LISENS scan

OPERATING INSTRUCTION

LISENS® scan

ASO Safety Solutions

Übergabedokumentation / Documentation

Anlagenbeschreibung / Description

Anlagenart / Type of plant

Hersteller / Manufacturer

Seriennummer / Serial number

Datum der Inbetriebnahme / Commissioning date

Aufstellort / Site of installation

Verwendete Steuerung / Control unit

Zusatzkomponenten / Additional components

Funktionsprüfung / Functional test

Sicherheitssensoren reagieren auf Betätigung / Safety sensors response to actuation	ok
Sicherheitssensoren reagieren auf Zuleitungsunterbrechung / Safety sensors response to supply line intteruption	ok

Name der ausführenden Firma / Installing company

Name des Installateurs / Installer

Datum / Date

Unterschrift / Signature

Inhaltsverzeichnis

1 General notes

This document is the translation of the original operating instruction for the “LISENS scan” safety radar for use on barrier and gate systems.

These operating instructions contain information installation, operation, maintenance, servicing, decommissioning and disposal. It is aimed specifically at technical installers and service technicians.

In the further description, the variants are generally referred to as “safety radar” or “LISENS scan”.

These operating instructions apply to the following items:

Article number	Designation	From version
2302-0300	LISENS scan CA-B-Set 1	V1.00
2302-0350	LISENS scan CC1-B-Set 1	V1.00
2302-0310	LISENS scan SUC1-1240E	V1.00
2302-0330	LISENS scan SUC2-1240E	V1.00
2302-0320	LISENS scan CUC2-2BA	V1.00
2302-0340	LISENS scan CUC2-2BC1	V1.00

Only the comfort version is currently available. The safety version will be available at a later date.

All previous editions of this document are no longer valid for the current hardware and software of the device. We reserve the right to make technical and operational changes to the products and devices listed in this documentation at any time, even without prior notice. No liability can be accepted for errors and misprints.

The safety radar may only be commissioned by qualified electricians who are familiar with the safety standards of electrical drive and automation technology. Precise knowledge of the safety radar and the required safety on barriers is absolutely essential. Therefore, please read these operating instructions carefully! The safety instructions must be strictly complied with!

1.1 Explanation of symbols

DANGER!
It denotes a hazard with a high degree of risk which, not avoided, result in death or serious injury. The following safety instructions must be observed to avoid serious personal injury.

WARNING!
It indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.The following safety instructions must be observed to avoid personal injury.

CAUTION!
It indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.The following safety instructions must be observed to avoid personal injury or damage to property.

Note
Further information or references to other documentation are provided.

1.2 Terms and Abbreviations

AC ..... Alternating Current

CU ..... Contol Unit

DC ..... Direct Current

DIN ..... German Institute for Standardization

EMC ..... Electromagnetic compatibility

EN ..... European standard

FAQ ..... Frequently Asked Questions

FOV ..... Field Of View refers to the area in the angle of view of an optical device within which events or changes can be detected and recorded.

GND ..... Ground

GUI ..... Graphical User Interface

HW ..... Hardware

IP ..... Intrusion Protection

ISO ..... International Organisation for Standardization

LED ..... Light Emitting Diode

RCS ..... Radar Cross Section, Equivalent echo area

RPD ..... Radar Protective Device

SU ..... Sensor Unit

Tolerance zone ..... Area outside the protective field with limited detection capability

TÜV ..... Technical Inspection Association

URL ..... Uniform Resource Locator

VCC ..... Voltage of Common Collector

1.3 Safety regulations / Protective measures

WARNING!
Please read these operating instructions carefully before operating the door Control Unit.

The instructions in this manual must be observed to guarantee function and safety. Failure to observe the warnings may result in personal injury and damage to property. The manufacturer is not liable for damage caused by failure to observe the instructions or by deliberate misuse.

The manufacturer and user of the system/machine on which the safety radar is used are responsible for coordinating and complying with all applicable safety regulations and rules on their own responsibility.

In conjunction with the superior control system, the safety radar guarantees functional safety, but not the safety of the entire system/machine. Before using the protective device, it is therefore necessary to carry out a safety assessment of the entire system/machine in accordance with the Machinery Directive 2006/42/EC or the relevant product standard.

The operating instructions must always be available at the place of use of the safety radar. It must be thoroughly read and applied by every person who is tasked with the operation, maintenance or servicing of the protective device.

The safety radar may only be installed and commissioned by qualified personnel who are familiar with these operating instructions and the applicable regulations on occupational safety and accident prevention. The instructions in this manual must be observed and complied with.

Electrical work may only be carried out by qualified electricians. The safety regulations of electrical engineering and the employer's liability insurance association must be observed. When working on the system, it must be disconnected from the power supply, checked that it is de-energized and secured against being switched back on.

If the connections of the safety radar are supplied with a dangerous external voltage, this must also be safely switched off when working on the device. Adequate protective circuitry must be provided for capacitive and inductive devices at the connections.

During assembly, installation, commissioning and operation, it must be ensured that the safety radar cannot be influenced by other radar sources. Do not install in the immediate vicinity of strong heat sources.

The safety radar does not contain any user-serviceable components. Unauthorized modifications or repairs to the switching device invalidate any warranty and liability of the manufacturer.

WARNING!
The Comfort version can be used as a D-device according to EN12453 and does not fulfill functional safety according to EN ISO 13849. When using the Comfort version, the functional safety of the system must be fulfilled by other measures.

WARNING!
To ensure that the safety system is compliant with the standard DIN EN 12453 “Safety in use of power-operated doors and gates”, the system must be checked for correct functioning by experts at suitable intervals. An inspection is obligated after six months. The inspection must be documented in a comprehensible manner at all times.

Note
Due to the current lack of technical specifications for the test specimens, checking the zones with the test specimen A defined in the EN 12453 standard is not suitable for the measuring principle of a radar sensor and can lead to the test specimen A being penetrated and not being detected.

2 Product description

The safety radar is used to detect a collision between a barrier and an obstacle in advance. If the safety radar is installed correctly, it is not necessary to attach safety edges to the barrier.

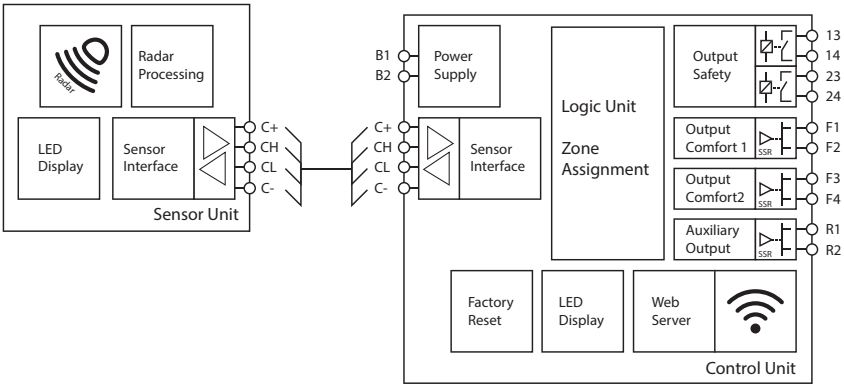
When installing a Comfort version, then a C-Device must be installed as well.

The compact safety radar is designed for outdoor use and can be operated with a low voltage of 10V to 30V DC.

The Comfort version serves as a D-device for the control function and must not perform any safety function.

The monitoring status of the safety radar and the operating voltage applied are indicated by LEDs. If an error message is present, all outputs are inactive.

A user interface for a mobile device is available via a WiFi connection to configure and check the Sensor Unit’s field of view. The internet browser is used for this on the mobile device. A special application for the mobile device is not required for this.



Functional diagram of a Control Unit with a Sensor Unit

2.1 Intended use

The safety radar can only fulfill its safety-relevant task if it is used as intended.

The intended use of the safety radar is the use on barrier systems to detect obstacles in the event of dangerous movements.

In addition to replacing light barriers / photo cells, the safety radar can also fulfill the comfort function of a loop detector. These additional functions are not safety functions and do not comply with the EN 12978 standard.

The Comfort version can be used as a D-device according to EN12453 and does not fulfill functional safety according to EN ISO 13849. It can be used as a replacement for a light barrier if it is mounted in such a way that it covers the required monitoring range in accordance with the standard. When using the Comfort version, the functional safety of the system must be fulfilled by other measures (e.g. force switch-off using safety contact strips as a C device in accordance with EN 12453).

The safety radar must not be used for machine monitoring in production processes.

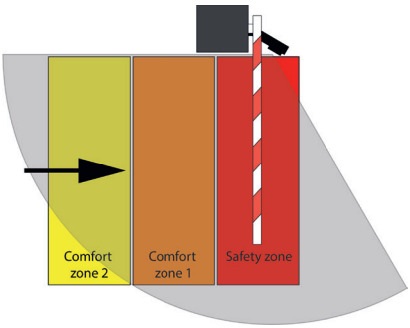
Any other use or use beyond this is not in accordance with the intended use. The manufacturer accepts no liability for damage resulting from improper use.
This includes the installation of the Sensor Unit in customer-specific housings and areas that have not been approved in writing by the manufacturer, or installation behind protective covers.

Use in special applications requires the manufacturer's approval.

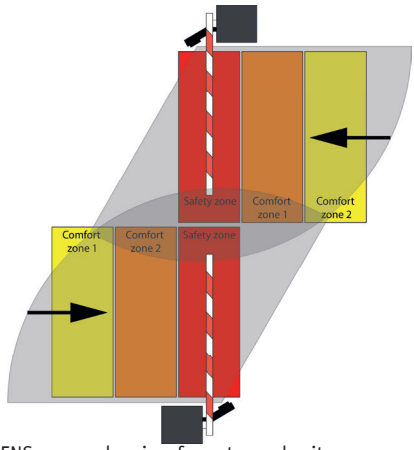
CAUTION!
The device can be used in household and industrial environments up to an altitude of 2000m above sea level. The device must not be operated in areas with strong temperature changes.

2.2 Example of use

This application example shows safety monitoring on a barrier system in various situations (see image descriptions). The arrangement of the individual components depends on the respective barrier design and the structural conditions.

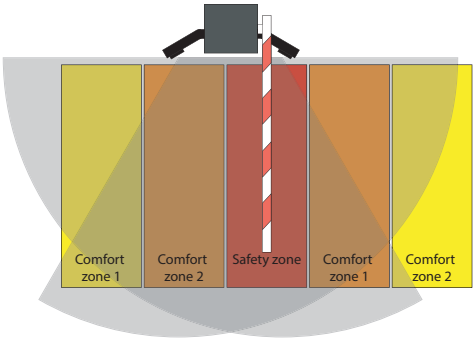


LISENS scan on barrier for one-way access

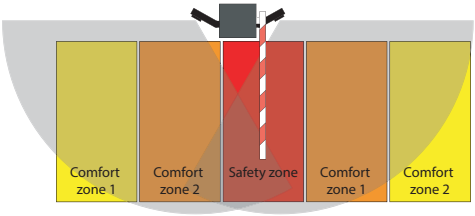


LISENS scan on barriers for entry and exit

A pendulum support or skirt on the barrier has an effect on the safety radar's field of view. The use of two Sensor Units is particularly recommended for applications with a skirt.



