deTec4 / deTec2
WE TAKE SAFETY TO THE NEXT LEVEL

Safety light curtains

SICK
Sensor Intelligence.

THE ORIGINAL YELLOW

THIS IS THE ORIGINAL – TOTALLY SAFE

deTec4 Prime – FROM THE INVENTOR OF THE LIGHT CURTAIN

The color yellow represents safety and the name SICK is synonymous with innovation. SICK developed the very first light curtain for accident prevention on machinery back in the 1950s. Much of the original concept remains in the safety light curtains from SICK – but today they offer even more.

We have amassed more than half century of experience and expertise in the field of safety – and what are we doing with it? We continue to innovate, so customers can take their applications to the next level.

The result is the deTec4 Prime – a new safety light curtain in our deTec product family and the new benchmark for versatility and ease of operation.

# A MASTERPIECE FOLLOWING AN ORIGINAL DESIGN – deTec4 Prime

ADVANCED FUNCTIONS AND FLEXIBILITY

The introduction of the deTec4 Core and deTec2 Core safety light curtains made protecting hazardous points and access points easier than ever. Our newest offering deTec4 Prime takes development one step further.

Versatile with flexible connectivity

"Intelligently standardized" is perhaps the best way to put it: Its flexible M12 connectivity means the deTec4 Prime is always the right solution for a wide range of applications, which reduces the variety of devices and cuts costs. ➜ see page 13
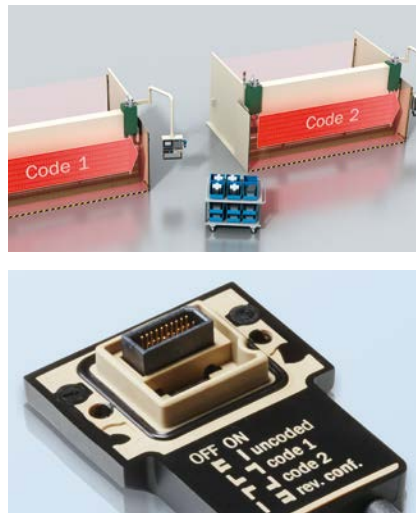
Freely positionable with very high resistance to interference

The deTec4 Prime increases flexibility for the sender-receiver alignment between machines. The integrated beam coding prevents interference from other safety light curtains in the immediate vicinity. The code can be set using DIP switches on the plug – no tools are necessary.

Maximum performance with large scanning range

The scanning range of the deTec4 Prime is 21 m which is more than twice as big in comparison to the other light curtains in the product family. With a resolution of 30 mm, it provides reliable protection for even exceptionally wide machines. And thanks to the integrated laser alignment aid, adjusting the system takes no time at all.

Extremely easy to use with a visual display

Complicated systems are history. The sender and receiver can be configured from one side. Color coded monitoring and diagnostic LEDs on both sides – red, yellow, and green – indicate the status of the device. Four blue LEDs on the receiver clearly show the signal strength.

Additional functions provide yet more safety

Take advantage of the following optional functions: restart interlock, external device monitoring, and a binary status output. A variant with an eight-pin system plug covers all three functions without the need for additional wiring.

Safety in series with cascaded modules

With the deTec4 Prime, it is possible to create cascaded systems with very few connection requirements. Up to three protective fields may be positioned adjacent to one another without blind zones, providing a simple way of implementing presence detection.

TRUE TO THE ORIGINAL, DEVELOPED FURTHER

BUILT FOR HARSH PRODUCTION ENVIRONMENTS

There have been many advances since the first safety light curtain was developed. Today, reliable sensors have to meet additional requirements which no one even considered over 60 years ago. Continuing systematic development equips the deTec safety light curtains to meet all present-day challenges.
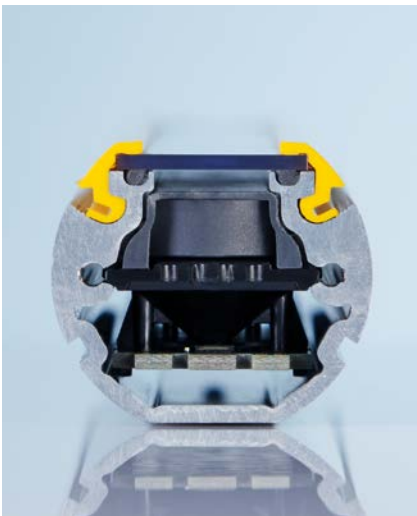
The housing – a powerful argument

Metal and plastic components are combined in impact- and warp-resistant housings in such a way that deTec safety light curtains can stand up to the very toughest requirements, with no problem. Thanks to the fact they are more shock resistant than standard requirements and that their front screens are extremely rugged, they work reliably even under extreme conditions.

Weather resistant – for long term safety

Heat, cold, and humidity don't pose any issues for deTec safety light curtains. They meet the requirements of enclosure ratings IP 65 and IP 67, are approved for ambient operating temperatures between –30 °C and +55 °C – and even in cold storage they prevent accidents and ensure that processes are efficient.
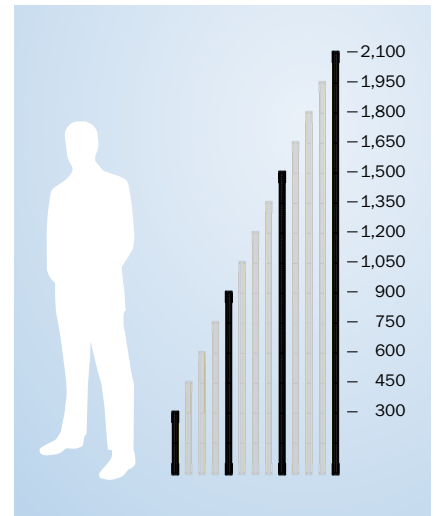
Graduated protective field heights

With 150-millimeter increments, deTec safety light curtains can be set to 13 different protective field heights from 300 mm to 2,100 mm.

SOPHISTICATED DESIGN FOR RAPID INSTALLATION

An impressive feature of the deTec safety light curtains is how little effort is required for commissioning and maintenance. This is because they have innovative brackets and integrated status indicators and a laser alignment aid which allow rapid installation and diagnostics.

Rapid commissioning – because time is money

All deTec safety light curtains save significant commissioning time and costs with their integrated LED indicators and many diagnostic functions. As soon as the deTec4 Prime has a sender-receiver connection color coded monitoring and diagnostic LEDs on both sides indicate the status of the device.

Easy system integration with no blind zones

With the innovative FlexFix mountings, it is possible to mount all deTec safety light curtains on a variety of machine types in a matter of minutes. After it has been mounted, the light curtain can be rotated before it is finally secured in the FlexFix mounting, which ensures the protective field is continuous up to the ends of the housing.
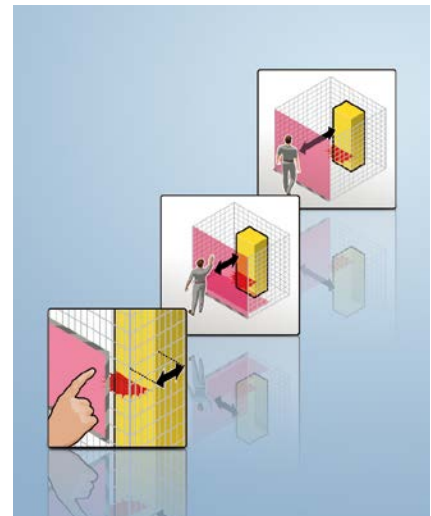
Finger and hand detection

All the variants of the deTec safety light curtains are available with 14 mm and 30 mm resolution. Safety light curtains with 14 mm resolution are used in any application requiring a reliable means of keeping fingers away from the system.

SETS THE ORIGINAL TONE –
deTec4 Prime

Whether in the automotive, automotive supplier or packaging industries, or in mechanical and plant engineering, two major points demonstrate the viability of functional safety technology: rapid commissioning, which means the system becomes effective considerably faster; and continuous production, which improves system efficiency. The new deTec4 Prime safety light curtain has been designed with this in mind and has many configuration options.

