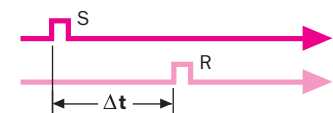
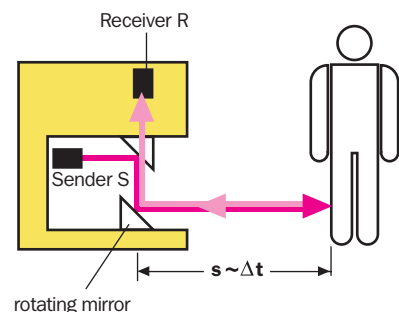


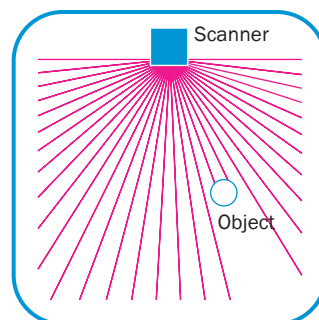
## Principle of operation of laser scanners

Laser scanners are compact systems that scan their surroundings with a beam (“optical radar”). If the emitted light pulses hit an object, the light is reflected and detected in the laser scanner’s receiver. The time between the emission of a light pulse and the reception of the reflection represents the distance between the laser scanner and object (light time-of-flight measurement). An internal rotating mirror “moves” the light pulses in



Laser scanner principle of operation

a circle to produce 2-dimensional scanning. So-called monitored areas can be defined within the field of view (scanning angle) and the device-specific scanning range of a laser scanner. If an object is detected in a monitored area, this situation is indicated by the laser scanner using 2 switching outputs (safe “stop” signal to the machine).



Fan-shaped scanning of the surroundings

## Use of laser scanners

Laser scanners are used for area monitoring (hazardous area protection), hazardous point protection and access protection.

A differentiation is made between:

- Stationary applications
  - Horizontal applications: e.g. pipe bending machines, machining centres, robot cells, press return area, etc.
  - Vertical applications: Entry/Exit, hand protection
- Mobile applications
  - Monitoring the movement of AGVs (automated guided vehicles), narrow aisle stackers, etc.

## Advantages of the SICK safety laser scanners

### Additional functions for plant and machine control

- Switchable monitored areas in accordance with the current process phase
- Monitoring external switching elements/contactors (EDM) saves costs and effort in the machine control
- High-current outputs for directly operated switching elements (contactors), making conversion of the switching signals using relay interfaces, etc. unnecessary
- Measured data on the surroundings as well as reflector detection to support vehicle steering (AGV). Only one sensor for safety and control
- Integrated restart interlock (RES) minimises the effort in the machine control

### Product range

- A very wide range of application requirements can be addressed with a compatible product family, thus minimising stock-keeping and investment costs.

### Experience

- Proven in use
- The highest quality standards guarantee stable serial production
- Consultation and service expertise

## Safety services

With services tailored specifically to your needs, SICK offers all-embracing support for the safety of your machine or system.

Address productivity and cost-effectiveness from the start: From selection and planning, through commissioning and inspection, to maintenance and modernisation.

→ For information about the services please refer to chapter A

# Safety laser scanners



C

Safety application	Scanning range (m)	Scanning angle (°)	Switchable field sets <sup>1)</sup>	Incremental encoder connections	Static control inputs	Functions					Product	Page
						External device monitoring (EDM)	Host/guest operation	Safe interface to bus systems	Reflector mark detection and expanded measured data input	Measured data output via RS-422 interface		
	4 / 5.5 / 7	190	8	2	4	✓	✓	✓	–	✓	S3000 Professional <sup>2)</sup>	C-3
			4	–	2	✓	✓	✓	–	✓	S3000 Advanced <sup>2)</sup>	C-10
			1	–	–	✓	✓	✓	–	✓	S3000 Standard <sup>2)</sup>	C-17
			8	–	–	✓	✓	✓	–	✓	S3000 Remote <sup>2) 3)</sup>	C-24
	2	270	8	2	4	✓	✓	✓	✓	✓	S3000 Professional CMS <sup>2)</sup>	C-31
4			2	2	✓	✓	✓	–	✓	S300 Professional	C-38	
2			–	1	✓	✓	✓	–	–	S300 Advanced	C-48	
1			–	–	✓	✓	✓	–	–	S300 Standard	C-57	
	1.5	270	1	–	–	✓	–	–	–	S200	C-65	

<sup>1)</sup> Field set comprising of protective field and warning field

<sup>2)</sup> Special features of the S3000 product family on page C-2

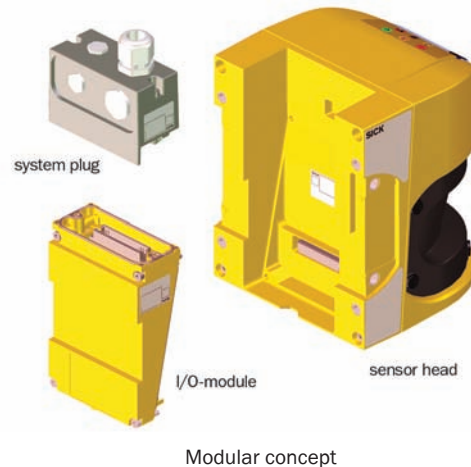
<sup>3)</sup> S3000 Remote can only be used in conjunction with another S3000 or a UE100 series safety controller

## Special features of the safety laser scanners

### S3000 - the modular system

C

- Modular concept
  - S3000 solutions grow with your needs
  - Security of investment due to configurable variants
  - Easy to service
- Largest achievable scanning range is 7 m for safety applications
- Configuration memory in the system plug
- Selectable resolution makes it possible to adapt the devices to a very wide range of application requirements
- Certified for vertical use for access control or entry/exit applications, as well as hand protection
- 7-segment display
- Integrated external device monitoring (EDM)
- Safe integration in bus systems
- Up to 8 switchable protective/warning fields (field sets)
- Formation of host/guest systems with S3000/S300
- Direct connection of incremental encoders
- Certified according to IEC/EN 61496-3 (type 3) and IEC/EN 61508 (SIL2)
- Measured data output via RS-422 interface
- Reflector mark detection



### S300/S200 – Compact. Flexible. Intelligent.

- Extremely compact
  - S300 is the smallest laser scanner in the world
  - S200 – the first laser scanner for cat. 2 applications
  - Easy to service
- 8 m warning field and 2 m protective field
- Superior 270° scan angle
- Configuration memory in the system plug
- Selectable resolution makes it possible to adapt the devices to a very wide range of application requirements
- Certified for vertical use for access control or entry/exit applications, as well as hand protection
- 7-segment display
- Integrated external device monitoring (EDM)
- Safe integration in bus systems
- Up to 4 switchable protective/warning fields (field sets)
- Formation of host/guest systems with S300/S3000
- Direct connection of incremental encoders
- Adjustable object resolution
- Stand-by input
- RS-422 data interface



## Overview of technical specifications

Protective field range (depending on type)	4 m / 5.5 m / 7 m
Warning field range	49 m (20 m at 20 % reflectivity)
Number of field sets	8
Scan angle	190°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, selectable
Response time	60 ms, 120 ms
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)

## Product description

The S3000 Professional can be used for a wide range of applications for the protection of machines and systems. The field sets can be conveniently defined using a PC or laptop.

- For complex applications with up to 8 protective fields/warning fields

- Static and dynamic protective field switching
- Incremental encoder connections
- Possibility of connecting two S3000 units to form a single system
- New uniform "Configuration & Diagnostic Software" CDS

## In-system added value

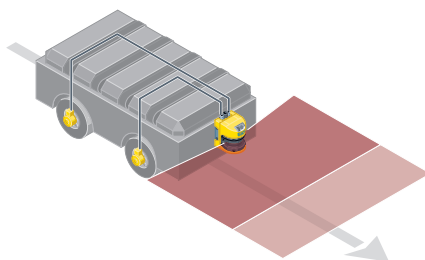
- Supports integration with multiple safety control solutions

→ For safety system combinations, see appendix "Sensor systems and safe control solutions from SICK"

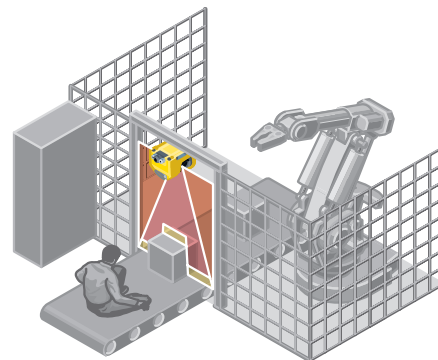
## Applications

→ You can find more applications using the application finder at [www.sickusa.com/applications](http://www.sickusa.com/applications)

- Freely moving transport vehicles
- Production lines
- Machining centres
- Entry/Exit stations (gates)
- Robot cells
- Narrow corridor vehicles



Velocity-dependent vehicle monitoring



Vertical access protection (entry/exit) with "contour as reference"



- Modular concept
- Scanning range 4 m, 5.5 m or 7 m
- Configuration memory
- Selectable resolution
- Certified for vertical use
- 7-segment display
- Integrated external device monitoring (EDM)



Further information	Page
→ Ordering information	C-4
→ Technical specifications	C-4
→ Dimensional drawings	C-6
→ Connection diagrams	C-7
→ Accessories	C-8
→ Services	A-2

## Ordering information

Delivery S3000 systems:

- Sensor head with I/O module mounted
- Operating instructions and CDS (Configuration & Diagnostic Software) on CD-ROM
- Adhesive label "Important information"

The system plug has to be ordered separately!

→ Ordering information for system plug and accessories, see page C-8

System part	Protective field range	Type	Part number
Sensor head with I/O module	4 m	S30A-4011DA	1028936
	5.5 m	S30A-6011DA	1019600
	7 m	S30A-7011DA	1023892
Sensor head	4 m	Sensor head short range	2034999
	5.5 m	Sensor head medium range	2022972
	7 m	Sensor head long range	2026747
I/O module	—	I/O module Professional	2022872

## Detailed technical specifications

→ Additional technical information is described in operating instructions, which are available to download at [www.sickusa.com/literature](http://www.sickusa.com/literature)

### General data

Laser protection class	1 (21 CFR 1040.10 and 1040.11, DIN EN 60825:2001)
Enclosure rating	IP 65 (EN 60529)
Protection class	2 (DIN VDE 0160, DIN EN 50178)
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)
Ambient operating temperature from ... to	-10 °C ... +50 °C
Type of light	Pulsed laser diode
Wave length	905 nm
Housing colour	RAL 1021
Housing material	Aluminium die-cast
Front screen material	Polycarbonate
Front screen surface finish	Outside with scratch-resistant coating
System plug	With ESD protected configuration memory
Dimensions (W x H x D)	155 mm x 185 mm x 160 mm
Weight	3.3 kg

## Functional data

Scan angle	190°
Protective field range (depending on type)	4 m / 5.5 m / 7 m
Reflectivity	Reflectors 1.8 % ... >1000 %
Response time	60 ms, 120 ms <sup>1)</sup>
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, selectable
Angular resolution	0.5°/0.25° (depending on range and resolution)
Protective field supplement	100 mm
Warning field range	49 m (20 m at 20 % reflectivity)
Distance measuring range	49 m
Number of multiple samplings	2 ... 16, configurable via CDS
Reset time	2 s ... 60 s, configurable

<sup>1)</sup> Depending on basic response time, resolution, maximum protective field range, multiple sampling and type of outputs

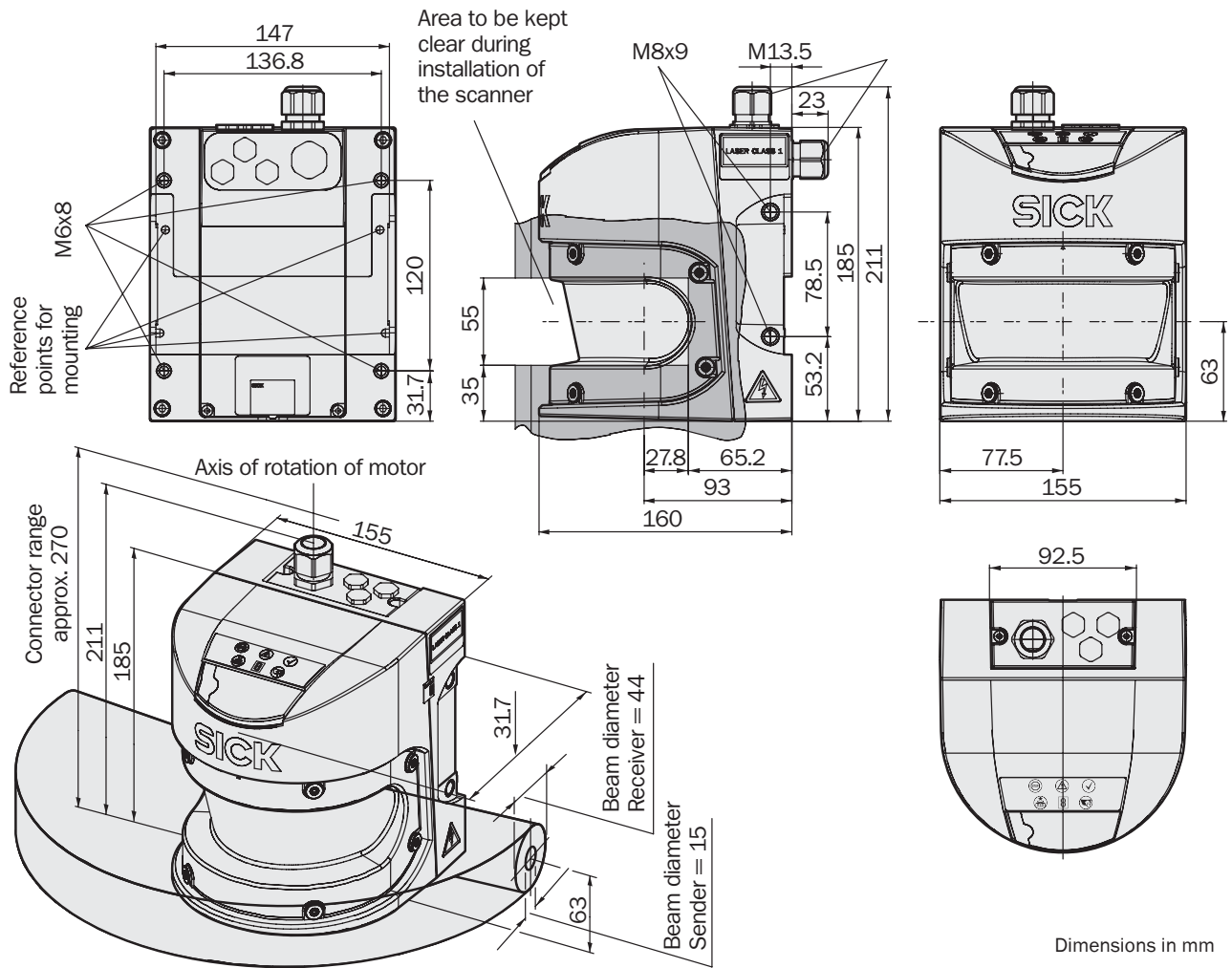
## Electrical data

Connection type	Plug-in connection housing with screw
Connector technology	Screw-type terminals
Supply voltage $V_s$	24 V DC (16.8 V DC ... 28.8 V DC)
Power consumption	0.8 A (24 V DC)
Power consumption	2.3 A <sup>1)</sup>
Number of inputs	
EDM	1
Restart/Reset	1
Static switching signals	2, 4
Dynamic encoder signals (incremental encoder)	2
Number of safety capable outputs	
Safety outputs (OSSD)	2 x 500 mA
Output for warning field	1 x 100 mA
Diagnostic output	1 x 100 mA
Restart/reset required	1 x 100 mA
Configuration and diagnostics interface	RS-232
Transmission rate	9.6 kBaud, 19.2 kBaud, 38.4 kBaud
Data interface	RS-422 (≤500 kBaud)
EFI – safe SICK device communication	
Transmission rate	≤500 kBaud
Cable length	50 m
Connection conductor cross-section	0.34 mm <sup>2</sup>

<sup>1)</sup> Including maximum output load

# Dimensional drawings

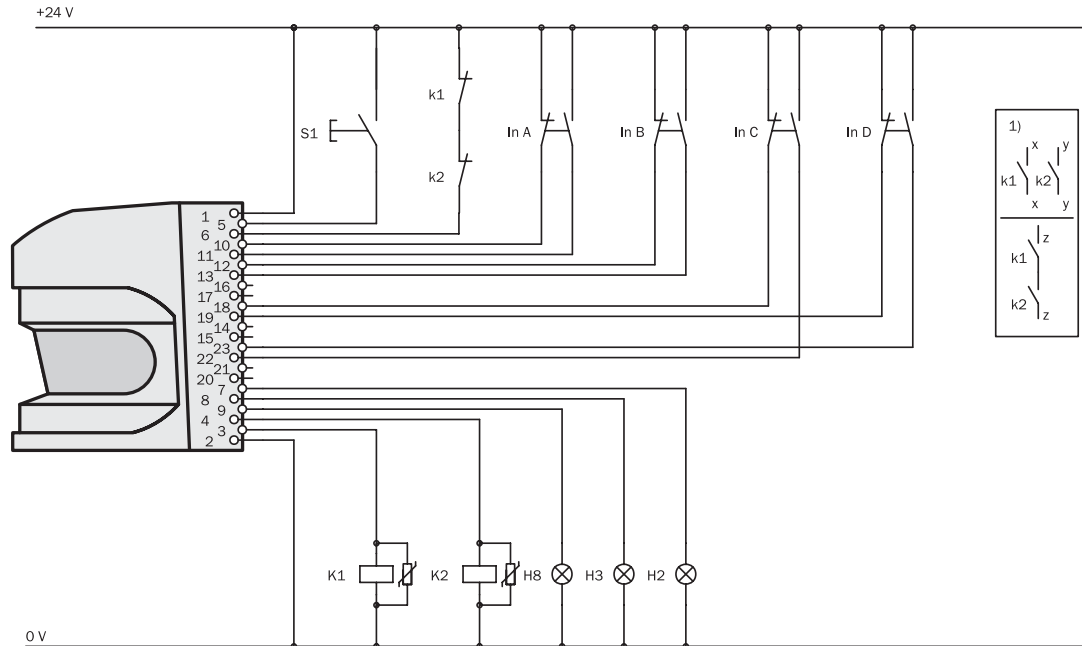
C



# Connection diagrams

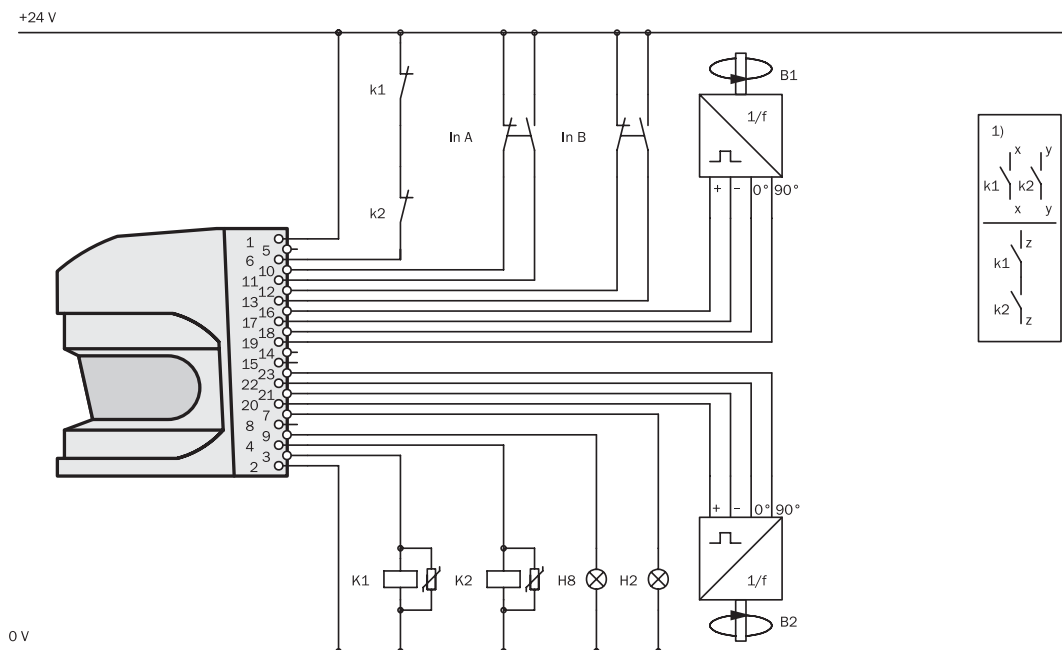
→ You can find connection diagrams at [www.sickusa.com/connectiondiagrams](http://www.sickusa.com/connectiondiagrams)

## Protective field switching with four static inputs



- S3000 Professional in conjunction with relays/contactors
- Operating mode: with restart interlock and external device monitoring (EDM)
- Static protective field switching by means of the control inputs A, B, C and D




## Protective field switching with static and dynamic inputs



- S3000 Professional in conjunction with relays/contactors
- Operating mode: without restart interlock with external device monitoring (EDM)
- Dynamic protective field switching using B1 and B2 as well as static protective field switching using the control inputs A and B

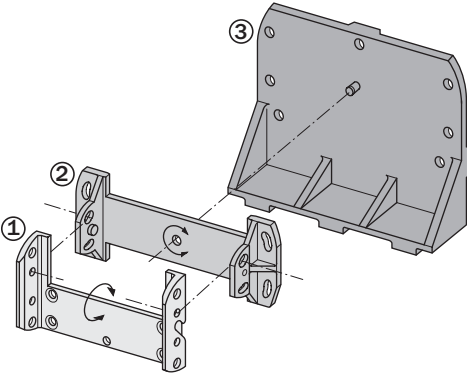


## Safe control solutions

	Product group	Applications	Further information
C	 Safety relays	Safety relays allow simple integration of safety components into machinery or plant.	Page N-0
	 Safety controllers	Safety controllers are utilized when the safety function (e.g. switching off a dangerous movement) is to be accomplished in a flexible way by logical combination of safety relevant signals. Operation of machinery becomes more flexible and generation of machine variants becomes easier.	Page O-0
	 Safety fieldbus solutions	Safety fieldbus solutions are utilized in plants and machinery of larger scale. This saves cabling and enables modular design of the safety automation. Potential errors or faults can be easily identified via the comprehensive diagnostics functions. That significantly reduces machine down times. SICK offers solutions for the open automation standards: AS-i Safety at Work, DeviceNet Safety and PROFIsafe.	

