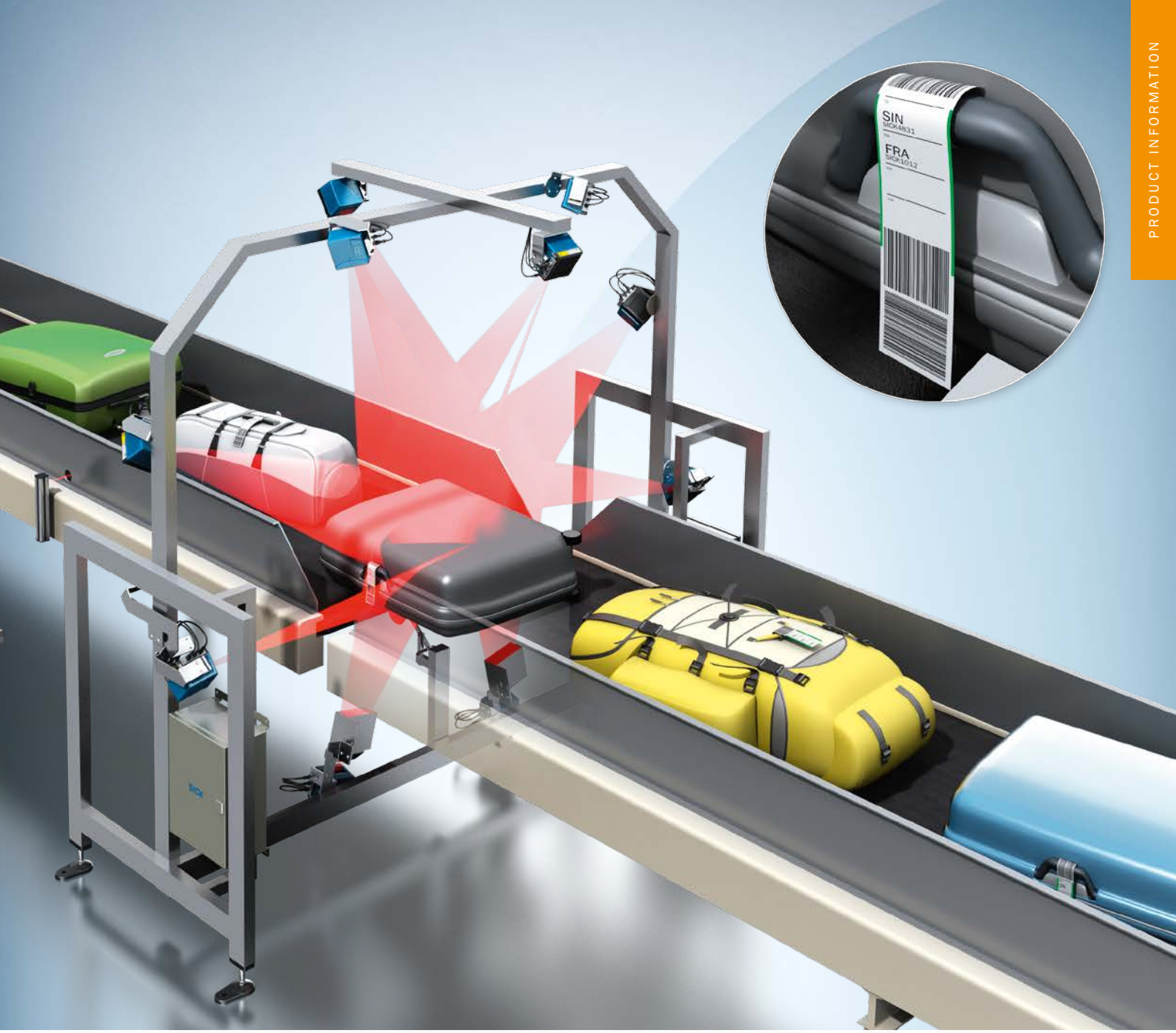
PRODUCT INFORMATION



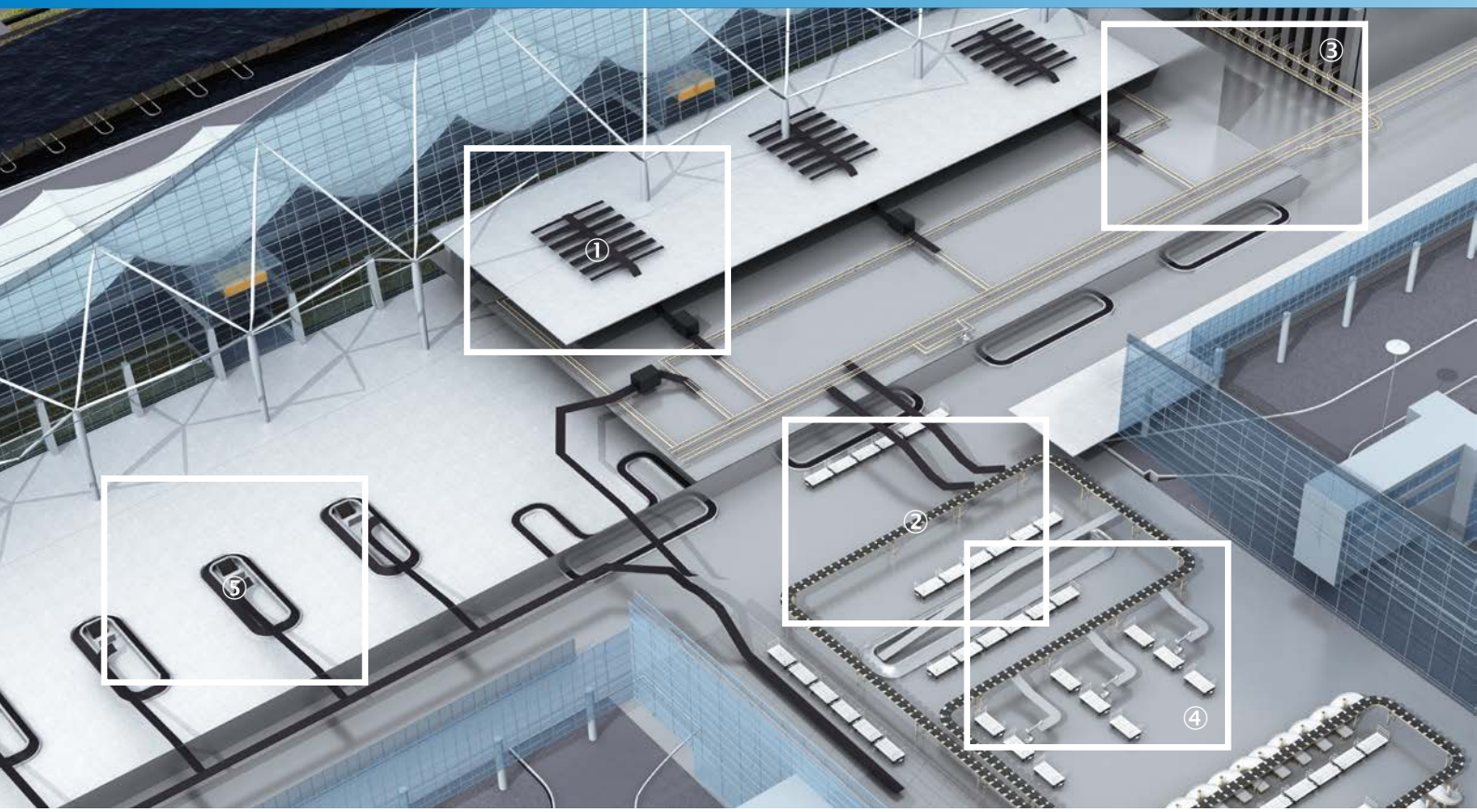
ALIS

RAPID AND RELIABLE AIRPORT LUGGAGE IDENTIFICATION - GUARANTEED.

Track and trace systems

SICK
Sensor Intelligence.

IDENTIFY, TRACE AND MEASURE LUGGAGE RELIABLY



① Bag drop off: bag drop at an unmanned counter
② Sorting and transport: baggage sorting according to destination and transport within the airport
③ Early baggage storage: storage of bags which are dropped off before official check-in starts
④ Automated flight make-up: baggage is loaded into the intended flight containers with the help of robots
⑤ Baggage reclaim: bag drop to the passenger at the reclaim carousel

A prerequisite for secure and reliable airport operations is smooth transport of bags within the usually kilometer-long airport conveyor systems. The reliable sorting and routing of suitcases, bags or backpacks to the correct sorting zone must be ensured while doing so. To make sure baggage moving in the conveyor and sorter systems of the airport does not reach an incorrect sorting zone or even get lost, the baggage must be clearly identifiable and traceable. In addition, information on a bag's size, weight and volume is required for transport.

SICK provides clever identification solutions for baggage handling. These feature uniform electric and technical connectivity, an identical user interface, and a uniform accessory concept. The devices are also compatible and interchangeable with one another. This compatibility is known as 4D*pro*. 4D*pro* allows for flexibility when selecting technology and is therefore future-proof. Our range of services covers everything from ideas and consulting to implementation and after-sales service on site.

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MODULAR DESIGN OF FLIGHT BAGGAGE READING GATES:

Rapid and reliable flight baggage handling with ALIS

Track-and-trace systems from SICK identify 1D and 2D codes, read and write to RFID tag labels, and provide high-resolution images for downstream processes (video coding, OCR, etc.). Furthermore, these systems provide volume and weight measurements and verify the contours of objects.
SICK developed the ALIS (Airport Luggage Identification System) track-and-trace system specially for baggage handling at airports. It is constructed as a reading gate and reads reliably and in accordance with the standards of the International Air Transport Association (IATA) 1D bar codes and RFID tag located on flight baggage transponder for labeling and clear assignment of flight luggage. Depending on the version, ALIS achieves read rates of up to 99% – even if the quality of the printed bar code label is critical.
SICK therefore helps your baggage handling systems to guide the baggage through the airport quickly and reliably, either via belt conveyor or curved tray sorter. From the electronic components to the diagnosis and visualization software, commissioning and worldwide 24/7 service support, SICK offers a modular concept that can be adapted to your individual requirements. A high level of operational safety and efficiency as well as professional project management goes without saying. Airport operations are not impaired during the entire runtime of the project.