2 LISENS scan Sensor Units on barrier for two-way access



2 LISENS scan Sensor Units on barrier for two-wayaccess with skirt

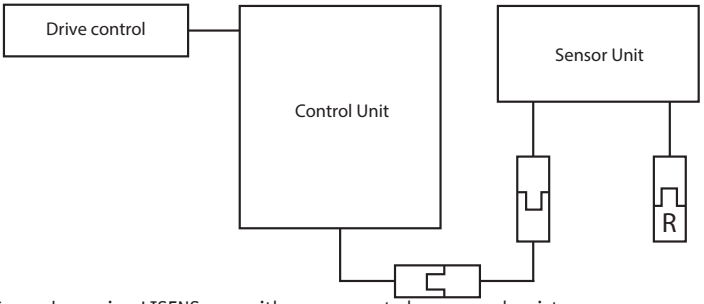
2.3 General overview

2.3.1 LISENS scan CA-B-Set 1

Sensor Unit with hinged arm

Control Unit

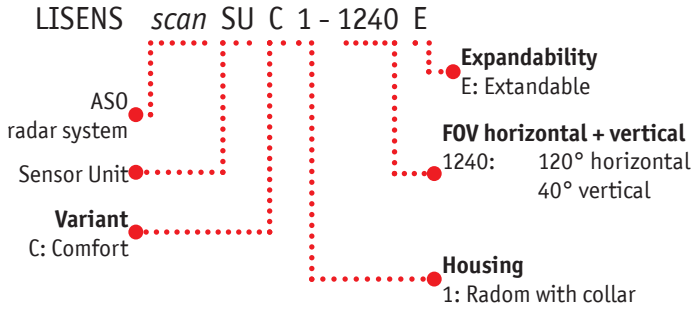
The safety radar consists of the Control Unit and, in future, up to 6 Sensor Units. The web interface is used to configure and test the system and its function. Communication between the Sensor Units and the Control Unit takes place via a bus connection. A terminating resistor is connected to the last Sensor Unit.



General overview LISENS scan with one connected sensor and resistor

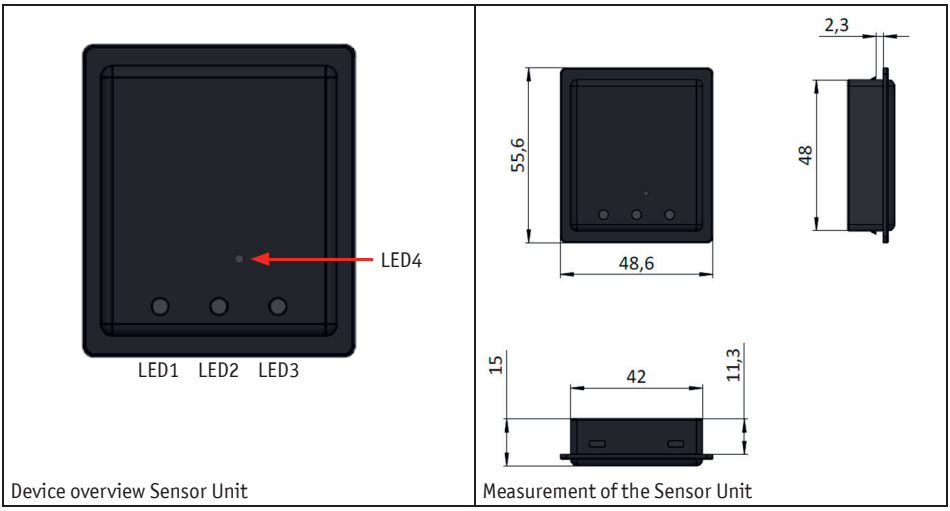
During installation, the short four-core cable with the M8 socket with snap-in technology must be connected to the corresponding connections for communication with the Sensor Unit to the Control Unit. The connections between the Sensor Unit and the Control Unit are made using four-pole M8 cables with plugs and couplings with snap-in technology. The terminating resistor on the last Sensor Unit is fitted with a four-pole M8 plug with snap-in technology.

2.4 Product key Sensor Unit



2.5 Device overview Sensor Unit

LISENS scan SUC1-1240E



Device overview Sensor Unit

Measurement of the Sensor Unit

2.5.1 Display elements

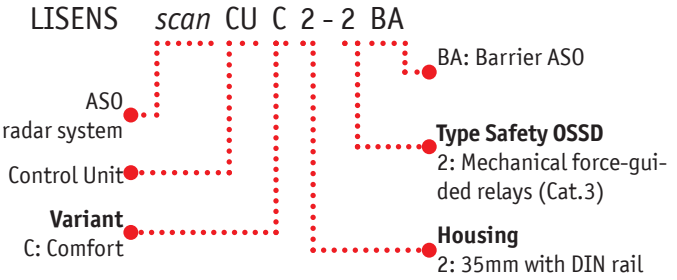
LED1	Power	Operating status indication
LED2	SAFETY	Message status safety zone
LED3	COMFORT	Message status comfort zone
LED4	VOLTAGE	Internal voltage indicator (glows dimly through the housing material)

The same messages are displayed on the Control Unit as well.

2.5.2 Electrical connection

There are two cables with an M8 plug and an M8 coupling with snap-in technology on the back. The M8 plug is intended for connection to the Control Unit or the preceding sensor. The M8 coupling is intended for the connection to the subsequent Sensor Unit or the terminating resistor.

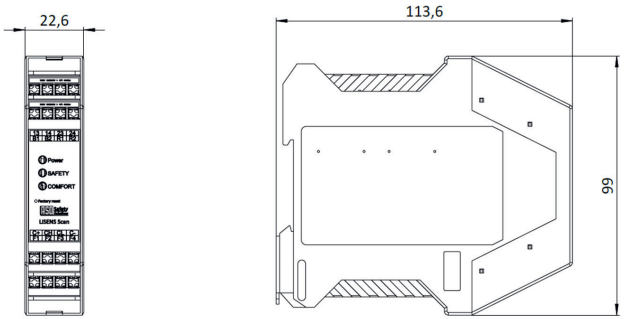
2.6 Product key Control Unit



2.7 Device overview Control Unit

LISENS scan CUC2-2BA

Device overview Control Unit



Measurement of the Control Unit

2.7.1 Display elements

Power	Operating status display
SAFETY	Message status safety zone
COMFORT	Message status comfort zone

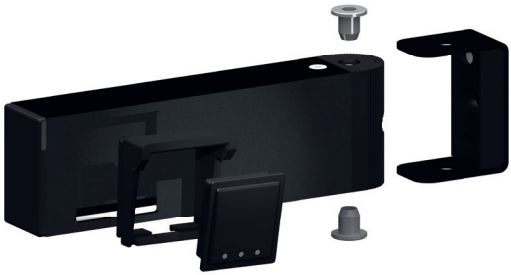
The same messages are displayed on the Sensor Unit as well.

2.7.2 Electrical connection

13	Safety relay 1 Contact 13 (Safety Zone)
14	Safety relay 1 Contact 14 (Safety Zone)
23	Safety relay 2 Contact 23 (Safety Zone)
24	Safety relay 2 Contact 24 (Safety Zone)
B1	Power Input 10 - 30 V DC 5,9W / 14-26,4V AC 9VA
B2	Power Input 10 - 30 V DC 5,9W / 14-26,4V AC 9VA
R1	Aux Relay Contact R1 (Safety Zone)
R2	Aux Relay Contact R2 (Safety Zone)
C+	Sensor power 12V output
CH	Sensor high
CL	Sensor low
C-	Sensor power GND output
F1	Solid state relay Contact F1 (Comfort Zone)
F2	Solid state relay Contact F2 (Comfort Zone)
F3	Solid state relay Contact F3 (Comfort Zone)
F4	Solid state relay Contact F4 (Comfort Zone)

3 Installation

3.1 Package contents



Hinged arm, partially assembled
Radome unit with radome frame
Metal bracket

Control Unit

3.1.1 Hinged arm, partially assembled

Quantity	Designation
1	Aluminum hollow profile
2	Countersunk screw for thermoplastics 5 x 12 mm
1	Radio plugs
1	Connecting cable
1	Terminating resistor
2	8K2 THT resistor
1	Operating instruction

3.1.2 Further components for mounting with hinged arm

Quantity	Designation
1	Lamella plugs
2	Sleeve nut flat head hexagon socket
1	Metal bracket
1	Radome unit with housing
2	Socket head screw galvanized steel M5 x 6 mm
1	Connection cable M8, Coupling, straight, 4-polig
2	PA6 Round rod 5mm
1	Radome frame 10°
2	Cylinder head screw galvanized M5 x 16 mm
2	Galvanized washer, inside 5,3 mm
2	Hexagon nut galvanized, M5
1	Form A threaded bolt galvanized, M8 x 65 mm
1	Inlay mounting bracket

3.2 Tools

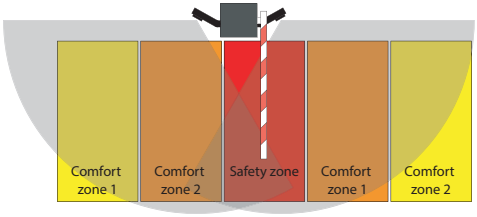
The following tools and aids are recommended for installation:

- Battery-powered screwdriver
- Drilling and cutting oil
- Tap drill M5
- Drill 4,2 mm und 6 mm
- Allen key size 5
- Torx screwdriver T25
- Water level

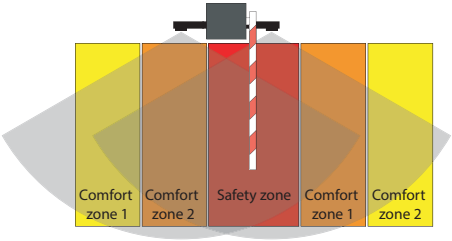
3.3 Installation specifications for barrier with skirt and / or pendulum support

3.3.1 Barrier systems with skirt and an overall length of more than 3 m

For a barrier with skirt, it is important that the Sensor Unit is mounted at least 15 cm offset from the skirt. The orientation of the Sensor Unit ranges from 0° (parallel to the boom) to 30° (turned away from the boom). If the Sensor Unit is turned towards the skirt, proper operation cannot be guaranteed.



2 LISENS scan on a barrier with skirt >3m length for two-sided access (30° Sensor Unit alignment)



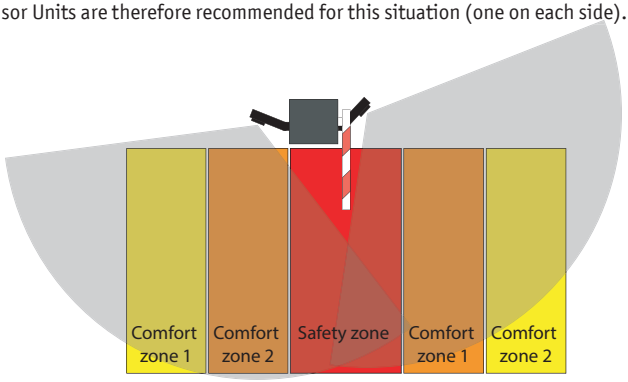
2 LISENS scan on a barrier with skirt >3m length for two-sided access (0° Sensor Unit alignment)

3.3.2 Barrier systems with skirt, boom rest and an overall length of more than 3 m

For barrier systems with a total length of more than 3 m that contain a skirt and boom rest, the “Skirt” function must be activated (click on the checkbox). The “Pendulum support” function must not be activated in parallel with the “Skirt” function and it must not be activated individually.

