In this position, the measuring wire from the wire draw encoder is fully retracted. The wire draw system is protected against damage by the covering plate.

2. Use cable ties to secure the handles of the measurement gantry so that it does not move accidentally during the cleaning process.

Removing the glass panel

1. Unscrew and remove the four knurled screws which are used to mount the glass panel on the four connecting bolts of the weighing cells.
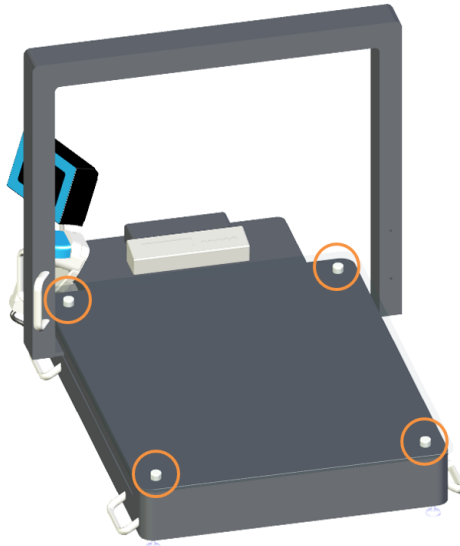

Fig. 55:   Cleaning – Internal housing area (removing the glass panel)

2. Carefully remove the glass panel from the connecting bolts. A second person should support you in doing this.

Mounting the replacement panel

1. Carefully place the replacement panel back on the four connecting bolts.

2. Re-tighten the four knurled screws.

3. Release the measurement gantry from its fixing.

Performing teach-in

It is recommended that the teach-in is performed once the internal housing area is opened. Refer to chapter *7.9.2.3 Performing teach-in*.

9 Fault diagnosis

This chapter describes how to identify and remedy errors and faults in the system.

9.1 Response to errors

⚠	**WARNING**

⚠

Danger due to malfunction!

Cease operation if the cause of the malfunction has not been clearly identified!

Measures

▶ Immediately stop system operation if you cannot clearly identify the fault and if you cannot safely remedy the problem.

9.2 Status indicator on the display

The Master Data Analyzer uses four types of status indicators to display the various operational statuses. The system distinguishes between messages regarding the **system status**, **measurement status**, **storage status**, and **connection status**.

The status messages are broken down into **Info**, **Warning**, and **Error** messages. **Warning** messages are **yellow** while **Error** messages are **red**. **Green** status messages document proper operation and measurement by the system.

The messages shown on the display are designed so that you can quickly understand what the error is and then use this information to rectify the cause of the problem.

In addition to the status messages, the system's operational and measurement readiness is also visualized by colored circles (see chapter *7.2.3 Structure of the measurement window*).

Note Pressing on the corresponding symbol opens a window with a status message.

9.2.1 Dealing with status messages

Status messages that contain warnings or errors always have to be dealt with straight away.

Example The following message will appear if an object has been measured which was not fully in the measurement field. Because this is an error, the status message will be red.
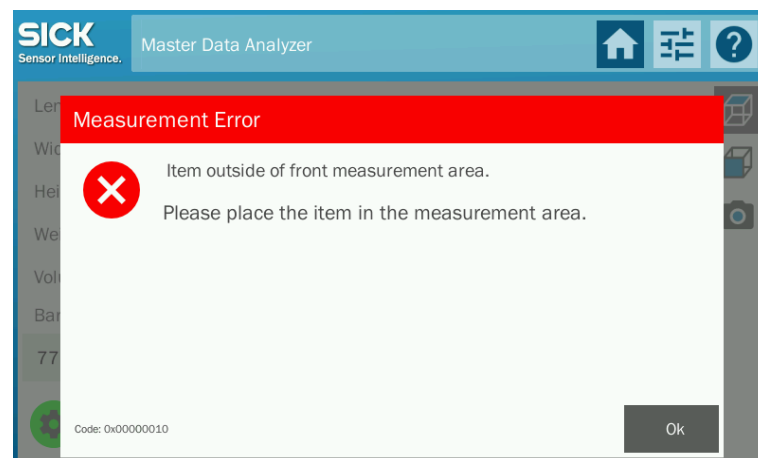
1. Press **OK** to confirm you have seen the error message. The window containing the message closes. The circle symbol for the measurement status indicator is red.

Note
If you accidentally close the window without having read the error message, you can display the notes again. To do this, click on the red circle.

2. Rectify the error. For this example: Position the entire object in the measurement field.

3. In the operating mode <u>with</u> bar code scanning, scan the bar code with the hand-held scanner or enter it manually. This creates a new measurement data set.