IATA bar code reading

Reading and writing RFID tags


Picture of the bag


Interaction monitoring


Weight determination


Classification

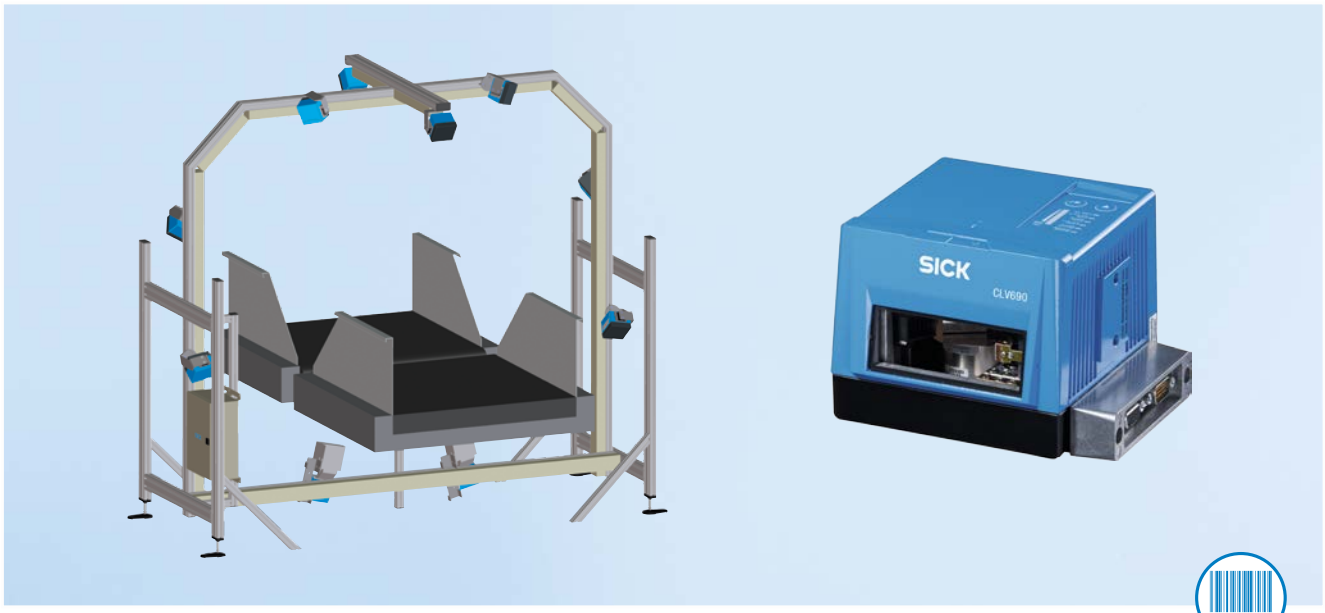

Height determination


Oversize detection


Volume determination


Security

ALIS – THE RIGHT IDENTIFICATION SOLUTION FOR YOUR BAGGAGE CONVEYOR SYSTEMS



ALIS – identification with laser

ALIS – identification with laser

ALIS with laser technology has been available on the market for more than 20 years. The many years of experience with the use of ALIS with laser technology at airports worldwide helps the application specialists from SICK to continuously optimize the system. This has made this version of ALIS the most reliable solution for the dependable identification and routing of airport baggage which is labeled with a 1D bar code. Position and rotation of bar codes do not play a role during this process. A color IP camera can take complete pictures of bags; these can be saved together with the bar code in the superior control system. This makes it easy to prove that a bag was already damaged before handling, for example.
The most important components of the system are laser-based bar code scanners of the CLV series.

Your benefits:

- High read rates of up to 99% and more, even with dirty and damaged bar codes, ensure the highest availability
- IATA-suitable bar code reading for the ability to adapt to the future
- worldwide regarding technology and efficiency
- Simple commissioning and maintenance
- Single host interface
- 100% redundant design
- Integration into the SICK software and visualization platform and extensive diagnostic options facilitate proactive maintenance and help prevent failures

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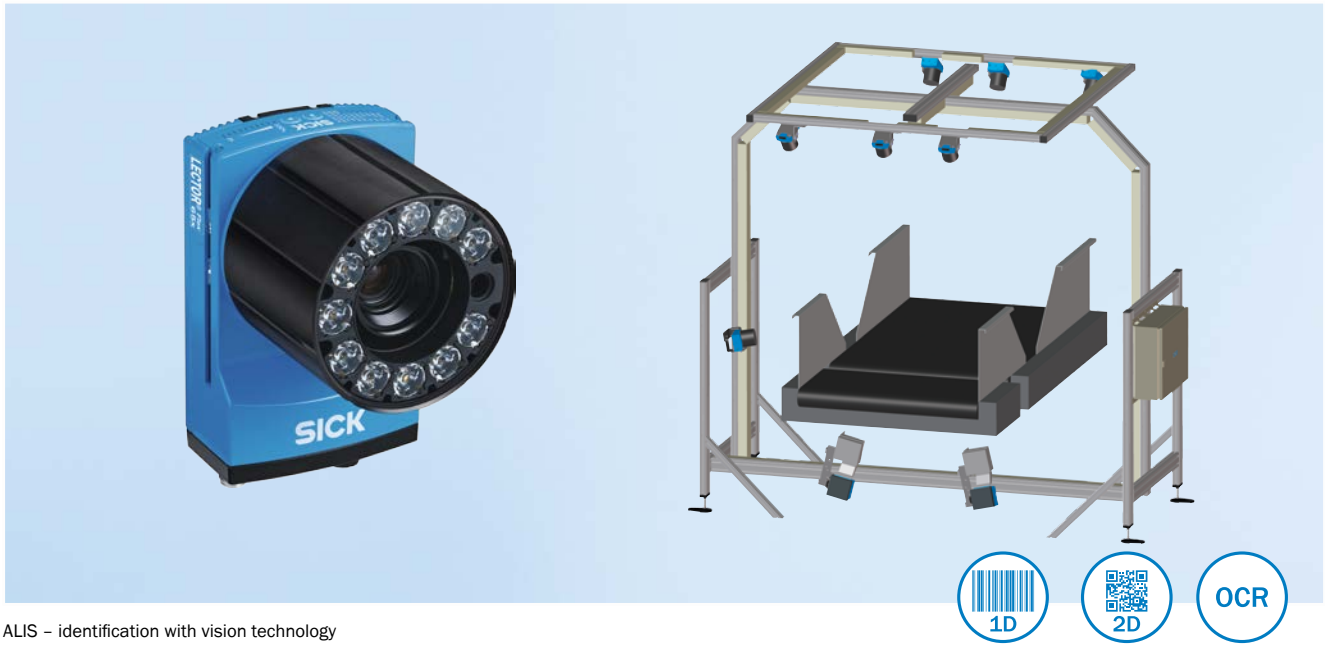
ALIS – identification with vision technology

In addition to identification of bar codes, ALIS provides images for plain text reading with vision technology from SICK via a matrix camera. Moreover, complete images of baggage can be taken with a color IP camera; these can be saved together with the bar code in the superior control system. This makes it easy to prove that a bag was already damaged before handling.
The most important components of the system are image-based code readers of the Lector® series for image recording and for omni-directional reading of 1D and 2D codes. Another version of ALIS with vision technology combines the Lector65x image-based code readers with laser-based bar code scanners of the CLV series.

Your benefits:

- Capable of plain text detection (OCR = Optical Character Recognition)
- High read rates of up to 99%
- IATA-suitable code reading for the ability to adapt to the future worldwide regarding technology and efficiency
- Complete and high-resolution image recording, also from below as an option
- Simple commissioning and maintenance
- Single host interface
- Integration into the SICK software and visualization platform and extensive diagnostic options facilitate proactive maintenance and help prevent failures



