



S3000 Anti Collision

MAXIMUM PRODUCTIVITY
BY SAFE COLLISION PROTECTION OF UP TO 15 METERS

Safety laser scanners

SICK
Sensor Intelligence.

S3000 Anti Collision

The formula for safety in very narrow aisles



Where to use S3000 Anti Collision

S3000 Anti Collision is a member of the S3000 product family by SICK. It has been specifically designed and certified for use in very narrow aisle warehouses.

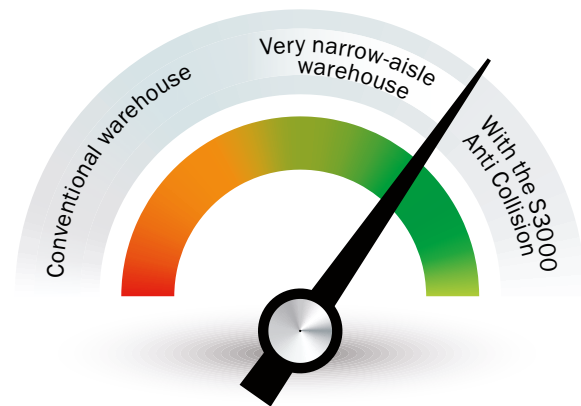
The safety demand for very narrow-aisle warehouses

Very narrow-aisle warehouses are storage systems which do not provide a minimum distance of 0.5 meters between the shelf and industrial trucks. As this type of environment presents a risk of personal injury, it is important to comply with safety requirements in line with DIN 15185-2 by taking measures such as attaching a personal protection system to both sides of the industrial trucks.

Until now, the risk of collision meant that it was not possible to operate two or more trucks in the same aisle, which severely impacted efficiency and flexibility of the industrial trucks.

The solution: S3000 Anti Collision

The S3000 Anti Collision makes it possible to operate two or more industrial trucks in a very narrow aisle – an absolute must when it comes to greater throughput and flexibility.



The S3000 Anti Collision significantly increases handling capacity thanks to the ability to use several industrial trucks in the same narrow aisle.



Protective field: 7 m

Collision field: 15 m

Detection of a second industrial truck in the same direction of travel (left) and the opposite direction of travel (right) by the S3000 Anti Collision

The scanning range of the S3000 Anti Collision for safe collision protection is 15 meters, at the same time personnel are detected safely up to a distance of 7 meters. Up to 16 field sets are available to provide dynamic field-set switching for making flexible adjustments to various driving situations, such as different load and speed conditions. This all combines to ensure that you are able to make optimal use of the aisle.