## Accessories

### Mounting systems

Description		Type	Part number
Mounting bracket for direct mounting at the rear on wall or machine. No adjustment facility		Mounting kit 1	2015623
Bracket only in conjunction with mounting kit 1. Mounting at the rear on wall or machine. Longitudinal and cross-wise adjustment possible		Mounting kit 2	2015624
Bracket only in conjunction with mounting kit 1 and 2. Mounting at the rear or below on wall, floor or machine. Longitudinal and cross-wise adjustment possible		Mounting kit 3	2015625
Mounting bracket, rugged design, with protective cover. Floor mounting. Height adjustment possible		Mounting bracket	7087514

### System plugs

Direction of cable outlet	Usage	Connection type	Number of cores	Cable length	Type	Part number
Upward	Not for use with incremental encoders	Without cable	—	—	SX0A-A0000B	2023797
		Pre-assembled	17	5 m	SX0A-B1705B	2027174
				10 m	SX0A-B1710B	2027175
				20 m	SX0A-B1720B	2027816
	For use with incremental encoders	Without cable	—	—	SX0A-A0000D	2023310
		Pre-assembled	13	5 m	SX0A-B1305D	2027176
10 m	SX0A-B1310D			2027177		

**Connection cables**

Type	Number of cores	Cable length	Part number
Connection cable	13	100 m	6025729
	17	100 m	6025730
EFI connection cable	—	50 m	6026675

**Cable gland**

Usage	Size of the cable gland	Part number
For EFI connections	M12	5308757

**Configuration connection cables**

Note	Connection type	Cable length	Part number
For connecting the configuration connection to the PC	M8 x 4, SUB-D 9-pol	2 m	6021195
		8 m	2027649

**SDL connection cables**

Note	Direction of cable outlet	Connection type	Number of cores	Cable length	Part number
For the connection of safety bus modules to S3000	Straight	Interconnectron plug M23 x 12	12	2.5 m	2029337
				5 m	2029338
				10 m	2029339
				15 m	2029340

**Configuration software**

Type	Description	Part number
CDS	CDS (Configuration & Diagnostic Software) on CD-ROM including online documentation and operating instructions in all available languages	2032314

**Power supply units**

Input voltage	Output voltage	Maximum output current	Part number
100 V AC, 240 V AC	24 V DC	2.1 A	7028789
		3.9 A	7028790
120 V AC, 230 V AC		2.5 A	6010361
		4 A	6010362

**Miscellaneous**

Type	Description	Part number
Front screen	Spare parts set for front screen with replacement seal and screws	2027180
Plastic cleaner	Plastic cleaner and care product, anti-static	5600006
Lens cloth	Cloth for cleaning the front screen	4003353



C



- Modular concept
- Scanning range 4 m, 5.5 m or 7 m
- Configuration memory
- Selectable resolution
- Certified for vertical use
- 7-segment display
- Integrated external device monitoring (EDM)



## Overview of technical specifications

Protective field range (depending on type)	4 m / 5.5 m / 7 m
Warning field range	49 m (20 m at 20 % reflectivity)
Number of field sets	4
Scan angle	190°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, selectable
Response time	60 ms, 120 ms
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)

## Product description

S3000 Advanced safety laser scanners are used for the horizontal and vertical protection of hazardous areas, hazardous points and accesses.

- For complex applications with up to 4 protective fields/warning fields
- Static protective field switching
- Possibility of connecting two S3000 units to form a single system
- New uniform "Configuration & Diagnostic Software" CDS

## In-system added value

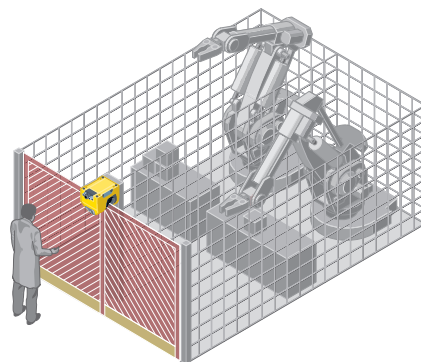
- Supports integration with multiple safety control solutions

→ For safety system combinations, see appendix "Sensor systems and safe control solutions from SICK"

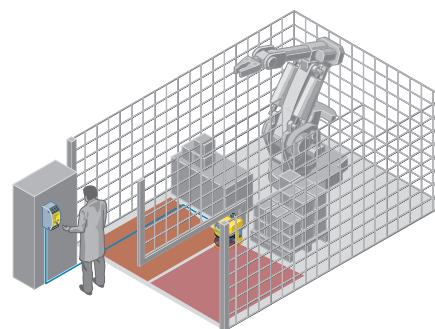
## Applications

→ You can find more applications using the application finder at [www.sickusa.com/applications](http://www.sickusa.com/applications)

- Freely moving transport vehicles
- Production lines
- Machining centres
- Entry/Exit stations (gates)
- Robot cells
- Narrow corridor vehicles



Access protection on a robot cell with several working areas with "contour as reference"



Protection of two separate working areas with one S3000 and a SICK safety controller

Further information	Page
→ Dimensional drawings	C-13
→ Connection diagrams	C-14
→ Accessories	C-15
→ Services	A-2

## Ordering information

Delivery S3000 systems:

- Sensor head with I/O module mounted
- Operating instructions and CDS (Configuration & Diagnostic Software) on CD-ROM
- Adhesive label "Important information"

The system plug has to be ordered separately!

→ Ordering information for system plug and accessories, see page C-15

System part	Protective field range	Type	Part number
Sensor head with I/O module	4 m	S30A-4011CA	1028935
	5.5 m	S30A-6011CA	1023547
	7 m	S30A-7011CA	1023891
Sensor head	4 m	Sensor head short range	2034999
	5.5 m	Sensor head medium range	2022972
	7 m	Sensor head long range	2026747
I/O module	—	I/O module Advanced	2026802

## Detailed technical specifications

→ Additional technical information is described in operating instructions, which are available to download at [www.sickusa.com/literature](http://www.sickusa.com/literature)

### General data

Laser protection class	1 (21 CFR 1040.10 and 1040.11, DIN EN 60825:2001)
Enclosure rating	IP 65 (EN 60529)
Protection class	2 (DIN VDE 0160, DIN EN 50178)
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)
Ambient operating temperature from ... to	-10 °C ... +50 °C
Type of light	Pulsed laser diode
Wave length	905 nm
Housing colour	RAL 1021
Housing material	Aluminium die-cast
Front screen material	Polycarbonate
Front screen surface finish	Outside with scratch-resistant coating
System plug	With ESD protected configuration memory
Dimensions (W x H x D)	155 mm x 185 mm x 160 mm
Weight	3.3 kg

Continued on next page

## Functional data

Scan angle	190°
Protective field range (depending on type)	4 m / 5.5 m / 7 m
Reflectivity	Reflectors 1.8 % ... >1000 %
Response time	60 ms, 120 ms <sup>1)</sup>
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, selectable
Angular resolution	0.5°/0.25° (depending on range and resolution)
Protective field supplement	100 mm
Warning field range	49 m (20 m at 20 % reflectivity)
Distance measuring range	49 m
Number of multiple samplings	2 ... 16, configurable via CDS
Reset time	2 s ... 60 s, configurable

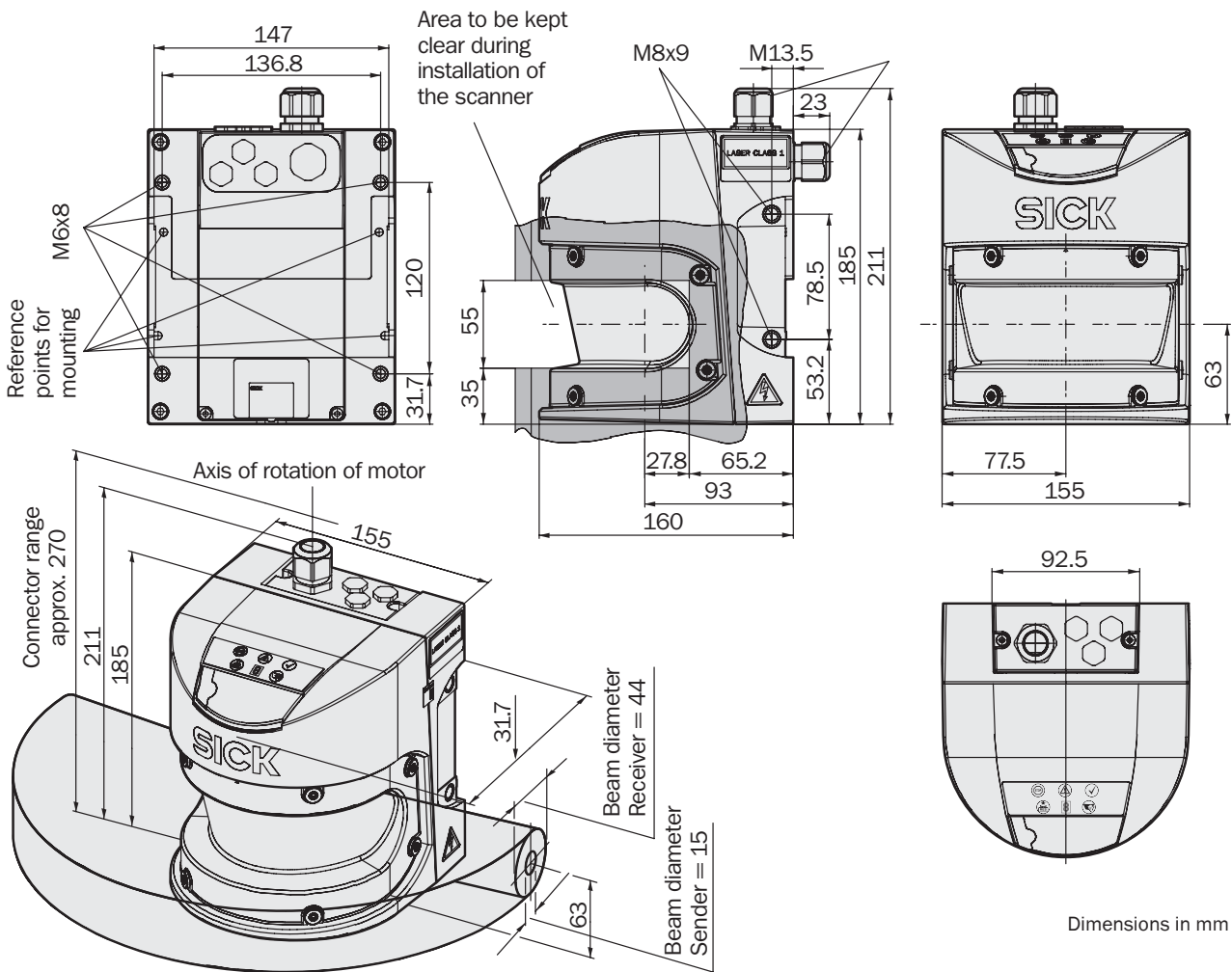
<sup>1)</sup> Depending on basic response time, resolution, maximum protective field range, multiple sampling and type of outputs

## Electrical data

Connection type	Plug-in connection housing with screw
Connector technology	Screw-type terminals
Supply voltage $V_s$	24 V DC (16.8 V DC ... 28.8 V DC)
Power consumption	0.8 A (24 V DC)
Power consumption	2.3 A <sup>1)</sup>
Number of inputs	
EDM	1
Restart/Reset	1
Static switching signals	2
Number of safety capable outputs	
Safety outputs (OSSD)	2 x 500 mA
Output for warning field	1 x 100 mA
Diagnostic output	1 x 100 mA
Restart/reset required	1 x 100 mA
Configuration and diagnostics interface	RS-232
Transmission rate	9.6 kBaud, 19.2 kBaud, 38.4 kBaud
Data interface	RS-422 (≤500 kBaud)
EFI – safe SICK device communication	
Transmission rate	≤500 kBaud
Cable length	50 m
Connection conductor cross-section	0.34 mm <sup>2</sup>

<sup>1)</sup> Including maximum output load

# Dimensional drawings



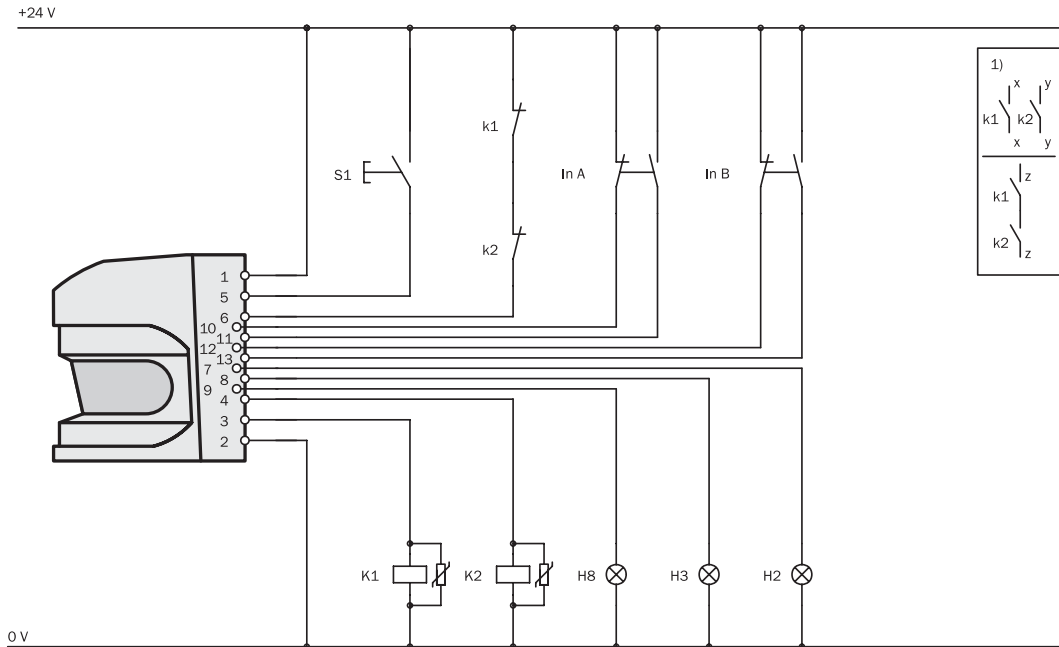
C

# Connection diagrams

→ You can find connection diagrams at [www.sickusa.com/connectiondiagrams](http://www.sickusa.com/connectiondiagrams)

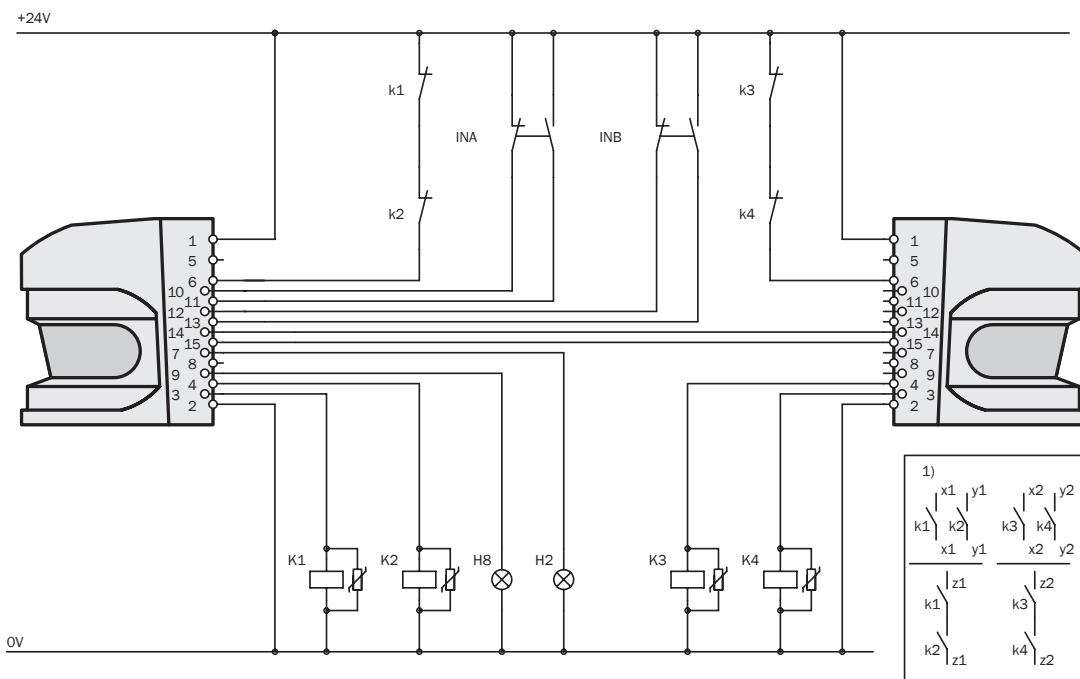
## Protective field switching with two static inputs

C






- S3000 Advanced in conjunction with relays/contactors
- Protective field switching by means of control inputs A and B
- Operating mode: with restart interlock and external device monitoring (EDM)

## Protective field switching between two S3000 with static inputs



- S3000 Advanced with S3000 Advanced in conjunction with relays/contactors
- Protective field switching by means of control input A and control input B on separate OSSD pairs (simultaneous monitoring)
- Operating mode: without restart interlock with external device monitoring (EDM)

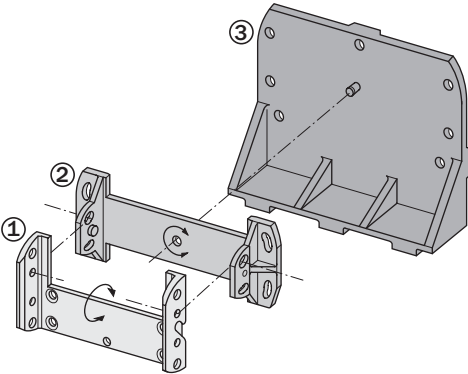
## Safe control solutions

	Product group	Applications	Further information
	Safety relays	Safety relays allow simple integration of safety components into machinery or plant.	Page N-0
	Safety controllers	Safety controllers are utilized when the safety function (e.g. switching off a dangerous movement) is to be accomplished in a flexible way by logical combination of safety relevant signals. Operation of machinery becomes more flexible and generation of machine variants become easier.	Page O-0
	Safety fieldbus solutions	Safety fieldbus solutions are utilized in plants and machinery of larger scale. This saves cabling and enables modular design of the safety automation. Potential errors or faults can be easily identified via the comprehensive diagnostics functions. That significantly reduces machine down times. SICK offers solutions for the open automation standards: AS-i Safety at Work, DeviceNet Safety and PROFIsafe.	

C

## Accessories

### Mounting systems

Description		Type	Part number
Mounting bracket for direct mounting at the rear on wall or machine. No adjustment facility		Mounting kit 1	2015623
Bracket only in conjunction with mounting kit 1. Mounting at the rear on wall or machine. Longitudinal and cross-wise adjustment possible		Mounting kit 2	2015624
Bracket only in conjunction with mounting kit 1 and 2. Mounting at the rear or below on wall, floor or machine. Longitudinal and cross-wise adjustment possible		Mounting kit 3	2015625
Mounting bracket, rugged design, with protective cover. Floor mounting. Height adjustment possible		Mounting bracket	7087514

### System plugs

Direction of cable outlet	Usage	Connection type	Number of cores	Cable length	Type	Part number
Upward	Not for use with incremental encoders	Without cable	—	—	SX0A-A0000B	2023797
		Pre-assembled	13	5 m	SX0A-B1305B	2027172
				10 m	SX0A-B1310B	2027173
				20 m	SX0A-B1320B	2027815



**Connection cables**

Type	Number of cores	Cable length	Part number
Connection cable	13	100 m	6025729
EFI connection cable	–	50 m	6026675

**Cable gland**

Usage	Size of the cable gland	Part number
For EFI connections	M12	5308757

**Configuration connection cables**

Note	Connection type	Cable length	Part number
For connecting the configuration connection to the PC	M8 x 4, SUB-D 9-pol	2 m	6021195
		8 m	2027649

**SDL connection cables**

Note	Direction of cable outlet	Connection type	Number of cores	Cable length	Part number
For the connection of safety bus modules to S3000	Straight	Interconnectron plug M23 x 12	12	2.5 m	2029337
				5 m	2029338
				10 m	2029339
				15 m	2029340

**Configuration software**

Type	Description	Part number
CDS	CDS (Configuration & Diagnostic Software) on CD-ROM including online documentation and operating instructions in all available languages	2032314

**Power supply units**

Input voltage	Output voltage	Maximum output current	Part number
100 V AC, 240 V AC	24 V DC	2.1 A	7028789
		3.9 A	7028790
120 V AC, 230 V AC		2.5 A	6010361
		4 A	6010362

**Miscellaneous**

Type	Description	Part number
Front screen	Spare parts set for front screen with replacement seal and screws	2027180
Plastic cleaner	Plastic cleaner and care product, anti-static	5600006
Lens cloth	Cloth for cleaning the front screen	4003353

## Overview of technical specifications

Protective field range (depending on type)	4 m / 5.5 m / 7 m
Warning field range	49 m (20 m at 20 % reflectivity)
Number of field sets	1
Scan angle	190°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, selectable
Response time	60 ms, 120 ms
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)

## Product description

S3000 Standard safety laser scanners are used for the horizontal and vertical protection of hazardous areas, hazardous points and accesses as well as to protect automated guided vehicles.