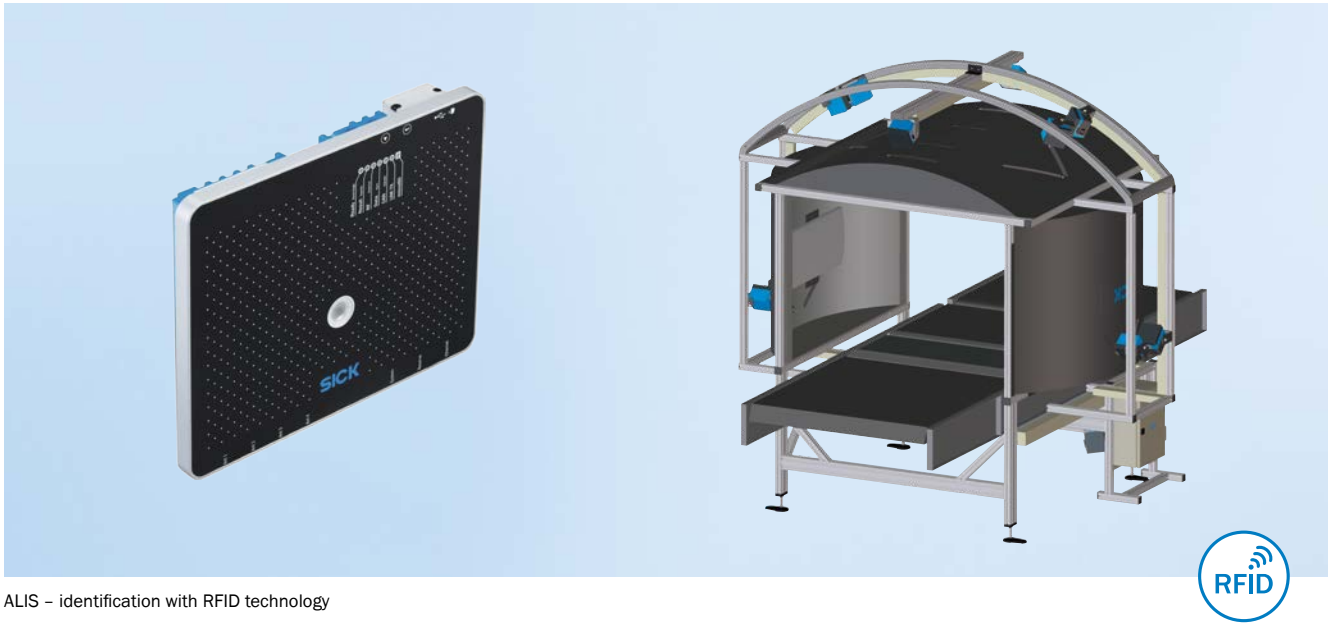
ALIS – identification with vision technology

ALIS – identification with RFID technology

In this solution for identifying baggage, the ALIS is based on RFID technology (radio frequency identification). The particular advantage: when identifying IATA transponders attached to baggage, no direct visual contact to the transponder is necessary. This facilitates reliable tracing of baggage and can prevent baggage from getting lost.
The most important components of the system are read/write devices of the RFU product family for reading and writing IATA RFID tags. ALIS with RFID technology fulfills the requirements of the global IATA standards and its transmission characteristics are specified for the UHF bandwidths approved for Europe, the USA and other countries.

Your benefits:

- High read rates of up to 99% and more
- IATA-suitable RFID tag reading for the ability to adapt to the future worldwide regarding technology and efficiency
- Larger scanning ranges due to UHF technology
- Simple commissioning and maintenance
- Single host interface
- 100% redundant design
- Integration into the SICK software and visualization platform and extensive diagnostic options facilitate proactive maintenance and help prevent failures



ALIS – identification with RFID technology

ALIS – for measuring bags

To protect conveyor and safety systems and to manage baggage volumes at the airport, it is important to know the exact dimensions of the bags. This ALIS version therefore detects the length, width and height of bags. The loading areas in airplanes can be optimally utilized with this data. Another ALIS version is available specially for oversize detection.

Your benefits:

- Volume measurement
- Height detection
- Oversize detection
- Simple commissioning and maintenance
- Single host interface
- 100% redundant design
- Integration into the SICK software and visualization platform and extensive diagnostic options facilitate proactive maintenance and help prevent failures

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ALIS – for measuring bags

ALIS – for identification and measuring of baggage

This ALIS version for identification and measuring of baggage unites the benefits of bar code and RFID transponder identification as well as volume measurement. It leads to nearly 100% reading reliability and dependable traceability. Lost baggage is a thing of the past and smooth handling of bags – even transfer luggage – is ensured. Volume measurement can also be integrated seamlessly into the identification system. The most important components of the system are laser-based bar code scanners of the CLV series and image-based code readers of the Lector® series for bar code reading. Also important are read/write devices of the RFU product family for reading and writing IATA RFID tags as well as measuring laser scanners of the LMS series or light grids of the MLG product family for measuring the volume of bags.

Your benefits:

- Very high read rates of up to 100%
- IATA-suitable bar code and RFID tag reading for the ability to adapt to the future worldwide regarding technology and efficiency
- Larger scanning ranges due to UHF technology
- Simple commissioning and maintenance
- Single host interface
- Integration into the SICK software and visualization platform and extensive diagnostic options facilitate proactive maintenance and help prevent failures

ALIS – for identification and measuring of baggage

EFFICIENT MANAGEMENT OF BAG CONVEYOR PROCESSES – RELIABLE STORAGE OF BAG DATA

Identification solutions from SICK read encrypted data on baggage tags which is necessary for clear identification and routing of bags. The sensors attached to the reading gates forward this data to the central control unit so that it can be processed and made available to the host in the desired form. The information on a bag is stored in a data bank. This makes it possible to trace a bag without any gaps. Furthermore, the control unit makes this information available to the SICK visualization platform so that all routing processes are represented in the baggage conveyor and sorter systems. You can therefore get a complete overview which facilitates the coordination of all baggage conveyor processes in the entire airport, thereby enabling smooth handling of bag transport.

Your benefits:

- Single host interface
- Integrated standard protocols: SICK standard protocol, customer protocols, FTP protocols
- Interfaces for OCR/VCS functions

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IMAGE RECORDING AND TRANSMISSION IN REAL TIME

JPEG compressor

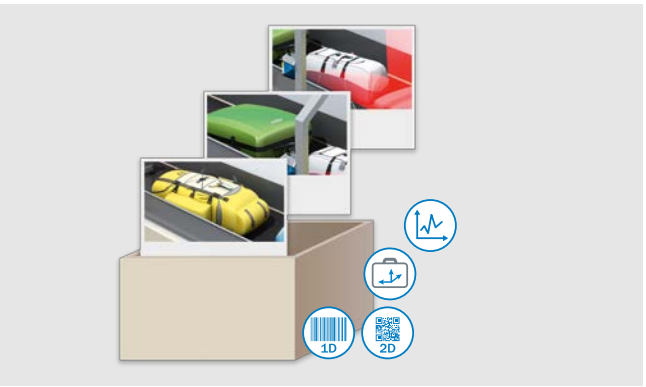
The JPEG compressor can change the quality of the image to suit the application. Settings range from very high quality for OCR scanning to very high compression for image archiving. The resource-intensive processing of raw data takes place directly on the integrated hardware of the camera system. This means that decoding performance is not compromised.