   In the operating mode <u>without</u> bar code scanning, the object has to be removed from the glass panel and repositioned again.

4. Now move the measurement gantry over the object.

   Once the volume has been measured, all measured values appear on the display and are transmitted by the MSC800 controller to the customer system via the defined interface.

9.2.2 Overview of status messages

The following tables provide an overview of all system messages with their error codes and a description of the error.

System status
Messages about the system status indicate, for example:

- That the light grids are contaminated and their optical performance is severely restricted.
- That the Master Data Analyzer's components cannot be addressed (e.g., the system is not connected to the light grids or the MSC800).

Color	Level	Code (dec./hex)	Name	Brief information	Status description
🟢	About	0000/ 0000	System	The system is ready for measuring.	–
🟡	Warning	0001/ 0001	System error	Sorry, something went wrong.	Please try again or contact your service partner.
🔴	Error	0678/ 02a6	Light grid error	No connection to light grid 1.	Please contact service partner.
🔴	Error	0679/ 02a7	Light grid error	No connection to light grid 2.	Please contact service partner.
🟡	Warning	0680/ 02a8	Scale error	No connection to scale.	Please contact service partner.
🔴	Error	0841/ 0349	Connection error	No connection to system controller.	Please make sure the IP address and port are correct or contact service partner.
🔴	Error	0842/ 034a	System	Trying to connect to controller.	–

Tab. 11: Status messages – System status

Measurement status

Messages about the measurement status indicate, for example:

- That the entire object is not located in the measurement field.
- That the object exceeds the maximum weight permitted for the scales.
- That an object has measured without a bar code.

Color	Level	Code	Name	Brief information	Status description
	About	00000000	About	Measurement complete.	–
	Error	00000001	Measurement error	Sorry, something went wrong.	Please try again or contact your service partner.
	About	00000002	Measurement	ready.	–
	Error	00000004	Measurement error	The measuring frame was moved backwards	Please move the measuring frame in one direction until the object has been measured completely.
	Warning	00000008	Measurement	Measuring...	–
	Error	00000010	Measurement error	Item outside of front measurement area.	Please place the item in the measurement area.
	Error	00000020	Measurement error	Item outside of upper measurement area.	Please place the item in the measurement area.
	Error	00000040	Measurement error	Item outside of rear measurement area.	Please place the item in the measurement area.
	Error	00000080	Measurement error	Item outside of lower measurement area.	Please place the item in the measurement area.
	Error	00010000	Measurement error	Item outside of left measurement area.	Please place the item in the measurement area.
	Error	00020000	Measurement error	Item outside of right measurement area.	Please place the item in the measurement area.
	Error	00000100	Measurement error	Item too small.	Please use bigger item.
	Error	00000200	Measurement error	Item not high enough.	Please use bigger item.
	Error	00000400	Measurement error	Item not wide enough.	Please use bigger item.
	Error	00001000	Measurement error	Item too long.	Please use smaller item.
	Error	00002000	Measurement error	Item too high.	Please use smaller item.
	Error	00004000	Measurement error	Item too wide.	Please use smaller item.
	Error	00080000	Measurement error	Item removed.	Please place the item in the center of the measurement area.
	Error	00100000	Measurement error	Bar code is missing.	Please enter bar code before scanning item.

9 FAULT DIAGNOSIS

Color	Level	Code	Name	Brief information	Status description
	Error	00200000	Handling error	–	Please wait until the weight is displayed.
	Error	00400000	Handling error	–	Please remove object and start again.
	Error	0001	Scale error	Sorry, something went wrong.	Please try again or contact your service partner.
	Error	0003	Scale error	Scale not connected.	Please contact service partner.
	Error	0007	Scale error	Scale overload. Item is too heavy.	Please use lighter item
	Error	0008	Scale error	Scale underload.	If there was an item on the surface during bootup, please remove the item and restart the system.
	Error	0009	Scale error	Negative weight.	If the Tare button was pressed and an item removed, please press Tare again and continue, or if there was an item on the surface during bootup, please remove the item and restart the system.

Tab. 12: Status messages – Measurement status

Storage status   In the operating mode <u>with</u> bar code scanning, messages regarding the storage status show whether or not there is sufficient space in the temporary memory bank.

Color	Level	Code	Number of data sets	Brief information	Status description
	About	0000	**X** = 0	The temporary storage is empty.	There are 0 of 1,000 files in the temporary storage.
	About	0001	0< **X** <950	–	There are X of 1,000 files in the temporary storage.
	Warning	0002	950<=**X**<1,000	The temporary storage is nearly full.	There are X of 1,000 files in the temporary storage. Please connect the system to the network where the target folder located.
	Error	0003	**X** = 1,000	The temporary storage is full.	Please stop the data acquisition and connect the system to the network where the target folder located.