SICK's system advantages

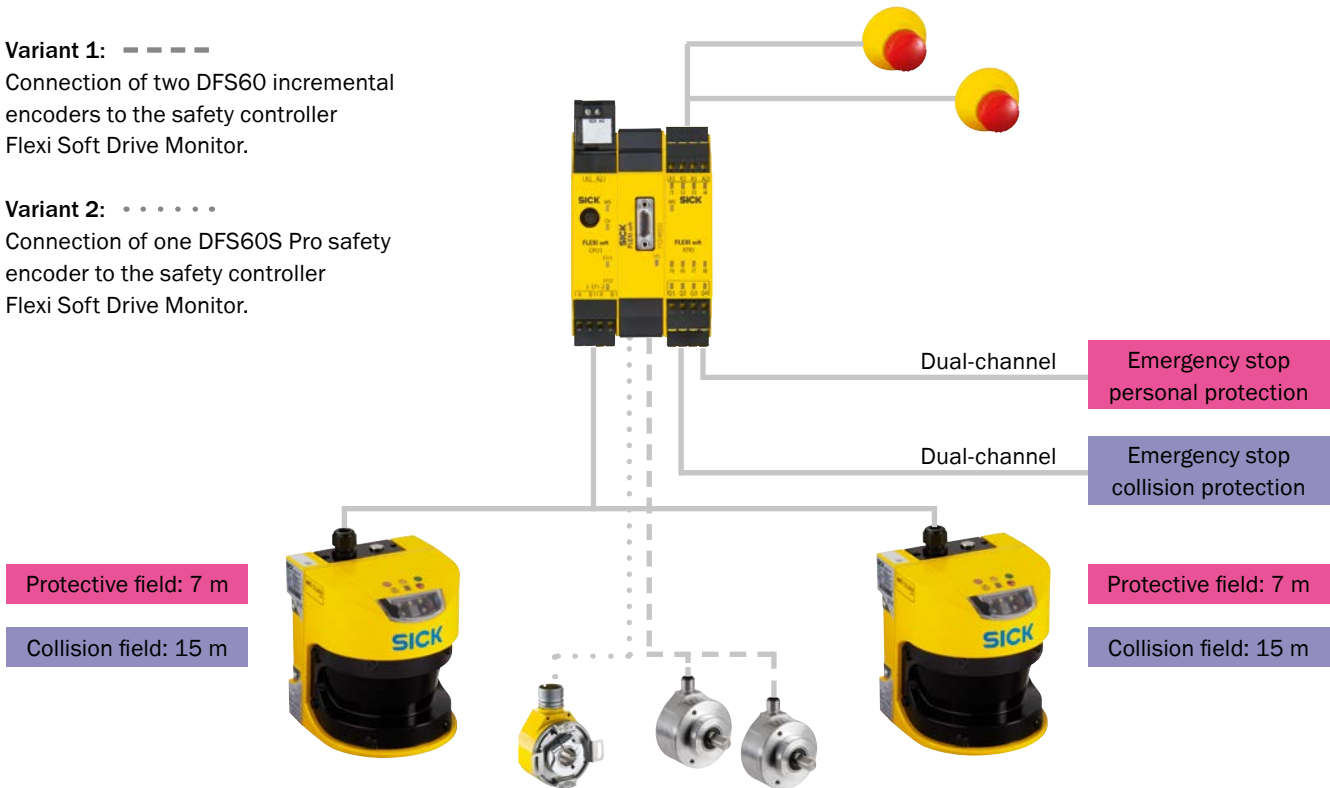
In combination with the modular safety controller Flexi Soft, the motion control safety controller Flexi Soft Drive Monitor and the speed information from the DFS60 or DFS60S Pro encoders from SICK, the S3000 Anti Collision offers dynamic field-set switching. In the event of an infringement of a safety field, the Flexi Soft sends a signal to the vehicle controller so that it can reduce its speed. The Flexi Soft Drive Monitor registers the reduction in speed and shares this information with the laser scanner, which then reduces the field length to an appropriate shorter length for the slower speed. The speed is reduced once again or the vehicle stops immediately, if a

further field is infringed. This means that it only comes to a complete standstill when it is absolutely necessary. Thanks to its modular structure, the system can also be expanded to include further safety components such as emergency stops or safety position switches.

Brought to you by SICK, this system allows you to adapt industrial trucks perfectly to suit the requirements imposed by your aisles. The system enables you to increase efficiency and flexibility of your industrial trucks while maintaining optimal safety.

Variant 1: - - - - -
 Connection of two DFS60 incremental encoders to the safety controller Flexi Soft Drive Monitor.

Variant 2:
 Connection of one DFS60S Pro safety encoder to the safety controller Flexi Soft Drive Monitor.






The safe solution for very narrow aisles: The components for the complete system

Your benefits

- ✓ Operate more than just one industrial truck per aisle
 - ✓ Protect personnel against accidents
 - ✓ Avoid damage to the warehouse and goods
 - ✓ Minimize times of standstill
 - ✓ Reduce maintenance costs
- ≡ More protection, more flexibility, more throughput



MAXIMUM PRODUCTIVITY BY SAFE COLLISION PROTECTION OF UP TO 15 METERS

CE

Additional information

Detailed technical data5

Ordering information7

Dimensional drawing7

Connection diagrams8

Accessories10

Enhanced system solutions. 13

Dimensional drawings for accessories 14

Product description

The safety laser scanner S3000 Anti Collision enables high throughput and high system availability in a narrow aisle. The S3000 Anti Collision features the largest range of a safe collision protection field worldwide with 15 m range. This makes it possible to operate two vehicles in one narrow aisle at high velocity. The device detects a reference target on an approaching vehicle which

makes it possible to reduce velocity before a collision occurs. At the same time S3000 Anti Collision monitors a protective field of up to 7 m range for safe person detection. Field set switching is used so that the best fitting field length is monitored, based on the velocity and the position of the vehicle in the aisle.