3.3.3 Barrier systems with Skirt and an overall length of less than 3 m

The “Skirt” function is not possible for barriers with a boom length incl. skirt of less than 3m. In this case, the Sensor Unit must be rotated so far (Z-axis) that the field of view does not extend into the skirt. Two Sensor Units are therefore recommended for this situation (one on each side).



2 LISENS scan Sensor Units on a barrier with skirt <3m long for two-sided access

CAUTION!
Observe the safety zone at the end of the boom. The fields of view for the safety zones of the individual Sensor Units must overlap behind the end of the boom to prevent unintentional and unprotected access to the safety zone.

Note:
Object detection and, in particular, the “vehicle” object classification in the comfort zones can be reduced by the skirt, depending on the orientation of the Sensor Unit. As a result, objects may only be detected or correctly classified at a later point in time. A late or incorrect classification is more likely, especially for object detection and classification for the comfort zones that lie behind the skirt as seen from the sensor. If the Sensor Unit is to monitor the side of the skirt that is not the installation side of the Sensor Unit, it is advisable to place the comfort zones for the open/close command of the barrier close to the barrier/safety zone, to keep them as small as possible and to configure the switching outputs so that each object can activate the zones.
Due to the different structural conditions, use in this way is at your own risk. The manufacturer accepts no liability for material defects resulting from material damage and/or non-permanent operation of the barrier.

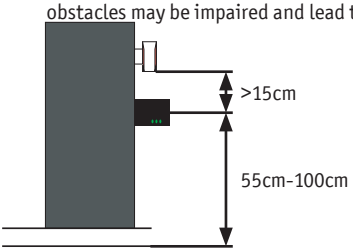
3.4 Installation specifications and possible installation errors

The following basic aspects must be taken into account during installation:

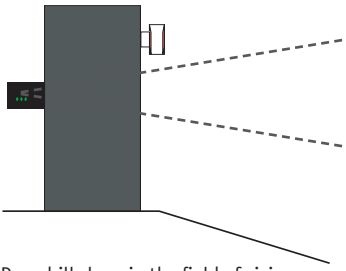
- Avoid strong vibrations
- Do not cover the radar window
- Avoid moving objects and other radar sources in front of the radar window

3.4.1 Installation height of the Sensor Unit

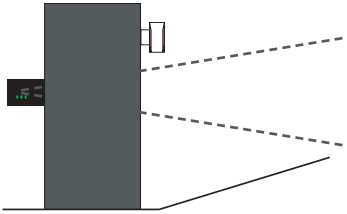
The Sensor Unit must be mounted on the barrier housing between 55cm and 100cm above the floor and at least 15cm below the barrier boom. If the distances are not observed, the detection of objects and obstacles may be impaired and lead to misinterpretations.



3.4.2 Influence of ground characteristics



Downhill slope in the field of vision of the Sensor Unit

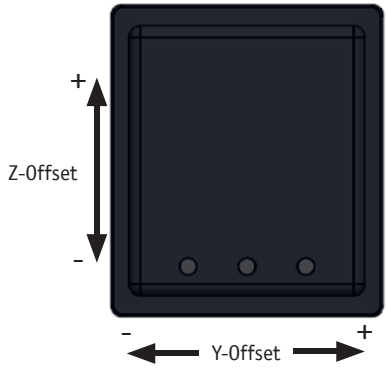


Uphill slope in the field of vision of the Sensor Unit

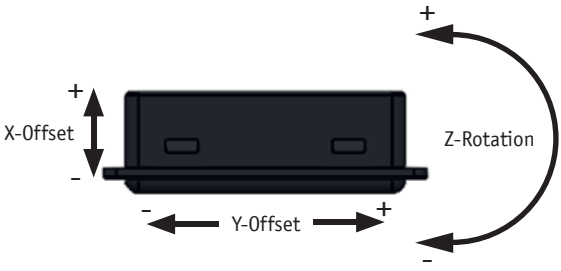
Uphill or downhill slopes in the Sensor Unit's field of view (e.g. at parking garage entrances and exits) can restrict the functional behavior and detectability of objects and obstacles.

If there is a downhill slope in the Sensor Unit's field of view, the vehicle will leave the detection area too early or reach it too late, depending on the direction of travel.
If there is an uphill slope in the Sensor Unit's field of view, the vehicle will leave the detection zone too late or reach it too early, depending on the direction of travel.

3.4.3 Positioning of the Sensor



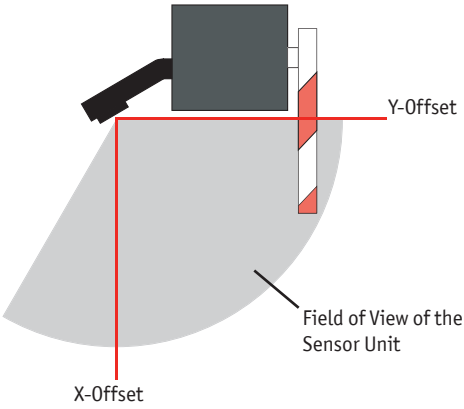
Positioning the Sensor Unit
View from the front



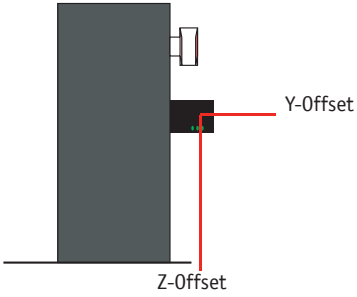
Positioning the Sensor Unit
View from above

3.4.4 Axis depictions

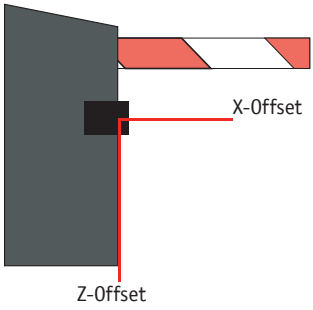
LISENS scan on the cabinet
View from above



LISENS scan on the cabinet
View from the front

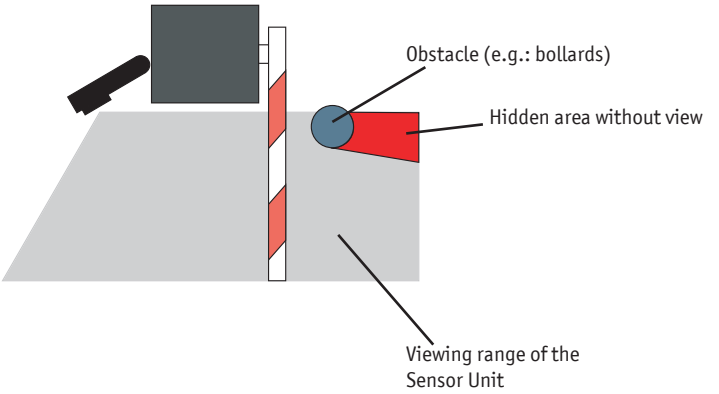


LISENS scan on the cabinet
View from the side



3.4.5 Obstacles in the field of view of the Sensor Unit

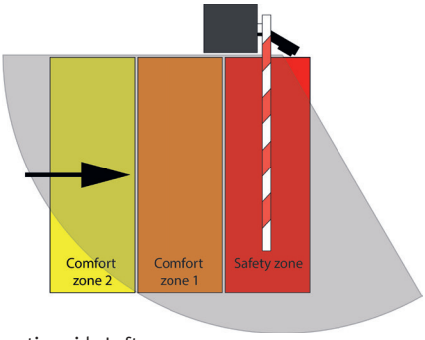
The Sensor Unit's field of view must be clear for the entire detection area. Obstacles in the field of view (e.g. bollards as impact protection) can restrict the detectability of objects and hinder the functional behavior.



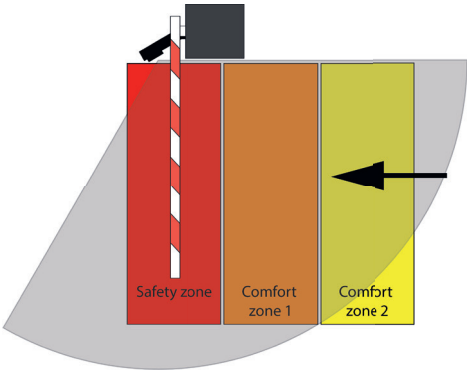
3.5 Sensor positioning

3.5.1 Mounting side of the sensor

Depending on the mounting side on the barrier housing and the use of the boom, the Sensor Unit must be installed as follows.



Mounting side Left



Mounting side Right

3.5.2 Horizontal viewing angles

A maximum of +/-30 degrees can be used for the safety zone on the horizontal level of the detection area of the Sensor Unit. The safety zone is limited to +/-30 degrees, especially when using a skirt on barriers.

With the hinged arm, the horizontal viewing angle of the Sensor Unit can be rotated by +/-40 degrees. With a customized hinged arm, a larger angle of rotation up to a maximum of +/-45 degrees can be implemented.

A maximum horizontal viewing angle of +/-45 degrees can be displayed in the Live image menu on the user interface. The 0 degree angle corresponds to the viewing direction of the Sensor Unit along the boom.

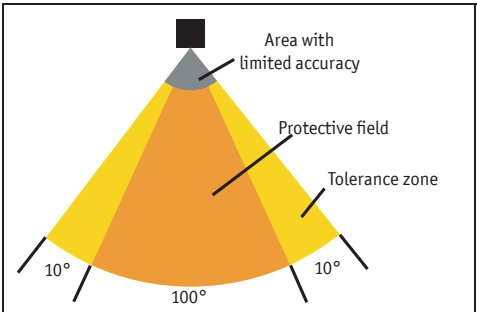
3.5.3 Angular alignment with the floor (tilt)

With the Sensor Unit aligned parallel to the floor, the angle is 0 degrees. With the radome mount, the Sensor Unit will be tilted by 10 degrees.

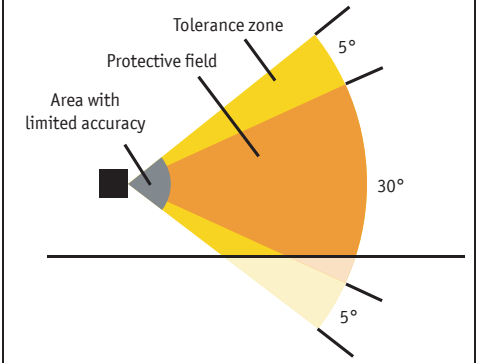
For a customized solution, a radome mount with an inclination of 15 degrees can be used. However, the detection range of the Sensor Unit is then limited to 8 meters. The manufacturer cannot accept any liability for the limited detection capability.
In addition, the functionality for comfort functions and stability may be reduced in adverse weather conditions.