Simple to order

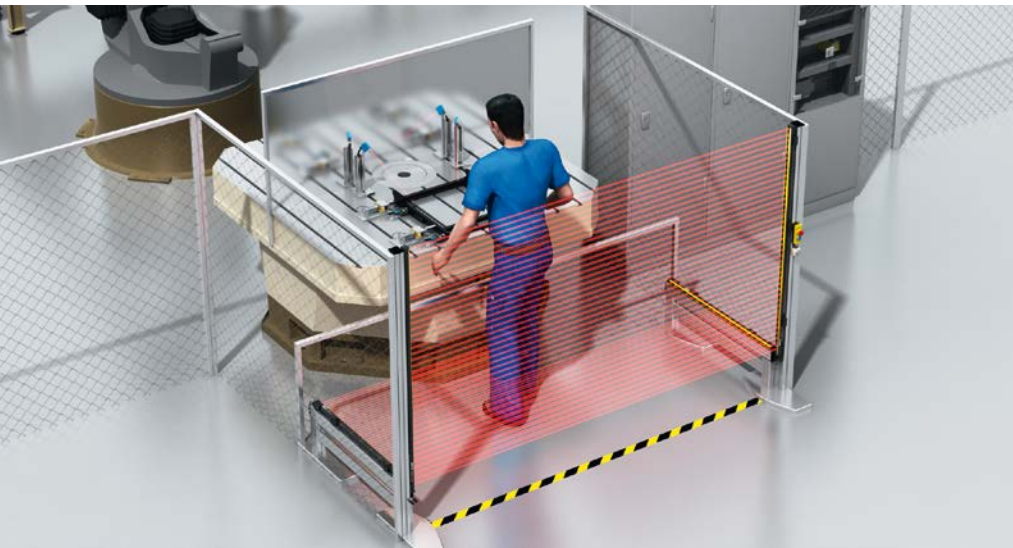- Flexible connection design allows reduced number of variants

Intuitive wiring

- Increased performance with intelligent standardization and less wiring
- Configuration without software

Proven reliability

- Shock resistant with extremely rugged front screens for demanding tasks in an industrial environment

MANY APPLICATIONS – ONE ORIGINAL

Increase productivity with greater machine safety

Up to three systems may be arranged in a consecutive cascade for reliable presence detection. This reduces the amount of wiring and the number of safety inputs needed in the control cabinet. The local reset function also reduces the amount of wiring and pro-gramming in the control system. Having a T-connector with only one wire to the control cabinet reduces costs further, and the status displays on senders and receivers minimize machine downtime.

Safe to well below freezing

To guarantee constant safety in all applications the deTec4 Prime safety light curtains are designed for ambient operating temperatures between −30 °C and +55 °C. This means they are suitable for use in the cold storage where they prevent accidents and en-sure that processes are efficient.
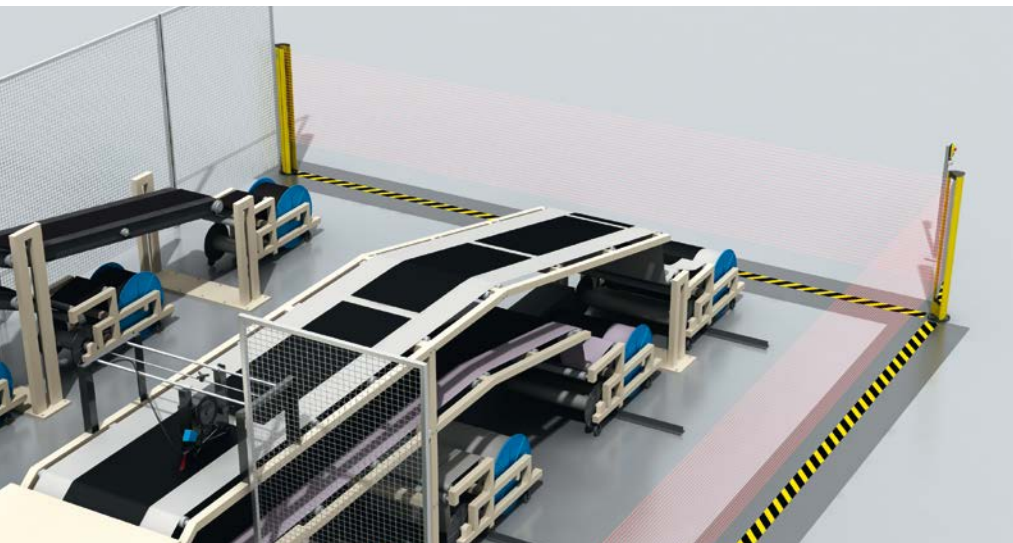

Safe around corners

When used with mirror columns the deTec4 Prime provides easy, flexible access protection, even round corners. This means the minimum distance can be reduced, so work processes can be optimized thanks to unhindered access to the machine.

Safe all the way

The deTec4 Prime safety light curtain is ideally suited to particularly wide machines or for protection along the length of a facility. The integrated laser alignment aid guarantees even faster, more reliable positioning of the sender and receiver in relation to one another using four LEDs, as well as automatic calibration of the scanning range up to 21 m at 30 mm resolution.
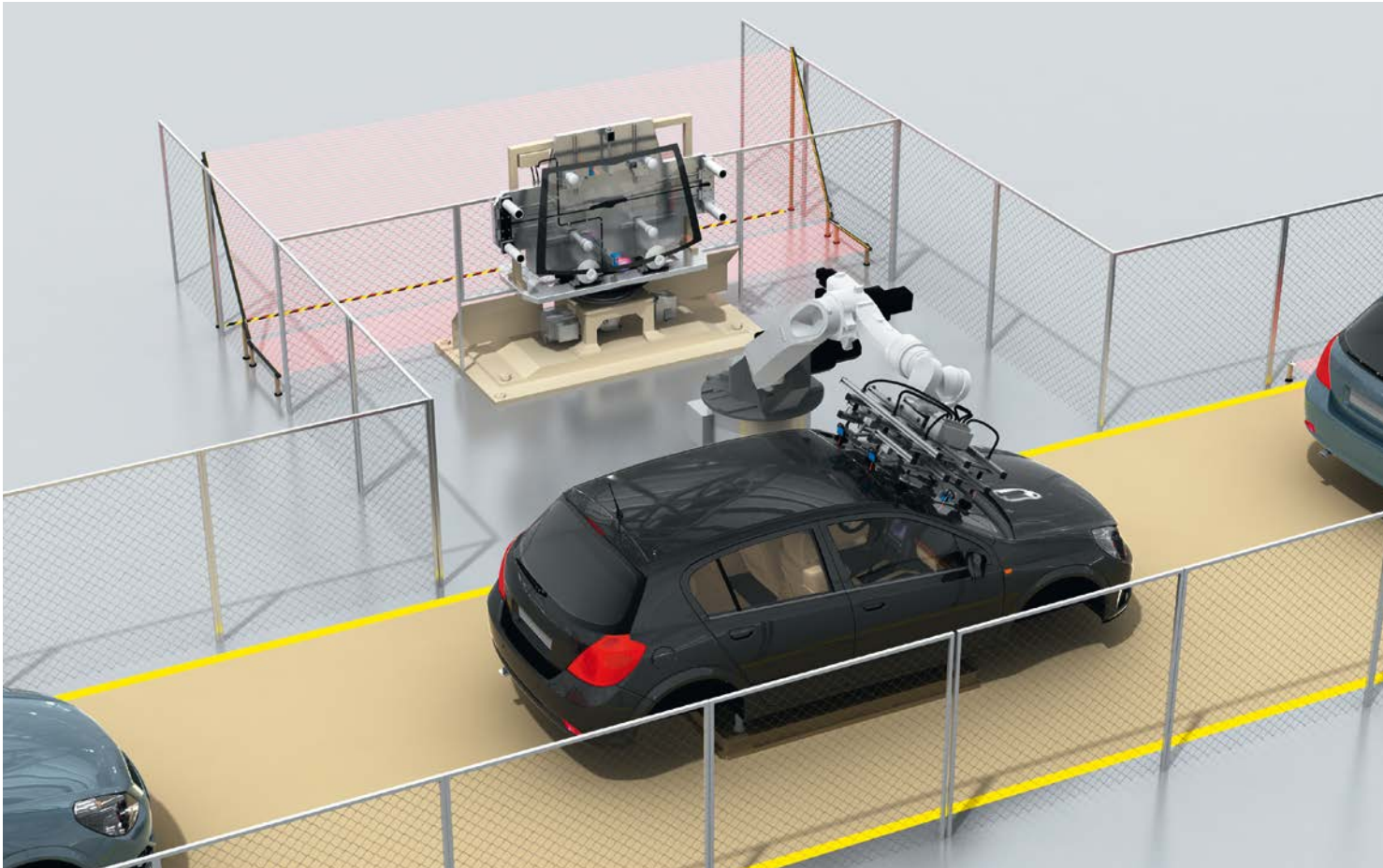
Frequently moving items in and out with simple safety requirements