- 1 protective and warning field
- Possibility of connecting two S3000 units to form a single system
- New uniform "Configuration & Diagnostic Software" CDS

## In-system added value

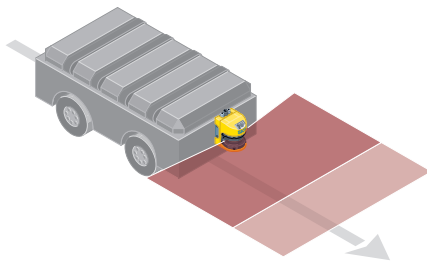
- Supports integration with multiple safety control solutions

→ For safety system combinations, see appendix "Sensor systems and safe control solutions from SICK"

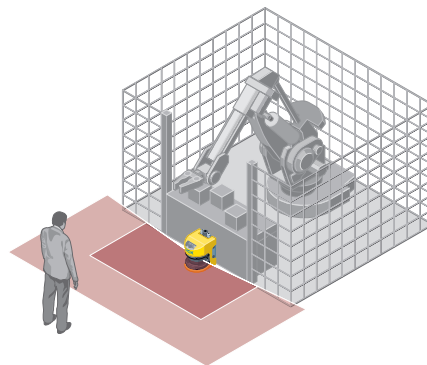
## Applications

→ You can find more applications using the application finder at [www.sickusa.com/applications](http://www.sickusa.com/applications)

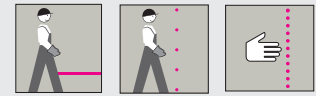
- Freely moving transport vehicles
- Production lines
- Machining centres
- Entry/Exit stations (gates)
- Robot cells
- Narrow corridor vehicles



Hazardous area protection on an AGV with one direction of travel



Hazardous area protection on a robot cell



- Modular concept
- Scanning range 4 m, 5.5 m or 7 m
- Configuration memory
- Selectable resolution
- Certified for vertical use
- 7-segment display
- Integrated external device monitoring (EDM)



Further information	Page
→ Ordering information	C-18
→ Technical specifications	C-18
→ Dimensional drawings	C-20
→ Connection diagrams	C-21
→ Accessories	C-22
→ Services	A-2

## Ordering information

Delivery S3000 systems:

- Sensor head with I/O module mounted
- Operating instructions and CDS (Configuration & Diagnostic Software) on CD-ROM
- Adhesive label "Important information"

The system plug has to be ordered separately!

→ Ordering information for system plug and accessories, see page C-22

System part	Protective field range	Type	Part number
Sensor head with I/O module	4 m	S30A-4011BA	1028934
	5.5 m	S30A-6011BA	1023546
	7 m	S30A-7011BA	1023890
Sensor head	4 m	Sensor head short range	2034999
	5.5 m	Sensor head medium range	2022972
	7 m	Sensor head long range	2026747
I/O module	—	I/O module Standard	2026801

## Detailed technical specifications

→ Additional technical information is described in operating instructions, which are available to download at [www.sickusa.com/literature](http://www.sickusa.com/literature)

### General data

Laser protection class	1 (21 CFR 1040.10 and 1040.11, DIN EN 60825:2001)
Enclosure rating	IP 65 (EN 60529)
Protection class	2 (DIN VDE 0160, DIN EN 50178)
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)
Ambient operating temperature from ... to	-10 °C ... +50 °C
Type of light	Pulsed laser diode
Wave length	905 nm
Housing colour	RAL 1021
Housing material	Aluminium die-cast
Front screen material	Polycarbonate
Front screen surface finish	Outside with scratch-resistant coating
System plug	With ESD protected configuration memory
Dimensions (W x H x D)	155 mm x 185 mm x 160 mm
Weight	3.3 kg

## Functional data

Scan angle	190°
Protective field range (depending on type)	4 m / 5.5 m / 7 m
Reflectivity	Reflectors 1.8 % ... >1000 %
Response time	60 ms, 120 ms <sup>1)</sup>
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, selectable
Angular resolution	0.5°/0.25° (depending on range and resolution)
Protective field supplement	100 mm
Warning field range	49 m (20 m at 20 % reflectivity)
Distance measuring range	49 m
Number of multiple samplings	2 ... 16, configurable via CDS
Reset time	2 s ... 60 s, configurable

<sup>1)</sup> Depending on basic response time, resolution, maximum protective field range, multiple sampling and type of outputs

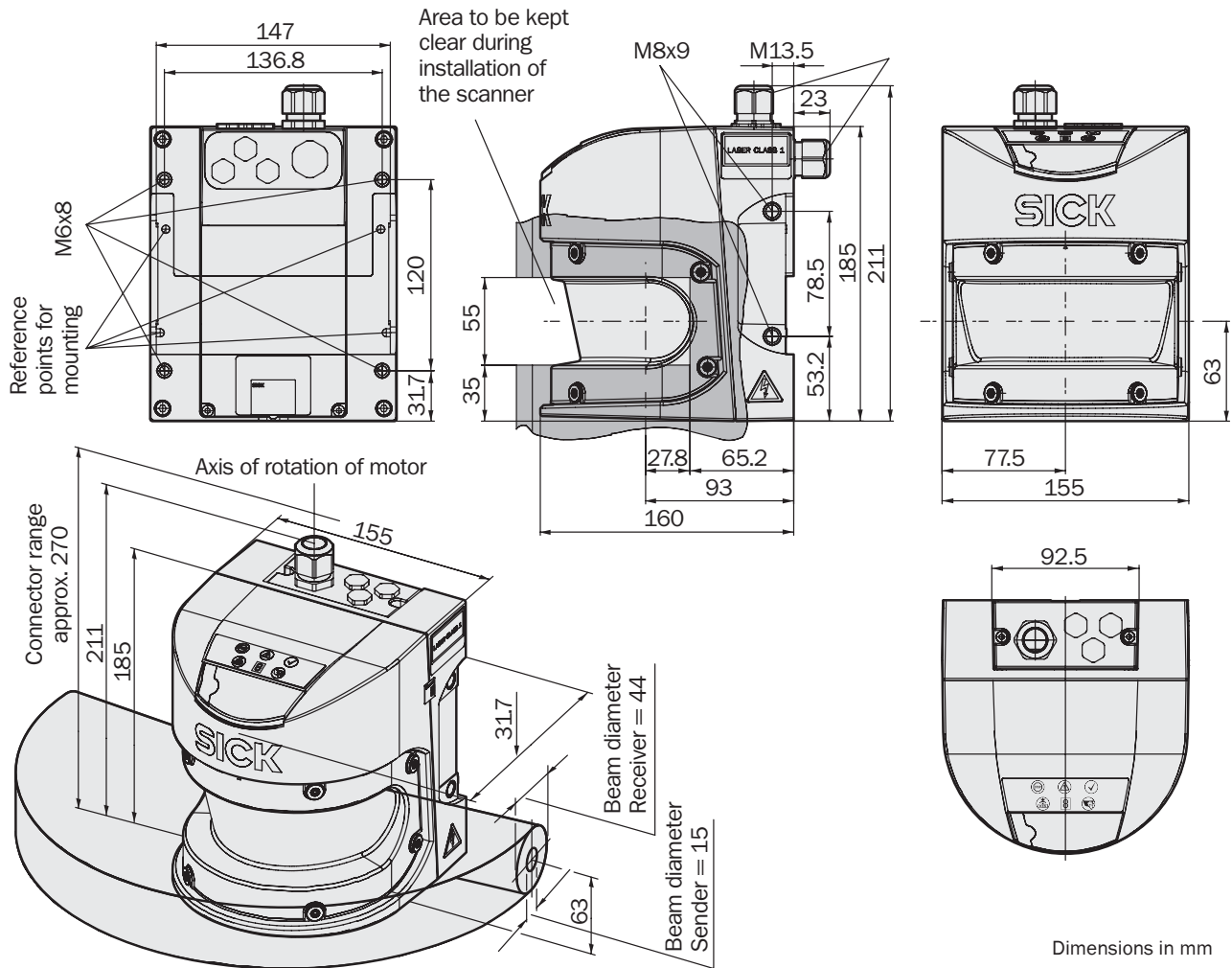
## Electrical data

Connection type	Plug-in connection housing with screw
Connector technology	Screw-type terminals
Supply voltage $V_s$	24 V DC (16.8 V DC ... 28.8 V DC)
Power consumption	0.8 A (24 V DC)
Power consumption	2.3 A <sup>1)</sup>
Number of inputs	
EDM	1
Restart/Reset	1
Number of safety capable outputs	
Safety outputs (OSSD)	2 x 500 mA
Output for warning field	1 x 100 mA
Diagnostic output	1 x 100 mA
Restart/reset required	1 x 100 mA
Configuration and diagnostics interface	RS-232
Transmission rate	9.6 kBaud, 19.2 kBaud, 38.4 kBaud
Data interface	RS-422 (≤500 kBaud)
EFI – safe SICK device communication	
Transmission rate	≤500 kBaud
Cable length	50 m
Connection conductor cross-section	0.34 mm <sup>2</sup>

<sup>1)</sup> Including maximum output load

# Dimensional drawings

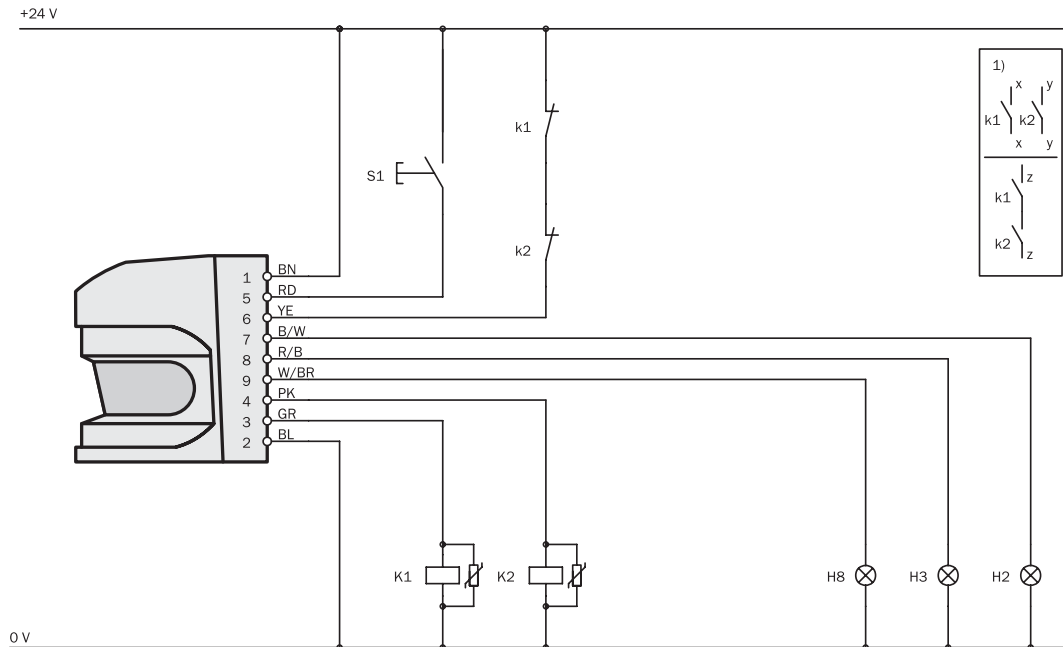
C



# Connection diagrams

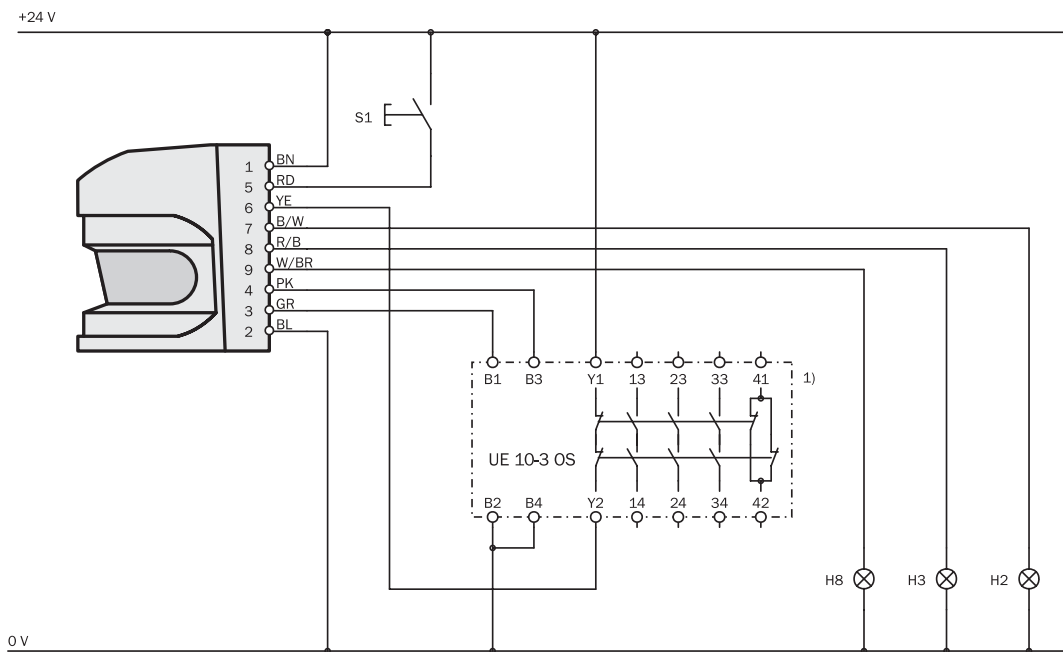
→ You can find connection diagrams at [www.sickusa.com/connectiondiagrams](http://www.sickusa.com/connectiondiagrams)

## With restart interlock and external device monitoring



- S3000 Standard in conjunction with relays/contactors
- Operating mode: with restart interlock and external device monitoring (EDM)




## Restart interlock and external device monitoring (EDM) with safety relay UE10-30S



- S3000 Standard in conjunction with UE10-30S
- Operating mode: with restart interlock and external device monitoring (EDM)

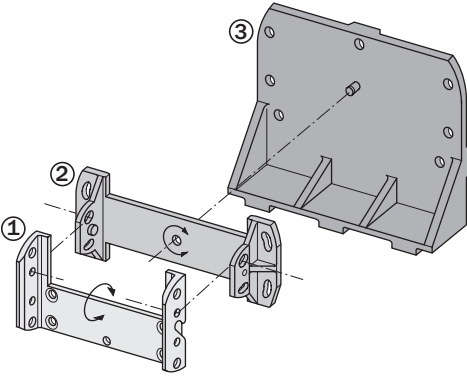
## Safe control solutions

C

	Product group	Applications	Further information
	Safety relays	Safety relays allow simple integration of safety components into machinery or plant.	Page N-0
	Safety controllers	Safety controllers are utilized when the safety function (e.g. switching off a dangerous movement) is to be accomplished in a flexible way by logical combination of safety relevant signals. Operation of machinery becomes more flexible and generation of machine variants becomes easier.	Page O-0
	Safety fieldbus solutions	Safety fieldbus solutions are utilized in plants and machinery of larger scale. This saves cabling and enables modular design of the safety automation. Potential errors or faults can be easily identified via the comprehensive diagnostics functions. That significantly reduces machine down times. SICK offers solutions for the open automation standards: AS-i Safety at Work, DeviceNet Safety and PROFIsafe.	

## Accessories

### Mounting systems

Description		Type	Part number
Mounting bracket for direct mounting at the rear on wall or machine. No adjustment facility		Mounting kit 1	2015623
Bracket only in conjunction with mounting kit 1. Mounting at the rear on wall or machine. Longitudinal and cross-wise adjustment possible		Mounting kit 2	2015624
Bracket only in conjunction with mounting kit 1 and 2. Mounting at the rear or below on wall, floor or machine. Longitudinal and cross-wise adjustment possible		Mounting kit 3	2015625
Mounting bracket, rugged design, with protective cover. Floor mounting. Height adjustment possible		Mounting bracket	7087514

### System plugs

Direction of cable outlet	Usage	Connection type	Number of cores	Cable length	Type	Part number
Upward	Not for use with incremental encoders	Without cable	—	—	SX0A-A0000B	2023797
				5 m	SX0A-B0905B	2027170
		Pre-assembled	9	10 m	SX0A-B0910B	2027171
				20 m	SX0A-B0920B	2027814

**Connection cables**

Type	Number of cores	Cable length	Part number
Connection cable	9	100 m	6022651
EFI connection cable	–	50 m	6026675

**Cable gland**

Usage	Size of the cable gland	Part number
For EFI connections	M12	5308757

**Configuration connection cables**

Note	Connection type	Cable length	Part number
For connecting the configuration connection to the PC	M8 x 4, SUB-D 9-pol	2 m	6021195
		8 m	2027649

**SDL connection cables**

Note	Direction of cable outlet	Connection type	Number of cores	Cable length	Part number
For the connection of safety bus modules to S3000	Straight	Interconnectron plug M23 x 12	12	2.5 m	2029337
				5 m	2029338
				10 m	2029339
				15 m	2029340

**Configuration software**

Type	Description	Part number
CDS	CDS (Configuration & Diagnostic Software) on CD-ROM including online documentation and operating instructions in all available languages	2032314

**Power supply units**

Input voltage	Output voltage	Maximum output current	Part number
100 V AC, 240 V AC	24 V DC	2.1 A	7028789
		3.9 A	7028790
120 V AC, 230 V AC		2.5 A	6010361
		4 A	6010362

**Miscellaneous**

Type	Description	Part number
Front screen	Spare parts set for front screen with replacement seal and screws	2027180
Plastic cleaner	Plastic cleaner and care product, anti-static	5600006
Lens cloth	Cloth for cleaning the front screen	4003353





C



- Modular concept
- Scanning range 4 m, 5.5 m or 7 m
- Configuration memory
- Selectable resolution
- Certified for vertical use
- 7-segment display
- Integrated external device monitoring (EDM)



## Overview of technical specifications

**Note:** S3000 Remote can only be used in conjunction with another S3000 or a UE100 series safety controller

Protective field range (depending on type)	4 m / 5.5 m / 7 m
Warning field range	49 m (20 m at 20 % reflectivity)
Number of field sets	8, the number of field sets is dependent on the S3000 variant to which the S3000 Remote is connected
Scan angle	190°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, selectable
Response time	60 ms, 120 ms
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)

## Product description

- Autonomous vehicle systems can be protected cost-effectively to suit the specific case using S3000 Remote.
- Up to 8 protective/warning fields
- For complex applications with host/guest combinations
- For 2 directions of travel
- New uniform "Configuration & Diagnostic Software" CDS

## In-system added value

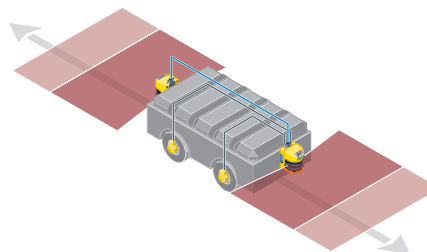
- Supports integration with multiple safety control solutions

→ For safety system combinations, see appendix "Sensor systems and safe control solutions from SICK"

## Applications

→ You can find more applications using the application finder at [www.sickusa.com/applications](http://www.sickusa.com/applications)

- Freely moving transport vehicles
- Production lines
- Machining centres
- Entry/Exit stations (gates)
- Robot cells
- Narrow corridor vehicles



S3000 Professional and S3000 Remote: complex application with bidirectional travel (velocity-dependent protective field/warning field switching using incremental encoders)

Further information	Page
→ Dimensional drawings	C-27
→ Connection diagrams	C-28
→ Accessories	C-29
→ Services	A-2

## Ordering information

Delivery S3000 systems:

- Sensor head with I/O module mounted
- Operating instructions and CDS (Configuration & Diagnostic Software) on CD-ROM
- Adhesive label "Important information"

The system plug has to be ordered separately!