3.5.4 Definition of the zones

The detection capability of the safety radar may be limited when using barriers with pendulum supports or skirt.



Detection area, top view



Detection area, side view

Horizontal signal acquisition (azimuth)
Tolerance zone 120° (+/- 60°)
Protective field 100° (+/- 50°)

Vertical signal detection (elevation)
Tolerance zone 40° (+/- 20°)
Protective field 30° (+/- 15°)

Operating distance protective field 0.4 up to 13m
(referencing corner reflector 0.17 m²)

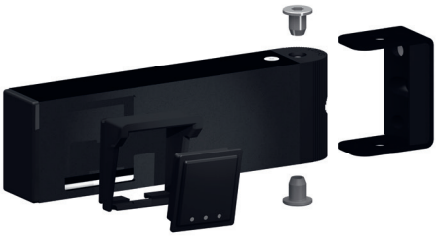
Detection capability:
Elevation +/- 17°
Azimuth up to 9 meters +/- 57
Azimuth up to 13 meters +/- 50°

Ensure that the safety zone is within the detection range of the Sensor Unit. The safety zone must not extend beyond the detection area, as object detection is not guaranteed.

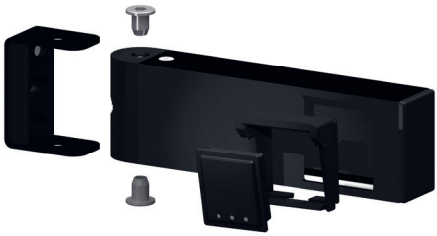
The comfort zones, which do not map any safety functions, can also be located outside the detection area, but here the detection of objects is not 100% guaranteed.

3.6 Installing the sensor with hinged arm

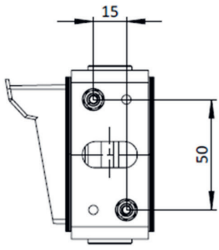
The hinged arm is supplied partially assembled. Depending on the mounting position, the Sensor Unit is inserted into the hinged arm.



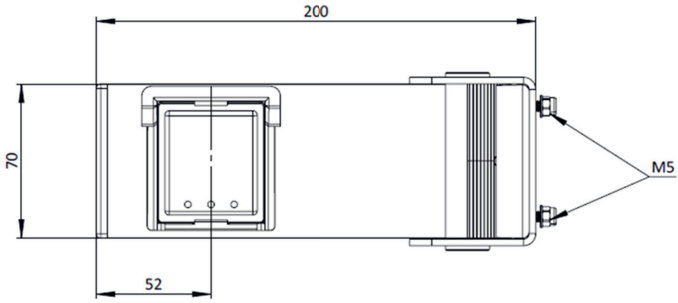
View for mounting the sensor with hinged arm
Mounting side right

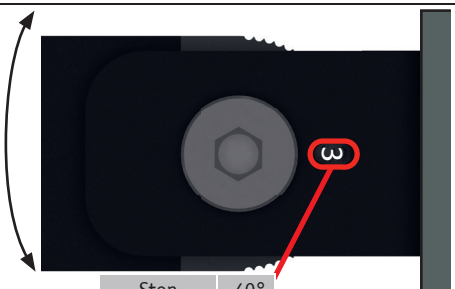


View for mounting the sensor with hinged arm
Mounting side left



Dimensions hinged arm





Stop	-40°
1	-30°
2	-15°
3	0
4	15°
5	30°
Stop	40°

Grid with numbers, mounting side left

Stop	40°
1	30°
2	15°
3	0
4	-15°
5	-30°
Stop	-40°

Grid with numbers, mounting side right

The viewing angle of the Sensor Unit (Z-axis) can be adjusted up to +/-40° using the hinged arm. The angle is adjusted by 5° with each locking step. Depending on the mounting side, the set angle is displayed with a number in a window on the bracket for the hinged arm.

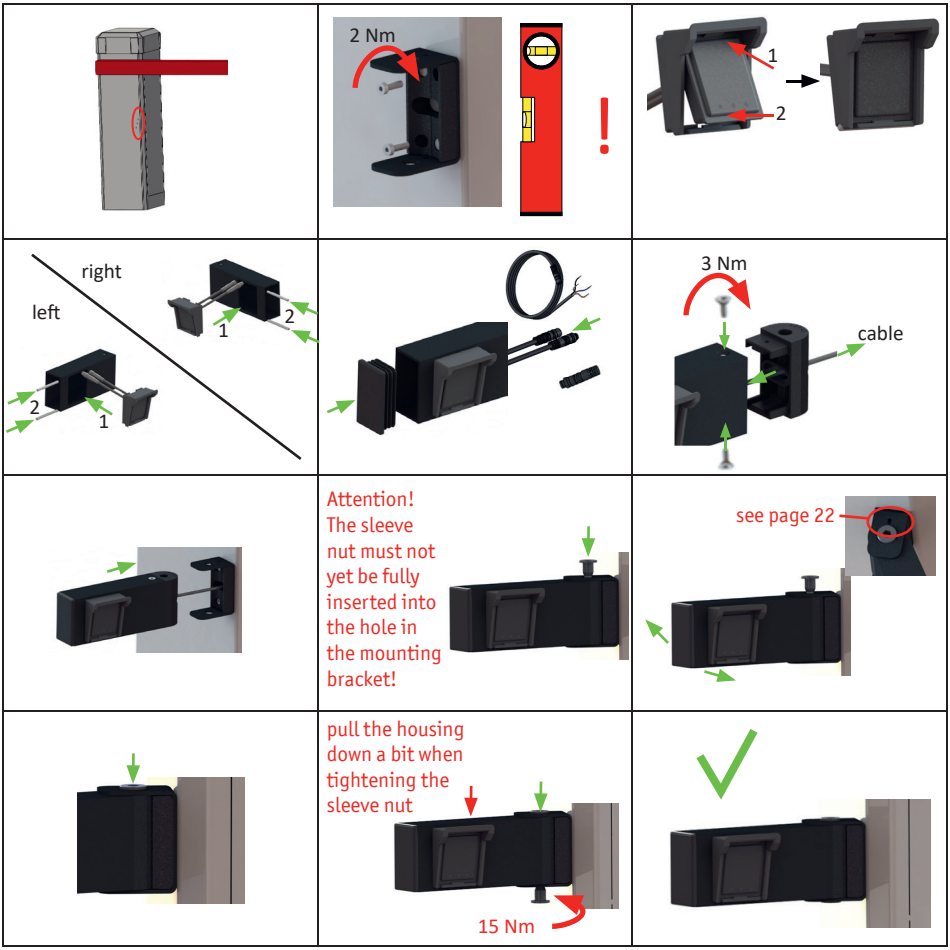
In the end positions of the latching settings, +/-40° is achieved without a number being visible in the window of the bracket. The safety function can be guaranteed within the viewing angle of the Sensor Unit up to +/-30°.

3.7 Mounting the sensor in the customer housing

It is possible to install the Sensor Unit with the protective cover in a customer-specific housing. Please note that the safety function can only be guaranteed within the opening angle of +/-30° of the Sensor Unit. The opening angle for the safety function can be rotated by a maximum of +/-40°. The display on the live image in the configuration menu is limited to +/-45°.
For the dimensions of the radar, please refer to the “Sensor Unit dimensions” diagram in chapter “2.4 Sensor Unit device overview”.

3.8 Assembly

DANGER!
When installing the sensor, make sure that the sensor has a clear view of the safety zone and that the safety zone fits into the detection area. Obstacles such as street lamps, deflectors or railings that are in the sensor’s field of view can prevent objects/persons behind such obstacles from being correctly detected, which can lead to dangerous situations.



For the electrical connection, the Control Unit must be snapped onto a top-hat rail inside the barrier housing.

The Control Unit must be installed in a switch cabinet with protection class IP54 or better (e.g. the barrier housing). All electrical connections can now be made as described in the following section “4. Connection and functional description” and the device can be put into operation.

4 Connection and function description

DANGER!
The safety radar may only be commissioned by qualified electricians with approved training who are familiar with the safety standards of electrical drive and automation technology.

4.1 Electrical connection

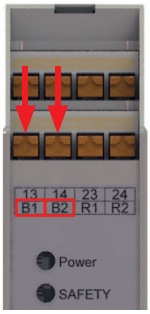
The following connection work must be carried out with particular care in accordance with the specifications in these instructions.

Connecting the wires of the connection cable to the wrong terminals can destroy the safety radar. The limit values for the supply voltage and switching capacity specified in chapter “11. Technical data” must be observed.

DANGER!
The signal cable must not be laid parallel to the motor cable or other power cables. The supply voltage must meet the requirements for safety extra-low voltage (SELV). Cables that are laid outdoors or outside the switch cabinet must be protected accordingly.

4.2 Connection of the power supply

CAUTION!
The extra-low voltage supply must meet the requirements for safety extra-low voltage (SELV). The supply line to the safety radar must be protected with a suitable fuse.

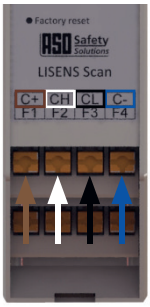


Connection contacts for the power supply

The supply voltage must be connected to connections B1 and B2. The polarity is arbitrary.

Supply voltage:
10 to 30V DC 5.9W
14 to 26.4V AC 9VA

4.3 Connection for the sensor



Connection contacts for the sensor

The Sensor Unit is connected to the Control Unit via a CAN open safety bus. To do this, the short cable with the open wire ends and the M8 socket is connected to the Control Unit.

Connection C+: brown wire
Connection CH: white wire
Connection CL: black wire
Connection C-: blue wire

The Sensor Unit is then connected to the Control Unit using a 5 meter extension cable.

4.4 Connection of safety outputs

The radar system has three different safety outputs: a potential-free redundant relay output, an 8k2 simulation and an FSS output that provides a 1 kHz quadrature wave signal. On the configuration page of the web server, either FSS or 8k2 can be selected in parallel with the redundant relay output or one of the outputs alone. Depending on which output is used, the wiring must be adapted.

WARNING!
Before changing the configuration of the safety outputs, the connection assignment for the safety outputs must be removed. The selected pin assignment of the safety outputs may only be implemented after the configuration setting has been carried out. The device may be destroyed if the connection assignment of the safety outputs is incorrect.

4.4.1 Safety output relay (Observe the variant type code)

For the redundant relay output, there are two options for connecting the relay contacts of the Control Unit to the control system.

In variant 1, the two relays are connected in series, with terminal 14 connected to terminal 23.	In variant 2 an 8k2Ω resistor can be used instead of the bridge so that the device can also be connected to an 8k2 input of the Control Unit.	Variant 3 is for the case that each relay can be connected separately to the Control Unit.
		