Safely increase process quality – with the smallest possible minimum distances to promote efficiency. Requirements up to performance level c can be met using the deTec2 Core safety light curtain. For performance levels d and e, the deTec4 Core safety light curtain is suitable.
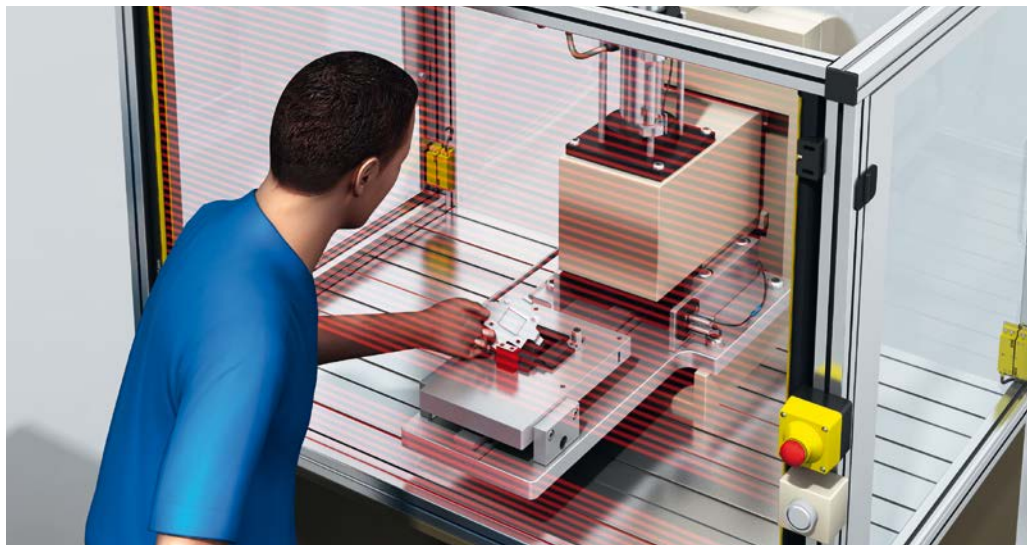
SELECTION GUIDE FOR THE deTec PRODUCT FAMILY

	Safety-related parameters						Scanning range		Functions								Page
	Type 2 (IEC 61496)	Type 4 (IEC 61496)	SIL1 (EN 62061)	SIL3 (EN 62061)	PL c (EN ISO 13849)	PL e (EN ISO 13849)	Up to 10 m	Up to 21 m	Flexible connection design	Beam coding	Diagnostic LEDs	Restart interlock	External device monitoring	Binary status output	Cascading	Presence detection	
deTec4 Prime		■		■		■		■	■	■	■	■	■	■	■	■	➜ 16
deTec4 Core		■		■		■	■										➜ 30
deTec2 Core	■		■		■		■										➜ 36

When you have found the right deTec safety light curtain, select the protective field height you require. All variants are available with protective field heights between 300 mm and 2,100 mm (in 150 mm increments).

Flexible connection design with the deTec4 Prime

The variety of sender and receiver types for the deTec4 Prime is conveniently low. The four interchangeable system plugs provide the flexibility to adapt the solution to different applications and at the same time make it possible to have fewer variants. Ordering is also very easy: Add the model name of the system plug to the end of the model name of the sender or receiver – simple!

System plug without extension connection

Figure	Connection type	Additional signals	Usage extension connection	Type
	M12, 5-pin	COM1	–	1000
	M12, 8-pin	COM1/RES/EDM/ADO	–	1200

System plug with extension connection

Figure	Connection type	Additional signals	Usage extension connection	Type
	M12, 5-pin and M12, 5-pin	COM1	Cascading, local reset, RES/EDM/ADO	1100
	M12, 8-pin and M12, 5-pin	COM1/RES/EDM/ADO	Cascading, local reset, RES/EDM/ADO	1300

Example of compiling a type code

Light curtain		System plug	Type
deTec4 Prime, type C4P-SA03030A00	✚	System plug, type 1000	**C4P-SA03030A001000**

SIMPLY SAFE – PROVEN
ALL AROUND EXPERTISE FROM SICK

WE PROTECT PROCESSES. WE PROTECT INVESTMENTS. WE PROTECT PEOPLE.

safetyPLUS® is the range of machine safety products and services provided by SICK for protecting people and investments. The PLUS means comprehensive, individual support for our customers regarding the functional safety of their machines and systems. Comprehensive means the best possible support from development of the machine through commissioning and use to retrofitting and modernizing – all over the world.

We help to ensure customers' individual requirements for legal compliance and reliable production are met through:

- Safety products and systems, services and training
- Passing on expert knowledge through consultancy and online services
- Safety tools for a simplified engineering process
- Functionality to support production efficiency

Benefits for you

- Products and systems that solve your safety challenges while also ensuring high productivity
- Legal security today and in the future
- Accident prevention
- Skilled support available to you throughout the world

Uncomplicated integration into safety controllers

Just like all of SICK's safety devices, the deTec4 Prime, deTec4 Core, and deTec2 Core safety light curtains were especially developed so that they can be integrated into all standard safety controllers without additional effort. SICK's leading expertise in machine safety makes perfect integration into all safety and system environments possible.

safetyPLUS® – WE PROTECT PEOPLE
www.sick-safetyplus.com

EASY COMMISSIONING, INTUITIVE WIRING, AND PROVEN RELIABILITY

Product description

The deTec4 Prime safety light curtain offers advanced functionality in the same housing as the deTec4 Core, making it ideal for a wider range of applications. The deTec4 Prime is configured via four different M12 system plugs without the need for a computer. A protective field range of up to 21 m can be measured automatically and the alignment displays equipped with four LEDs ensure that the commissioning of the light curtain is quick and safe. Cascading up to three deTec4 Prime safety light curtains minimizes wiring complexity and means that fewer safety capable inputs are required in the control cabinet, while reliable protection is also provided for fingers and hands. With IP 65 and IP 67 enclosure ratings and an ambient operating temperature range of –30 °C to +55 °C, the safety light curtain is also ideal for use in harsh environments.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Resolution: 14 mm, 30 mm; protective field height: 300 mm to 2,100 mm
- Ambient operating temperature: –30 °C to +55 °C; enclosure rating: IP 65, IP 67
- Option of cascading up to three deTec4 Prime safety light curtains, beam coding
- Restart interlock, external device monitoring, status output
- Scanning range up to 21 m, integrated laser alignment aid
- Flexi Loop compatible M12 system plug

Your benefits

- Ideal for use in harsh environments
- Easy installation without blind zones thanks to universal brackets and interchangeable M12 system plugs
- Rapid status feedback due to comprehensive diagnosis: Alignment display, laser alignment aid, LED displays along the protective field
- Saves time as configuration does not require a computer: DIP switch in the system plug, and automatic measurement of protective field range
- Beam coding to protect against mutual interference if machines are located side by side
- Less space in the control cabinet: fewer safety inputs as a result of cascading up to three deTec4 Prime safety light curtains

Additional information

➜ **www.mysick.com/en/deTec4_Prime**

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

	Resolution 14 mm	Resolution 30 mm
Protective field height	300 mm ... 2,100 mm (depending on type)	
Scanning range		
Minimum	0.15 m ... 10 m	0.15 m ... 21 m
Typical	0.15 m ... 16 m	0.15 m ... 24 m
Response time	11 ms ... 22 ms [1] (depending on type)	9 ms ... 14 ms [1] (depending on type)
No blind zones	✔	
Cascading	✔	
Application diagnostic output (ADO)	✔	
Synchronization	Optical synchronisation	

[1] Without beam coding, no cascaded systems. Other response times see operating instructions.