→ Ordering information for system plug and accessories, see page C-29

System part	Protective field range	Type	Part number
Sensor head with I/O module	4 m	S30A-4011EA	1028938
	5.5 m	S30A-6011EA	1023548
	7 m	S30A-7011EA	1023893
Sensor head	4 m	Sensor head short range	2034999
	5.5 m	Sensor head medium range	2022972
	7 m	Sensor head long range	2026747
I/O module	—	I/O module Remote	2026803

## Detailed technical specifications

→ Additional technical information is described in operating instructions, which are available to download at [www.sickusa.com/literature](http://www.sickusa.com/literature)

### General data

Laser protection class	1 (21 CFR 1040.10 and 1040.11, DIN EN 60825:2001)
Enclosure rating	IP 65 (EN 60529)
Protection class	2 (DIN VDE 0160, DIN EN 50178)
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)
Ambient operating temperature from ... to	-10 °C ... +50 °C
Type of light	Pulsed laser diode
Wave length	905 nm
Housing colour	RAL 1021
Housing material	Aluminium die-cast
Front screen material	Polycarbonate
Front screen surface finish	Outside with scratch-resistant coating
System plug	With ESD protected configuration memory
Dimensions (W x H x D)	155 mm x 185 mm x 160 mm
Weight	3.3 kg

Continued on next page

## Functional data

Scan angle	190°
Protective field range (depending on type)	4 m / 5.5 m / 7 m
Reflectivity	Reflectors 1.8 % ... >1000 %
Response time	60 ms, 120 ms <sup>1)</sup>
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, selectable
Angular resolution	0.5°/0.25° (depending on range and resolution)
Protective field supplement	100 mm
Warning field range	49 m (20 m at 20 % reflectivity)
Distance measuring range	49 m
Number of multiple samplings	2 ... 16, configurable via CDS
Reset time	2 s ... 60 s, configurable

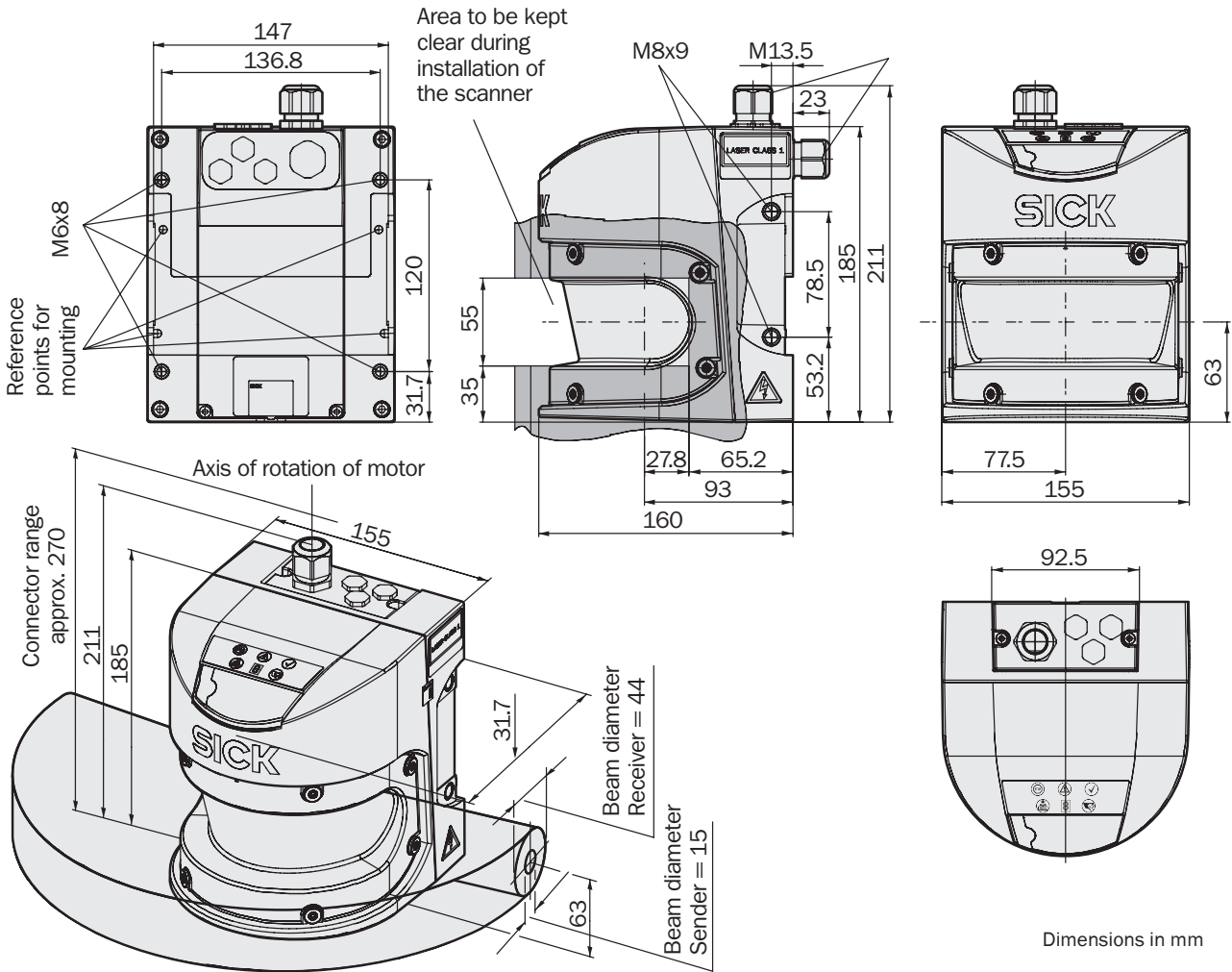
<sup>1)</sup> Depending on basic response time, resolution, maximum protective field range, multiple sampling and type of outputs

## Electrical data

Connection type	Plug-in connection housing with screw
Connector technology	Screw-type terminals
Supply voltage $V_s$	24 V DC (16.8 V DC ... 28.8 V DC)
Power consumption	0.8 A (24 V DC)
Power consumption	2.3 A <sup>1)</sup>
Number of inputs	
EDM	1
Restart/Reset	1
Number of safety capable outputs	
Safety outputs (OSSD)	2 x 500 mA
Output for warning field	1 x 100 mA
Diagnostic output	1 x 100 mA
Restart/reset required	1 x 100 mA
Configuration and diagnostics interface	RS-232
Transmission rate	9.6 kBaud, 19.2 kBaud, 38.4 kBaud
Data interface	RS-422 (≤500 kBaud)
EFI – safe SICK device communication	
Transmission rate	≤500 kBaud
Cable length	50 m
Connection conductor cross-section	0.34 mm <sup>2</sup>

<sup>1)</sup> Including maximum output load

# Dimensional drawings



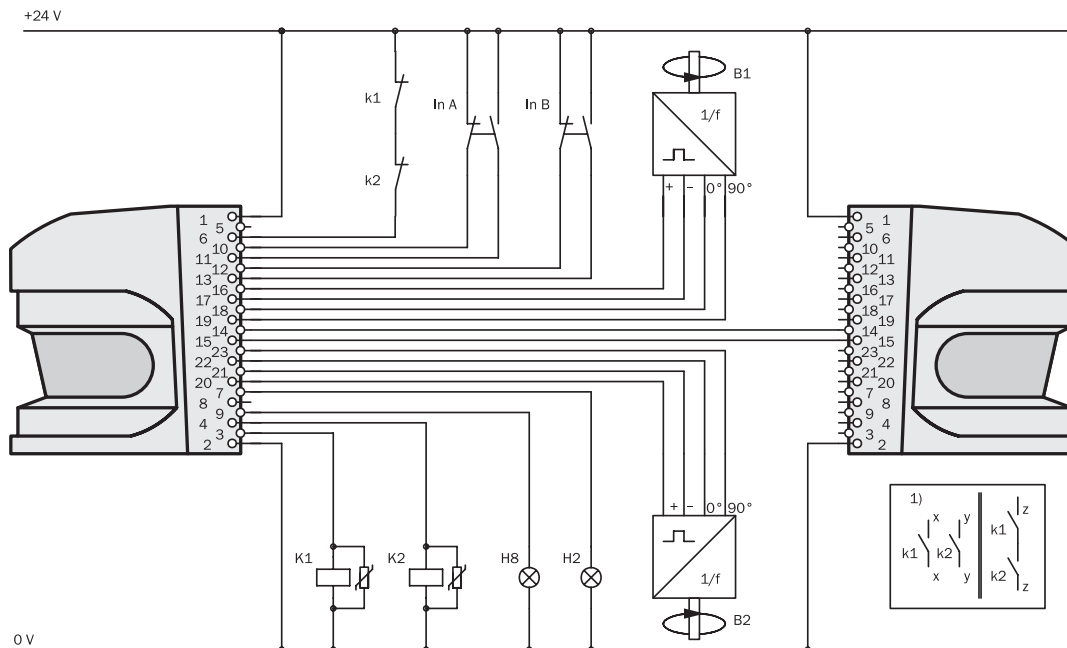
C

## Connection diagrams

→ You can find connection diagrams at [www.sickusa.com/connectiondiagrams](http://www.sickusa.com/connectiondiagrams)




### Protective field switching between two S3000 with static and dynamic inputs

C



- S3000 Professional (left) and Remote (right) in conjunction with relays/contactors
- Operating mode: without restart interlock with external device monitoring (EDM)
- Direction of travel-dependent dynamic protective field switching by means of B1 and B2 as well as static protective field switching by means of the control inputs A and B with sensor communication via EFI

## Safe control solutions

	Product group	Applications	Further information
	Safety relays	Safety relays allow simple integration of safety components into machinery or plant.	Page N-0
	Safety controllers	Safety controllers are utilized when the safety function (e.g. switching off a dangerous movement) is to be accomplished in a flexible way by logical combination of safety relevant signals. Operation of machinery becomes more flexible and generation of machine variants becomes easier.	Page O-0
	Safety fieldbus solutions	Safety fieldbus solutions are utilized in plants and machinery of larger scale. This saves cabling and enables modular design of the safety automation. Potential errors or faults can be easily identified via the comprehensive diagnostics functions. That significantly reduces machine down times. SICK offers solutions for the open automation standards: AS-i Safety at Work, DeviceNet Safety and PROFI-safe.	

## Accessories

### Mounting systems

Description		Type	Part number
Mounting bracket for direct mounting at the rear on wall or machine. No adjustment facility		Mounting kit 1	2015623
Bracket only in conjunction with mounting kit 1. Mounting at the rear on wall or machine. Longitudinal and cross-wise adjustment possible		Mounting kit 2	2015624
Bracket only in conjunction with mounting kit 1 and 2. Mounting at the rear or below on wall, floor or machine. Longitudinal and cross-wise adjustment possible		Mounting kit 3	2015625
Mounting bracket, rugged design, with protective cover. Floor mounting. Height adjustment possible		Mounting bracket	7087514

### System plugs

Direction of cable outlet	Usage	Connection type	Number of cores	Cable length	Type	Part number
Upward	Not for use with incremental encoders	Without cable	—	—	SX0A-A0000B	2023797
		Pre-assembled	9	5 m	SX0A-B0905B	2027170
				10 m	SX0A-B0910B	2027171
				20 m	SX0A-B0920B	2027814

### Connection cable

Type	Cable length	Part number
EFI connection cable	50 m	6026675

### Cable gland

Usage	Size of the cable gland	Part number
For EFI connections	M12	5308757

### Configuration connection cables

Note	Connection type	Cable length	Part number
For connecting the configuration connection to the PC	M8 x 4, SUB-D 9-pol	2 m	6021195
		8 m	2027649

**SDL connection cables**

Note	Direction of cable outlet	Connection type	Number of cores	Cable length	Part number
For the connection of safety bus modules to S3000	Straight	Interconnectron plug M23 x 12	12	2.5 m	2029337
				5 m	2029338
				10 m	2029339
				15 m	2029340

**Configuration software**

Type	Description	Part number
CDS	CDS (Configuration & Diagnostic Software) on CD-ROM including online documentation and operating instructions in all available languages	2032314

**Power supply units**

Input voltage	Output voltage	Maximum output current	Part number
100 V AC, 240 V AC	24 V DC	2.1 A	7028789
		3.9 A	7028790
120 V AC, 230 V AC		2.5 A	6010361
		4 A	6010362

**Miscellaneous**

Type	Description	Part number
Front screen	Spare parts set for front screen with replacement seal and screws	2027180
Plastic cleaner	Plastic cleaner and care product, anti-static	5600006
Lens cloth	Cloth for cleaning the front screen	4003353

## Overview of technical specifications

Protective field range (depending on type)	4 m / 5.5 m / 7 m
Warning field range	49 m (20 m at 20 % reflectivity)
Number of field sets	8
Scan angle	190°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, selectable
Response time	60 ms, 120 ms
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)

## Product description

With S3000 Professional CMS (Contour Measurement and Safety) it is possible for the first time to combine the protection of people and the acquisition of surrounding contours. This system opens up new ways of productively achieving your objectives in the logistics and materials handling sector.

- Personnel protection and acquisition of the surrounding contour in one scanner
- Measured data output via RS-422 interface in real-time

- Reflector mark detection up to 30 m
- Velocity transfer for odometry
- 8 switchable protective/warning fields
- Static and dynamic protective field switching
- Incremental encoder connections
- Possibility of connecting two S3000 units to form a single system
- New uniform "Configuration & Diagnostic Software" CDS

## In-system added value

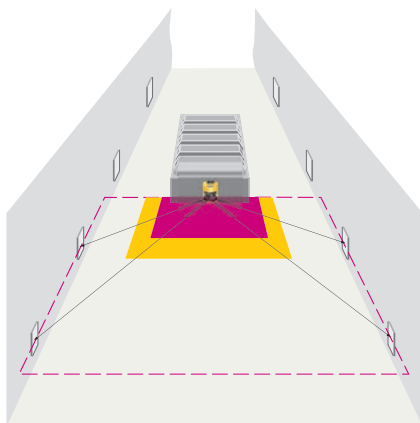
- Supports integration with multiple safety control solutions
- Safe integration to bus systems

→ For safety system combinations, see appendix "Sensor systems and safe control solutions from SICK"

## Applications

→ You can find more applications using the application finder at [www.sickusa.com/applications](http://www.sickusa.com/applications)

- Freely moving transport vehicles



Personnel protection and acquisition of the surrounding contour with integrated reflector detection



- Modular concept
- Scanning range 4 m, 5.5 m or 7 m
- Configuration memory
- Selectable resolution
- Certified for vertical use
- 7-segment display
- Integrated external device monitoring (EDM)



Further information	Page
→ Ordering information	C-32
→ Technical specifications	C-32
→ Dimensional drawings	C-34
→ Connection diagrams	C-35
→ Accessories	C-36
→ Services	A-2



## Ordering information

Delivery S3000 systems:

- Sensor head with I/O module mounted
- Operating instructions and CDS (Configuration & Diagnostic Software) on CD-ROM
- Adhesive label "Important information"

The system plug has to be ordered separately!

→ Ordering information for system plug and accessories, see page C-36

System part	Protective field range	Type	Part number
Sensor head with I/O module	4 m	S30A-4011DB	1028939
	5.5 m	S30A-6011DB	1026401
	7 m	S30A-7011DB	1026402
Sensor head	4 m	Sensor head short range	2034999
	5.5 m	Sensor head medium range	2022972
	7 m	Sensor head long range	2026747
I/O module	—	I/O module Professional CMS	2030915

## Detailed technical specifications

→ Additional technical information is described in operating instructions, which are available to download at [www.sickusa.com/literature](http://www.sickusa.com/literature)

### General data

Laser protection class	1 (21 CFR 1040.10 and 1040.11, DIN EN 60825:2001)
Enclosure rating	IP 65 (EN 60529)
Protection class	2 (DIN VDE 0160, DIN EN 50178)
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)
Ambient operating temperature from ... to	-10 °C ... +50 °C
Type of light	Pulsed laser diode
Wave length	905 nm
Housing colour	RAL 1021
Housing material	Aluminium die-cast
Front screen material	Polycarbonate
Front screen surface finish	Outside with scratch-resistant coating
System plug	With ESD protected configuration memory
Dimensions (W x H x D)	155 mm x 185 mm x 160 mm
Weight	3.3 kg

## Functional data

Scan angle	190°
Protective field range (depending on type)	4 m / 5.5 m / 7 m
Reflectivity	Reflectors 1.8 % ... >1000 %
Response time	60 ms, 120 ms <sup>1)</sup>
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, selectable
Angular resolution	0.5°/0.25° (depending on range and resolution)
Protective field supplement	100 mm
Warning field range	49 m (20 m at 20 % reflectivity)
Distance measuring range	49 m
Number of multiple samplings	2 ... 16, configurable via CDS
Reset time	2 s ... 60 s, configurable

<sup>1)</sup> Depending on basic response time, resolution, maximum protective field range, multiple sampling and type of outputs

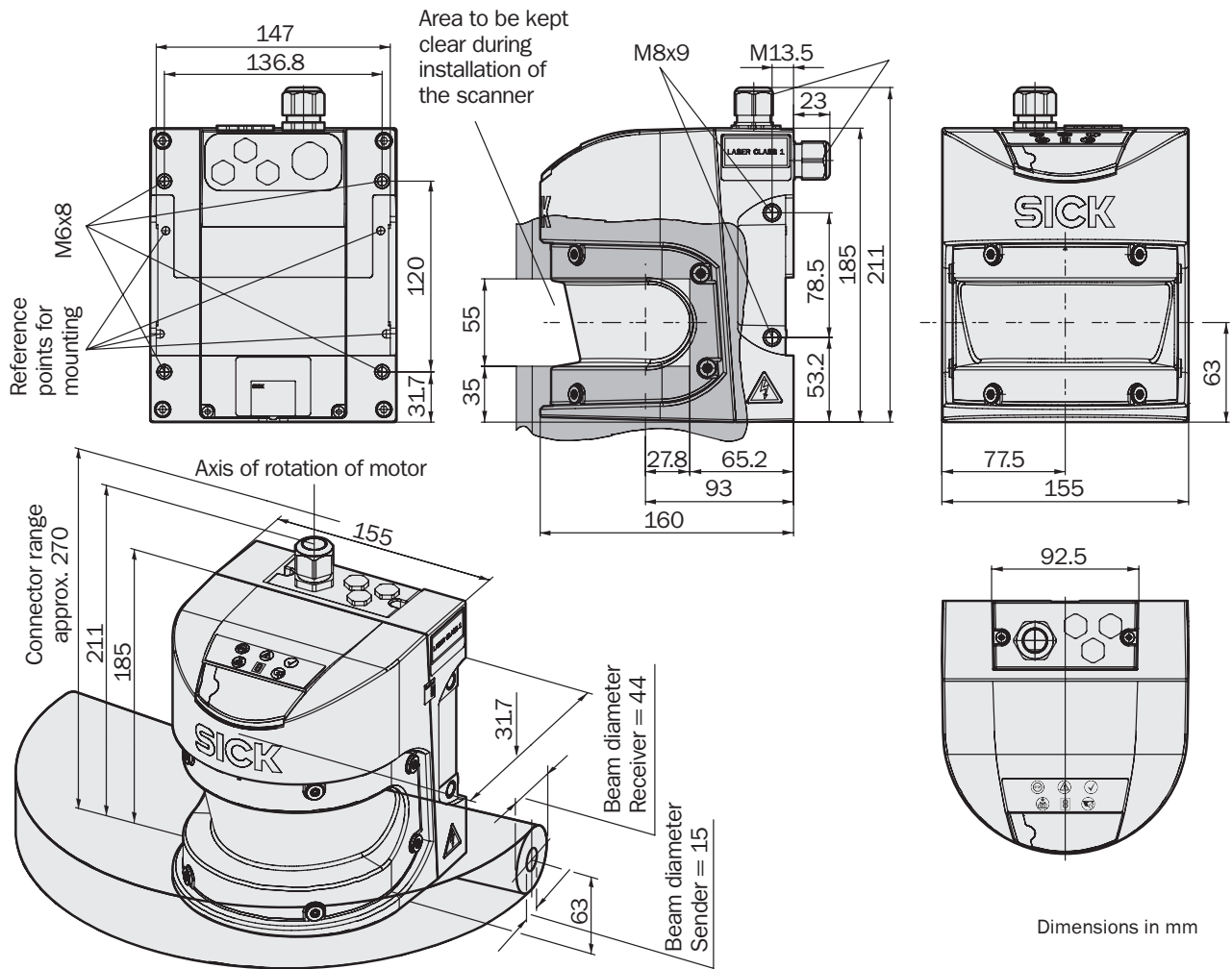
## Electrical data

Connection type	Plug-in connection housing with screw
Connector technology	Screw-type terminals
Supply voltage $V_s$	24 V DC (16.8 V DC ... 28.8 V DC)
Power consumption	0.8 A (24 V DC)
Power consumption	2.3 A <sup>1)</sup>
Number of inputs	
EDM	1
Restart/Reset	1
Static switching signals	2, 4
Dynamic encoder signals (incremental encoder)	2
Number of safety capable outputs	
Safety outputs (OSSD)	2 x 500 mA
Output for warning field	1 x 100 mA
Diagnostic output	1 x 100 mA
Restart/reset required	1 x 100 mA
Configuration and diagnostics interface	RS-232
Transmission rate	9.6 kBaud, 19.2 kBaud, 38.4 kBaud
Data interface	RS-422 (≤500 kBaud)
EFI – safe SICK device communication	
Transmission rate	≤500 kBaud
Cable length	50 m
Connection conductor cross-section	0.34 mm <sup>2</sup>

<sup>1)</sup> Including maximum output load

# Dimensional drawings

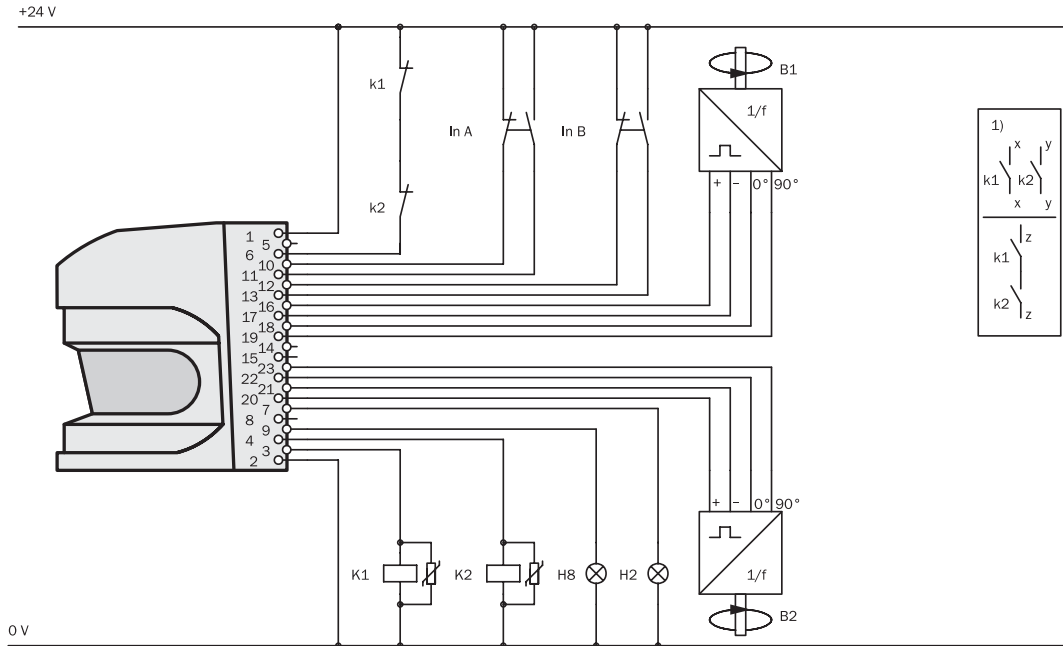
C



## Connection diagrams




→ You can find connection diagrams at [www.sickusa.com/connectiondiagrams](http://www.sickusa.com/connectiondiagrams)

### Protective field switching with static and dynamic inputs



- S3000 Professional CMS in conjunction with relays/contactors
- Operating mode: without restart interlock with external device monitoring (EDM)
- Dynamic protective field switching using B1 and B2 as well as static protective field switching using the control inputs A and B

## Safe control solutions

	Product group	Applications	Further information
	Safety relays	Safety relays allow simple integration of safety components into machinery or plant.	Page N-0
	Safety controllers	Safety controllers are utilized when the safety function (e.g. switching off a dangerous movement) is to be accomplished in a flexible way by logical combination of safety relevant signals. Operation of machinery becomes more flexible and generation of machine variants becomes easier.	Page O-0
	Safety fieldbus solutions	Safety fieldbus solutions are utilized in plants and machinery of larger scale. This saves cabling and enables modular design of the safety automation. Potential errors or faults can be easily identified via the comprehensive diagnostics functions. That significantly reduces machine down times. SICK offers solutions for the open automation standards: AS-i Safety at Work, DeviceNet Safety and PROFIsafe.	