4.4.2 Safety output FSS (Observe the variant type code)

Connection contacts for FFS

With the FSS option, the following cables are connected:
Connection F1: brown wire (power or 12V)
Connection F2: green wire (signal)
Connection F3: white wire (GND or minus)

4.4.3 Safety output 8K2 - *Simulation* (Observe the variant type code)

Connection contacts for a safety output 8K2

The following connections are connected to the Control Unit for the 8K2 simulation: F1 and F3

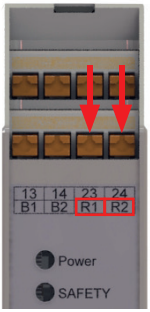
In the 8K2 simulation, an output of a resistance value of 8.2 kOhm is simulated via internal switching elements in the normal state. In the event of detection in the safety zone, a resistance of approximately 0 kOhm is simulated via the internal switching elements. In the fault state, an interruption of the resistance is simulated via the internal switching elements. The safety-compliant functionality is checked by an internal test with a corresponding change in the simulated resistance. The function of the internal testing of the safety output depends on the controller used and the design of the input circuitry.

Note:
It is possible that the safety output is not compatible with specific Control Units and that the function of the safety output is not guaranteed.

4.5 Comfort outputs connection

DANGER!
The connection for the comfort outputs is only permitted for switching low voltages. Depending on the rated current, the control circuits must be protected with a suitable fuse or the rated current of the control circuits must be limited to the maximum value by other measures.

4.5.1 AUX relay safety zone (SZ)

 1x Connection contact	The SSR for the safety zone is connected to connections R1 and R2.

4.5.2 Relay for comfort zone

 2x Connection contacts	The SSR1 is connected to the F1 and F2 connections. The SSR2 is connected to connections F3 and F4. The FSS and 8K2 outputs are deactivated in this hardware version. The test input is also not available.

4.6 Display features

Currently pending error messages are displayed. If there are several error messages, they are displayed one after the other with a longer pause in between. If there are no more pending error messages, the display LED switch to the normal operating display. If no LED lights up, check the power supply for wiring problems, overvoltage or undervoltage.

LED1: Operating status display LED2: Message status safety zone LED3: Message status comfort zone	Power: Operating status display SAFETY: Message status safety zone COMFORT: Message status comfort zone

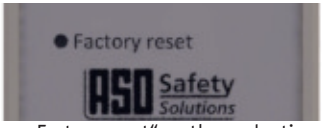
LED 1 / Power	Green on	Normal operating status, detection mode
LED 1 / Power	Green flashing fast	System boot, initialization mode
LED 1 / Power	Red on	General error, error status
LED 1 / Power	Red with 2 flashing pulses	Safety output test failed, error status
LED 1 / Power	Red with 3 flashing pulses	Data transmission between Control Unit and Sensor Unit interrupted
LED 2 / SAFETY	Blue flashing fast	Calibration of sensor environment in progress
LED 2 / SAFETY	Green on	The safety zone is not triggered
LED 2 / SAFETY	Red on	The safety zone is triggered or Configuration mode is active
LED 2 / SAFETY	Off	Error status; no objects recognizable in zones
LED 3 / COMFORT	Green on	Comfort zones are not triggered
LED 3 / COMFORT	Red on	Comfort zone 1 is triggered
LED 3 / COMFORT	Red with 2 flashing pulses	Comfort zone 2 is triggered
LED 3 / COMFORT	Red with 3 flashing pulses	Comfort zone 1 and 2 are triggered
LED 3 / COMFORT	Off	Error status; no objects recognizable in zones

4.7 Button „Factory reset“

If something has gone wrong and no connection can be established after the restart, press and hold the “Factory reset” button while the device is switched on.
The „Factory reset“ can only be done when there is a Sensor Unit connected to the Control Unit.

To press the “Factory reset” button, insert a thin object (e.g. a paper clip) through the opening in the housing.

The factory reset restores the factory settings for the WiFi settings and the login data (user name, password).



Button „Factory reset“ on the evaluation unit

5 Web-Interface

5.1 Connection to WiFi

To start the LISENS scan, a connection must be established between the mobile device and the WiFi module of the radar system.
Open the WiFi connection of your device, search for the SSID of the radar system and log in with the password.

SSID: LISENS-scan-WIFI XXX (the last three digits of the serial number specified on the type plate of the Control Unit)
Password: ASO-safety-XXXXX (the last five digits of the serial number specified on the type plate of the Control Unit)

Once you have successfully connected to the WiFi, you can call up the URL of the safety radar‘s web interface using any Internet browser.
URL: aso.net

Note!
It may be necessary to switch off a connection to the Internet so that the URL is not entered incorrectly. You must also check whether another device has already connected to the WIFI, as the system can only connect to one device.

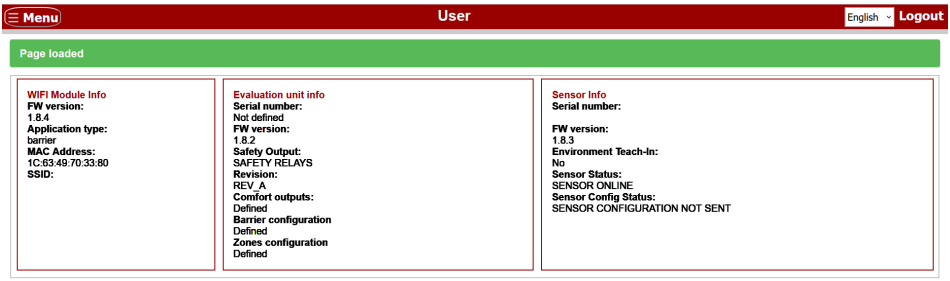
It may be necessary to clear the cache if it is still not possible to connect to the WIFI.

5.2 Login screen

After entering the URL aso.net in the Internet browser, the login screen appears. To log in to the menu, enter your user name and password in the GUI login screen. For the first login, you will find the user name and password on the label on the Control Unit. English or German can be selected as a language.

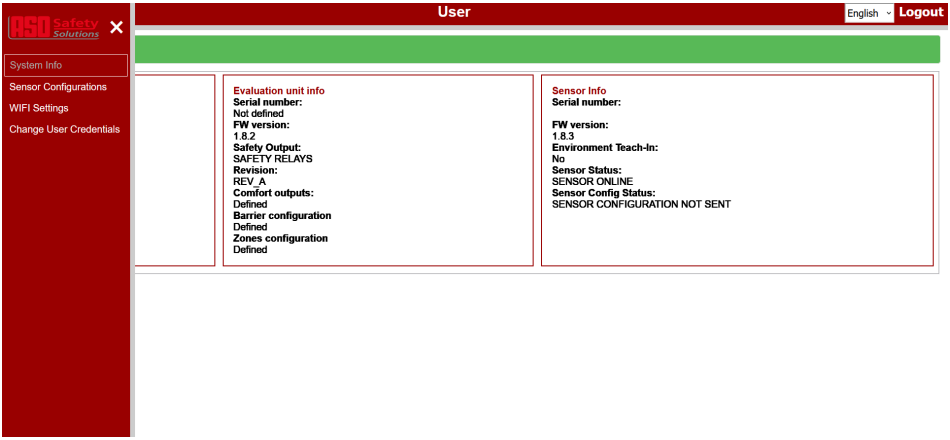
5.3 System information

After successfully logging in, you will see the page with all information about the software and hardware of all installed components.
The information window can also be accessed via the menu bar when the “System info” tab is selected.



5.4 Menu bar (User)

To configure the system for the first time, click on Menu in the top left-hand corner. All currently available menu items are listed here, which may vary for different user levels and selected menu items.



5.5 Menu > Configuration

To set up the system and activate the safety function, go to the menu bar and select the “Configuration” option.

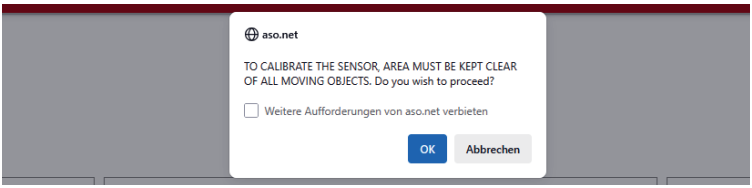
There you can see the current settings of the System. With a klick on the Button „Get Targets“ you can then see the selected Targets in the live view. You can select between „vehicle“, „other“, and „All targets“.

To access the configuration, the “Enter Config Mode” button must be pressed. If this is not the default setting, the safety outputs are deactivated as soon as the button is pressed.

When configuration mode is activated, the outputs are switched to the safe state and the display LED are glowing accordingly.

Once the values of the sensor and zone settings have been checked for correctness, the configuration menu and the “Exit configuration mode” button on top of the page can be selected.

A message appears to remind you that the teach-in process is starting and that the monitoring area must be free for the teach-in process. This process takes a few seconds and only takes place after adding / changing parameters.



Once calibration is complete, the system returns to operating mode and the switching outputs switch as configured. Depending on the objects detected in the monitored zones, the corresponding outputs are switched and the display LED are set accordingly.

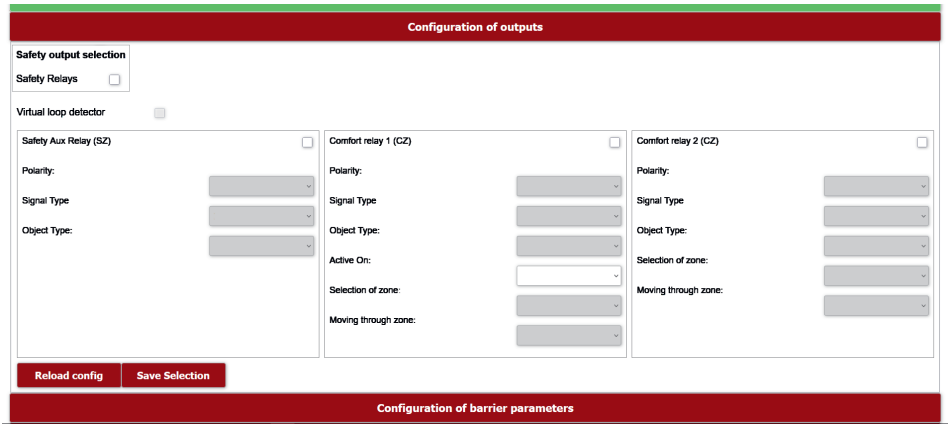
WARNING!
To confirm correct functioning, all defined areas must be tested at least by walking through the boundaries and activating the safety zone and comfort zones.

5.5.1 Digital water level

The digital water level is used to check how the sensor is installed. It also serves as an acceleration sensor so that it can be monitored whether the position of the sensor has been changed by bumping or manipulation.
The first step in the configuration is to check the acceleration sensor and therefore the installation of the sensor itself.
Depending on the version, the pitch angle must be -10° or 0°.
The roll angle should be 0° if possible.

5.5.2 Configuration of the switching outputs

The safety outputs are configured in “Configuration of outputs”. It is also possible to select different combinations of comfort outputs. The “Virtual loop detector” function can also be activated and configured.



The “Safety output selection“ defines the switching output type depending on the hardware variant. At least one safety switching output must be activated (checkbox selected or selection drop-down menu) so that the sensor can be configured. The safety output switches as soon as an object activates the safety zone (SZ).