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFHd (mean probability of a dangerous failure per hour)	
Single device	9.6×10^{-9} (EN ISO 13849)
Cascade with one guest	1.9×10^{-8} (EN ISO 13849)
Cascade with two guest devices	2.9×10^{-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

	Functions	Delivery status
Restart interlock	✔	Deactivated
External device monitoring (EDM)	✔	Deactivated
Beam coding	✔	Non-coded
Automatic calibration of the protective field width	✔	

Interfaces

System connection 5-pin

System connection	Without extension connection	With extension connection
Connection type	Male connector M12, 5-pin	
Flexi Loop-compatible M12 plug connector	✔	
Sender-receiver communication (COM1)	✔ [1]	
Reset pushbutton input (RES)	–	
External device monitoring input (EDM)	–	
Application diagnostic output (ADO)	–	
Permitted cable length	Receiver power supply: ≤ 15 m [2] All additional conductors at the system connection: ≤ 37.5 m	
Extension connection		
Connection type	–	Female connector M12, 5-pin
Reset pushbutton input (RES)	–	✔ [3]
External device monitoring input (EDM)	–	✔ [3]
Application diagnostic output (ADO)	–	✔ [3]
Permitted cable length	–	≤ 10 m
Configuration method		
Cascade	Automatic detection when starting the device	
External device monitoring (EDM)	Automatic detection when starting the device	
Calibration of the protective field width	Automatic detection when starting the device	
Restart interlock	Teach-in procedure when starting the device	
Beam coding	DIP switch	
Reset to factory default	DIP switch	
Status display	LEDs	
Fieldbus, industrial network		
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET [4]	

[1] Optional: To indicate the status on both sides, the COM1 connections from the sender and receiver must be connected to each other in the control cabinet.

[2] If no inductive OSSD loads (e.g., contactors) are in use, the power supply cable for the receiver of a single device (no cascade) can be up to 30 m in length.

[3] Single device or last guest (receiver only)

[4] For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or ➜ www.sick.com/FlexiSoft

System connection 8-pin

	Without extension connection	With extension connection
System connection		
Connection type	Male connector M12, 8-pin	
Flexi Loop-compatible M12 plug connector	–	
Sender-receiver communication (COM1)	✔ [1]	
Reset pushbutton input (RES)	✔ [2]	
External device monitoring input (EDM)	✔ [2]	
Application diagnostic output (ADO)	✔ [2]	
Permitted cable length	Receiver power supply: ≤ 15 m [3] All additional conductors at the system connection: ≤ 37.5 m	
Extension connection		
Connection type	–	Female connector M12, 5-pin
Reset pushbutton input (RES)	–	✔ [4]
External device monitoring input (EDM)	–	✔ [4]
Application diagnostic output (ADO)	–	✔ [4]
Permitted cable length	–	≤ 10 m
Configuration method		
Cascade	Automatic detection when starting the device	
External device monitoring (EDM)	Automatic detection when starting the device	
Calibration of the protective field width	Automatic detection when starting the device	
Restart interlock	Teach-in procedure when starting the device	
Beam coding	DIP switch	
Reset to factory default	DIP switch	
Status display	LEDs	
Fieldbus, industrial network		
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET [5]	

[1] Optional: To indicate the status on both sides, the COM1 connections from the sender and receiver must be connected to each other in the control cabinet.

[2] Only on the receiver.

[3] If no inductive OSSD loads (e.g., contactors) are in use, the power supply cable for the receiver of a single device (no cascade) can be up to 30 m in length.

[4] Single device or last guest (receiver only)

[5] For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or ➜ www.sick.com/FlexiSoft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178) [1]	
Supply voltage V_S	24 V DC (19.2 V DC … 28.8 V DC)	
Ripple	≤ 10 % [2]	
Power consumption typical	1.23 W (DC) … 2.46 W (DC) (depending on type)	3.23 W (DC) … 5.41 W (DC) (depending on type)
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored [3]
Switching voltage HIGH	–	24 V DC (V_S – 2.25 V DC … V_S)
Switching voltage LOW	–	≤ 2 V DC
Switching current	–	≤ 500 mA

[1] SELV/PELV safety/protective extra-low voltage.

[2] Within the limits of V_S.

[3] Applies to the voltage range between –30 V and +30 V.

Mechanical data

Housing cross-section (incl. system connection)	34 mm x 41.1 mm
Housing material	Aluminum extruded profile
Front screen material	Polycarbonate, scratch-resistant coating
Weight	290 g … 1,930 g (± 50 g)

Ambient data

Enclosure rating	IP 65 (EN 60529) IP 67 (EN 60529)
Ambient operating temperature	–30 °C … +55 °C
Storage temperature	–30 °C … +70 °C
Air humidity	15 % … 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz … 55 Hz (EN 60068-2-6)
Shock resistance	10 g, 16 ms (EN 60068-2-29)

Other information

Wave length	850 nm
Integrated laser alignment aid	✔
Light source	Laser diode
Laser class	1 (IEC 60825-1)
Type of light	Visible red light
Wave length	650 nm

Ordering information

Items supplied deTec4 Prime:
- Safety light curtain consisting of a sender and a receiver
- 2 system plugs
- 4 QuickFix brackets
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Adhesive label with information on the daily check
- Safety instructions
- Mounting instructions

deTec4 Prime with system connection 5-pin without extension connection
- **Usage:** as a standalone system and as last system in a cascade
- **Resolution:** 14 mm
- **System connection:** male connector M12, 5-pin
- **Minimum scanning range:** 0.15 m ... 10 m
- **Typical scanning range:** 0.15 m ... 16 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C4P-SA03010A001000	1215556	C4P-EA03010A001000	1215583
450 mm	C4P-SA04510A001000	1215651	C4P-EA04510A001000	1215652
600 mm	C4P-SA06010A001000	1215653	C4P-EA06010A001000	1215654
750 mm	C4P-SA07510A001000	1215655	C4P-EA07510A001000	1215656
900 mm	C4P-SA09010A001000	1215657	C4P-EA09010A001000	1215658
1,050 mm	C4P-SA10510A001000	1215659	C4P-EA10510A001000	1215660
1,200 mm	C4P-SA12010A001000	1215661	C4P-EA12010A001000	1215662
1,350 mm	C4P-SA13510A001000	1215663	C4P-EA13510A001000	1215664
1,500 mm	C4P-SA15010A001000	1215665	C4P-EA15010A001000	1215666
1,650 mm	C4P-SA16510A001000	1215667	C4P-EA16510A001000	1215668
1,800 mm	C4P-SA18010A001000	1215669	C4P-EA18010A001000	1215670
1,950 mm	C4P-SA19510A001000	1215671	C4P-EA19510A001000	1215672
2,100 mm	C4P-SA21010A001000	1215673	C4P-EA21010A001000	1215674

- **Usage:** as a standalone system and as last system in a cascade
- **Resolution:** 30 mm
- **System connection:** male connector M12, 5-pin
- **Minimum scanning range:** 0.15 m ... 21 m
- **Typical scanning range:** 0.15 m ... 24 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C4P-SA03030A001000	1215753	C4P-EA03030A001000	1215754
450 mm	C4P-SA04530A001000	1215755	C4P-EA04530A001000	1215756
600 mm	C4P-SA06030A001000	1215757	C4P-EA06030A001000	1215758
750 mm	C4P-SA07530A001000	1215759	C4P-EA07530A001000	1215760
900 mm	C4P-SA09030A001000	1215761	C4P-EA09030A001000	1215762
1,050 mm	C4P-SA10530A001000	1215763	C4P-EA10530A001000	1215764
1,200 mm	C4P-SA12030A001000	1215765	C4P-EA12030A001000	1215766
1,350 mm	C4P-SA13530A001000	1215767	C4P-EA13530A001000	1215768
1,500 mm	C4P-SA15030A001000	1215769	C4P-EA15030A001000	1215770
1,650 mm	C4P-SA16530A001000	1215771	C4P-EA16530A001000	1215772
1,800 mm	C4P-SA18030A001000	1215773	C4P-EA18030A001000	1215774
1,950 mm	C4P-SA19530A001000	1215775	C4P-EA19530A001000	1215776
2,100 mm	C4P-SA21030A001000	1215777	C4P-EA21030A001000	1215778