## Accessories

### Mounting systems

Description		Type	Part number
Mounting bracket for direct mounting at the rear on wall or machine. No adjustment facility		Mounting kit 1	2015623
Bracket only in conjunction with mounting kit 1. Mounting at the rear on wall or machine. Longitudinal and cross-wise adjustment possible		Mounting kit 2	2015624
Bracket only in conjunction with mounting kit 1 and 2. Mounting at the rear or below on wall, floor or machine. Longitudinal and cross-wise adjustment possible		Mounting kit 3	2015625
Mounting bracket, rugged design, with protective cover. Floor mounting. Height adjustment possible		Mounting bracket	7087514

### System plugs

Direction of cable outlet	Usage	Connection type	Number of cores	Cable length	Type	Part number
Upward	Not for use with incremental encoders	Without cable	—	—	SX0A-A0000B	2023797
		Pre-assembled	17	5 m	SX0A-B1705B	2027174
				10 m	SX0A-B1710B	2027175
				20 m	SX0A-B1720B	2027816
	For use with incremental encoders	Without cable	—	—	SX0A-A0000D	2023310
		Pre-assembled	13	5 m	SX0A-B1305D	2027176
10 m	SX0A-B1310D			2027177		

### Connection cables

Type	Number of cores	Cable length	Part number
Connection cable	13	100 m	6025729
	17	100 m	6025730
EFI connection cable	—	50 m	6026675

### Cable gland

Usage	Size of the cable gland	Part number
For EFI connections	M12	5308757

### Configuration connection cables

Note	Connection type	Cable length	Part number
For connecting the configuration connection to the PC	M8 x 4, SUB-D 9-pol	2 m	6021195
		8 m	2027649

**SDL connection cables**

Note	Direction of cable outlet	Connection type	Number of cores	Cable length	Part number
For the connection of safety bus modules to S3000	Straight	Interconnectron plug M23 x 12	12	2.5 m	2029337
				5 m	2029338
				10 m	2029339
				15 m	2029340

**Configuration software**

Type	Description	Part number
CDS	CDS (Configuration & Diagnostic Software) on CD-ROM including online documentation and operating instructions in all available languages	2032314

**Power supply units**

Input voltage	Output voltage	Maximum output current	Part number
100 V AC, 240 V AC	24 V DC	2.1 A	7028789
		3.9 A	7028790
120 V AC, 230 V AC		2.5 A	6010361
		4 A	6010362

**Miscellaneous**

Type	Description	Part number
Front screen	Spare parts set for front screen with replacement seal and screws	2027180
Plastic cleaner	Plastic cleaner and care product, anti-static	5600006
Lens cloth	Cloth for cleaning the front screen	4003353



C



- Extremely compact design
- Scanning angle 270°
- Selectable resolution
- Certified for vertical and horizontal use
- 7-segment display
- Integrated external device monitoring (EDM)
- Stand-by input



## Overview of technical specifications

Protective field range	2 m
Warning field range	8 m (at 30 % reflectivity)
Number of field sets	4
Scan angle	270°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, selectable
Response time	80 ms
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)

## Product description

Small but refined-, the safety laser scanner for mobile use.

The S300 provides optimal protection for small, free-moving transport systems and service robots, specifically when protective fields must be easily adjusted to different velocities.

- 4 switchable protective/warning fields

- Adjustable object resolution
- Facility for connecting incremental encoder
- Measured data output over RS-422 data interface
- EFI – safe SICK device communication
- New multi-system "Configuration & Diagnostic Software" CDS

## In-system added value

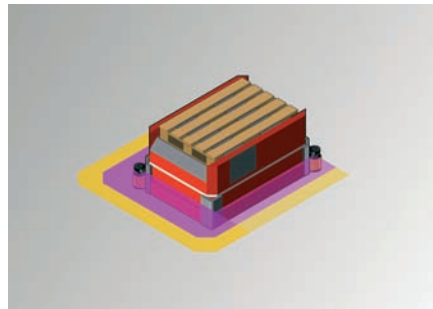
- Supports integration with multiple safety control solutions

→ For safety system combinations, see appendix "Sensor systems and safe control solutions from SICK"

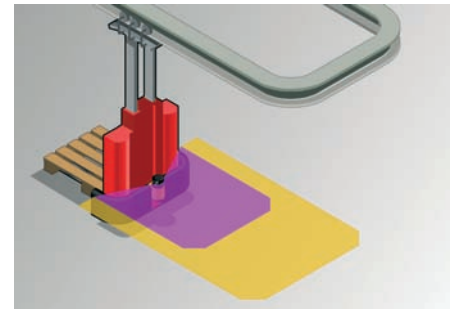
## Applications

→ You can find more applications using the application finder at [www.sickusa.com/applications](http://www.sickusa.com/applications)

- Freely moving transport vehicles
- Production lines
- Machining centres
- Entry/Exit stations
- Robot cells
- Overhead monorail transport systems



All-round protection on an AGV



Hazardous area protection on an electrical overhead conveyor

Further information	Page
→ Dimensional drawings	C-41
→ Connection diagrams	C-43
→ Accessories	C-45
→ Services	A-2

## Ordering information

Delivery S300

- Safety laser scanner
- Operating instructions and CDS (Configuration & Diagnostic Software) on CD-ROM
- Adhesive label "important information"

The system plug has to be ordered separately!

→ Ordering information for system plug and accessories, see page C-45

Type	Part number
S30B-2011DA	1026822

## Detailed technical specifications

→ Additional technical information is described in operating instructions, which are available to download at [www.sickusa.com/literature](http://www.sickusa.com/literature)

### General data

Laser protection class	1 (21 CFR 1040.10 und 1040.11, IEC 60825-1:2001)
Enclosure rating	IP 65 (EN 60529)
Protection class	2 (DIN VDE 0160, DIN EN 50178)
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)
Ambient operating temperature from ... to	-10 °C ... +50 °C
Type of light	Pulsed laser diode
Wave length	905 nm
Housing colour	RAL 1021
Housing material	Aluminium die-cast
Optics cover material	Polycarbonate
Optics cover surface finish	Outside with scratch-resistant coating
System plug	With ESD protected configuration memory
Dimensions (W x H x D)	102 mm x 152 mm x 105 mm
Weight	1.2 kg

### Functional data

Scan angle	270°
Protective field range	2 m
Reflectivity	Reflectors 1.8 % ... >1000 %
Response time	80 ms
Resolution	30 mm, 40 mm, 50 mm, 70 mm, selectable
Angular resolution	0.5°
Protective field supplement	100 mm
Warning field range	8 m (at 30 % reflectivity)
Distance measuring range	30 m
Number of multiple samplings	2 ... 16, configurable via CDS
Reset time	2 s ... 60 s, configurable

Continued on next page



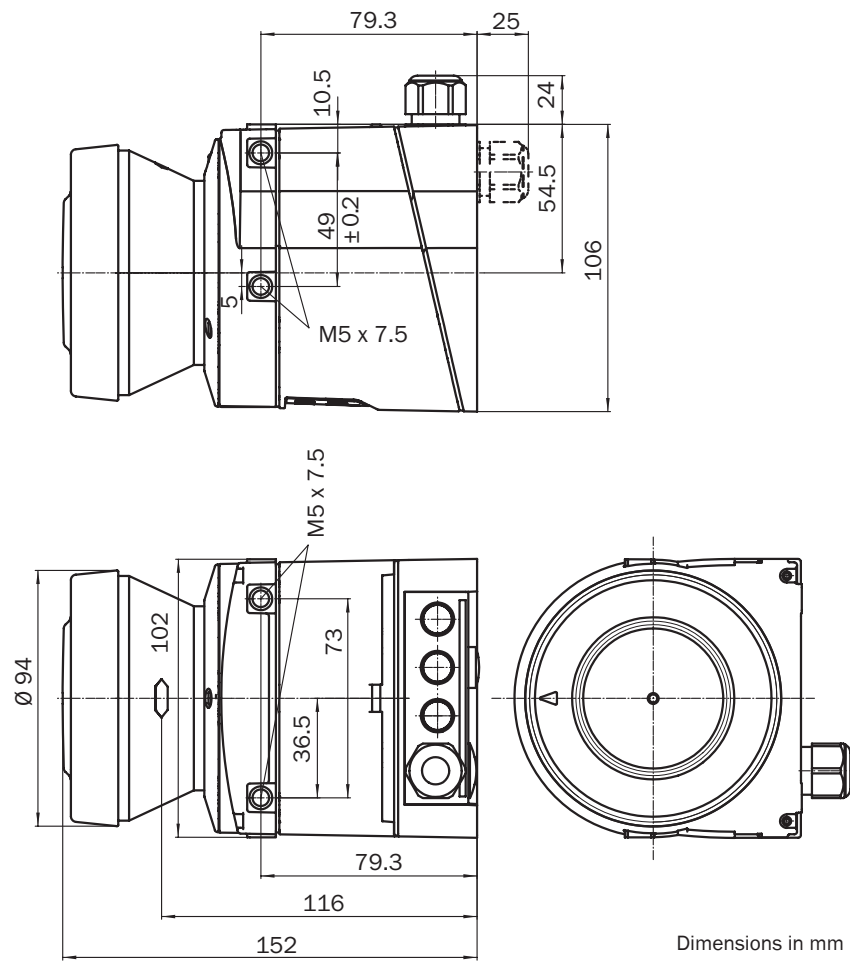
## Electrical data

Connection type	Plug-in connection housing with screw
Connector technology	Screw-type terminals
Supply voltage $V_s$	24 V DC (16.8 V DC ... 30 V DC)
Power consumption	0.33 A (24 V DC)
Power consumption	1.65 A <sup>1)</sup>
Number of inputs	
EDM	1
Restart/Reset	1
Static switching signals or dynamic encoder signals	2, dual-channel
Standby	1
Number of safety capable outputs	
Safety outputs (OSSD)	2 x 250 mA
Output for warning field	1 x 100 mA
Diagnostic output	1 x 100 mA
Restart/reset required	1 x 100 mA
Configuration and diagnostics interface	RS-232
Transmission rate	38.4 kBaud
Data interface	RS-422 (500 kBaud)
EFI – safe SICK device communication	
Transmission rate	500 kBaud
Cable length	50 m
Connection conductor cross-section	0.22 mm <sup>2</sup>

<sup>1)</sup> Including maximum output load

# Dimensional drawings

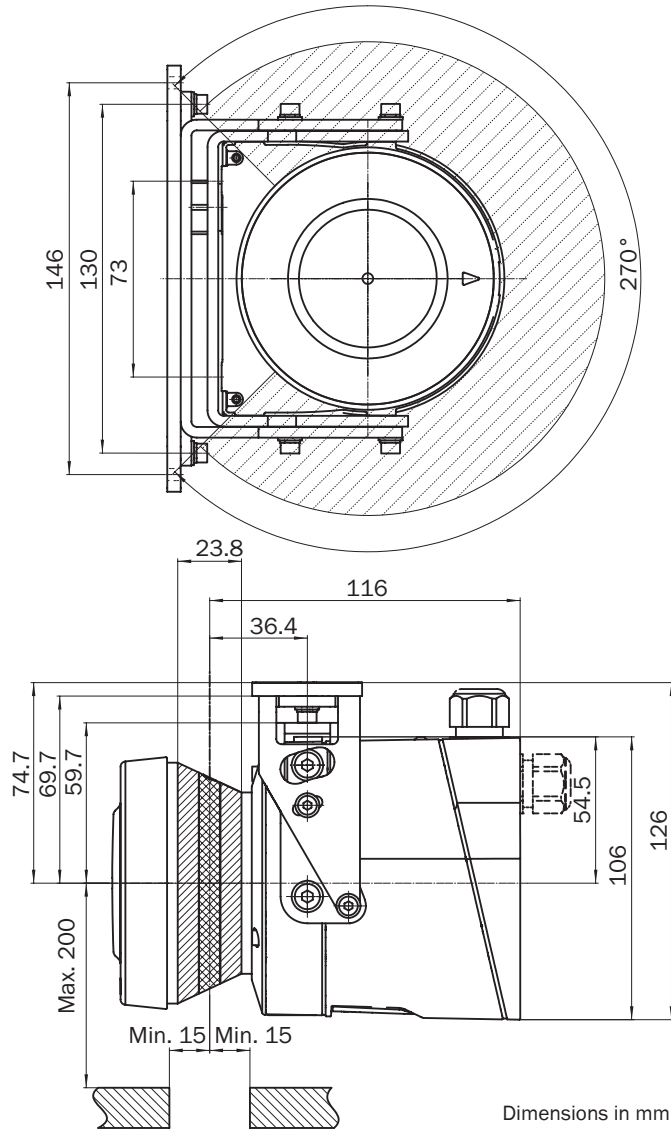
S300



C

Scan plane origin

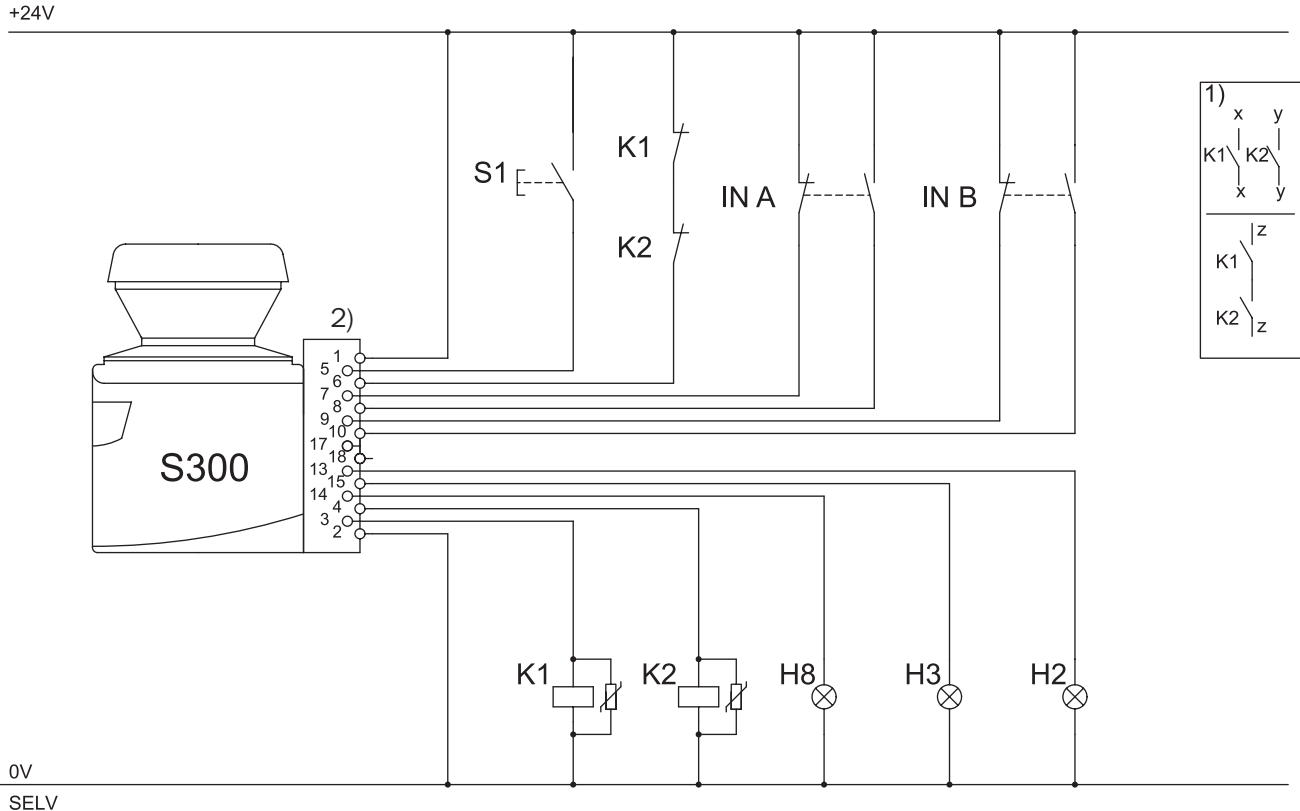
C



# Connection diagrams

→ You can find connection diagrams at [www.sickusa.com/connectiondiagrams](http://www.sickusa.com/connectiondiagrams)

## Protective field switching with two static inputs



- S300 Professional in conjunction with relays/contactors
- Operating mode: with restart interlock and external device monitoring (EDM)
- Protective field switching using control input IN A and IN B

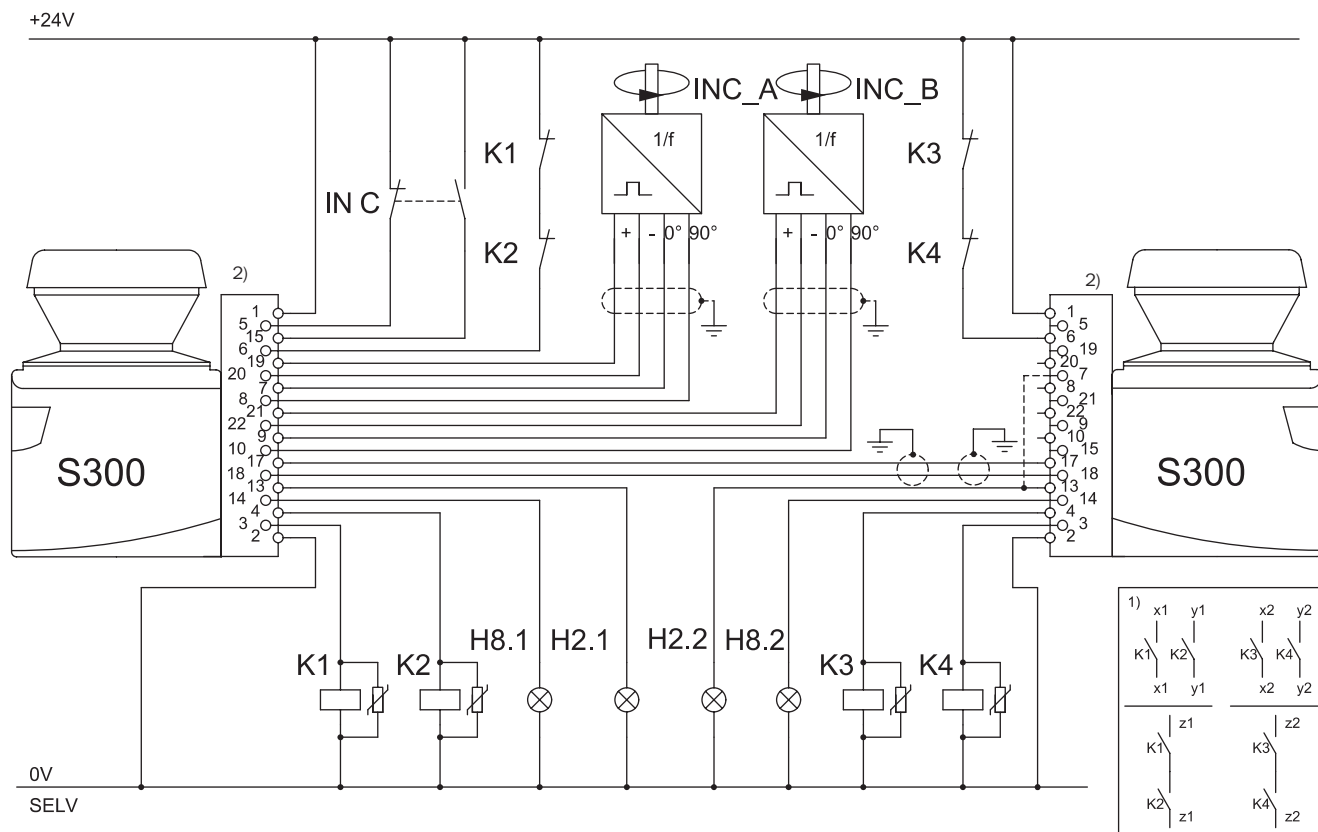
**Comments**

1) Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration

must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and taking the risk analysis into account.  
 2) Functional earth (FE): To achieve the specified EMC safety, the functional earth (FE) must be connected (e.g. to the central earth star point on the vehicle or the system).