The “Virtual loop detector” checkbox activates or deactivates the loop detector function. If the checkbox is selected (filled), both comfort zones must be activated and configured so that the system can execute the loop function.
The “AUX relay safety zone (SZ)” checkbox activates or deactivates the AUX relay, which switches in parallel to the safety relay. The AUX relay can therefore be used for a courtyard light, for example.

The “Comfort relay 1” and “Comfort relay 2” checkboxes each activate or deactivate a comfort zone. Activation takes place when the checkbox is selected (filled). Deactivation takes place when the checkbox is deselected (empty). If a switching output is activated, the dimension of the comfort zone must be configured in chapter 5.5.5 “Configuration of the zone(s)”. If both checkboxes are selected, the dimensions of both comfort zones must be configured.

With “Polarity”, the contact type can be set as “NO” (Normally Open) or “NC” (Normally Closed).

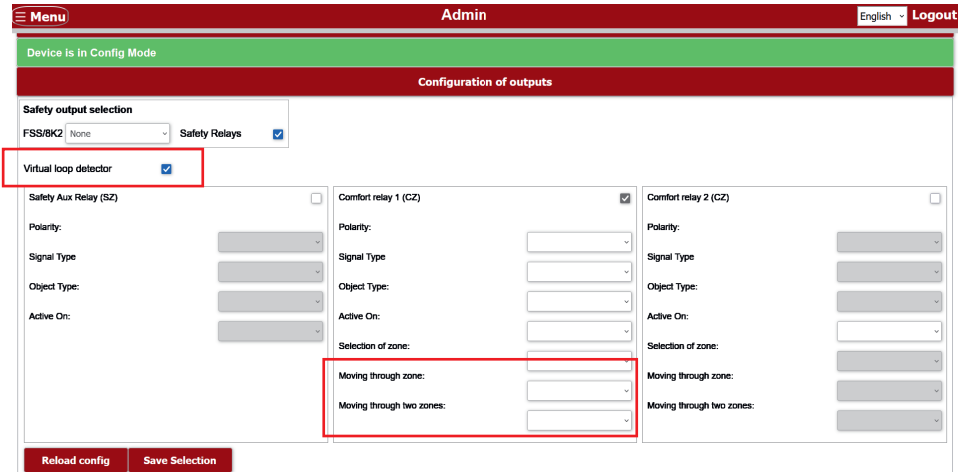
With “Signal type”, the signal can be set as “Permanent” or “Pulse”. The pulse duration is 500ms.

With “Object type”, the objects “Vehicle”, “Other” or “Both” can be set.
With the “Vehicle” object type, the outputs only switch when the zone is entered by vehicles such as cars or trucks.
With object type “Other”, the outputs only switch if an object has not been classified as a vehicle (e.g. person). Vehicles are not recognized.
With object type “Both”, the outputs switch for all detected objects.

With “Activation on”, a distinction can be made as to when the switching output should switch.
Movements away from the barrier are seen as “Exit zone”.
Movements in the direction of the barrier are seen as “Enter zone”.

With “Selection of zone”, the switching outputs can be assigned the designation “CZ1” (Comfort Zone 1) or “CZ2” (Comfort Zone 2).

With “Movement through zone”, the direction of movement of the object can be set to activate the switching output. The directions result from the view from the housing in the direction of the barrier boom.

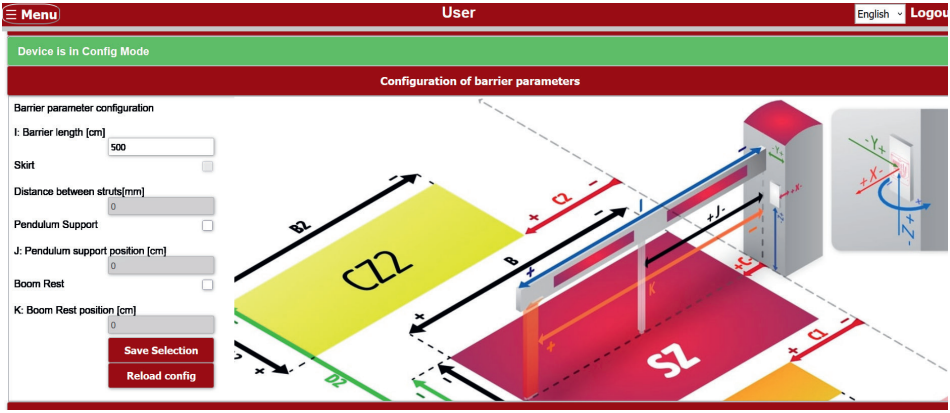


With “Moving through two zones”, you can specify whether an object must move through two zones to activate the switching output. If movement through two zones is active, the object must move through both comfort zones for the switching output to be activated.
This menu item is only visible if the “Virtual loop detector” checkbox is activated.

The settings “CZ1➞CZ2” and “CZ2➞CZ1” can be selected via “Sequence between Zones”. This setting is used to define the sequence that an object must pass through to activate the switching output.
This menu item is only visible if the “Virtual loop detector” checkbox is activated.

To restore the last configured and saved settings, press “Reload config”.
To confirm the configuration, press “Save Selection”.
An information window appears in front of the screen. This confirms the transfer of the data.

5.5.3 Configuration of barrier parameters



The barrier is defined under the configuration option “Configuration of barrier parameters”.
You can also select whether the barrier system contains a pendulum support or a boom rest and where these are located.

The length of the boom must be entered under “I: boom length [cm]”.

If the barrier system has a skirt, the “Skirt” checkbox must be activated.

As soon as the “Skirt” checkbox is activated, the distance between the struts must be entered in the field “Distance between struts [mm]”.

If the barrier system has a pendulum support, the “Pendulum support” checkbox must be activated.

As soon as the “Pendulum support” checkbox is activated, the distance of the pendulum support can be entered in the field “J: Pendulum support position [cm]”.

If the barrier system has a boom rest, the “Boom Rest” checkbox must be activated.

As soon as the “Boom Rest” checkbox is activated, the distance of the swing support can be specified in the field “K: Boom Rest position [cm]”.

WARNING!
The use of two sensors (one on each side) is mandatory for applications with barriers with skirt and/or boom rest if the product is used as a D-device in accordance with EN 12453.

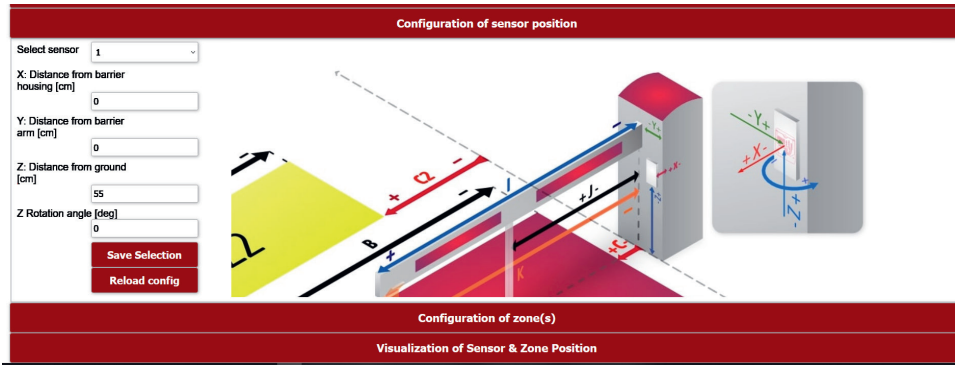
Barriers with boom rest learn their surroundings around the boom rest and can hide objects at the boom rest after 31 seconds.

Note
The unit for the distance between the struts of the skirt is measured in mm! This refers to the distance from center strut to center strut.

For barriers with skirt and pendulum support, ***only*** the “Skirt” function must be selected.
Both functions must be selected for barriers with a skirt and boom rest.

To confirm the configuration, press “Save Selection”. An information window appears in front of the screen. This confirms the transmission of the parameters.

5.5.4 Configuration of sensor position



Note
The sensor settings determine the position of the selected Sensor Unit in relation to the zero point. This is located directly below the barrier arm on the housing.

The X distance value describes the distance between the Sensor Unit and the front of the barrier housing. The greater the value, the further away the Sensor Unit is from the barrier housing in the direction of the boom.

The Y distance value describes the lateral distance from the center of the barrier boom to the Sensor Unit. If you look from the housing in the direction of the barrier boom, the Sensor Unit is on the left if the value is positive.

The Z distance value describes the distance from the floor to the Sensor Unit.

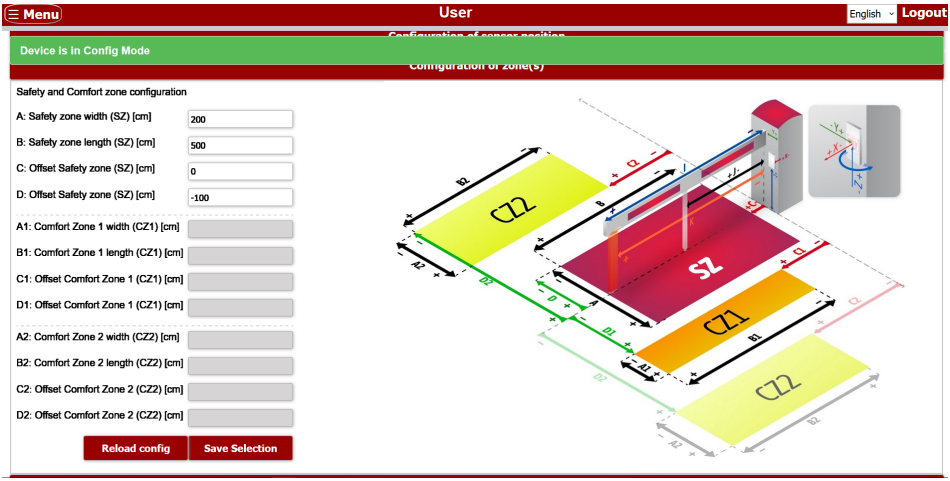
The Z-rotation angle value describes the lateral rotation of the Sensor Unit. If the value is positive, the Sensor Unit is rotated counterclockwise; if the value is negative, the Sensor Unit is rotated clockwise.

5.5.5 Configuration of zone(s)

This configuration menu is used to define the dimensions (length, width and positions) of the safety and comfort zones.

WARNING!
A safety zone (SZ) of ≥100cm must always be configured in the middle under the barrier.
Of the safety zone is positioned off-center, there must be at least 50 cm of safety zone on each side of the boom.

Note
If you look from the housing in the direction of the barrier arm, the comfort zones always extend to the left and in the direction of the housing. If the zones are to the right of the barrier arm, the offset defines the end of the zones. If the zones are to the left of the boom, the offset defines the beginning of the zones.



The dimensions of the different zones are defined with the following letters:
“A” defines the width of the zones in the Y direction.
“B” defines the length of the zones in the X direction.
“C” defines the offset of the zones from the boom in the X direction.
“D” defines the offset of the zones from the boom in the Y direction.