At a glance

- Collision protection of up to 15 m and person protection of up to 7 m in one device
- Can only be used in EFI system network with modular Flexi Soft safety controller
- Up to 16 switchable field sets
- Configuration memory integrated in the system plug
- Extended measurement data output via RS-422 with landmark recognition

Your benefits

- Increases your productivity: Using collision protection you can operate two vehicles in one narrow aisle at the same time.
- The largest field range in the market allows for high velocity of the vehicles and therefore high productivity.
- Three functions in one device: person protection, safe collision protection and navigation support with landmark recognition
- High availability of the complete system thanks to velocity dependent field set switching of up to 16 field sets
- Quick recommissioning via configuration memory

→ www.mysick.com/en/S3000_Anti_Collision

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



Detailed technical data

You can find more detailed data in the operating instructions. Download → www.sick.com/OI

Features

Usage	Can only be used in EFI system network, e.g., with a Flexi Soft safety controller
Protective field range	7 m
Collision protection field range	15 m (on reference target) ¹⁾
Distance measuring range	49 m
Number of simultaneously monitored protective fields	2 ¹⁾
Type of field set	Triple field sets, dual field sets
Number of field sets	16 ²⁾
Number of monitoring cases	32
Scan angle	190°
Resolution	30 mm, 40 mm, 50 mm, 70 mm, 150 mm, configurable
Angular resolution	0.25°
Response time	120 ms ³⁾
Protective field supplement	100 mm
Number of multiple samplings	2 ... 16, configurable
Delay of automatic reset	2 s ... 60 s, configurable

¹⁾ The safe output signals must be routed to safe outputs of a Flexi Soft safety controller, or via a safe EFI gateway.

²⁾ In dual field mode 16, in triple field mode 10 field sets.

³⁾ Depending on basic response time and multiple sampling.

Safety-related parameters

Type	Type 3 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508), SILCL2 (EN 62061)
Category	Category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
PFHd (mean probability of a dangerous failure per hour)	8.0×10^{-8} (EN ISO 13849)
T_M (mission time)	20 years (EN ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Restart interlock	✓
External device monitoring (EDM)	✓
Multiple sampling	✓
Monitoring case switching	✓
Simultaneous monitoring	✓
Static protective field switching	✓
Dynamic protective field switching	✓
Integrated configuration memory	✓
Measured data output	✓
Expanded measured data output (CMS)	✓
Safe SICK device communication via EFI/SDL	✓

Interfaces

Connection type	System plug with or without connecting cable
Configuration method	PC with CDS (Configuration and Diagnostic Software)
Configuration and diagnostics interface	RS-232
Transmission rate	9.6 kBaud, 19.2 kBaud, 38.4 kBaud
Data interface	RS-422
Transmission rate	≤ 500 kBaud
Safe SICK device communication via EFI/SDL	
Transmission rate	≤ 500 kBaud
Cable length	≤ 50 m
Conductor cross-section	0.34 mm ²
Fieldbus, industrial network	
Integration via EFI gateways	PROFIBUS PROFI-safe, PROFINET PROFI-safe ¹⁾
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET ²⁾

¹⁾ For a suitable EFI-gateway see modules and gateways in the accessory section of connection systems.

²⁾ For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or → www.sick.com/FlexiSoft

Electrical data

Protection class	II (EN 50178)
Supply voltage V_s	24 V DC (16.8 V DC ... 28.8 V DC)
Power consumption	≤ 0.8 A ¹⁾ ≤ 2.3 A ²⁾
Inputs	
External device monitoring (EDM)	1
Reset/restart	1
Static control inputs with EFI	5 ³⁾
Outputs	
Safety outputs (OSSD)	2 x 500 mA
Diagnostic outputs	3 x 100 mA ⁴⁾

¹⁾ At 24 V DC without output load.

²⁾ At 24 V DC including maximum output load.

³⁾ Can only be used in EFI system network, e.g., with a Flexi Soft safety controller.

⁴⁾ Freely programmable, e.g., warning field, contamination, reset required.