Protective field switching between two S300 with static and dynamic inputs

C






- S300 Professional with S300 Professional in master/slave connection with relays/contactors
- Operating mode: with restart interlock and external device monitoring
- Dynamic protective field switching by the incremental encoders A and B on the master
- Static protective field switching using the control input IN C on the master
- The protective fields affect the related OSSDs on master or slave

**Comments**

- 1) Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and taking the risk analysis into account.
- 2) Functional earth (FE): To achieve the specified EMC safety, the functional earth (FE) must be connected (e.g. to the central earth star point on the vehicle or the system).

## Safe control solutions

	Product group	Applications	Further information
	Safety relays	Safety relays allow simple integration of safety components into machinery or plant.	Page N-0
	Safety controllers	Safety controllers are utilized when the safety function (e.g. switching off a dangerous movement) is to be accomplished in a flexible way by logical combination of safety relevant signals. Operation of machinery becomes more flexible and generation of machine variants becomes easier.	Page O-0
	Safety fieldbus solutions	Safety fieldbus solutions are utilized in plants and machinery of larger scale. This saves cabling and enables modular design of the safety automation. Potential errors or faults can be easily identified via the comprehensive diagnostics functions. That significantly reduces machine down times. SICK offers solutions for the open automation standards: AS-i Safety at Work, DeviceNet Safety and PROFIsafe.	

C

## Accessories

### Mounting systems

→ Dimensional drawings for mounting accessories, see page C-46

Type	Mounting	Adjustment	Note	Part number
Mounting kit 1a	Mounting bracket for mounting at the rear on wall or machine	—	—	2034324
Mounting kit 1b	Mounting bracket for rear mounting on wall or machine with protection of optics cover	—	—	2034325
Mounting kit 2	Mounting bracket	Cross-wise adjustment possible	Only in conjunction with mounting kit 1a or 1b	2039302
Mounting kit 3		Longitudinal adjustment possible	Only in conjunction with mounting kit 2	2039303

### System plugs

Usage	Connection type	Number of cores	Cable length	Type	Part number
Not for use with incremental encoders	Without cable	—	—	SX0B-A0000G	2032807
	Pre-assembled	15	5 m	SX0B-B1505G	2034264
			10 m	SX0B-B1510G	2034265
For use with incremental encoders	Without cable	—	—	SX0B-A0000J	2032856
	Pre-assembled	11	5 m	SX0B-B1105J	2032857
			10 m	SX0B-B1110J	2032858

### Connection cables

Type	Number of cores	Cable length	Part number
Connection cable	15	100 m	6030795
EFI connection cable	—	By the meter	6029448

**Cable gland**

Usage	Size of the cable gland	Part number
For EFL connections	M12	5308757

**Configuration connection cables**

Description	Connection type	Cable length	Part number
For connecting the configuration connection to the PC	M8 x 4, SUB-D 9-pol	2 m	6021195
		8 m	2027649

**Configuration software**

Type	Description	Part number
CDS	CDS (Configuration & Diagnostic Software) on CD-ROM including online documentation and operating instructions in all available languages	2032314

**Power supply units**

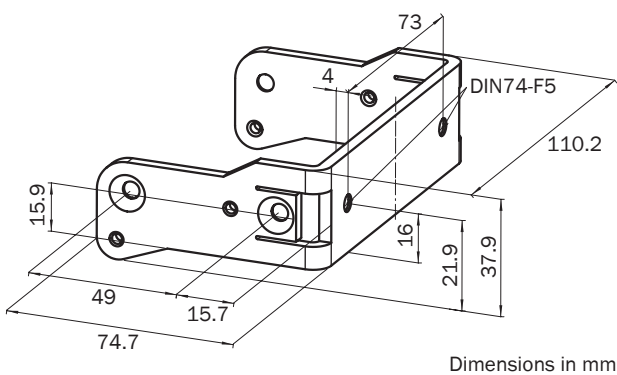
Input voltage	Output voltage	Maximum output current	Part number
100 V AC, 240 V AC	24 V DC	2.1 A	7028789
		3.9 A	7028790
120 V AC, 230 V AC		2.5 A	6010361
		4 A	6010362

**Miscellaneous**

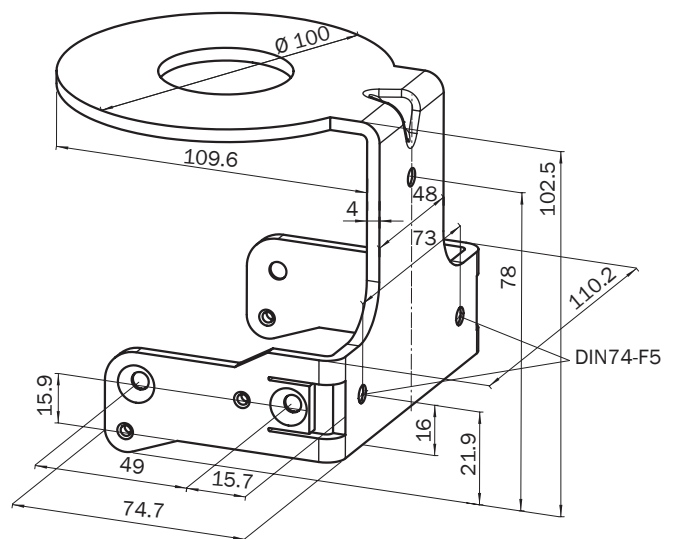
Type	Description	Part number
Optic cover	Spare parts set for optic cover with replacement seal and screws	2039248
Plastic cleaner	Plastic cleaner and care product, anti-static	5600006
Lens cloth	Cloth for cleaning the front screen	4003353

**Dimensional drawings mounting accessories**

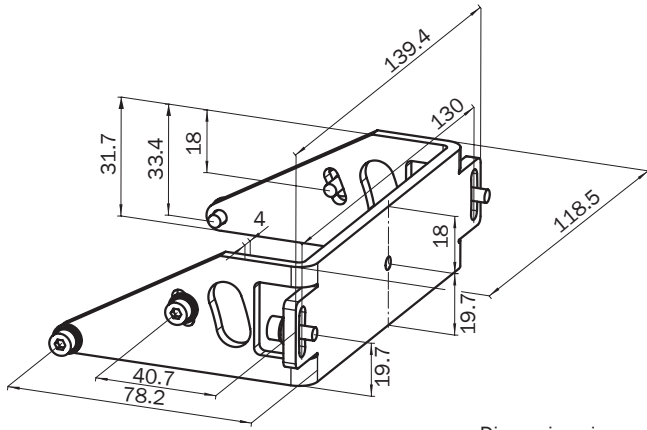
**Mounting kit 1a**



**Mounting kit 1b**

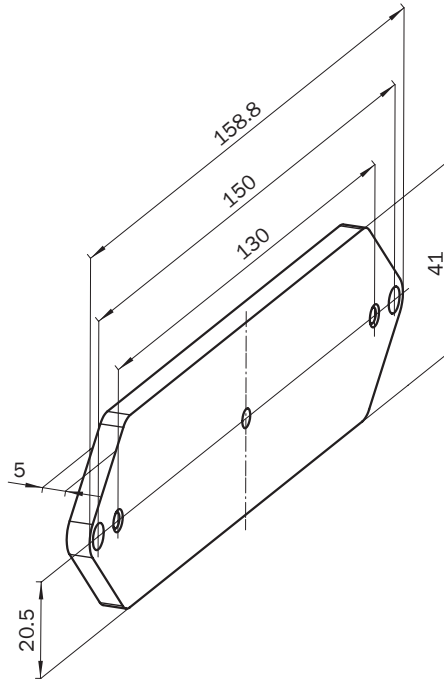


**Mounting kit 2**



Dimensions in mm

**Mounting kit 3**



C





C



- Extremely compact design
- Scanning angle 270°
- Selectable resolution
- Certified for vertical and horizontal use
- 7-segment display
- Integrated external device monitoring (EDM)
- Stand-by input



## Overview of technical specifications

Protective field range	2 m
Warning field range	8 m (at 30 % reflectivity)
Number of field sets	2
Scan angle	270°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, selectable
Response time	80 ms
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)

## Product description

Compact safety laser scanner for complete safety.

The S300 Advanced is the system of choice particularly for applications with changing operating positions, e.g. insertion stations, robots, moving workbenches and more.

- 2 protective/warning fields
- Possibility of connecting two S300 units to form a single system
- Static protective field switching
- New multi-system "Configuration & Diagnostic Software" CDS

## In-system added value

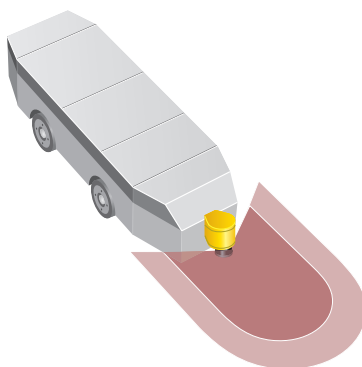
- Supports integration with multiple safety control solutions

→ For safety system combinations, see appendix "Sensor systems and safe control solutions from SICK"

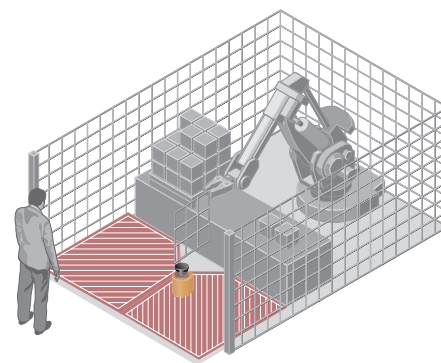
## Applications

→ You can find more applications using the application finder at [www.sickusa.com/applications](http://www.sickusa.com/applications)

- Freely moving transport vehicles
- Production lines
- Machining centres
- Entry/Exit stations
- Robot cells
- Overhead monorail transport systems



Hazardous area protection on an AGV with one direction of travel



Hazardous area protection on a robot cell with two operating areas

Further information	Page
→ Dimensional drawings	C-51
→ Connection diagrams	C-53
→ Accessories	C-54
→ Services	A-2

## Ordering information

Delivery S300

- Safety laser scanner
- Operating instructions and CDS (Configuration & Diagnostic Software) on CD-ROM
- Adhesive label "important information"

The system plug has to be ordered separately!

→ Ordering information for system plug and accessories, see page C-54

Type	Part number
S30B-2011CA	1026821

## Detailed technical specifications

→ Additional technical information is described in operating instructions, which are available to download at [www.sickusa.com/literature](http://www.sickusa.com/literature)

### General data

Laser protection class	1 (21 CFR 1040.10 und 1040.11, IEC 60825-1:2001)
Enclosure rating	IP 65 (EN 60529)
Protection class	2 (DIN VDE 0160, DIN EN 50178)
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)
Ambient operating temperature from ... to	-10 °C ... +50 °C
Type of light	Pulsed laser diode
Wave length	905 nm
Housing colour	RAL 1021
Housing material	Aluminium die-cast
Optics cover material	Polycarbonate
Optics cover surface finish	Outside with scratch-resistant coating
System plug	With ESD protected configuration memory
Dimensions (W x H x D)	102 mm x 152 mm x 105 mm
Weight	1.2 kg

### Functional data

Scan angle	270°
Protective field range	2 m
Reflectivity	Reflectors 1.8 % ... >1000 %
Response time	80 ms
Resolution	30 mm, 40 mm, 50 mm, 70 mm, selectable
Angular resolution	0.5°
Protective field supplement	100 mm
Warning field range	8 m (at 30 % reflectivity)
Distance measuring range	30 m
Number of multiple samplings	2 ... 16, configurable via CDS
Reset time	2 s ... 60 s, configurable

Continued on next page

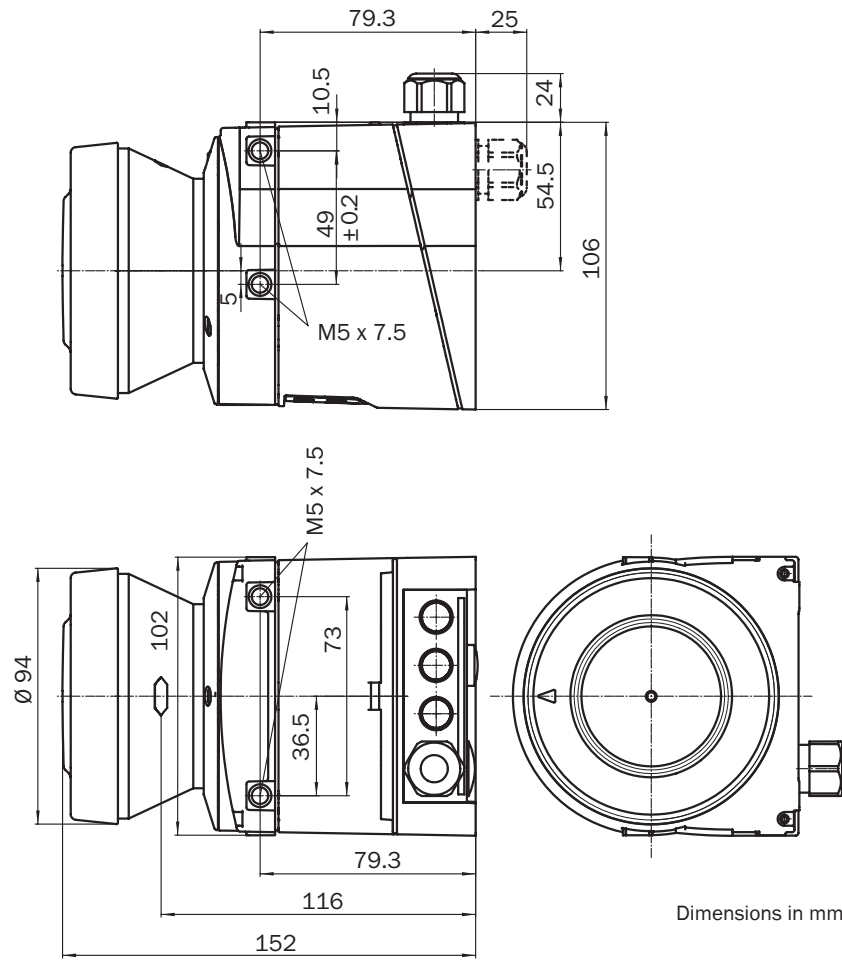
## Electrical data

Connection type	Plug-in connection housing with screw
Connector technology	Screw-type terminals
Supply voltage $V_s$	24 V DC (16.8 V DC ... 30 V DC)
Power consumption	0.33 A (24 V DC)
Power consumption	1.65 A <sup>1)</sup>
Number of inputs	
EDM	1
Restart/Reset	1
Static switching signals	1, dual-channel
Standby	1
Number of safety capable outputs	
Safety outputs (OSSD)	2 x 250 mA
Output for warning field	1 x 100 mA
Diagnostic output	1 x 100 mA
Restart/reset required	1 x 100 mA
Configuration and diagnostics interface	RS-232
Transmission rate	38.4 kBaud
EFI – safe SICK device communication	
Transmission rate	500 kBaud
Cable length	50 m
Connection conductor cross-section	0.22 mm <sup>2</sup>

<sup>1)</sup> Including maximum output load

# Dimensional drawings

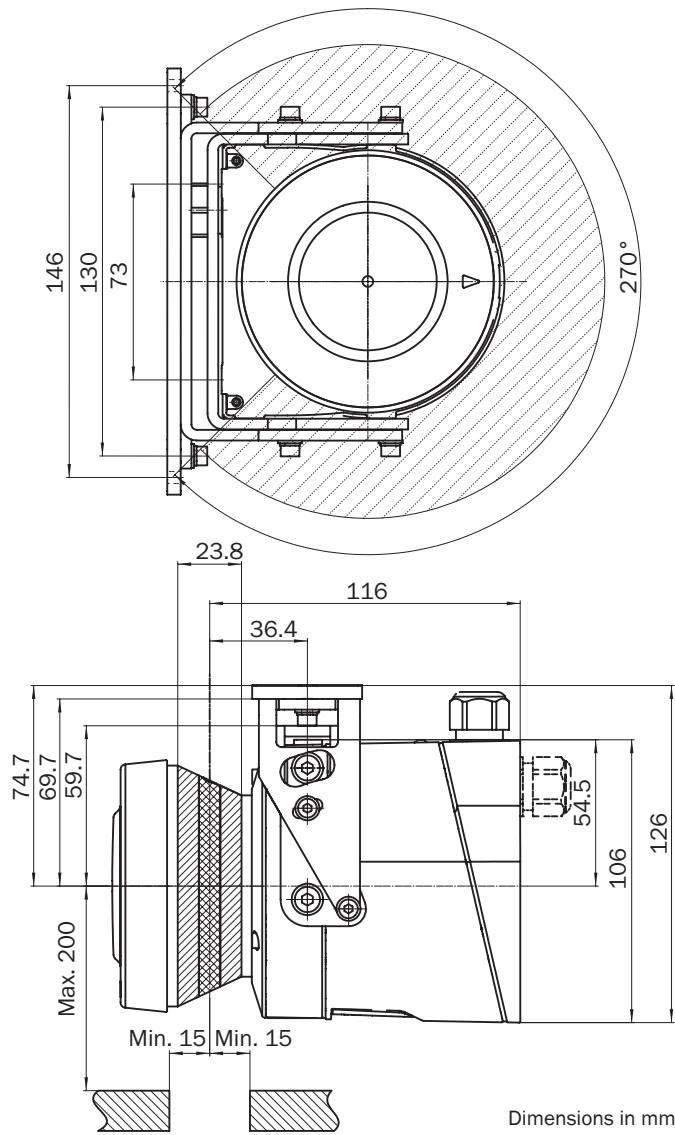
S300



C




Scan plane origin

C





## Safe control solutions

	Product group	Applications	Further information
	Safety relays	Safety relays allow simple integration of safety components into machinery or plant.	Page N-0
	Safety controllers	Safety controllers are utilized when the safety function (e.g. switching off a dangerous movement) is to be accomplished in a flexible way by logical combination of safety relevant signals. Operation of machinery becomes more flexible and generation of machine variants becomes easier.	Page O-0
	Safety fieldbus solutions	Safety fieldbus solutions are utilized in plants and machinery of larger scale. This saves cabling and enables modular design of the safety automation. Potential errors or faults can be easily identified via the comprehensive diagnostics functions. That significantly reduces machine down times. SICK offers solutions for the open automation standards: AS-i Safety at Work, DeviceNet Safety and PROFI-safe.	

## Accessories

### Mounting systems

→ Dimensional drawings for mounting accessories, see page C-55

Type	Mounting	Adjustment	Note	Part number
Mounting kit 1a	Mounting bracket for mounting at the rear on wall or machine	—	—	2034324
Mounting kit 1b	Mounting bracket for rear mounting on wall or machine with protection of optics cover	—	—	2034325
Mounting kit 2	Mounting bracket	Cross-wise adjustment possible	Only in conjunction with mounting kit 1a or 1b	2039302
Mounting kit 3		Longitudinal adjustment possible	Only in conjunction with mounting kit 2	2039303

### System plugs

Connection type	Number of cores	Cable length	Type	Part number
Without cable	—	—	SX0B-A0000G	2032807
Pre-assembled	15	5 m	SX0B-B1505G	2034264
		10 m	SX0B-B1510G	2034265

### Connection cables

Type	Number of cores	Cable length	Part number
Connection cable	15	100 m	6030795
EFI connection cable	—	By the meter	6029448

**Cable gland**

Usage	Size of the cable gland	Part number
For EFI connections	M12	5308757

**Configuration connection cables**

Description	Connection type	Cable length	Part number
For connecting the configuration connection to the PC	M8 x 4, SUB-D 9-pol	2 m	6021195
		8 m	2027649

**Configuration software**

Type	Description	Part number
CDS	CDS (Configuration & Diagnostic Software) on CD-ROM including online documentation and operating instructions in all available languages	2032314

**Power supply units**

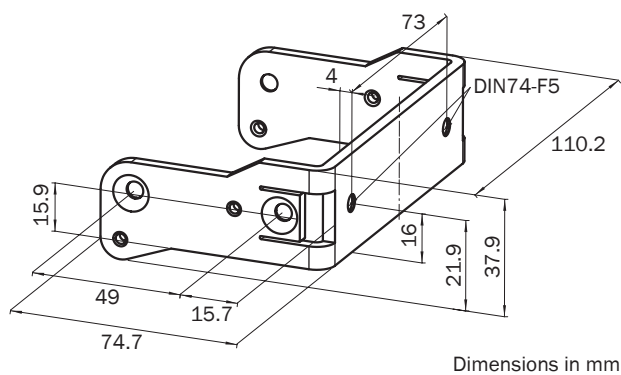
Input voltage	Output voltage	Maximum output current	Part number
100 V AC, 240 V AC	24 V DC	2.1 A	7028789
		3.9 A	7028790
120 V AC, 230 V AC		2.5 A	6010361
		4 A	6010362

**Miscellaneous**

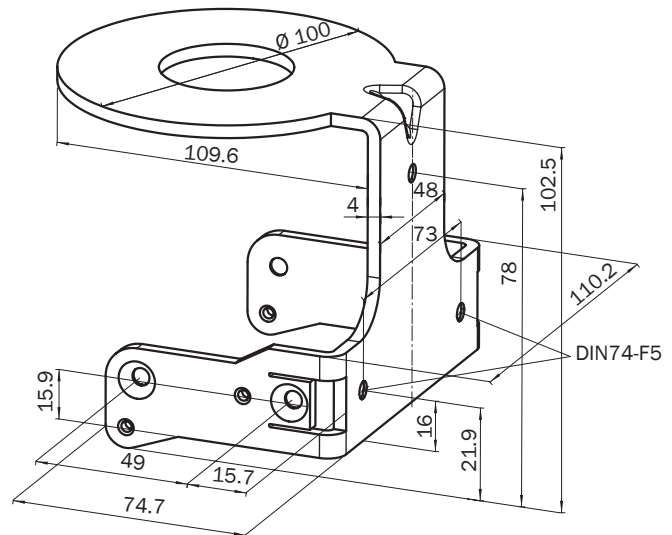
Type	Description	Part number
Optic cover	Spare parts set for optic cover with replacement seal and screws	2039248
Plastic cleaner	Plastic cleaner and care product, anti-static	5600006
Lens cloth	Cloth for cleaning the front screen	4003353

**Dimensional drawings mounting accessories**

**Mounting kit 1a**



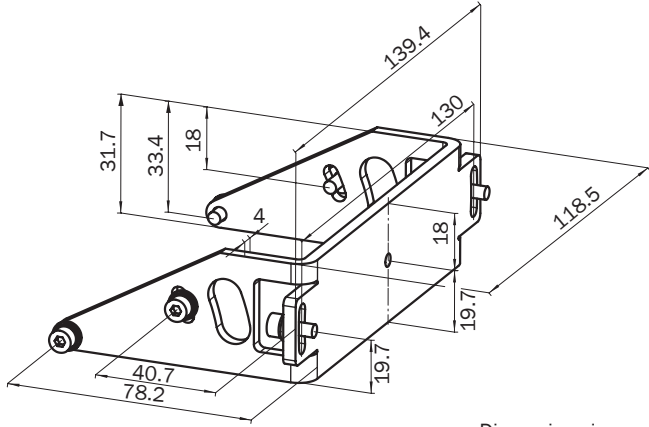
**Mounting kit 1b**





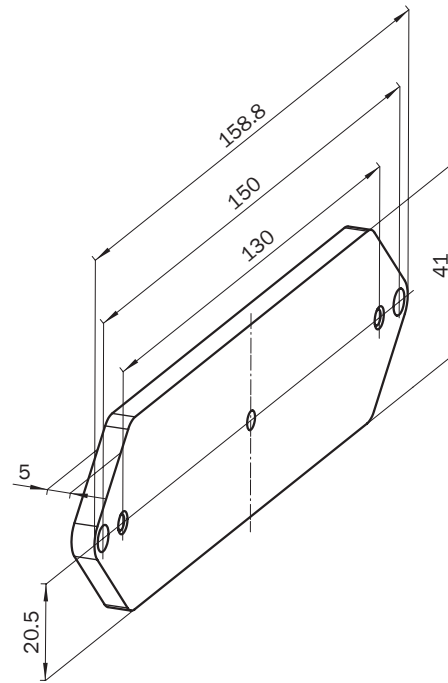
C

Mounting kit 2



Dimensions in mm

Mounting kit 3



## Overview of technical specifications

Protective field range	2 m
Warning field range	8 m (at 30 % reflectivity)
Number of field sets	1
Scan angle	270°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, selectable
Response time	80 ms
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)

## Product description

High-end safety at entry level price  
 The low-cost solution for simple requirements with one protective field and warning field.  
 Ideal for the horizontal and vertical protection of hazardous areas and areas of access.