deTec4 Prime with system connection 5-pin and extension connection 5-pin

- **Usage:** as a standalone system and as first, middle or last system in a cascade
- **Resolution:** 14 mm
- **System connection:** male connector M12, 5-pin
- **Extension connection:** female connector M12, 5-pin
- **Minimum scanning range:** 0.15 m ... 10 m
- **Typical scanning range:** 0.15 m ... 16 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C4P-SA03010A001100	1215675	C4P-EA03010A001100	1215676
450 mm	C4P-SA04510A001100	1215677	C4P-EA04510A001100	1215678
600 mm	C4P-SA06010A001100	1215679	C4P-EA06010A001100	1215680
750 mm	C4P-SA07510A001100	1215681	C4P-EA07510A001100	1215682
900 mm	C4P-SA09010A001100	1215683	C4P-EA09010A001100	1215684
1,050 mm	C4P-SA10510A001100	1215685	C4P-EA10510A001100	1215686
1,200 mm	C4P-SA12010A001100	1215687	C4P-EA12010A001100	1215688
1,350 mm	C4P-SA13510A001100	1215689	C4P-EA13510A001100	1215690
1,500 mm	C4P-SA15010A001100	1215691	C4P-EA15010A001100	1215692
1,650 mm	C4P-SA16510A001100	1215693	C4P-EA16510A001100	1215694
1,800 mm	C4P-SA18010A001100	1215695	C4P-EA18010A001100	1215696
1,950 mm	C4P-SA19510A001100	1215697	C4P-EA19510A001100	1215698
2,100 mm	C4P-SA21010A001100	1215699	C4P-EA21010A001100	1215700

- **Usage:** as a standalone system and as first, middle or last system in a cascade
- **Resolution:** 30 mm
- **System connection:** male connector M12, 5-pin
- **Extension connection:** female connector M12, 5-pin
- **Minimum scanning range:** 0.15 m ... 21 m
- **Typical scanning range:** 0.15 m ... 24 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C4P-SA03030A001100	1215779	C4P-EA03030A001100	1215780
450 mm	C4P-SA04530A001100	1215781	C4P-EA04530A001100	1215782
600 mm	C4P-SA06030A001100	1215783	C4P-EA06030A001100	1215784
750 mm	C4P-SA07530A001100	1215785	C4P-EA07530A001100	1215786
900 mm	C4P-SA09030A001100	1215787	C4P-EA09030A001100	1215788
1,050 mm	C4P-SA10530A001100	1215789	C4P-EA10530A001100	1215790
1,200 mm	C4P-SA12030A001100	1215791	C4P-EA12030A001100	1215792
1,350 mm	C4P-SA13530A001100	1215793	C4P-EA13530A001100	1215794
1,500 mm	C4P-SA15030A001100	1215795	C4P-EA15030A001100	1215796
1,650 mm	C4P-SA16530A001100	1215797	C4P-EA16530A001100	1215798
1,800 mm	C4P-SA18030A001100	1215799	C4P-EA18030A001100	1215800
1,950 mm	C4P-SA19530A001100	1215801	C4P-EA19530A001100	1215802
2,100 mm	C4P-SA21030A001100	1215803	C4P-EA21030A001100	1215804

deTec4 Prime with system connection 8-pin without extension connection

- **Usage:** as a standalone system
- **Resolution:** 14 mm
- **System connection:** male connector M12, 8-pin
- **Minimum scanning range:** 0.15 m ... 10 m
- **Typical scanning range:** 0.15 m ... 16 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C4P-SA03010A001200	1215701	C4P-EA03010A001200	1215702
450 mm	C4P-SA04510A001200	1215703	C4P-EA04510A001200	1215704
600 mm	C4P-SA06010A001200	1215705	C4P-EA06010A001200	1215706
750 mm	C4P-SA07510A001200	1215707	C4P-EA07510A001200	1215708
900 mm	C4P-SA09010A001200	1215709	C4P-EA09010A001200	1215710
1,050 mm	C4P-SA10510A001200	1215711	C4P-EA10510A001200	1215712
1,200 mm	C4P-SA12010A001200	1215713	C4P-EA12010A001200	1215714
1,350 mm	C4P-SA13510A001200	1215715	C4P-EA13510A001200	1215716
1,500 mm	C4P-SA15010A001200	1215717	C4P-EA15010A001200	1215718
1,650 mm	C4P-SA16510A001200	1215719	C4P-EA16510A001200	1215720
1,800 mm	C4P-SA18010A001200	1215721	C4P-EA18010A001200	1215722
1,950 mm	C4P-SA19510A001200	1215723	C4P-EA19510A001200	1215724
2,100 mm	C4P-SA21010A001200	1215725	C4P-EA21010A001200	1215726

- **Usage:** as a standalone system
- **Resolution:** 30 mm
- **System connection:** male connector M12, 8-pin
- **Minimum scanning range:** 0.15 m ... 21 m
- **Typical scanning range:** 0.15 m ... 24 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C4P-SA03030A001200	1215805	C4P-EA03030A001200	1215806
450 mm	C4P-SA04530A001200	1215807	C4P-EA04530A001200	1215808
600 mm	C4P-SA06030A001200	1215809	C4P-EA06030A001200	1215810
750 mm	C4P-SA07530A001200	1215811	C4P-EA07530A001200	1215812
900 mm	C4P-SA09030A001200	1215813	C4P-EA09030A001200	1215814
1,050 mm	C4P-SA10530A001200	1215815	C4P-EA10530A001200	1215816
1,200 mm	C4P-SA12030A001200	1215817	C4P-EA12030A001200	1215818
1,350 mm	C4P-SA13530A001200	1215819	C4P-EA13530A001200	1215820
1,500 mm	C4P-SA15030A001200	1215821	C4P-EA15030A001200	1215822
1,650 mm	C4P-SA16530A001200	1215823	C4P-EA16530A001200	1215824
1,800 mm	C4P-SA18030A001200	1215825	C4P-EA18030A001200	1215826
1,950 mm	C4P-SA19530A001200	1215827	C4P-EA19530A001200	1215828
2,100 mm	C4P-SA21030A001200	1215829	C4P-EA21030A001200	1215830

## deTec4 Prime with system connection 8-pin and extension connection 5-pin

- **Usage:** as a standalone system and as first system in a cascade
- **Resolution:** 14 mm
- **System connection:** male connector M12, 8-pin
- **Extension connection:** female connector M12, 5-pin
- **Minimum scanning range:** 0.15 m ... 10 m
- **Typical scanning range:** 0.15 m ... 16 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C4P-SA03010A001300	1215727	C4P-EA03010A001300	1215728
450 mm	C4P-SA04510A001300	1215729	C4P-EA04510A001300	1215730
600 mm	C4P-SA06010A001300	1215731	C4P-EA06010A001300	1215732
750 mm	C4P-SA07510A001300	1215733	C4P-EA07510A001300	1215734
900 mm	C4P-SA09010A001300	1215735	C4P-EA09010A001300	1215736
1,050 mm	C4P-SA10510A001300	1215737	C4P-EA10510A001300	1215738
1,200 mm	C4P-SA12010A001300	1215739	C4P-EA12010A001300	1215740
1,350 mm	C4P-SA13510A001300	1215741	C4P-EA13510A001300	1215742
1,500 mm	C4P-SA15010A001300	1215743	C4P-EA15010A001300	1215744
1,650 mm	C4P-SA16510A001300	1215745	C4P-EA16510A001300	1215746
1,800 mm	C4P-SA18010A001300	1215747	C4P-EA18010A001300	1215748
1,950 mm	C4P-SA19510A001300	1215749	C4P-EA19510A001300	1215750
2,100 mm	C4P-SA21010A001300	1215751	C4P-EA21010A001300	1215752