Mechanical data

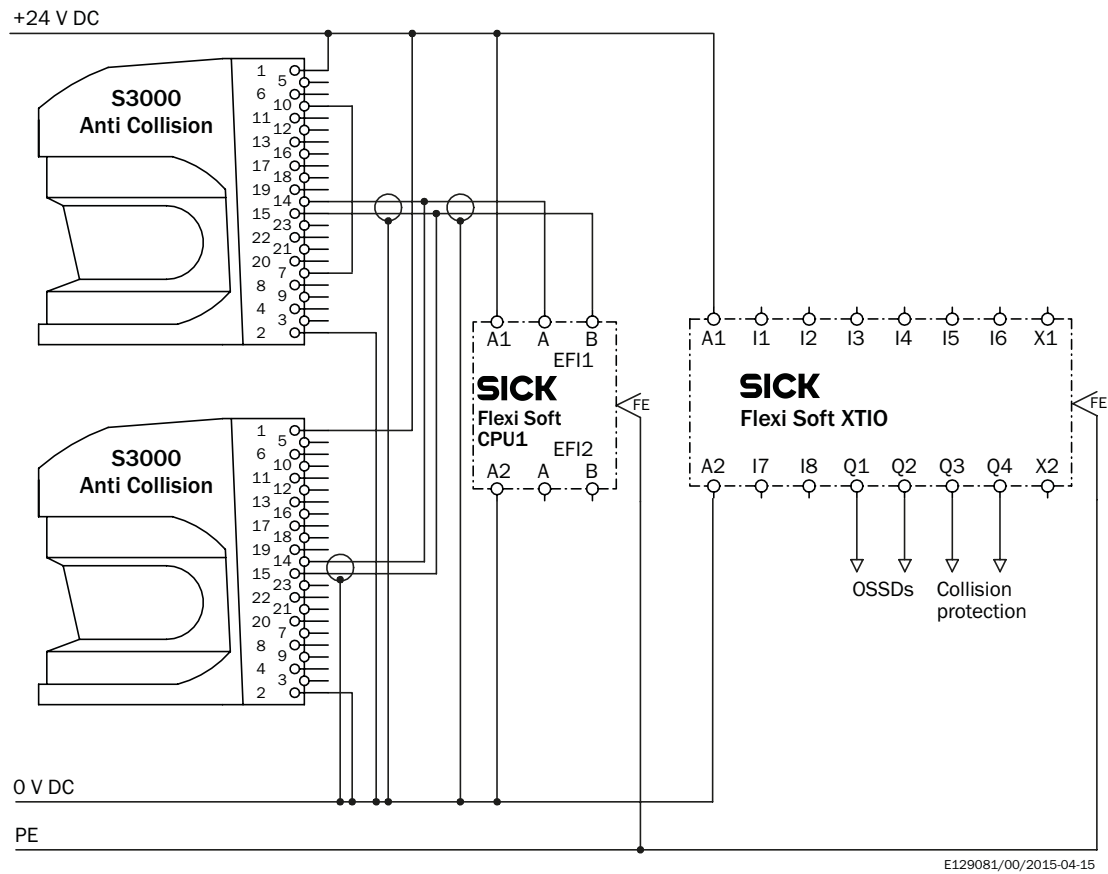
Dimensions (W x H x D)	155 mm x 185 mm x 160 mm
Weight	3.3 kg
Housing material	Die-cast aluminum
Housing color	RAL 1021 (yellow)
Front screen material	Polycarbonat
Front screen surface finish	Outside with scratch-resistant coating