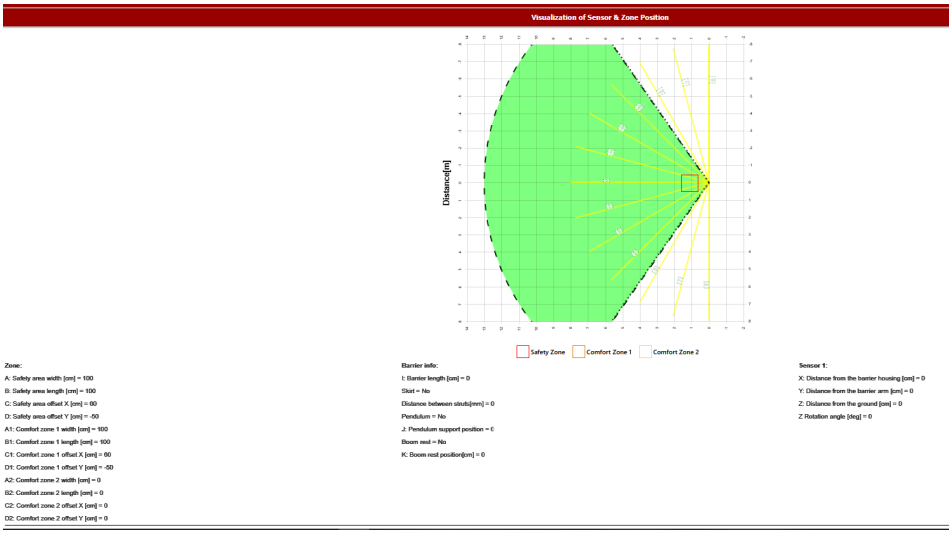
The following applies to the letters A and B: Positive numbers offset the zones in the direction of the end of the boom. Negative numbers offset the zones in the direction behind the barrier housing.

The following applies to the letters C and D: Positive numbers move the zones to the left. Negative numbers move the zones to the right.

To confirm the configuration, press “Save Selection”. An information window appears in front of the screen. This confirms the transfer of the transmission parameters.

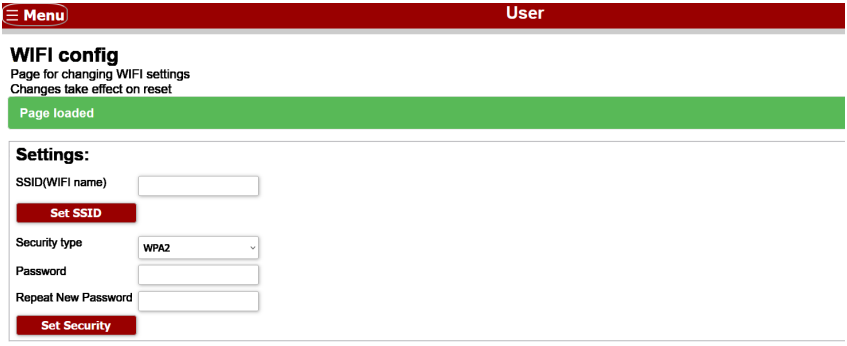
5.5.6 Visualization of sensor & zone position

The currently set configuration data can be viewed here as a live image and as a list below it without the system having to be learned in again.



5.6 Menu > WIFI-config

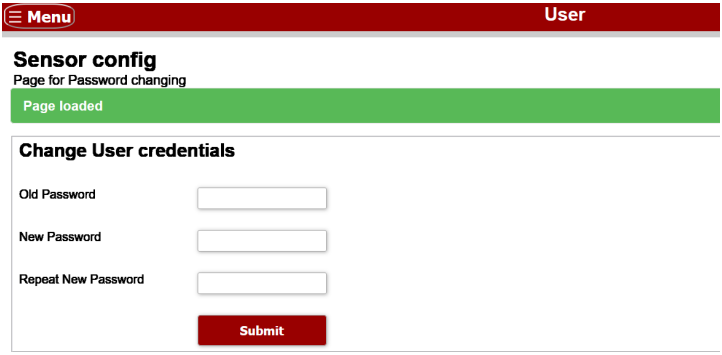
In the settings, you can define the SSID and the security level yourself and/or change the password. Once you have selected the SSID and/or the WIFI password, press the " Set SSID" button and the "Set Security" button. The device must be switched off and on again so that the parameters are applied and the new SSID is displayed in the WIFI connection.
If something has gone wrong and no connection can be established after the restart, press and hold the "Factory reset" button while the device is switched on.



It is strongly recommended that you keep the changed access data in a safe place. If necessary, the changed access data can be noted on the notes pages of these operating instructions.

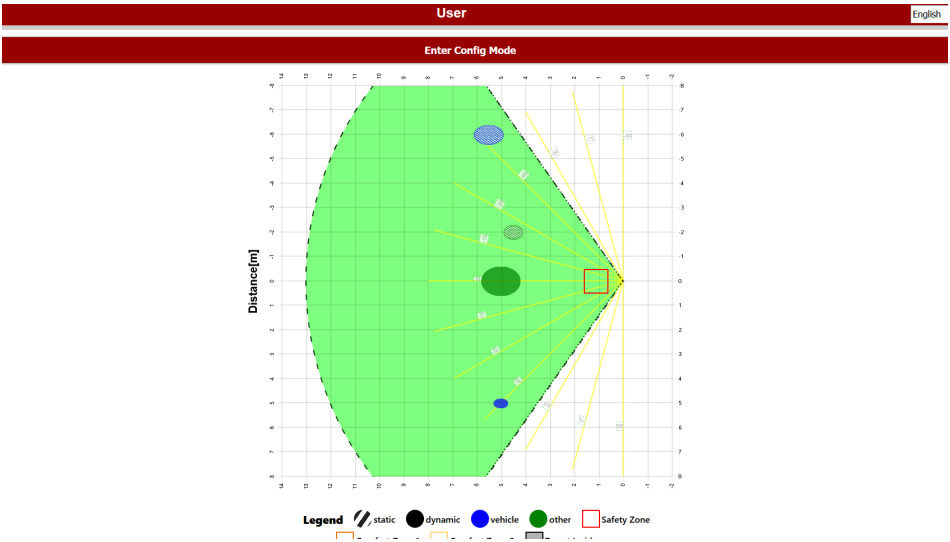
5.7 Menu > Change user credentials

An individual password for logging in can be set here. Press the “Save” button to apply the new setting. If something has gone wrong and no connection can be established after the restart, press and hold the “Factory reset” button while the device is switched on.



It is strongly recommended that you keep the changed access data in a safe place. If necessary, the changed access data can be noted on the note pages of these operating instructions.

5.8 Virtual loops



The LISENS scan is able to project virtual loop detectors in the monitored comfort zones. These enable the system to activate direction detection. The direction detection is set in the “Configuration of the switching outputs”. For example, an opening request can be reported when the barrier is approached.

6 Commissioning and function testing

The following basic aspects must be taken into account when using the LISENS scan:
- Avoid extreme vibrations.
- Do not cover the radar window.
- Avoid moving objects and other radar sources in front of the radar window.
- Avoid condensation.
- Avoid sudden and extreme temperature fluctuations.
- In environments where the temperature may fall below -10°C, the sensor should be switched on continuously.

To put the LISENS scan into operation for the first time, the system must be switched on and the barrier must be fully open. The area in front of the Sensor Unit must be empty or at least only contain objects that are permanently present in the area during operation.
Please note that permanently present objects may obscure the Sensor Unit's view of the defined zones and lead to dangerous situations.

When the safety radar is commissioned for the first time, no calibration is available and the device is in the initialization state. A configuration must be carried out via the user interface.

LED 1 / Power	LED 2 / SAFETY	LED 3 / COMFORT
Green on	Red on	Off

If the safety radar is configured, there are no faults and no object is detected in the monitoring field, the idle state is displayed on the Sensor Unit and the Control Unit (all LEDs are green).

6.1 Functionality test

The proper functioning of the radar sensor must be checked after start-up and after changes to the configuration. The test must be documented and stored so that it can be traced at any time. The requirements of the system/machine manufacturer must be observed and complied with.

The Comfort version of the radar sensor (D device in accordance with EN 12453) is checked for function by detecting a human body within the limits of the set zones for presence monitoring. Due to the current lack of technical specifications for the test objects, checking the zones with the test object A defined in the EN 12453 standard is not suitable for the measuring principle of a radar sensor and can lead to the test object A being illuminated and not being detected, even though the radar sensor guarantees the presence of a real person at all times.

Before the functionality test can be carried out, please ensure that the detection area is free of objects and other obstacles.

To test the functionality, connect the mobile device to the WiFi and switch to the "Live View" menu to start the live image. Here you can see the position of the configured zones and the detected objects. Then run through the virtual zones in reality and compare whether the zones trigger correctly on the mobile device. In addition, the test objects required for the application must be placed in the safety zone and recognized.

The function test must be documented as part of the safety inspection of the barrier. A new test is mandatory after 6 months at the latest.

Required components:
1x test box 200x300x700, alternatively a human body (replacement for test piece A (EN 12453) for use with radar)
1x angle reflector 0.17m²
1x Mobile device with internet browser

7 Error diagnosis and troubleshooting

When the safety radar is commissioned for the first time, no calibration is available and the device is in the initialization state.

LED 1 / Power	LED 2 / SAFETY	LED 3 / COMFORT
Green on	Red on	Off

If there are no faults in the safety radar and no object is detected in the monitoring field, the idle state is displayed on the Sensor Unit and the Control Unit (all LEDs are green).

The status of the LEDs on the Sensor Unit and the Control Unit indicates existing faults and activated output messages.

LED 1 / Power	Green on	Normal operating status, detection mode
LED 1 / Power	Green flashing fast	System boot, initialization mode
LED 1 / Power	Red on	General error, error status
LED 1 / Power	Red with 2 flashing pulses	Safety output test failed, error status
LED 1 / Power	Red with 3 flashing pulses	Data transmission between Control Unit and Sensor Unit interrupted
LED 2 / SAFETY	Blue flashing fast	Calibration of sensor environment in progress
LED 2 / SAFETY	Green on	The safety zone is not triggered
LED 2 / SAFETY	Red on	The safety zone is triggered or Configuration mode is active
LED 2 / SAFETY	Off	Error status; no objects recognizable in zones
LED 3 / COMFORT	Green on	Comfort zones are not triggered
LED 3 / COMFORT	Red on	Comfort zone 1 is triggered
LED 3 / COMFORT	Red with 2 flashing pulses	Comfort zone 2 is triggered
LED 3 / COMFORT	Red with 3 flashing pulses	Comfort zone 1 and 2 are triggered
LED 3 / COMFORT	Off	Error status; no objects recognizable in zones

7.1 General errors

Internal error. Press and hold the “Factory reset” button while the device is switched on. If the fault persists, the device is defective. Please replace the system.

7.2 Data transmission between Control Unit and Sensor Unit interrupted

Check the wiring between the Sensor Unit and the Control Unit and/or restart the system. Press and hold the “Factory reset” button while the device is switched on. If the fault persists, please replace the system.

7.3 No objects available

Check the wiring between the Sensor Unit and the Control Unit and/or restart the system. Press and hold the “Factory reset” button while the device is switched on. If the fault persists, please replace the system.