With adjustable object resolution as well as configurable "contour as reference."

- 1 protective and warning field
- New multi-system "Configuration & Diagnostic Software" CDS

## In-system added value

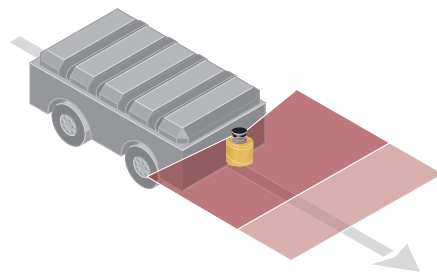
- Supports integration with multiple safety control solutions

→ For safety system combinations, see appendix "Sensor systems and safe control solutions from SICK"

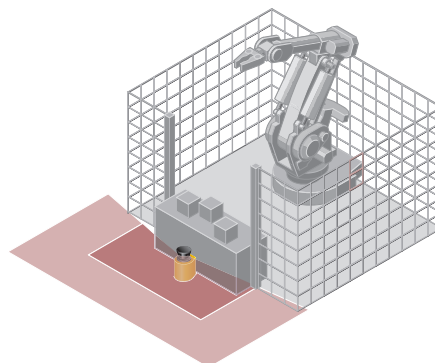
## Applications

→ You can find more applications using the application finder at [www.sickusa.com/applications](http://www.sickusa.com/applications)

- Freely moving transport vehicles
- Production lines
- Machining centres
- Entry/Exit stations
- Robot cells
- Overhead monorail transport systems



Hazardous area protection on an AGV with one direction of travel



Hazardous area protection on a robot cell



- Extremely compact design
- Scanning angle 270°
- Selectable resolution
- Certified for vertical and horizontal use
- 7-segment display
- Integrated external device monitoring (EDM)
- Stand-by input



Further information	Page
→ Ordering information	C-58
→ Technical specifications	C-58
→ Dimensional drawings	C-59
→ Connection diagrams	C-61
→ Accessories	C-62
→ Services	A-2

## Ordering information

Delivery S300

- Safety laser scanner
- Operating instructions and CDS (Configuration & Diagnostic Software) on CD-ROM
- Adhesive label "important information"

The system plug has to be ordered separately!

→ Ordering information for system plug and accessories, see page C-62

Type	Part number
S30B-2011BA	1026820

## Detailed technical specifications

→ Additional technical information is described in operating instructions, which are available to download at [www.sickusa.com/literature](http://www.sickusa.com/literature)

### General data

Laser protection class	1 (21 CFR 1040.10 und 1040.11, IEC 60825-1:2001)
Enclosure rating	IP 65 (EN 60529)
Protection class	2 (DIN VDE 0160, DIN EN 50178)
Type	Type 3 (IEC/EN 61496-3)
Safety integrity level	SIL2 (IEC/EN 61508)
Ambient operating temperature from ... to	-10 °C ... +50 °C
Type of light	Pulsed laser diode
Wave length	905 nm
Housing colour	RAL 1021
Housing material	Aluminium die-cast
Optics cover material	Polycarbonate
Optics cover surface finish	Outside with scratch-resistant coating
System plug	With ESD protected configuration memory
Dimensions (W x H x D)	102 mm x 152 mm x 105 mm
Weight	1.2 kg

### Functional data

Scan angle	270°
Protective field range	2 m
Reflectivity	Reflectors 1.8 % ... >1000 %
Response time	80 ms
Resolution	30 mm, 40 mm, 50 mm, 70 mm, selectable
Angular resolution	0.5°
Protective field supplement	100 mm
Warning field range	8 m (at 30 % reflectivity)
Distance measuring range	30 m
Number of multiple samplings	2 ... 16, configurable via CDS
Reset time	2 s ... 60 s, configurable

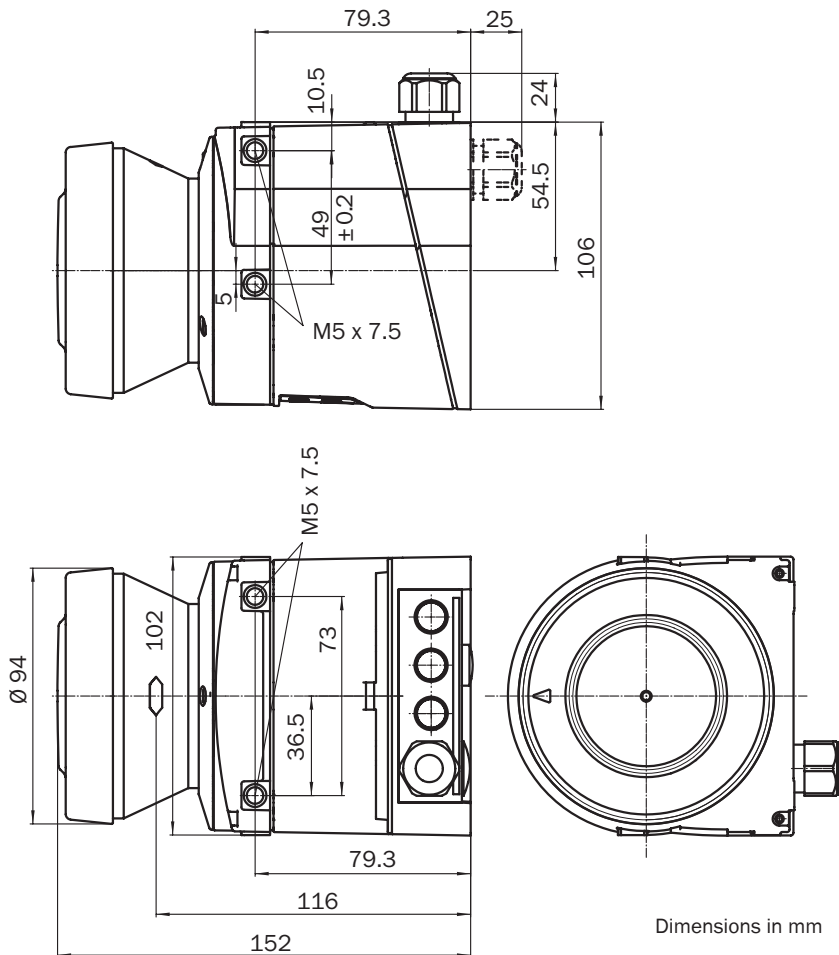
Electrical data

Connection type	Plug-in connection housing with screw	
Connector technology	Screw-type terminals	
Supply voltage $V_s$	24 V DC (16.8 V DC ... 30 V DC)	
Power consumption	0.33 A (24 V DC)	
Power consumption	1.65 A <sup>1)</sup>	
Number of inputs	EDM	1
	Restart/Reset	1
	Standby	1
Number of safety capable outputs	Safety outputs (OSSD)	2 x 250 mA
	Output for warning field	1 x 100 mA
	Diagnostic output	1 x 100 mA
	Restart/reset required	1 x 100 mA
Configuration and diagnostics interface	RS-232	
	Transmission rate	38.4 kBaud

<sup>1)</sup> Including maximum output load

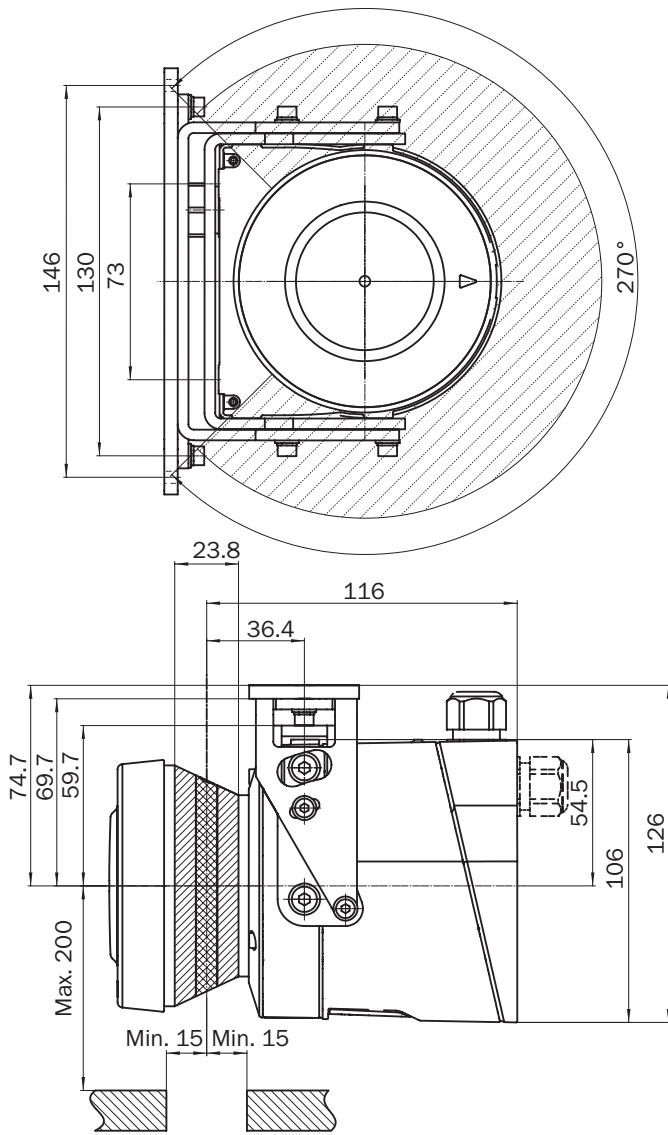
Dimensional drawings

S300



Scan plane origin

C

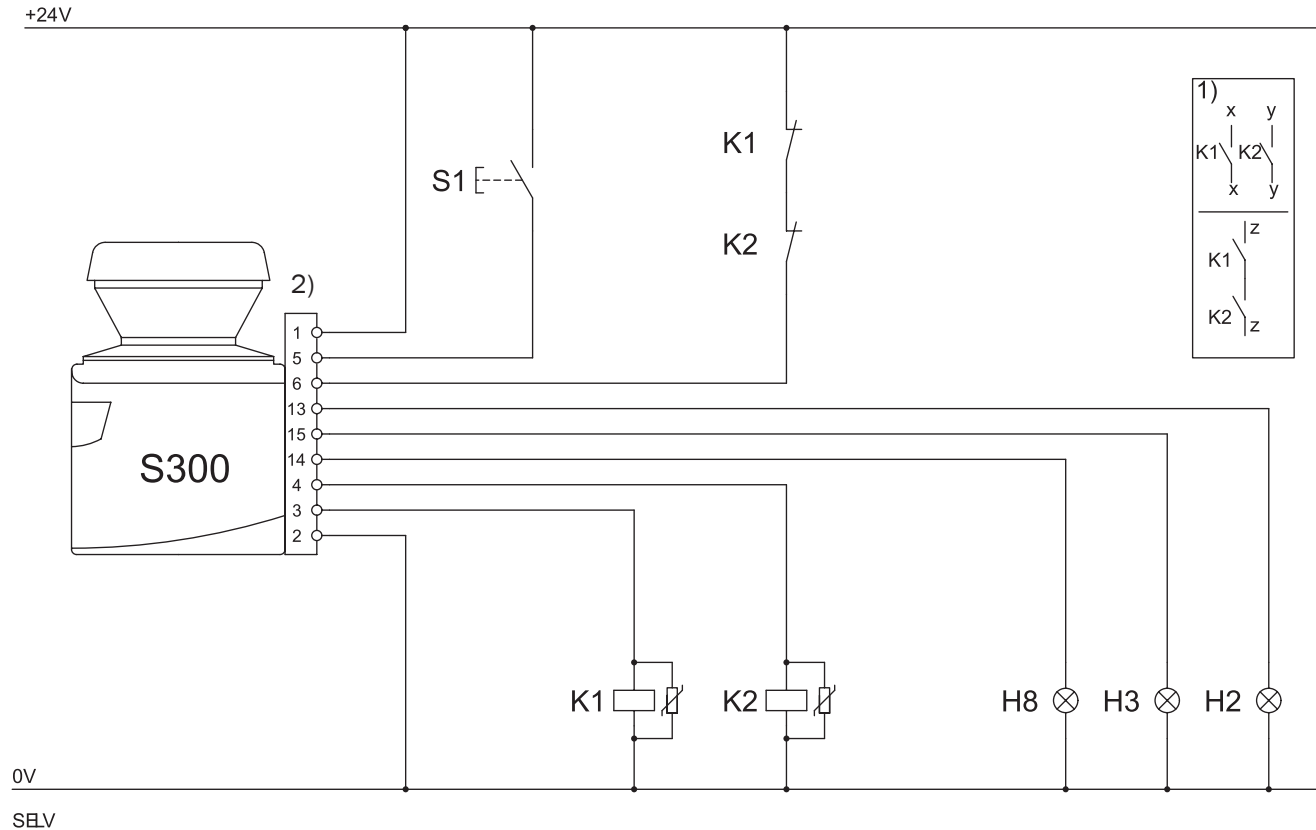


Dimensions in mm

# Connection diagrams

→ You can find connection diagrams at [www.sickusa.com/connectiondiagrams](http://www.sickusa.com/connectiondiagrams)

## With restart interlock and external device monitoring



- S300 Standard in conjunction with relays/contactors
- Operating mode: with restart interlock and external device monitoring (EDM)

**Comments**

1) Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration




must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and taking the risk analysis into account.

2) Functional earth (FE): To achieve the specified EMC safety, the functional earth (FE) must be connected (e.g. to the central earth star point on the vehicle or the system).

C

## Safe control solutions

C

	Product group	Applications	Further information
	Safety relays	Safety relays allow simple integration of safety components into machinery or plant.	Page N-0
	Safety controllers	Safety controllers are utilized when the safety function (e.g. switching off a dangerous movement) is to be accomplished in a flexible way by logical combination of safety relevant signals. Operation of machinery becomes more flexible and generation of machine variants becomes easier.	Page O-0
	Safety fieldbus solutions	Safety fieldbus solutions are utilized in plants and machinery of larger scale. This saves cabling and enables modular design of the safety automation. Potential errors or faults can be easily identified via the comprehensive diagnostics functions. That significantly reduces machine down times. SICK offers solutions for the open automation standards: AS-i Safety at Work, DeviceNet Safety and PROFI-safe.	

## Accessories

### Mounting systems

→ Dimensional drawings for mounting accessories, see page C-63

Type	Mounting	Adjustment	Note	Part number
Mounting kit 1a	Mounting bracket for mounting at the rear on wall or machine	—	—	2034324
Mounting kit 1b	Mounting bracket for rear mounting on wall or machine with protection of optics cover	—	—	2034325
Mounting kit 2	Mounting bracket	Cross-wise adjustment possible	Only in conjunction with mounting kit 1a or 1b	2039302
Mounting kit 3		Longitudinal adjustment possible	Only in conjunction with mounting kit 2	2039303

### System plugs

Connection type	Number of cores	Cable length	Type	Part number
Without cable	—	—	SX0B-A0000G	2032807
Pre-assembled	11	5 m	SX0B-B1105G	2032859
		10 m	SX0B-B1110G	2032860
		20 m	SX0B-B1120G	2032861

### Connection cable

Type	Number of cores	Cable length	Part number
Connection cable	15	100 m	6030795

**Configuration connection cables**

Description	Connection type	Cable length	Part number
For connecting the configuration connection to the PC	M8 x 4, SUB-D 9-pol	2 m	6021195
		8 m	2027649

**Configuration software**

Type	Description	Part number
CDS	CDS (Configuration & Diagnostic Software) on CD-ROM including online documentation and operating instructions in all available languages	2032314



**Power supply units**

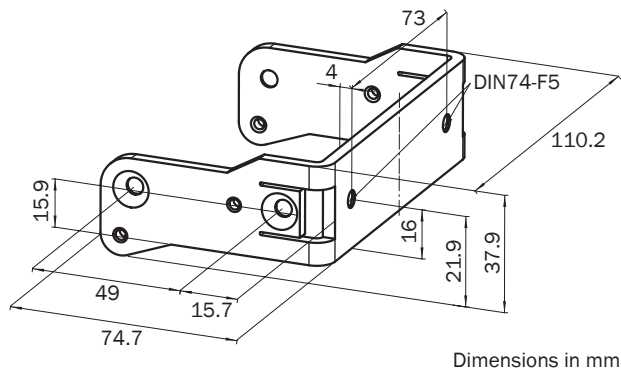
Input voltage	Output voltage	Maximum output current	Part number
100 V AC, 240 V AC	24 V DC	2.1 A	7028789
		3.9 A	7028790
2.5 A		6010361	
4 A		6010362	
120 V AC, 230 V AC			

**Miscellaneous**

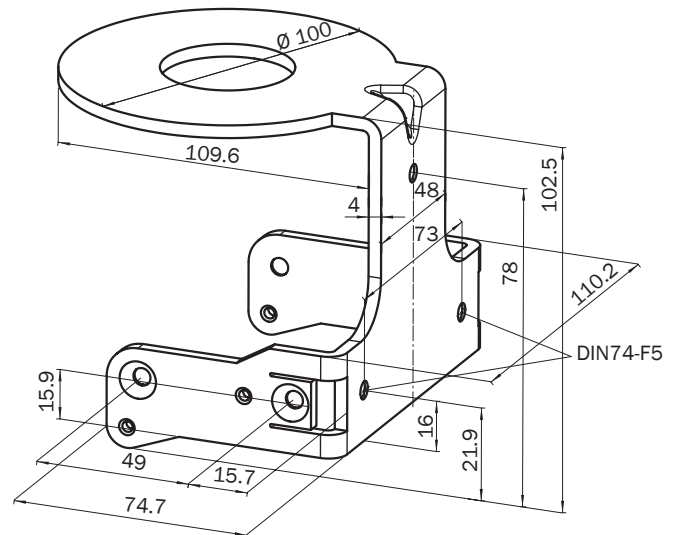
Type	Description	Part number
Optic cover	Spare parts set for optic cover with replacement seal and screws	2039248
Plastic cleaner	Plastic cleaner and care product, anti-static	5600006
Lens cloth	Cloth for cleaning the front screen	4003353

**Dimensional drawings mounting accessories**

**Mounting kit 1a**



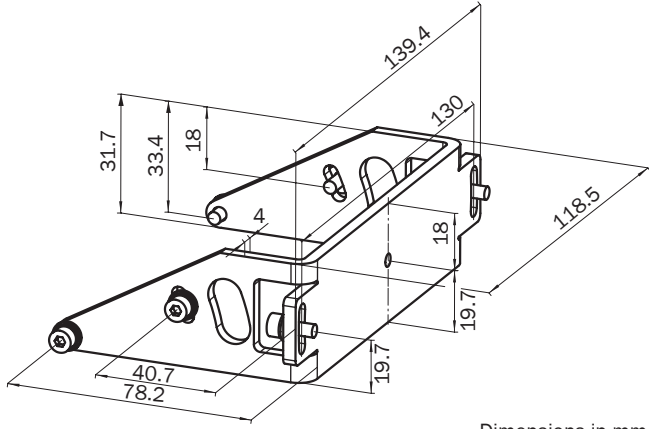
**Mounting kit 1b**





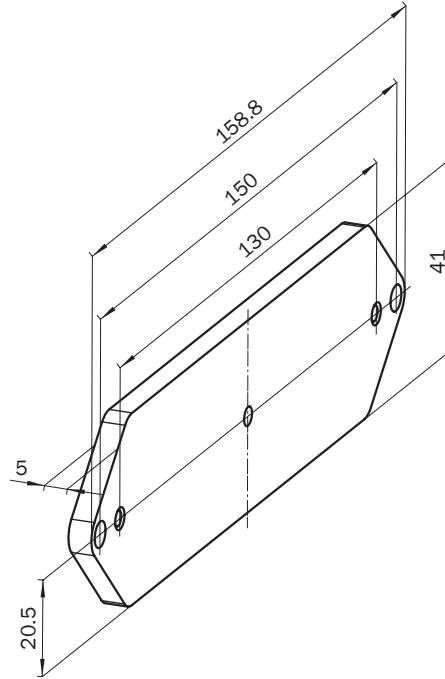
C

Mounting kit 2



Dimensions in mm

Mounting kit 3



## Overview of technical specifications

Protective field range	1.5 m
Warning field range	8 m (at 30 % reflectivity)
Number of field sets	1
Scan angle	270°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, selectable
Response time	80 ms
Type	Type 2 (IEC/EN 61496-1)
Safety integrity level	SIL1 (IEC/EN 61508)

## Product description

State-of-the-art Type 2 solution. Finally a system that meets the requirements of Type 2 in accordance with IEC/EN 61496 at the highest technical level and at astoundingly low cost. The S200 is flexible and easy to integrate, can be used horizontally and vertically, and

impresses with its adjustable object resolution as well as the contour as reference function.