- **Usage:** as a standalone system and as first system in a cascade
- **Resolution:** 30 mm
- **System connection:** male connector M12, 8-pin
- **Extension connection:** female connector M12, 5-pin
- **Minimum scanning range:** 0.15 m ... 21 m
- **Typical scanning range:** 0.15 m ... 24 m

| Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C4P-SA03030A001300	1215831	C4P-EA03030A001300	1215832
450 mm	C4P-SA04530A001300	1215833	C4P-EA04530A001300	1215834
600 mm	C4P-SA06030A001300	1215835	C4P-EA06030A001300	1215836
750 mm	C4P-SA07530A001300	1215837	C4P-EA07530A001300	1215838
900 mm	C4P-SA09030A001300	1215839	C4P-EA09030A001300	1215840
1,050 mm	C4P-SA10530A001300	1215841	C4P-EA10530A001300	1215842
1,200 mm	C4P-SA12030A001300	1215843	C4P-EA12030A001300	1215844
1,350 mm	C4P-SA13530A001300	1215845	C4P-EA13530A001300	1215846
1,500 mm	C4P-SA15030A001300	1215847	C4P-EA15030A001300	1215848
1,650 mm	C4P-SA16530A001300	1215849	C4P-EA16530A001300	1215850
1,800 mm	C4P-SA18030A001300	1215851	C4P-EA18030A001300	1215852
1,950 mm	C4P-SA19530A001300	1215853	C4P-EA19530A001300	1215854
2,100 mm	C4P-SA21030A001300	1215855	C4P-EA21030A001300	1215856

Dimensional drawing (dimensions in mm (inch))
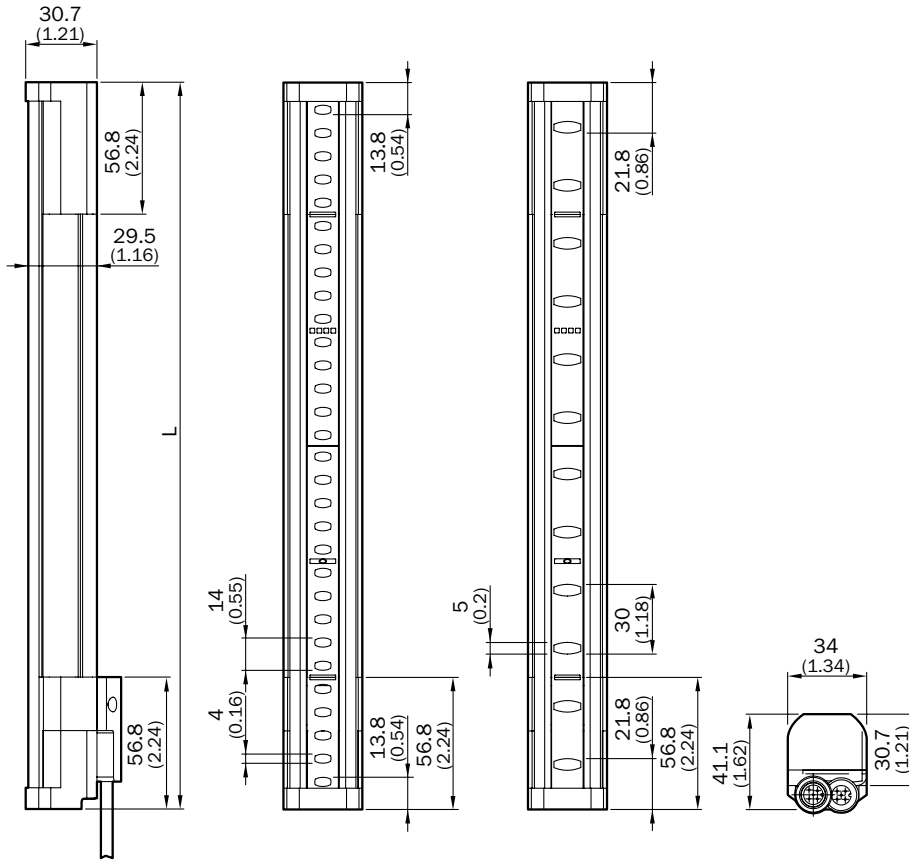
Protective field height	L
300 (11.81)	313 (12.32)
450 (17.72)	463 (18.23)
600 (23.62)	613 (24.13)
750 (29.53)	763 (30.04)
900 (35.43)	913 (35.94)
1,050 (41.34)	1,063 (41.85)
1,200 (47.24)	1,213 (47.76)
1,350 (53.15)	1,362 (53.62)
1,500 (59.06)	1,512 (59.53)
1,650 (64.96)	1,662 (65.43)
1,800 (70.87)	1,812 (71.34)
1,950 (76.77)	1,962 (77.24)
2,100 (82.68)	2,112 (83.15)

Connection diagrams

deTec4 Prime safety light curtain cascade to UE10-3OS safety relay
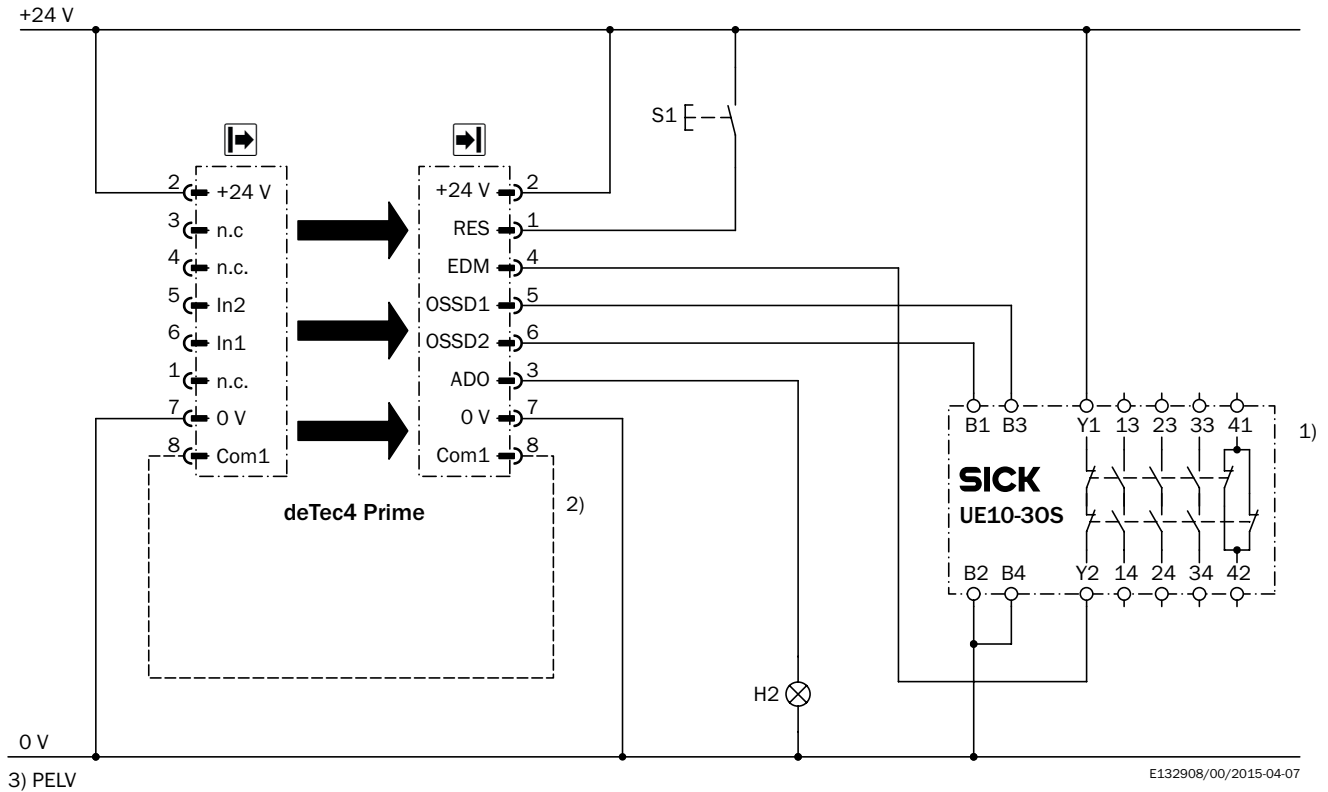
E132908/00/2015-04-07

3) PELV

① Output circuits. These contacts must be incorporated into the control such that the dangerous state is brought to an end if the output circuit is open. For categories 4 and 3, they must be incorporated on two channels (x, y paths). Single-channel incorporation into the control (z path) is only possible with a single-channel control and taking the risk analysis into account.

② To indicate the status on both sides, the Com1 connections from the sender and receiver must be connected to each other in the control cabinet (optional).