Tab. 13: Status messages – Storage status

Transmission status   In the operating mode <u>with</u> bar code scanning, messages regarding the transmission status show whether the measurement data could be successfully transmitted to the customer server.

Color	Level	Code	Brief information	Status description
	Warning	0000	Sending data...	–
	Error	0001	Transmission failed.	–
	About	0002	Transmission successful.	–
	About	0003	Ready	–

Connection status Messages regarding the connection status show whether or not the device is connected to the customer system.

Color	Level	Code	Name	Brief information	Status description
	Offline	0000	Connection	No connection to the server.	The connection to the server could not be established. Please check the connection, login credentials or the WiFi coverage
	About	0001	Connection	The connection to the server was established.	–
	Offline	0002	Connection	No connection to the server.	The connection to the server could not be established. Please check the connection, login credentials or the WiFi coverage
	Warning	0003	Connection	The system is trying to connect to the server.	Please wait.

Tab. 14: Status messages – Connection status

9.3 SICK support

If you cannot remedy the error with the help of the information provided in this chapter, please contact your SICK subsidiary.

10   Technical data

10.1   Data sheet

Measurement field (L x W x H) MDA800 / MDA800 Image	790 mm x 590 mm x 590 mm
Measurement results	Length, width, height, volume, weight
Measurement accuracy	± 2.5 mm ± 5 mm
Measurement sensor	Infrared
Measurement direction	On both sides
Bar codes	1D, 2D, stacked codes
Start and end point of the measurement	Specified by object contours
Object properties	Remission (influence of object surface) does not effect the measurement result. The system can also measure transparent, reflective, and very dark objects
Object geometry	Any (cubic, round, irregular)
Minimum object size (L x W x H)	10 mm x 10 mm x 5 mm (at 5 mm resolution) * At 2.5 mm resolution, smaller dimensions are also possible
Maximum object size (L x W x H) MDA800 / MDA800 Image	790 mm x 590 mm x 590 mm
Object rotation	Omni
Maximum object weight	Up to 30 kg
Minimum object weight	20 g
Accuracy of the electronic scales	0.005 kg (up to 15 kg) 0.01 kg (up to 30 kg)
Supply voltage	AC 100 … 264 V / 50 … 60 Hz
Ambient operating temperature	0 °C … +40 °C
Dimensions (L x W x H) MDA800 / MDA800 Image	1,210 mm x 900 mm x 900 mm
Weight	65 kg – 80 kg