Ambient data

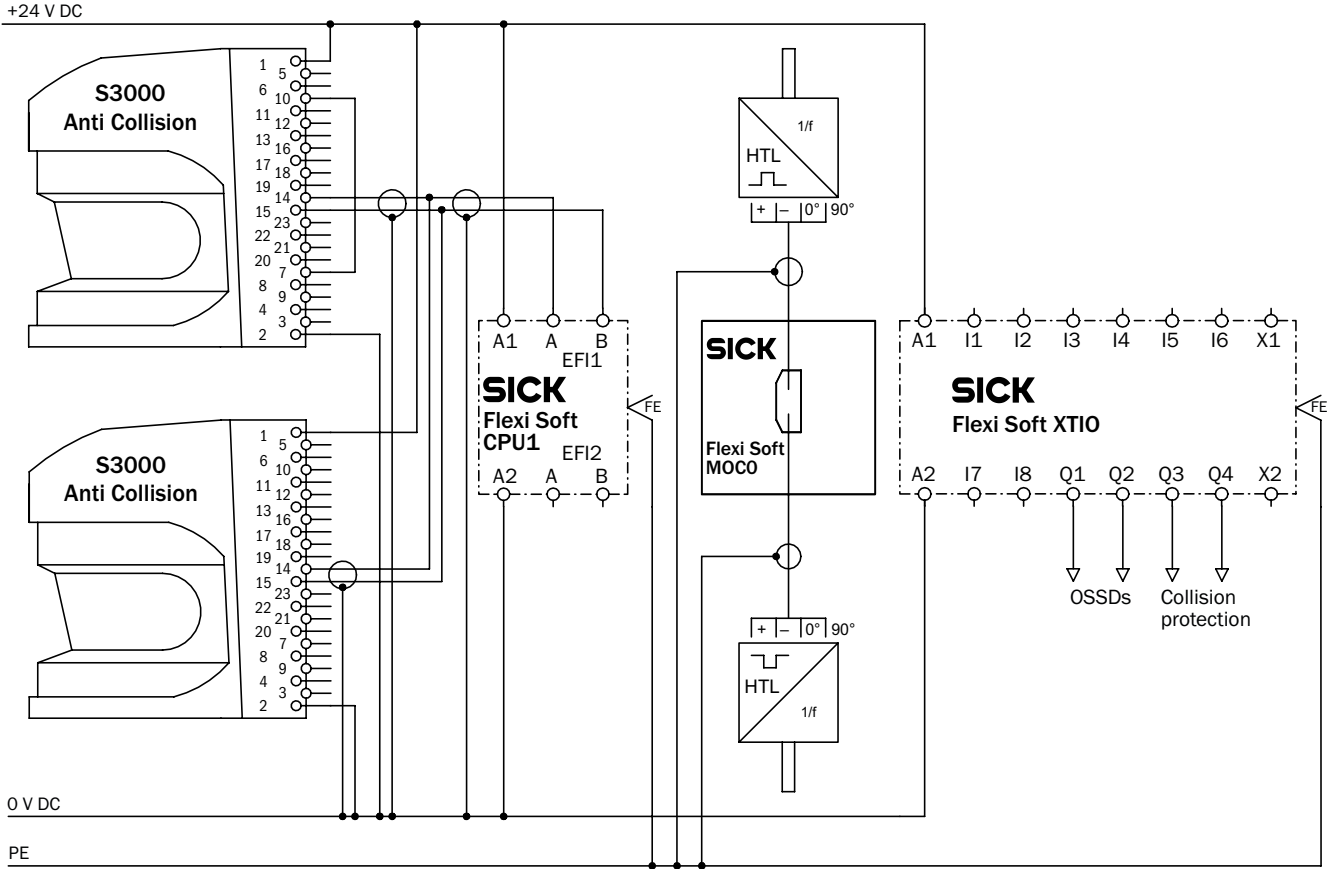
Enclosure rating	IP 65 (EN 60529)
Ambient operating temperature	-10 °C ... +50 °C
Storage temperature	-25 °C ... +50 °C
Vibration resistance	5 g, 10 Hz ... 150 Hz (EN 61496-1, CLC/TS 61496-3)
Shock resistance	10 g, 16 ms (EN 61496-1, CLC/TS 61496-3)

Connection diagrams

Host-guest system of two S3000 Anti Collision and Flexi Soft modular safety controller



Host-guest system of two S3000 Anti Collision and Flexi Soft modular safety controller with Flexi Soft Drive Monitor



E129083/00/2015-04-15

Accessories required for commissioning





Description	Number	Items supplied	Further information
Mounting bracket	1	-	→ Mounting brackets and mounting plates
System plug	1	-	→ Plug connectors and cables
Connecting cable (only required for system plugs without cable)	1	-	→ Plug connectors and cables
EFI partner device	1	-	→ Can only be used in EFI system network, e.g., with a Flexi Soft safety controller
Connection cable for configuration and diagnosis	1	-	→ Plug connectors and cables
Reference target for collision protection	2	✓	→ Test and monitoring tools
Test object with bracket	1	-	→ Test and monitoring tools
Test equipment for collision protection	1	-	→ Test and monitoring tools
CDS (Configuration & Diagnostic Software)	1	✓	-
Operating instructions	1	✓	-

Accessories

Mounting systems

Mounting brackets and mounting plates

Mounting brackets

Figure	Description	Packing unit	Model name	Part no.
	Mounting bracket for direct mounting, from the rear, on wall or machine, not adjustable	1 piece	Mounting kit 1	2015623
	Mounting bracket for rear mounting on wall or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623)	1 piece	Mounting kit 2	2015624
	Mounting bracket for rear mounting on wall, floor, or machine, adjustable longitudinal and lateral axes, only in conjunction with mounting kit 1 (2015623) and 2 (2015624)	1 piece	Mounting kit 3	2015625
 Illustration may differ	Mounting bracket, heavy design, with protective hood, for floor mounting, adjustable longitudinal and lateral axes via ball joint, adjustable height	1 piece	Mounting kit heavy duty	7087514





Dimensional drawings → [page 14](#)

Connection systems

Plug connectors and cables


System plugs

- **Description:** not for use with incremental encoders, integrated configuration memory