③ SELV/PELV safety/protective extra-low voltage.

Task

Connection of a deTec4 Prime safety light curtain to a UE10-3OS safety relay. Operating mode: with restart interlock, external device monitoring (EDM), and application diagnostic output.

Mode of operation

If the protective field is clear and the UE10-3OS is in a fault-free de-energized position, the field indicator and the H2 lamp flash. The system can be switched on. The system is enabled by pressing S1 (pushbutton is pressed and released). Outputs OSSD1 and OSSD2 carry voltage, the UE10-3OS is switched on. When the protective field is interrupted, the OSSD1 and OSSD2 outputs switch the UE10-3OS off.

Fault analysis

Cross-circuits and short-circuits of the OSSDs are recognized and lead to the locking state (lock-out). The malfunction of the UE10-3OS is detected. The shut-down function is retained. Manipulation (e.g., jamming) of the S1 pushbutton prevents the output circuits from being enabled.

deTec4 Prime safety light curtain with T-distributor to UE48-2OS safety relay
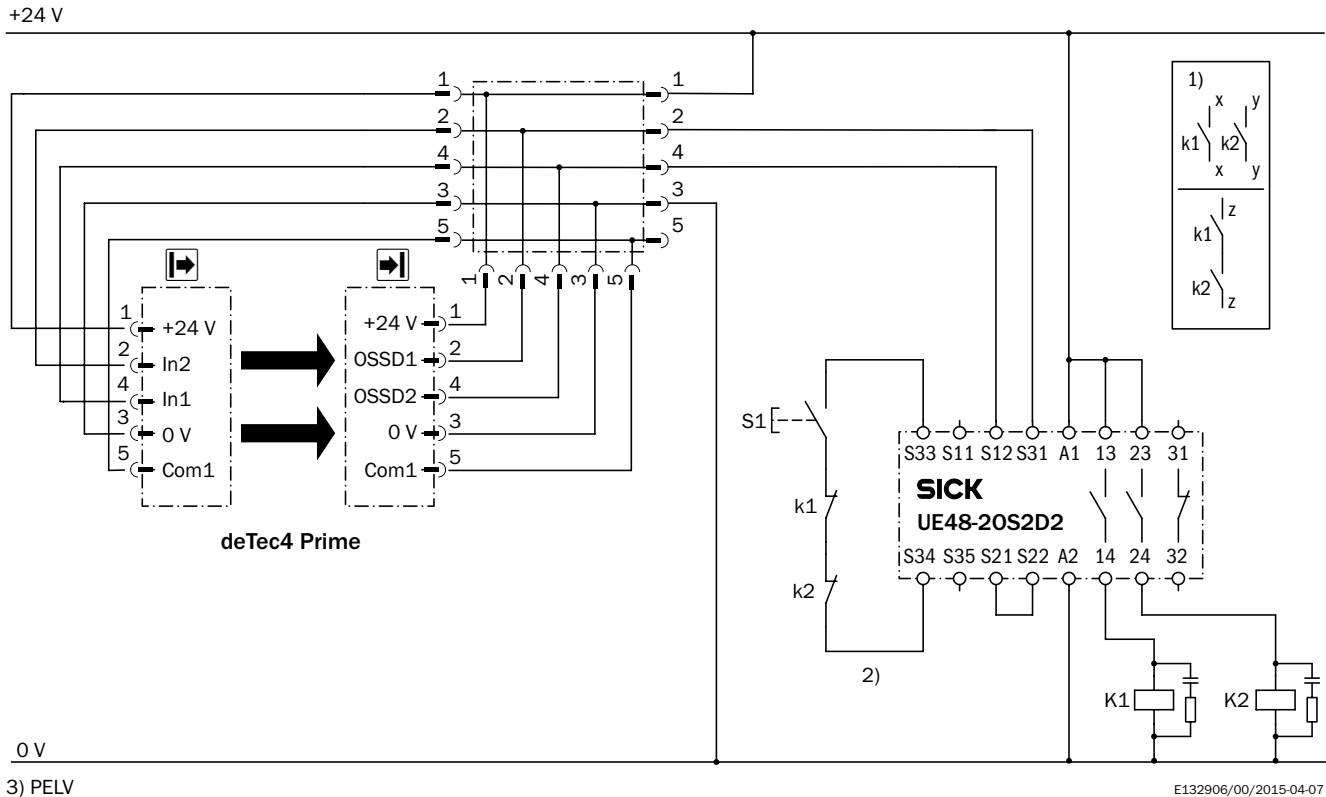
E132906/00/2015-04-07

① Output circuits. These contacts must be incorporated into the control such that the dangerous state is brought to an end if the output circuit is open. For categories 4 and 3, they must be incorporated on two channels (x, y paths). Single-channel incorporation into the control (z path) is only possible with a single-channel control and taking the risk analysis into account.
② External device monitoring is only static.
③ SELV/PELV safety/protective extra-low voltage.

Task

Connection of a deTec4 Prime safety light curtain to a UE48-2OS safety relay. Operating mode: with restart interlock and external device monitoring (EDM). The T-piece establishes a connection between the sender and the receiver.

Mode of operation

When the protective field is clear, the OSSD1 and OSSD2 outputs carry voltage. The system can be switched on when K1 and K2 are in a fault-free de-energized position. The UE48-2OS is switched on by pressing S1 (pushbutton is pressed and released). The outputs (contacts 13-14 and 23-24) switch the K1 and K2 contactors on. When the protective field is interrupted, the OSSD1 and OSSD2 outputs switch the UE48-2OS off. Contactors K1 and K2 are switched off.

Fault analysis

Cross-circuits and short-circuits of the OSSD1 and OSSD2 outputs are recognized and lead to the locking state (lock-out). A malfunction with one of the K1 or K2 contactors is detected. The shut-down function is retained. In the event of manipulation (e.g., jamming) of the S1 pushbutton, the UE48-2OS will not re-enable the output current circuits.

deTec4 Prime safety light curtain cascade to UE10-3OS safety relay
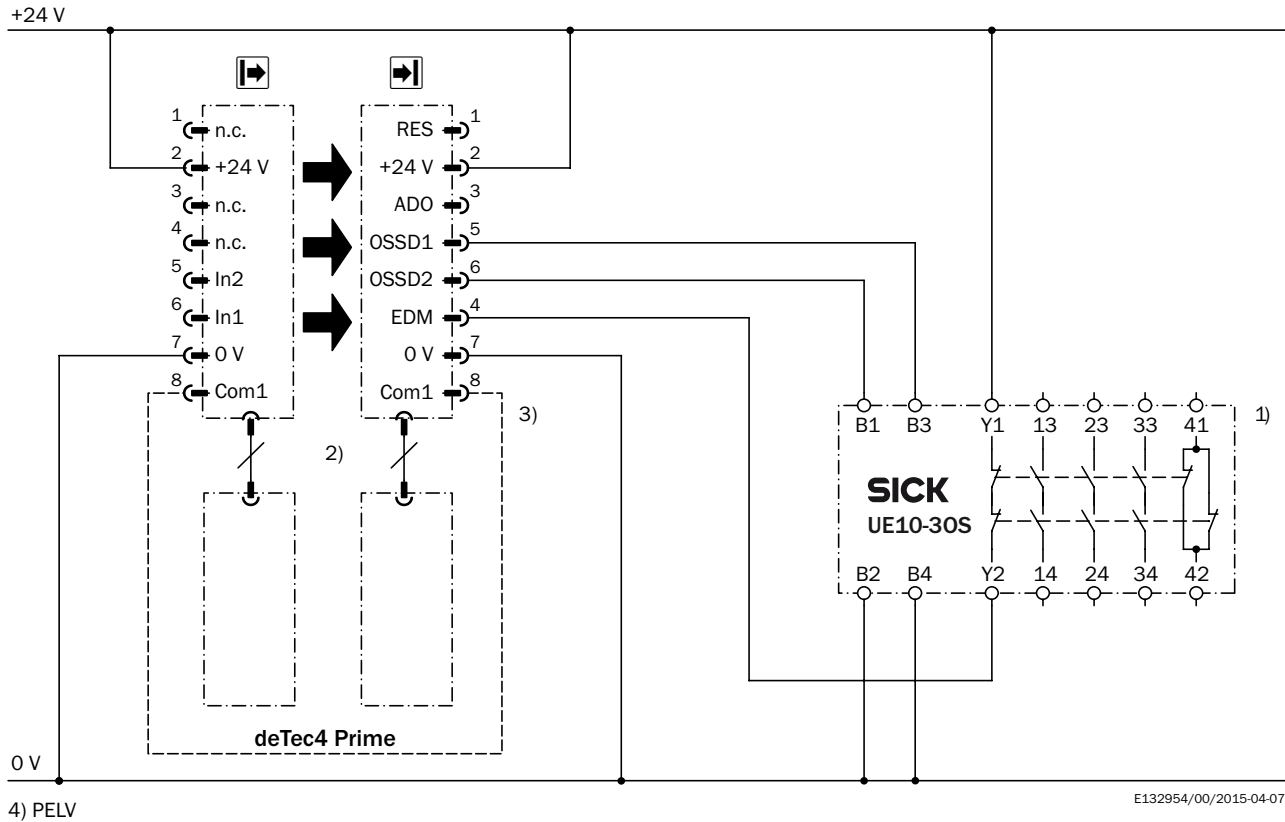
E132954/00/2015-04-07