Tab. 15: Data sheet for the Master Data Analyzer

10.2   Dimensional drawings
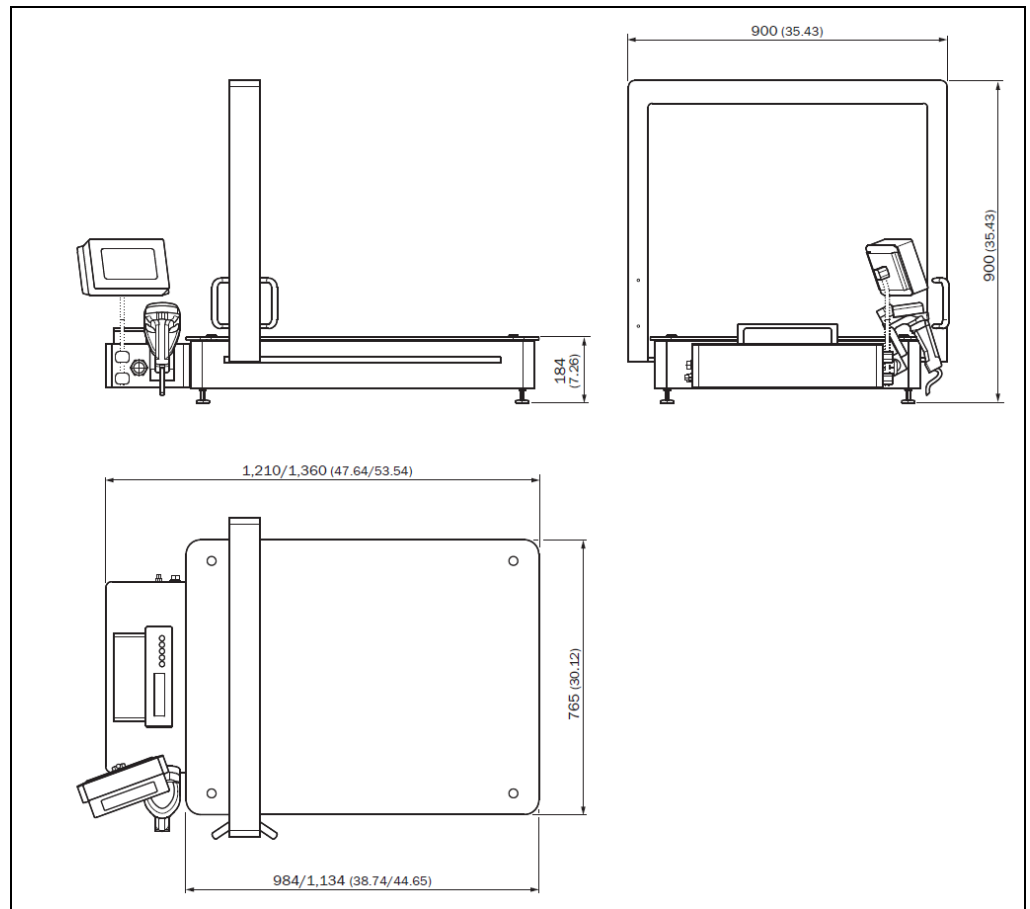
Fig. 56:   Dimensional drawings of the MDA800

10.3   Spare parts list

- Hand-held scanners
- Display
- Glass panel (800 mm)
- IP camera
- WLAN module

10.4 Data interface

The following chapters describe the structure of data output via the data interface.

The structures can be changed separately by the SICK technician. Please talk to your SICK contact.

10.4.1 Output format 2 (default)

```
<object>
        <number>[ON]</number>
        <code>[BC]</code>
        <dimensions>
                <length>[OLE]</length>
                <width>[OWI]</width>
                <height>[OHE]</height>
                <unit>mm</unit>
        </dimensions>
        <volume>
                <value>[OBV]</value>
                <unit>cm³</unit>
        </volume>
        <weight>
                <value>[OWE]</value>
                <unit>g</unit>
        </weight>
        <field1>
                <name>[UDS1]</name>
                <value>[UDS2]</value>
        </field1>
        <field2>
                <name>[UDS3]</name>
                <value>[UDS4]</value>
        </field2>
        <field3>
                <name>[UDS5]</name>
                <value>[UDS6]</value>
        </field3>
        <status>
                <scale>[OWS]</scale>
                <oms1>[OMS1]</oms1>
                <oms2>[OMS2]</oms2>
        </status>
</object>
```

Tab. 16: Description of the data interface: Output format 2 (default)

10.4.2   Output format 1

Column	Field	Bytes	Description	Example	Note
1	Start of text (special character)	1	STX		
2	Object number (ON)	4	Measurement identification index	0145	Internal index or external tray index (optional).
	Separator	1	;	;	
3	Item identification (BC)	Variable	Bar code content of one bar code	1JVGL0012345	May contain one bar code usually. Also filtering functions to distinguish relevant bar codes are available. If no bar code could be read: NoRead is sent out.
	Separator	1	;	;	
4	Weight (OWE)	9	Gross weight from scale	000081212	Weight value is zeroed if the measurement was not legal for trade/ if there was an error.
	Separator	1	;	;	
5	Unit weight (OWU)	1	Units of weight	g	
	Separator	1	;	;	
6	Scale error (connection) (Byte 1 of SEID)	1	Scale is connected/ disconnected	1	First byte of SEID: 0for scale is connected. 1for scale is not connected (e.g., not powered/switched on).
	Separator	1	;	;	
7	Length (OLE)	4	VMS measurement	0321	Zeroed if measurement error.
	Separator	1	;	;	
8	Width (OWI)	4	VMS measurement	0150	Zeroed if measurement error.
	Separator	1	;	;	
9	Height (OHE)	4	VMS measurement	0087	Zeroed if measurement error.
	Separator	1	;	;	
10	UnitVMS (OUD)	2	Units of MVS measurements	mm	mm
	Separator	1	;	;	
11	VMS status 1 (OMS1)	4	0000	0000 nor error 0001 item outside reading field	Hex. Format. Output will be suppressed in case of an error.
	Separator	1	;	;	
12	Cubic volume	7	VMS measurement LxWxH	cm3	Same as display output.
13	End of text (special character)	1	ETX		Terminator.

Tab. 17: Description of the data interface: Output format 1

11   Disposal

NOTE

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

NOTE

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

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

- **Electronics:**

  Capacitors, accumulators, batteries.

- **Displays:**

  Liquid in the LC displays.

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