Figure	Model	Number of cores	Cable length	Items supplied	Model name	Part no.
	Without cable	-	-	With 1 x cable gland M20, 1 x blanking plug M20, 2 x blanking plug M12	SX0A-A0000B	2023797
	Pre-assembled, PVC, unshielded	9-wire	5 m		SX0A-B0905B	2027170
	Pre-assembled, cable outlet to the rear, PVC, unshielded	9-wire	5 m		SX0A-B0905G	2049222
	Pre-assembled, PVC, unshielded	9-wire	10 m		SX0A-B0910B	2027171
			20 m		SX0A-B0920B	2027814



Connection cables with female connector and male connector

- **Description:** for connecting the configuration connection to the serial interface of a PC
- **Model:** PVC, unshielded

Figure	Connection type		Conductor cross-section	Cable length	Model name	Part no.
	Female connector, D-Sub, 9-pin, straight	Male connector, M8, 4-pin, straight	0.25 mm ²	2 m	DSL-8D04G02M025KM1	6021195
				10 m	DSL-8D04G10M025KM1	2027649


Connection cables with male connector and male connector

- **Model:** PVC, unshielded


Figure	Connection type		Description	Conductor cross-section	Cable length	Model name	Part no.
 Illustration may differ	Male connector, D-Sub, 9-pin, straight	Male connector, USB-A, straight	RS-232 to USB converter, with driver CD and operating instructions	-	35 cm	Converter RS-232 to USB	6035396
	Male connector, M8, 4-pin, straight	Male connector, USB-A, straight	For connecting the configuration connection to the USB interface on the PC	0.25 mm ²	2 m	DSL-8U04G02M025KM1	6034574
					10 m	DSL-8U04G10M025KM1	6034575

Cables (ready to assemble)

- **Description:** fitting for EFI connections
- **Model:** PVC, shielded

Figure	Conductor cross-section	Cable diameter	Number of cores	Items supplied	Model name	Part no.
	1 x 2 x 0.22 mm ²	Ø 5.7 mm	2-wire	By the meter	EFI connecting cable	6029448
	2 x 2.62 mm ² + 2 x 1.65 mm ²	Ø 12.2 mm	4-wire	By the meter	Connection cable	6030756
	2 x 0.34 mm ² + 2 x 0.25 mm ²	Ø 6.9 mm	4-wire	By the meter	Connection cable	6030921

Cable gland


Figure	Connection type	Description	Permitted cable diameter	Model name	Part no.
	M12	For EFI connections and incremental encoders, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5308757
		For EFI connections and incremental encoders, for quick and easy shield connection, EMC proof	3 mm ... 6.5 mm	Cable gland M12	5314772
	M20	For supply cables and signal cables, for quick and easy shield connection, EMC proof	10 mm ... 14 mm	Cable gland M20	5314774

Modules and gateways

EFI gateways

Figure	Description	Model name	Part no.
	PROFIBUS PROFIsafe	UE4140-22I0000	1029098
	PROFINET PROFIsafe	UE4740-22H0000	1046978

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Model name	Part no.
	100 V AC ... 240 V AC	24 V DC	≤ 2.1 A	Power supply	7028789
			≤ 3.9 A	Power supply	7028790





Reflectors and optics

Optics cloths


Figure	Description	Model name	Part no.
	Cloth for cleaning the front screen	Lens cloth	4003353

Further accessories


Test and monitoring tools

Figure	Description	Model name	Part no.
	Reflective tape, standard, 100 mm x 100 mm	Reference target for collision protection	2078643
	To align the reference target and set up the collision protection function	Test equipment for collision protection	2078657
	To test the function of the protective field in a narrow aisle	Test object with bracket	2019459
 Illustration may differ	Scan finder, receiver to localize infrared scans	LS-80L	6020756


Cleaning agent

Figure	Description	Model name	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006

Spare parts

Figure	Description	Model name	Part no.
	Front screen replacement kit with replacement seal and screws	Front screen replacement kit S3000	2027180