OCR and video coding

If the system cannot read a code, or if there is no routing information stored in the database for a particular ID code, video coding or OCR (optical character recognition) can be used to read the address information from the image generated by the camera systems. Thanks to the ROI (region of interest) data generated in the camera system, the image can be processed in a minimum amount of time. The package can remain on the sorter during this time, which greatly reduces the number of objects/bags that must be processed subsequently by hand.

Archiving image data

Archived image data allows all shipments captured by the camera to be tracked in full. All images and additional object/bag data, such as volume and bar codes, are displayed on a customized interface. “No reads” can also be analyzed offline. This makes the system highly transparent, since systematic errors (defective printers, etc.) can be identified and corrected based on the images.



Multiple output channels

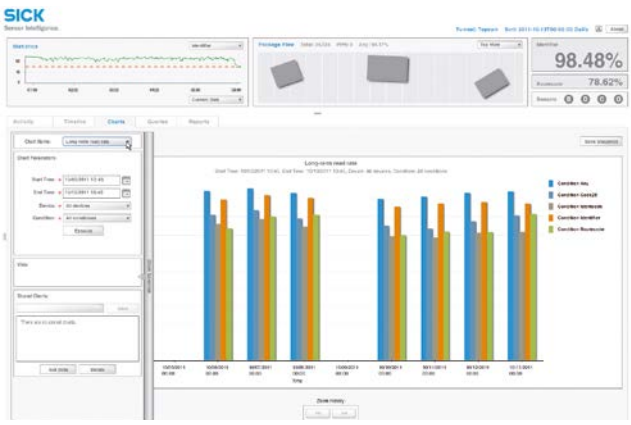
The camera makes an image output channel and two data output channels available. This makes it possible for the user to send an image to a destination or a receiver. The data, on the other hand, can be sent simultaneously to various destinations or receivers.

VISUALIZATION IN REAL TIME – ANALYTICS SOLUTION

There are hidden treasures buried in your data. We will show you where.

Analytics Solutions is a high-performance, web-based client/server system that maximizes transparency across the entire identification and sorting process. The software compiles all of the information relating to an object – including the bar code, volume, weight, image data, and video data – to streamline analysis. What's more, Analytics Solutions also monitors all camera, laser scanner, and RFID systems from anywhere in the network. This makes it easy for the operator to check the performance and status, identify errors and implement countermeasures. Analytics Solutions is much more advanced than a typical visualization of the process status. The wealth of recorded data stored in the database forms a solid basis for carrying out targeted analyses. By detecting repeated process patterns, anomalies and their relationships, a baggage handling system operator can continually optimize the processes. This makes it possible to create and simulate root cause analyses, trend forecasts and what-if scenarios. Analytics Solutions is currently the only tool on the market that allows for these analyses regardless of the scanning technology used.

Analyze your baggage handling system on-site or remotely. Problematic bags are highlighted



Key characteristics and advantages

- Analysis and visualization of individual systems all the way to complete baggage handling systems in real time
- Integration of all identification systems, regardless of the technology used (camera, laser, RFID)
- Performance and status check of all systems using all key parameters, from the read rate to bar code quality
- Live view of the baggage flow with display of all data, including the code, dimensions, weight and image for each bag

Statistics

- Baggage tracking across all baggage handling systems in the entire network
- Scanning to determine recurring patterns, such as long-term label quality, so that recommendations for process improvements can be given to the baggage handling system operator
- Analysis of what-if scenarios to improve load distribution and utilization of capacity across different time periods and under full load conditions