7.4 Disruption due to environmental influences

The safety radar is very well suited for harsh environments. If there is too much interference due to environmental influences, the system switches to the safe state. Restart the system./ Press and hold the “Factory reset” button while the device is switched on.

7.5 Mechanical failure

Misalignment due to an accident or vandalism can impair the detection capability. In order to avoid dangerous situations, a position sensor is installed to bring the system into a safe state if a misalignment or excessive force is detected.

8 Maintenance and servicing

The safety radar does not contain any user-serviceable components.

To clean the Sensor Unit, avoid direct pressure jets and the use of aggressive cleaning agents or chemicals. The Sensor Unit can be cleaned with compressed air or a clean and damp microfiber cloth.

To ensure that the safety system is designed in accordance with the DIN EN 12453 standard, the system must be checked for correct functioning by experts at suitable intervals. The inspection must be documented in a way that is traceable at all times. An inspection is mandatory after 6 months at the latest.

9 Decommissioning and disposal

The products manufactured by ASO are intended exclusively for commercial use (B2B). After use, the products must be disposed of in accordance with all local, regional and national regulations. ASO will also gladly take back the products and dispose of them properly.

10 Technical specifications

General information

Housing	Sensor: PC and black PUR casting compound Control Unit: PA6.6
Dimensions (HxWxD)	Depending on the mechanical housing
Protection category	Sensor: IP67 according to IEC 60529 Control Unit: IP20 according to IEC 60529
Protection class	III (SELV)
Weight	0.3 kg (one sensor and one evaluator, incl. mounting material)
Temperature range	-25 °C to +65 °C
HUmidity	0 to 95%, without condensation
Pollution degree	2

Radar signal detection

Radar frequency and bandwidth	60-64 GHz / 4 GHz
Azimuth	+/- 60°Tolerance zone, +/- 50° Detection zone
Elevation	+/- 20°Tolerance zone, +/- 15 ° Detection zone
Distance and speed	Up to 13 meters and maximum speed of 6,79 m/s
Detection capability	Elevation +/- 17° Azimuth up to 9m +/- 57°, up to 13m +/- 50° Distance 13 meters when using angled reflector RCS=0,17m²

Power supply

Operating voltage	10V up to 30V DC / 14V up to 27V AC
Current consumption	Approx. 220 mA (up to 24V DC with one sensor)
Power consumption	Approx. 5,28 W (up to 24V DC with one sensor)

Output switching unit

Potential free safety relays	Rated current: 1 A (30 V DC), 1 A (27 V AC) Mechanical lifespan: >106 operations Utilization Category: AC-15 (30V AC; 1A; 800000 Op.), DC-13 (30V DC; 1A; 950000 Op.), 1 sec. switch-on delay
FSS output signal	Pulsed signal, 1kHz, 50% switch-on time, max. 24V 100mA
Output signal 8k2 simulation	quiescent current, max. 5V, with testing
Response time	<=100 ms
Comfort relay	500mA at 30V DC
AUX Relais	500mA at 30V DC, potential free

Other

WIFI-Frequency and bandwidth	2,4 GHz / 200 MHz

Safety characteristics

LISENS scan	MTTFD 300 Years, DC >99%, PFHD 2,29*10-7 1/h
Protective system	„D“-Additional device according to EN 12453

All voltages connected to the safety radar must be safely isolated voltages!

Protection class III
(Protective insulation)

11 Declaration of conformity

EG - Konformitätserklärung
EC Declaration of conformity
Déclaration de conformité CE

Hiermit erklären wir, dass die nachfolgend bezeichneten Produkte der Baureihe

LISENS scan SUC1-1240E
LISENS scan SUC2-1240E
LISENS scan CUC2-2BA
LISENS scan CUC2-2BC1
LISENS scan CA-B-Set 1
LISENS scan CC1-B-Set 1

aufgrund ihrer Konzipierung und Bauart sowie in der von uns in Verkehr gebrachten Ausführung, den einschlägigen grundlegenden Sicherheits- und Gesundheitsanforderungen der nachfolgenden EG-Richtlinien und Normen entsprechen:

2006/42/EG
EN 12453*
2014/53/EU - RED
2011/65/EU; 2015/863/EU - RoHS
(EG) Nr. 1907/2006 - REACH

*nur „D"-Zusatzeinrichtung (Anwesenheitserkennung, Ersatz Lichtschranke)

Alle technischen Daten für diese Produkte werden sicher aufbewahrt und werden erforderlichenfalls der behördlichen Marktaufsicht auf Anfrage zur Verfügung gestellt.

Diese Konformitätserklärung entbindet den Konstrukteur/ Hersteller der Maschine nicht von seiner Pflicht, die Konformität der gesamten Maschine, an der dieses Produkt angebracht wird, entsprechend der EG-Maschinen-richtlinie sicherzustellen.

Hersteller und Dokumentationsbevollmächtigter

ASO GmbH
Hansastr. 52
D-59557 Lippstadt
Lippstadt, 05.05.2025

We hereby declare that the following products of the model range

LISENS scan SUC1-1240E
LISENS scan SUC2-1240E
LISENS scan CUC2-2BA
LISENS scan CUC2-2BC1
LISENS scan CA-B-Set 1
LISENS scan CC1-B-Set 1

satisfy the relevant essential health and safety requirements of the EC directives and standards listed below on account of its design and construction, as does the version brought to market by us:

2006/42/EG
EN 12453*
2014/53/EU - RED
2011/65/EU; 2015/863/EU - RoHS
(EG) Nr. 1907/2006 - REACH

*only "D"-Device (Presence detection, light barrier replacement)

All technical data for these products are securely stored and, if necessary, made available to regulatory market surveillance upon request.

This declaration of conformity does not relieve the designer / manufacturer of the machine from his obligation to ensure that the conformity of the entire machine to which this product is attached satisfies the corresponding EC directive.

Manufacturer and attorney of documents

Par la présente nous déclarons que les produits suivants de la série

LISENS scan SUC1-1240E
LISENS scan SUC2-1240E
LISENS scan CUC2-2BA
LISENS scan CUC2-2BC1
LISENS scan CA-B-Set 1
LISENS scan CC1-B-Set 1

de par sa conception et sa construction, ainsi que dans les modèles mis en circulation par nos soins, répondent aux exigences de base pour la sécurité et la santé des directives et normes CE suivantes:

2006/42/EG
EN 12453*
2014/53/EU - RED
2011/65/EU; 2015/863/EU - RoHS
(EG) Nr. 1907/2006 - REACH

* dispositif additionnel « D » seulement (Détection de presence, remplacement de la barrière lumineuse)

Toutes les données techniques relatives à ces produits seront conservées en toute sécurité et, seront mises, sur demande, à la disposition des autorités de réglementation.

Cette déclaration de conformité ne délie pas le constructeur / fabricant de la machine de son obligation d'assurer la conformité de l'ensemble de la machine à laquelle ce produit est apposé selon la directive CE.

Fabricant et agent de documentation

H. Friedrich
- Geschäftsführer - CEO - Gérant -

CE

12 FAQ

Trouble	Actions
No WIFI appears for a connection.	Wait about 30 seconds after switching on so that the detected WIFI networks are updated. Update the displayed networks on your end device. Switch the radar sensor off and then on again after 5 seconds. Carry out a “Factory Reset”. If the problem persists, call support.
The WIFI connection cannot be established.	Check that the user name and password entered are correct. Make sure that no other devices are connected to the network. Carry out a “Factory Reset”. If the problem persists, call support.
The connection to the domain cannot be established (login).	Check whether the correct domain address has been entered. Check whether a sufficient connection to the radar sensor has been established. Clear the cache of your browser. Make sure that you are not using a VPN (this includes Apple‘s own Private Relay service). For IOS devices, set the “limit up address tracking” setting to Off. Switch off mobile data so that no DNS is executed via the Internet. If the problem persists, call support.
The radar system sees objects even though they do not exist.	Check the configuration settings. Calibrate the device again. If the problem persists, call support.
A person is recognized as a vehicle in a zone.	It is normal functional behaviour if the radar sensor has detected a large reflective area for an object. No action is required. This effect can occur if a person is standing close to an object in the detection zone or if several people are standing next to each other. If the radar sensor detects an object as a vehicle, it always remains a vehicle even if the reflective surface is subsequently reduced.
A vehicle is not classified as a vehicle.	The alignment of the sensor and the surroundings (e.g. barrier with curtain) have an influence on the object classification. Object classification works best when the sensor is aligned in such a way that the objects, e.g. vehicles, approach the sensor. The sensor is therefore not aligned parallel to the barrier. Solution 1: Rotate the sensor Solution 2: Set object classification to “Both
There is no Log in possible after doing a „Factory reset“.	Restart the Control Unit. If the problem persists, retry „Factory reset“ again.
The „Factory reset“ cant be executed.	The Sensor Unit is not connected or is not connected accordingly.

13 Notes on WIFI connection and login

The changed access data for the WiFi connection can be entered here so that registration for a service is subsequently possible.

Connection WIFI

SSID	LISENS-scan-WIFIXXX XXX (XXX= last **three** digits of the ASO serial number)
Passwort	ASO-safety-XXXXX (XXXXX= last **five** digits of the ASO serial number)

User login

Username	User
Passwort	LISENS-scan

Connection WIFI

SSID	
Passwort	

User login

Username	
Passwort	

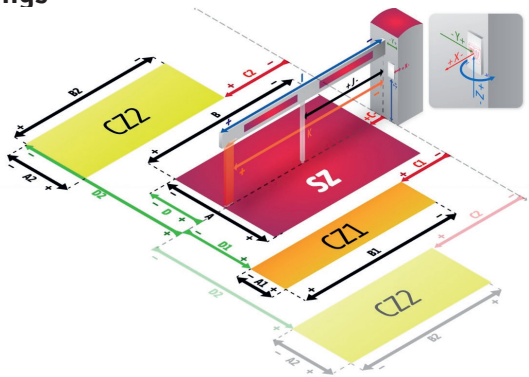
Connection WIFI

SSID	
Passwort	

User login

Username	
Passwort	

14 Notes on parameter settings



Sensor	
X-Offset [cm]	
Y-Offset [cm]	
Z-Offset [cm]	
Z-Inclination [Degree]	
Sicherheitsbereich [cm] Safety Area Width	
Sicherheitsbereichslänge [cm] Safety Zone Length	
Schrankenbaumbreite [cm] Boom Width	
Schrankenbaumlänge [cm] Boom Length	
Mit Hängegitter With Skirt	
Komfortzone 1 active	
Komfortzone 2 active	
Komfortzone 1 [cm] Warning Zone 1 Width	
Komfortzone 2 [cm] Warning Zone 2 Width	
Distance Komfortzone 1 [cm]	
Comfort zone orientation	
Comfort zone direction	

15 Notes

LISENS®
scan

ENGLISH

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Subject to technical changes.
No liability can be accepted for errors and misprints.

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https://www.asosafety.de/fileadmin/user_upload/downloads/pdfs/produkte/Operating_Manual_ASO_Radar_Sensor.pdf