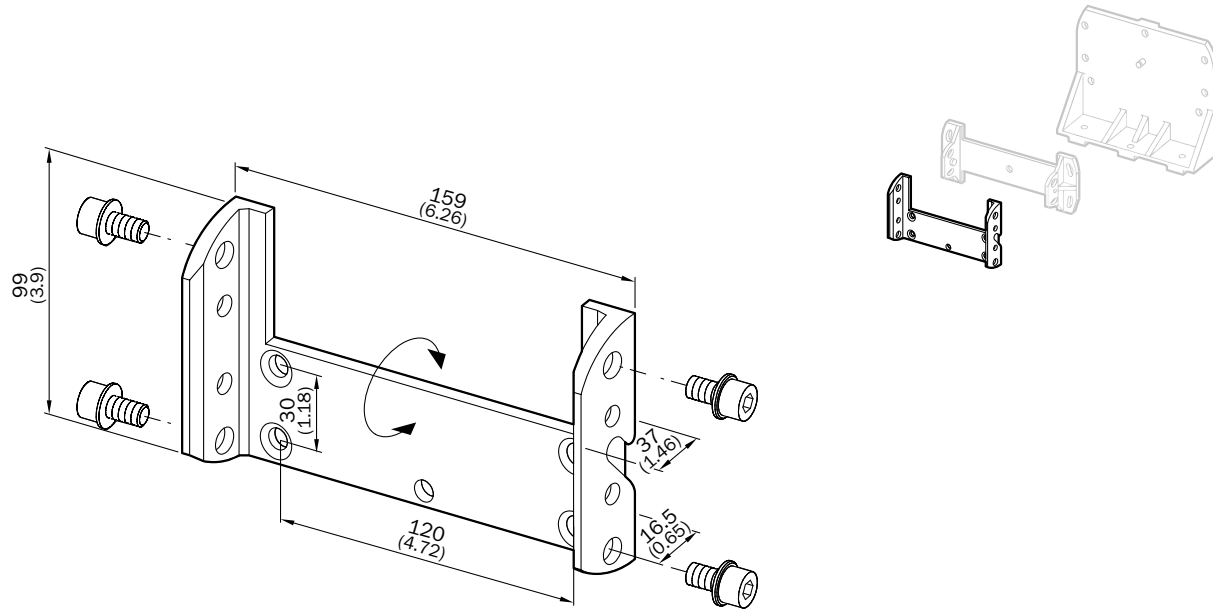
Enhanced system solutions

Figure	Description	Further information
	Intelligent machine designs focus on increasing productivity while also ensuring the highest level of quality and safety. sens:Control - safe control solutions from SICK satisfy these criteria.	→ www.sick.com/FlexiSoft

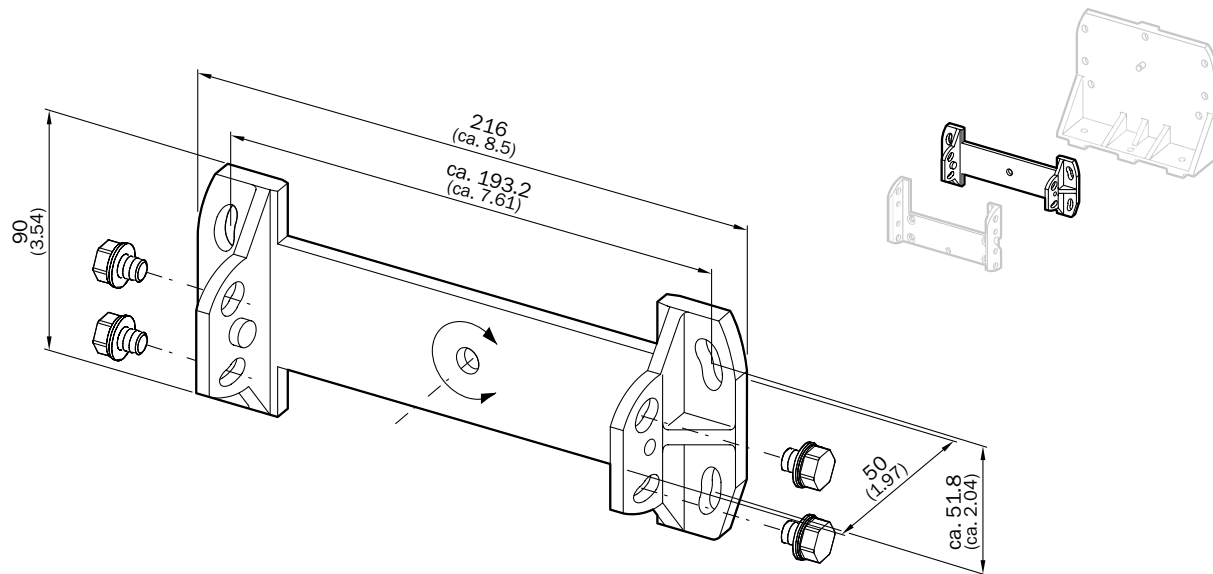
Dimensional drawings for accessories (Dimensions in mm (inch))