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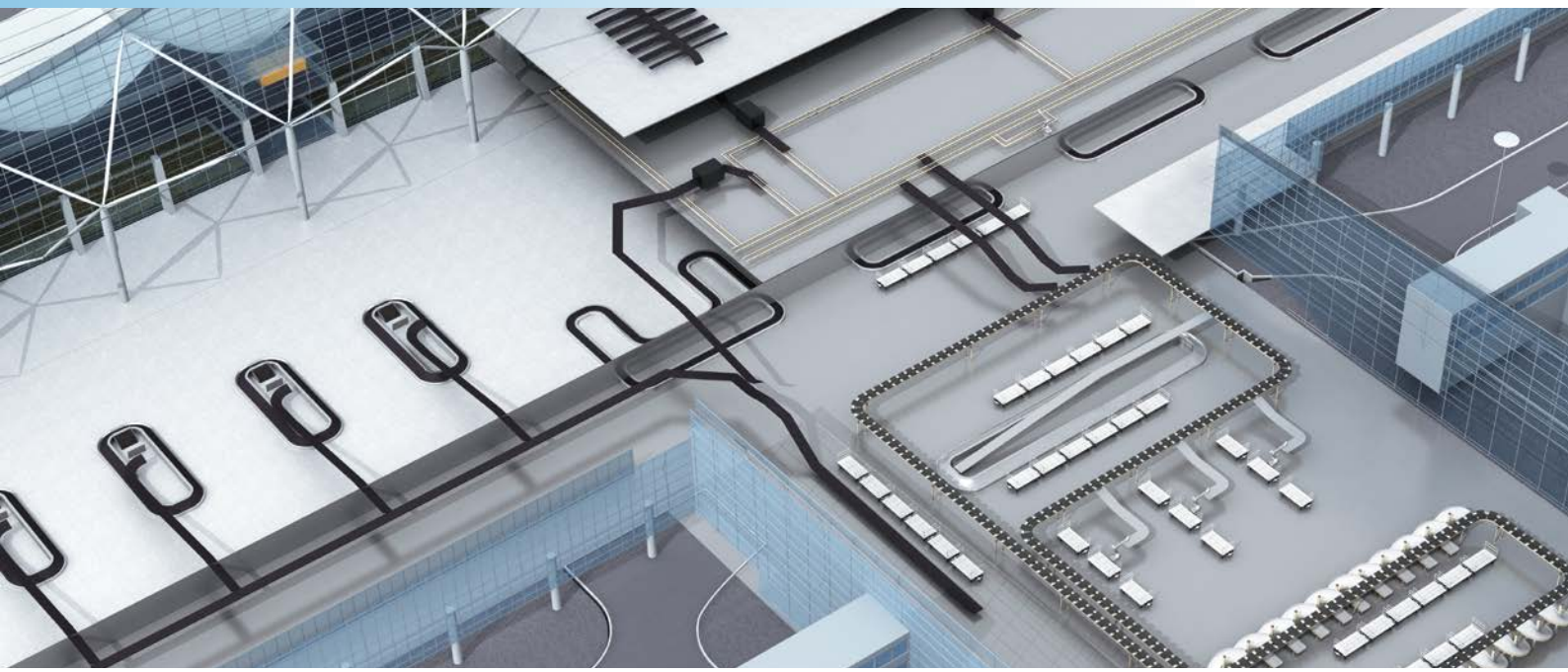
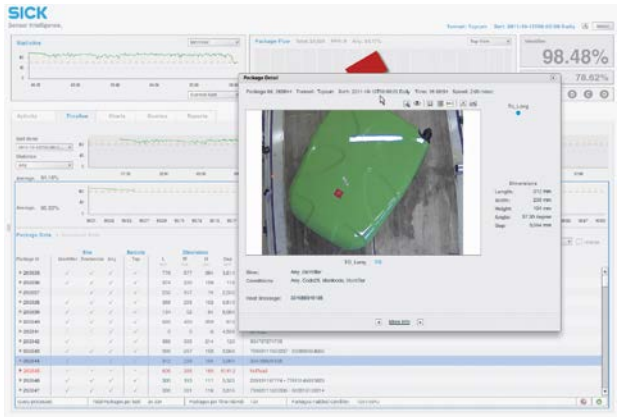
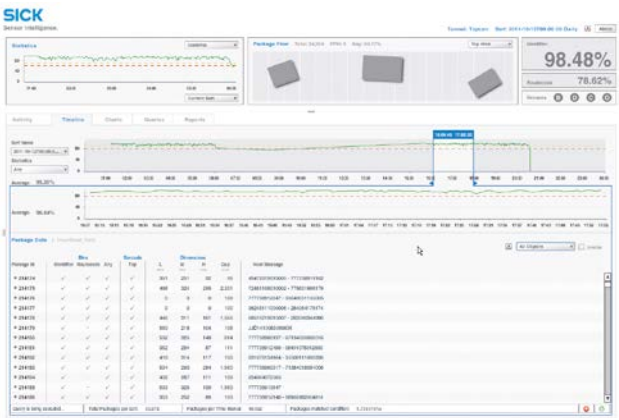




Detailed bag information

- Direct access to all baggage data, including camera image, evaluation of condition and system messages
- Root cause analysis of “no reads” based on standard code criteria and knowledge-based decoding attributes to determine the effects on internal and external factors



Data archiving

- Improved remote diagnostics and maintenance from SICK thanks to access to all relevant data
- Fully integrated archiving solution for all images and associated baggage data
- Effective database search using criteria such as ID, distance, multiple reads or oversize for trend analysis, checking the code quality, etc.

RAPID AND RELIABLE AIRPORT LUGGAGE IDENTIFICATION – GUARANTEED.

Product description

With the ALIS (Airport Luggage Identification System) track and trace system, luggage can be clearly identified as it is transported quickly and reliably through the airport, meaning you can rest assured of it reaching the right sorting zone. Designed like a reading interval gate, SICK has developed ALIS specifically with luggage handling services in mind. The system is extremely reliable when it comes to reading luggage information on IATA bar codes and RFID tagged labels. With ALIS, SICK has created a modular system which can be specially adapted to suit the various requirements of airport luggage identification and handling processes, whether this involves sensors, other electronic components, visualization software, or even the commissioning process.

At a glance

- 100% redundant design (optional)
- Suitable for belt conveyors and container-type sorters
- Very high read rates
- Suitable for IATA bar codes and RFID tags
- Focus on bags and code reading in real time
- Tried-and-tested high-performance sensors

Your benefits

- Even capable of reading soiled and partially covered bar codes and RFID tagged labels to reduce the need for manual bag processing downstream
- Individual sensors can be replaced quickly thanks to quick-clamp devices and parameters which can be stored in the sensor connection and cloning plug
- High operational safety
- Low maintenance and easy to operate

CE

Additional information

➜ www.sick.com/ALIS

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

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Detailed technical data

The exact device specifications and performance data of the product may deviate from the information provided here, and depend on the application in which the product is being used and the relevant customer specifications.

General notes

Items supplied	Sensors Controller unit Mounting material Frame

Features

Reading unit	Laser scanner Matrix camera Line camera
Controller	Controller unit
Laser class	2 (IEC 60825-1 (2007-3)) and 1 (IEC 60825-1 (2007-6)), eye-safe for laser scanner 1M (IEC 60825-1 (2007-3)), correlates with 21 CFR 1040.10, except of deviation according „Laser Notice No. 50“ from June, 24th 2007
MTBF	CLV: 100.000 h Lector: unkown LMS: unknown MSC: > 80.000 h
MTTR	< 10 min
Applications	Identification of luggage
Field of application	Luggage transportation system at airports
Amount object sites/cameras	1 ... 6
Conveyor type	Belt and tray sorter
Number of main components	Laser scanner: 2 ... 14 Matrix camera: 6 ... 8 Line camera: 1 ... 4 1 ... 2 1 ... 2

Performance

Code types	IL 2/5 (IATA resolution 740) RFID (IATA RP 740C)
Maximum object size	L + B + H = 1580 mm (flight luggage)
Minimum object distance	50 mm, label gap 400 mm, RFID
RFID standard	ETSI FCC

Interfaces

Serial (RS-232, RS-422/-485)	✔ (4)
Function	Host AUX
Data transmission rate	300 Baud ... 115,200 Baud, AUX: 9,600 baud
Ethernet	✔ (3)
Data transmission rate	10 MBit/s / 100 MBit/s
Protocol	TCP/IP FTP Half/full-duplex

CAN bus	✔ (2)
Function	SICK CAN sensor network
Data transmission rate	10 kbit/s ... 1 Mbit/s
Protocol	CANopen, CSN (SICK CAN sensor network)
PROFIBUS DP	✔
Data transmission rate	12 MBaud
Digital switching inputs	✔ (14), PNP, configurable, short-circuit proof
Digital outputs	✔ (4), potential-free
Output data	Customized data output string