- 1 protective/warning field (field set)
- New uniform "Configuration & Diagnostic Software" CDS

## In-system added value

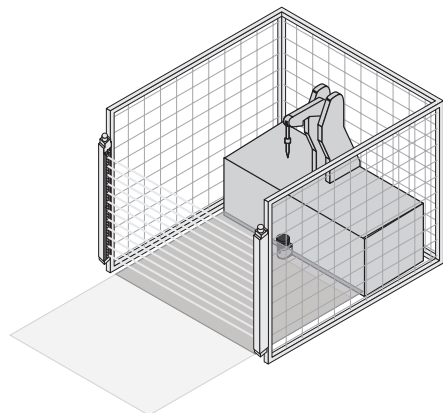
- Supports integration with multiple safety control solutions

→ For safety system combinations, see appendix "Sensor systems and safe control solutions from SICK"

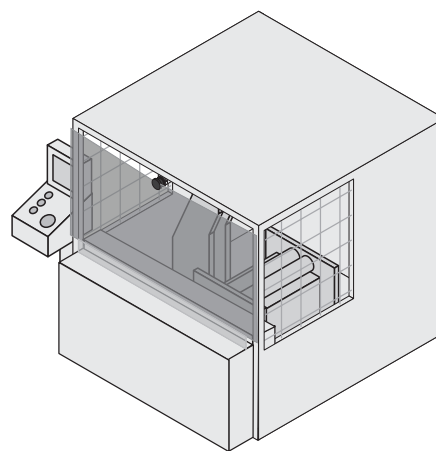
## Applications

→ You can find more applications using the application finder at [www.sickusa.com/applications](http://www.sickusa.com/applications)

- Machining centres
- Entry/Exit stations
- Robot cells
- Overhead monorail transport systems



Point-of-operation guarding on a robot cell using S200 in conjunction with safety light curtain



Hazardous point protection on a small automatic placement machine



- Extremely compact design
- Scanning angle 270°
- Selectable resolution
- Certified for vertical and horizontal use
- 7-segment display
- Integrated external device monitoring (EDM)



Further information	Page
→ Ordering information	C-66
→ Technical specifications	C-66
→ Dimensional drawings	C-68
→ Connection diagrams	C-70
→ Accessories	C-71
→ Services	A-2

## Ordering information

Delivery S200

- Safety laser scanner
- Operating instructions and CDS (Configuration & Diagnostic Software) on CD-ROM
- Adhesive label "important information"

The system plug has to be ordered separately!

→ Ordering information for system plug and accessories, see page C-71

Type	Part number
S20B-1011BA	1026823

## Detailed technical specifications

→ Additional technical information is described in operating instructions, which are available to download at [www.sickusa.com/literature](http://www.sickusa.com/literature)

### General data

Laser protection class	1 (21 CFR 1040.10 und 1040.11, IEC 60825-1:2001)
Enclosure rating	IP 65 (EN 60529)
Protection class	2 (DIN VDE 0160, DIN EN 50178)
Type	Type 2 (IEC/EN 61496-1)
Safety integrity level	SIL1 (IEC/EN 61508)
Ambient operating temperature from ... to	-10 °C ... +50 °C
Type of light	Pulsed laser diode
Wave length	905 nm
Housing colour	RAL 1021
Housing material	Aluminium die-cast
Optics cover material	Polycarbonate
Optics cover surface finish	Outside with scratch-resistant coating
Dimensions (W x H x D)	102 mm x 152 mm x 105 mm
Weight	1.2 kg

### Functional data

Scan angle	270°
Protective field range	1.5 m
Reflectivity	Reflectors 1.8 % ... >1000 %
Response time	80 ms
Resolution	30 mm, 40 mm, 50 mm, 70 mm, selectable
Angular resolution	0.5°
Protective field supplement	100 mm
Warning field range	8 m (at 30 % reflectivity)
Distance measuring range	30 m
Number of multiple samplings	2 ... 16, configurable via CDS
Reset time	2 s ... 60 s, configurable

## Electrical data

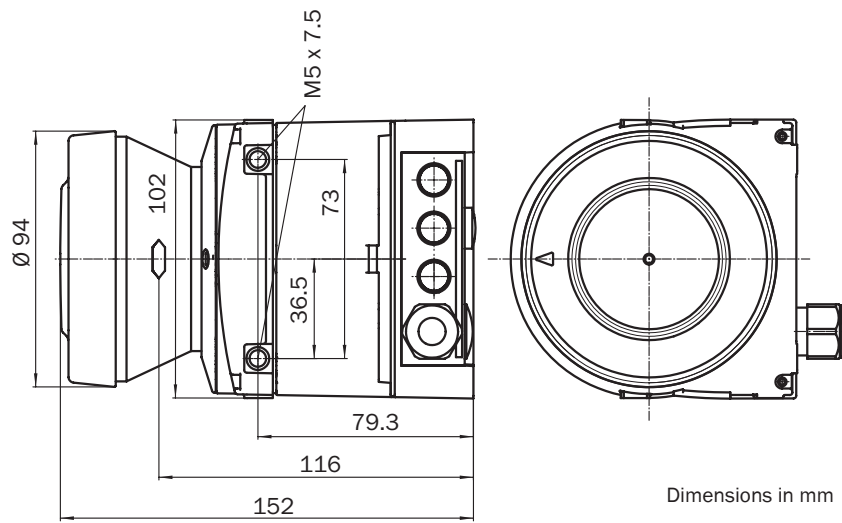
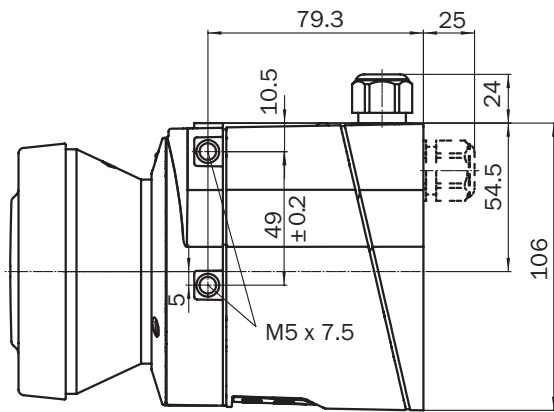
Connection type	Plug-in connection housing with screw
Connector technology	Screw-type terminals
Supply voltage $V_s$	24 V DC (16.8 V DC ... 30 V DC)
Power consumption	0.33 A (24 V DC)
Power consumption	1.65 A <sup>1)</sup>
Number of inputs	
EDM	1
Restart/Reset	1
Standby	1
Number of safety capable outputs	
Safety outputs (OSSD)	2 x 250 mA
Output for warning field	1 x 100 mA
Diagnostic output	1 x 100 mA
Restart/reset required	1 x 100 mA
Configuration and diagnostics interface	RS-232
Transmission rate	38.4 kBaud

<sup>1)</sup> Including maximum output load

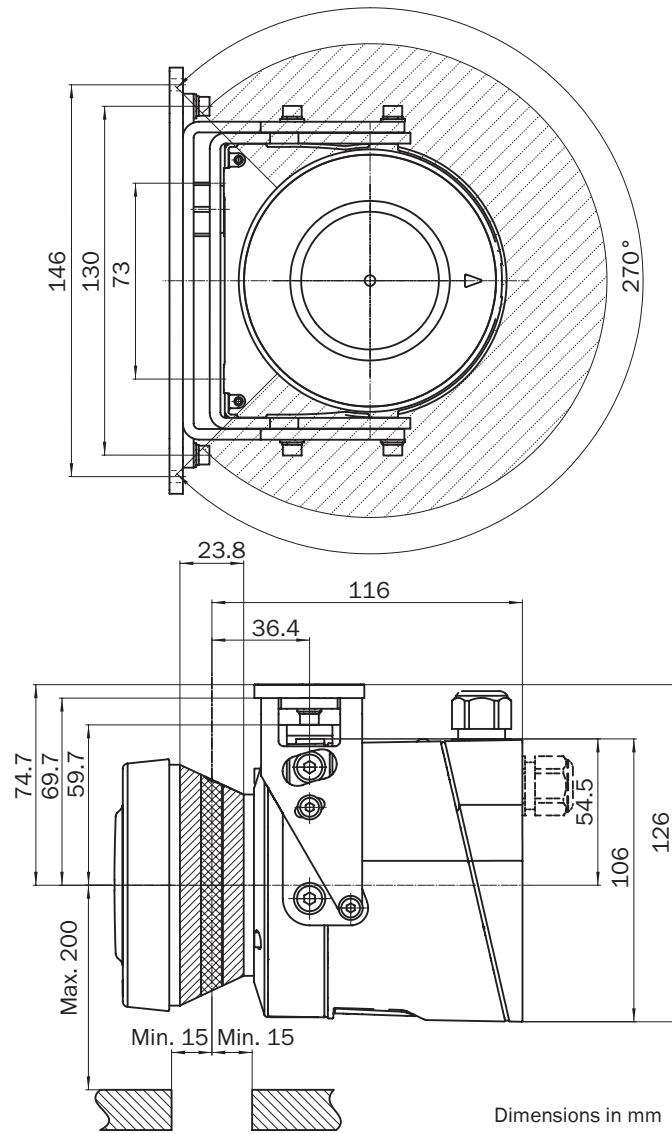
C

## Dimensional drawings

S200



Scan plane origin



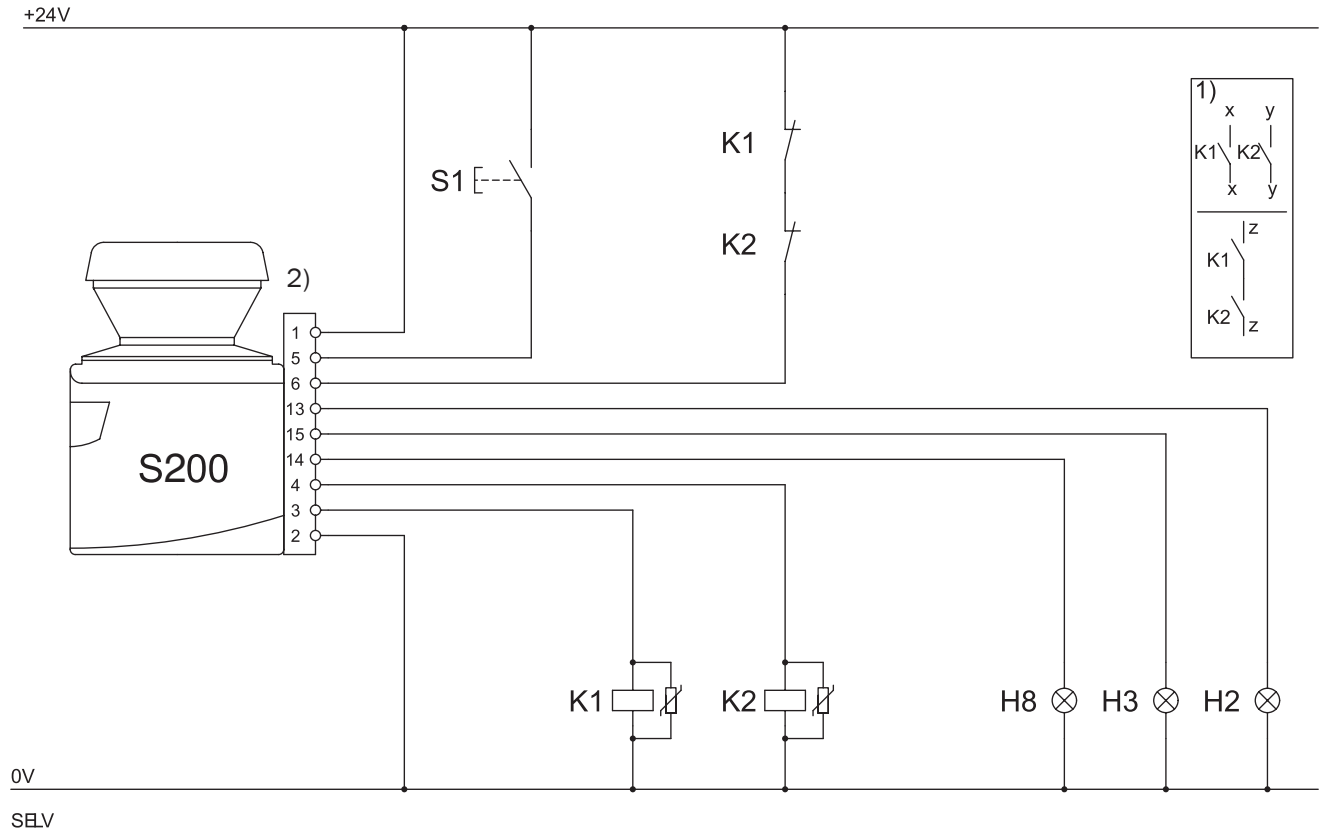
C

# Connection diagrams

→ You can find connection diagrams at [www.sickusa.com/connectiondiagrams](http://www.sickusa.com/connectiondiagrams)

## With restart interlock and external device monitoring

C



- S200 in conjunction with relays/contactors
- Operating mode: with restart interlock and external device monitoring (EDM)




**Comments**

1) Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration

must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and taking the risk analysis into account.

2) Functional earth (FE): To achieve the specified EMC safety, the functional earth (FE) must be connected (e.g. to the central earth star point on the vehicle or the system).

## Safe control solutions

	Product group	Applications	Further information
	Safety relays	Safety relays allow simple integration of safety components into machinery or plant.	Page N-0
	Safety controllers	Safety controllers are utilized when the safety function (e.g. switching off a dangerous movement) is to be accomplished in a flexible way by logical combination of safety relevant signals. Operation of machinery becomes more flexible and generation of machine variants becomes easier.	Page O-0
	Safety fieldbus solutions	Safety fieldbus solutions are utilized in plants and machinery of larger scale. This saves cabling and enables modular design of the safety automation. Potential errors or faults can be easily identified via the comprehensive diagnostics functions. That significantly reduces machine down times. SICK offers solutions for the open automation standards: AS-i Safety at Work, DeviceNet Safety and PROFIsafe.	

C

## Accessories

### Mounting systems

→ Dimensional drawings for mounting accessories, see page C-72

Type	Mounting	Adjustment	Note	Part number
Mounting kit 1a	Mounting bracket for mounting at the rear on wall or machine	—	—	2034324
Mounting kit 1b	Mounting bracket for rear mounting on wall or machine with protection of optics cover	—	—	2034325
Mounting kit 2	Mounting bracket	Cross-wise adjustment possible	Only in conjunction with mounting kit 1a or 1b	2039302
Mounting kit 3		Longitudinal adjustment possible	Only in conjunction with mounting kit 2	2039303

### System plugs

Connection type	Number of cores	Cable length	Type	Part number
Without cable	—	—	SX0B-A0000G	2032807
Pre-assembled	11	5 m	SX0B-B1105G	2032859
		10 m	SX0B-B1110G	2032860
		20 m	SX0B-B1120G	2032861

### Connection cable

Type	Number of cores	Cable length	Part number
Connection cable	15	100 m	6030795



**Configuration connection cables**

Description	Connection type	Cable length	Part number
For connecting the configuration connection to the PC	M8 x 4, SUB-D 9-pol	2 m	6021195
		8 m	2027649

**Configuration software**

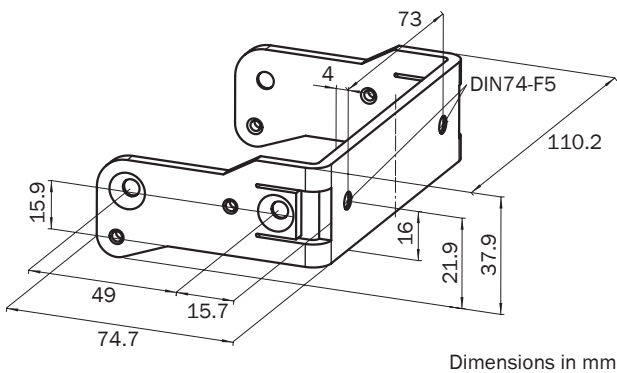
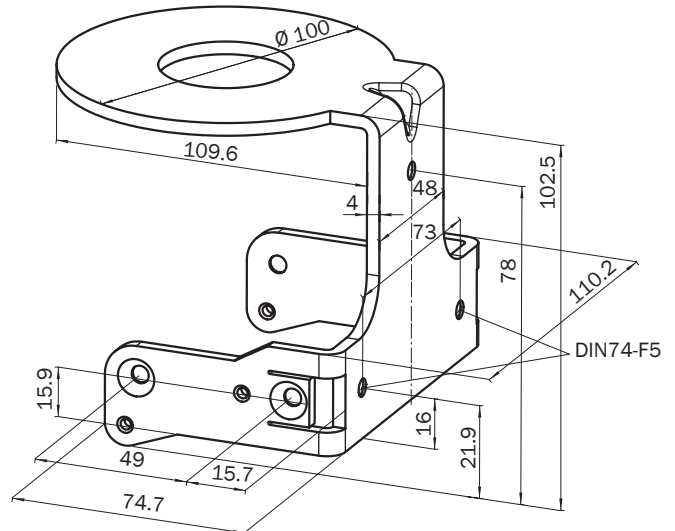
Type	Description	Part number
CDS	CDS (Configuration & Diagnostic Software) on CD-ROM including online documentation and operating instructions in all available languages	2032314

**Power supply units**

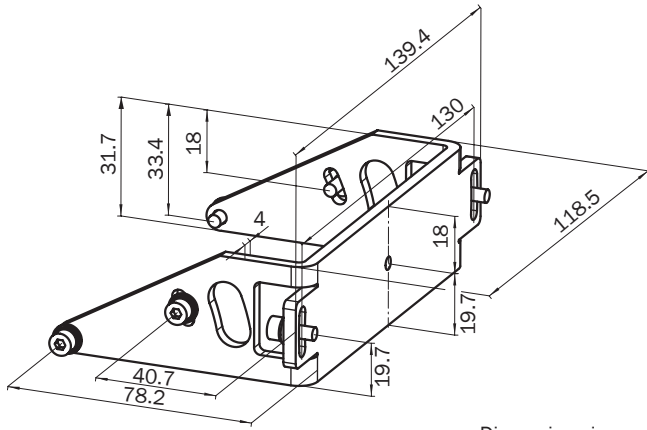
Input voltage	Output voltage	Maximum output current	Part number
100 V AC, 240 V AC	24 V DC	2.1 A	7028789
		3.9 A	7028790
120 V AC, 230 V AC		2.5 A	6010361
		4 A	6010362

**Miscellaneous**

Type	Description	Part number
Optic cover	Spare parts set for optic cover with replacement seal and screws	2039248
Plastic cleaner	Plastic cleaner and care product, anti-static	5600006
Lens cloth	Cloth for cleaning the front screen	4003353

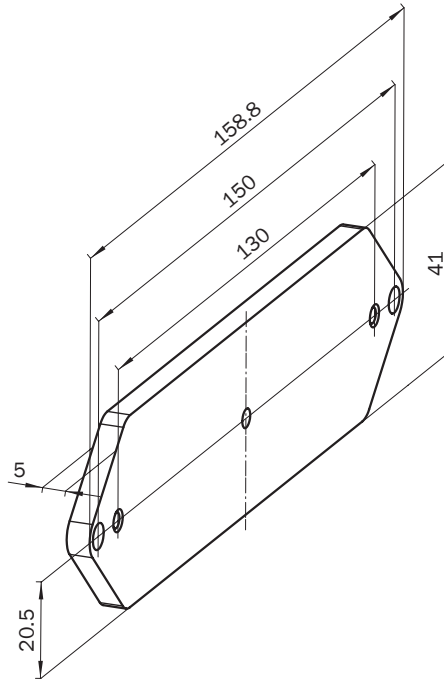
**Dimensional drawings mounting accessories****Mounting kit 1a****Mounting kit 1b**

**Mounting kit 2**



Dimensions in mm

**Mounting kit 3**



C