Mounting brackets and mounting plates

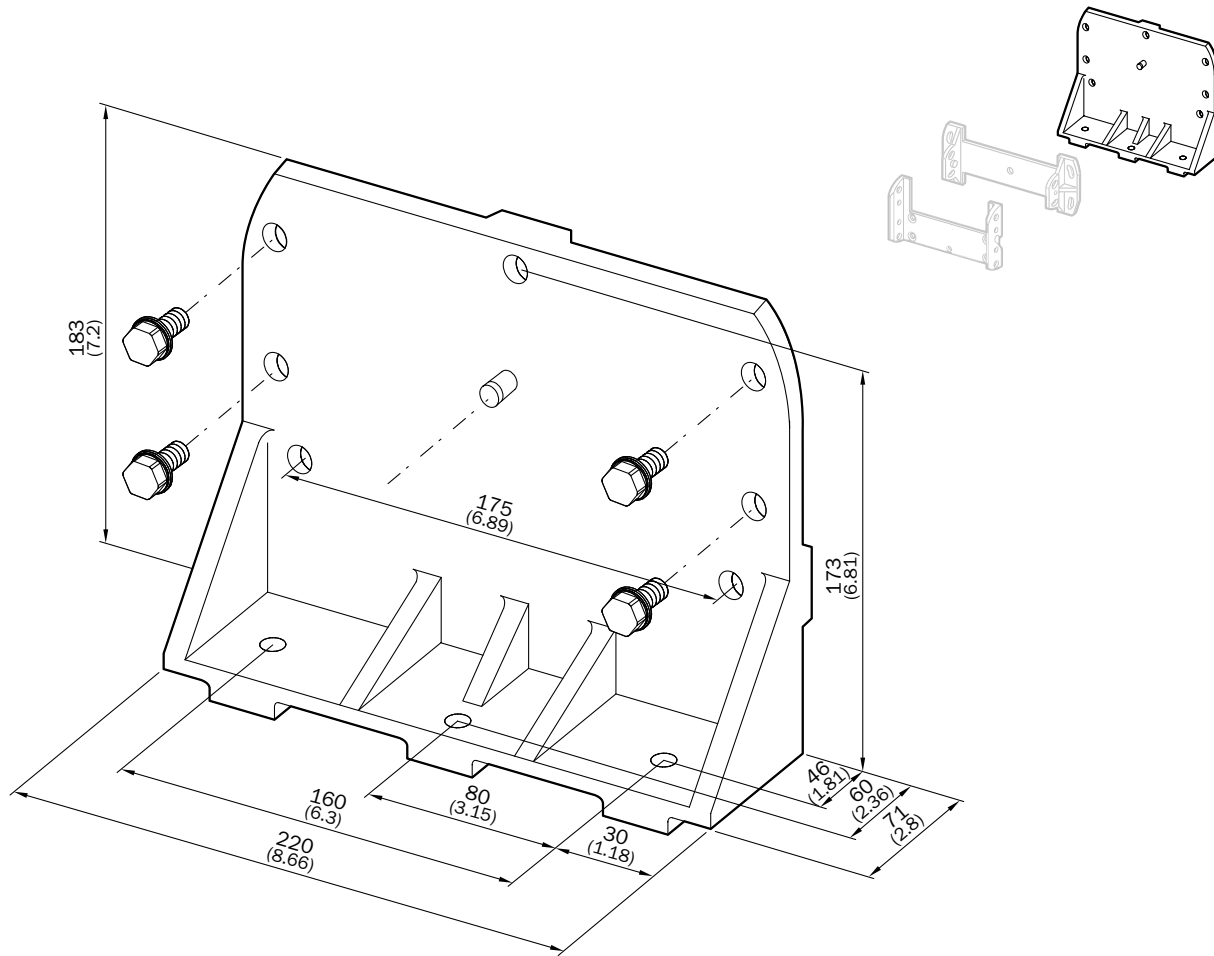
Mounting kit 1



Mounting kit 2



Mounting kit 3



SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 6,500 employees and over 50 subsidiaries and equity investments as well as numerous representative offices worldwide, we are always close to our customers. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

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

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

For us, that is “Sensor Intelligence.”

Worldwide presence:

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

Detailed addresses and additional representatives → www.sick.com