Mechanics/electronics

Supply voltage	100 V AC ... 264 V AC
Mains frequency	50 Hz ... 60 Hz
Frame	Standard Customized

Ambient data

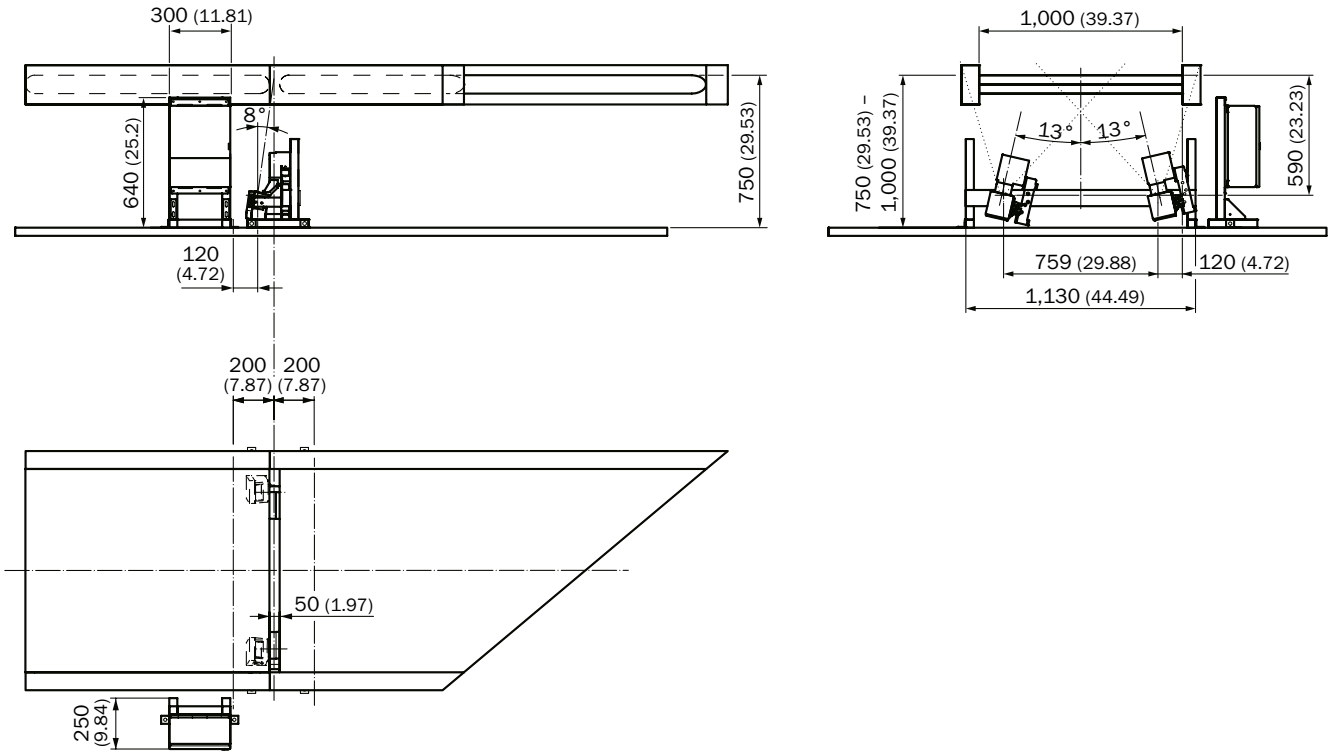
Permissible relative humidity	90 %, Non-condensing

Ordering information

Application	Type	Part no.
Identification of luggage	ALIS	On request

Dimensional drawings (Dimensions in mm (inch))

ALIS 90° with laser



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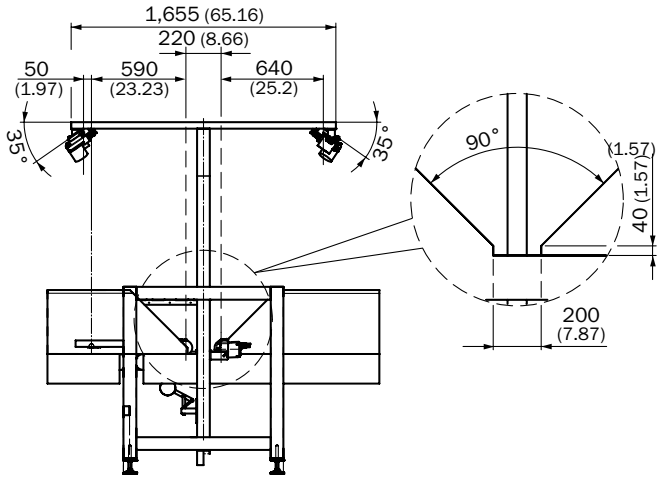
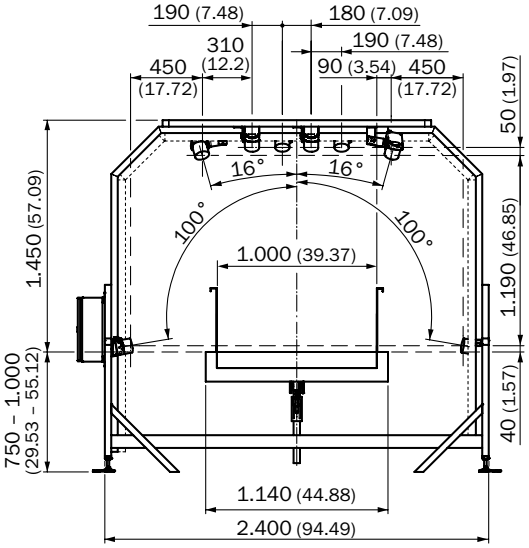
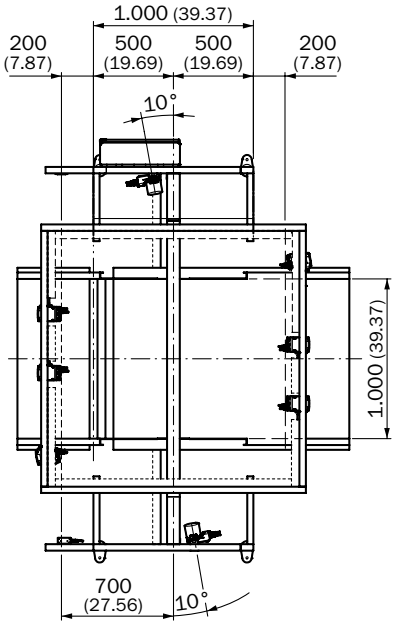
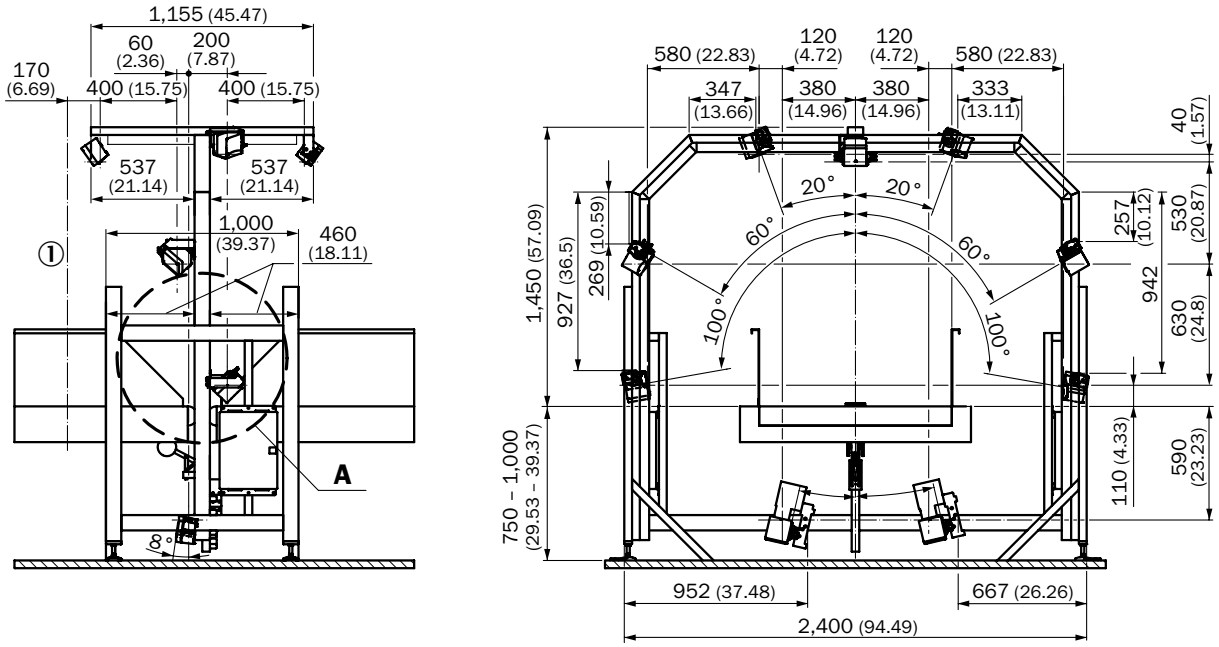
ALIS 270° with matrix camera

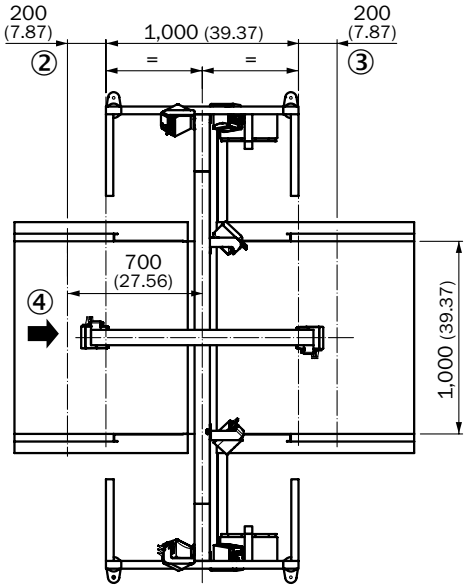


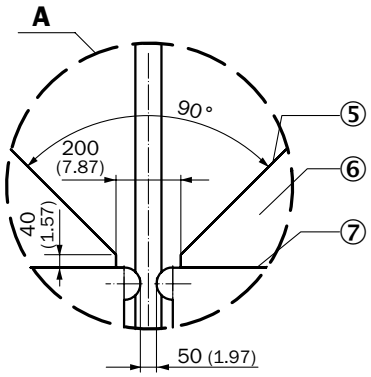




ALIS 360° with laser







Accessories

Mounting systems

Other mounting accessories

Figure	Brief description	Type	Part no.
	Mounting set for color IP camera (6048278)	Mounting set color IP camera	2060086
	Quick-action lock system for mirror hood frame mounting	Mounting set mirror hood	2033579

Connection systems

Power supply units and power cord connectors

Figure	Brief description	Type	Part no.
	Power supply PoE for color IP camera dome (6055384)	Power supply PoE (dome)	6055385

Reflectors and optics

Mirror adapters

Figure	Brief description	Type	Part no.
	External mirror hood (0°) to reduce reading distance between two closely spaced conveyor	Mirror hood	2074535

Further accessories

Hardware

Figure	Type	Part no.
	Color IP camera	6048278
	Color IP camera dome	6055384

Sets and kits

Figure	Brief description	Type	Part no.
	DFS60B shaft encoder kit includes incremental encoder with collet and 10 m cable	DFS60B shaft encoder kit	2087288
	DFV60 measuring wheel encoder kit includes incremental encoder, mounting kit, and 10 m cable	DFV60 measuring wheel encoder kit	2058475

Signal and status indicators

Figure	Brief description	Type	Part no.
	Tower light red, yellow, green, 24 V, incl. mounting and 10 m connection cable	Signal lamps	2069155

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Our comprehensive and versatile LifeTime Services are the perfect addition to the comprehensive range of products from SICK. The services range from product-independent consulting to traditional product services.

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Safe and professional

Product and system support
Reliable, fast and on-site

Verification and optimization
Safe and regularly inspected

Upgrade and retrofits
Easy, safe and economical

Training and education
Practical, focused and professional

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SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 7,400 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, we are always close to our customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in various industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services round out our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is "Sensor Intelligence."

Worldwide presence:

Australia, Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, India, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Poland, Romania, Russia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, USA, Vietnam.

Detailed addresses and further locations → www.sick.com

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