4) PELV

① Output circuits. These contacts must be incorporated into the control such that the dangerous state is brought to an end if the output circuit is open. For categories 4 and 3, they must be incorporated on two channels (x, y paths). Single-channel incorporation into the control (z path) is only possible with a single-channel control and taking the risk analysis into account.

② Connection of the 5-pin extension connection of the host device to the 5-pin system connection of the guest device.

③ To indicate the status on both sides, the Com1 connections from the sender and receiver must be connected to each other in the control cabinet (optional).

④ SELV/PELV safety/protective extra-low voltage.

Task

Connection of two deTec4 Prime safety light curtains to a UE10-3OS safety relay. Operating mode: without restart interlock, with external device monitoring (EDM). If required, the restart interlock is implemented via the machine controller.

Mode of operation

If the protective field is clear and the UE10-3OS is in a fault-free de-energized position, the system is enabled. Outputs OSSD1 and OSSD2 carry voltage, the UE10-3OS is switched on. When the protective field is interrupted, the OSSD1 and OSSD2 outputs switch the UE10-3OS off.

Fault analysis

Cross-circuits and short-circuits of the OSSDs are recognized and lead to the locking state (lock-out). The malfunction of the UE10-3OS is detected. The shut-down function is retained.

Accessories required for commissioning

Description	Number	Items supplied	Further information
System plug	2	✔	➜ System plugs
Mounting bracket	1	✔	➜ Terminal and alignment brackets
Connecting cable	2	–	➜ Plug connectors and cables
Operating instructions	1	–	➜ www.sick.com/deTec4
Test rod	1	✔	➜ Test and monitoring tools

Suitable accessories ➜ **page 42**

EFFICIENT INTEGRATION. QUICK INSTALLATION. SIMPLY SAFE.

Product description

The deTec4 Core safety light curtain is impressive with a new innovative system of brackets, no blind zones, and the increased height of its protective field. The effort required for commissioning and maintenance is minimized. The half-rounded contour of the rear of the housing enables the brackets to be positioned in any location on the housing. The FlexFix bracket facilitates alignment at up to +/–15°. Integrated LED displays, diagnostic functions, and automatic calibration on the protective field width

help to save time and costs during commissioning. The deTec4 Core is also suitable for use in harsh ambient conditions thanks to the enclosure rating IP 65 and IP 67. With ambient operating temperatures of between –30 °C and +55 °C, the safety light curtain can also be used in low-temperature environments. The deTec4 Core provides reliable hand and finger protection at the highest PL e protection level. The available protective field heights range from 300 mm to 2,100 mm.

At a glance

- Type 4 (IEC 61496), SIL3 (IEC 61508), PL e (EN ISO 13849)
- Absence of blind zones
- Resolution of 14 mm or 30 mm
- Protective field height of 300 mm to 2.100 mm

- Automatic calibration on the protective field width up to 10 m range
- Ambient operating temperature of –30 °C to +55 °C
- Enclosure rating IP 65 and IP 67
- Flexi Loop-compatible M12 male connector

Your benefits

- Simple assembly with innovative mounting and no blind zones
- Quick commissioning thanks to integrated LED display and automatic calibration on the protective field width up to 10 m range
- Simply safe: rugged and reliable thanks to enclosure rating IP 67 and an ambient operating temperature down to –30 °C, enabling use in harsh ambient conditions

- Intelligently standardized: M12, 5-pin provide cost reductions and enables a safe series connection with Flexi Loop
- Basic function without configuration effort enables quick replacement when servicing is required

Additional information

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/IO**

Features

	Resolution 14 mm	Resolution 30 mm
Protective field height	300 mm ... 2,100 mm (depending on type)	
Scanning range		
Minimum	0 m ... 7 m	0 m ... 10 m
Typical	0 m ... 8 m	0 m ... 12 m
Response time	11 ms ... 22 ms (depending on type)	10 ms ... 14 ms (depending on type)
Synchronization	Optical synchronisation	

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (EN 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFHd (mean probability of a dangerous failure per hour)	$3{,}7 \times 10^{-9}$ (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.

Interfaces

System connection	
Connection type	Male connector M12, 5-pin
Flexi Loop-compatible M12 plug connector	✔
Permitted cable length	≤ 50 m
Fieldbus, industrial network	
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET [1]

[1] For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or ➜ www.sick.com/FlexiSoft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC)	
Ripple	≤ 2.4 V_{pp} [1]	
Power consumption typical	0.82 W ... 2.4 W (depending on type)	1.63 W ... 4.8 W (depending on type)
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored [2]
Switching voltage HIGH	–	24 V DC (V_S – 2.25 V DC ... V_S)
Switching voltage LOW	–	≤ 2 V DC
Switching current	–	≤ 300 mA

[1] Within the limits of V_S.

[2] Applies to the voltage range between –30 V and +30 V.

Mechanical data

	Sender	Receiver
Housing cross-section (incl. system connection)	34 mm x 30.7 mm	
Housing material	Aluminum extruded profile	
Weight	290 g ... 1,920 g (depending on type)	300 g .. 1,930 g (depending on type)

Ambient data

Enclosure rating	IP 65 (EN 60529) IP 67 (EN 60529)
Ambient operating temperature	–30 °C ... +55 °C
Storage temperature	–30 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (EN 60068-2-6)
Shock resistance	10 g, 16 ms (EN 60068-2-29)

Other information

Wave length	850 nm

Ordering information

Items supplied deTec4 Core:

- Safety light curtain consisting of a sender and a receiver
- 4 QuickFix brackets
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

- **Resolution:** 14 mm
- **Minimum scanning range:** 0 m … 7 m
- **Typical scanning range:** 0 m … 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C4C-SA03010A10000	1211450	C4C-EA03010A10000	1211463
450 mm	C4C-SA04510A10000	1211469	C4C-EA04510A10000	1211470
600 mm	C4C-SA06010A10000	1211471	C4C-EA06010A10000	1211472
750 mm	C4C-SA07510A10000	1211473	C4C-EA07510A10000	1211474
900 mm	C4C-SA09010A10000	1211475	C4C-EA09010A10000	1211515
1,050 mm	C4C-SA10510A10000	1211476	C4C-EA10510A10000	1211477
1,200 mm	C4C-SA12010A10000	1211478	C4C-EA12010A10000	1211479
1,350 mm	C4C-SA13510A10000	1211480	C4C-EA13510A10000	1211481
1,500 mm	C4C-SA15010A10000	1211482	C4C-EA15010A10000	1211483
1,650 mm	C4C-SA16510A10000	1211484	C4C-EA16510A10000	1211485
1,800 mm	C4C-SA18010A10000	1211486	C4C-EA18010A10000	1211487
1,950 mm	C4C-SA19510A10000	1211488	C4C-EA19510A10000	1211489
2,100 mm	C4C-SA21010A10000	1211490	C4C-EA21010A10000	1211491

- **Resolution:** 30 mm
- **Minimum scanning range:** 0 m … 10 m
- **Typical scanning range:** 0 m … 12 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C4C-SA03030A10000	1211462	C4C-EA03030A10000	1211464
450 mm	C4C-SA04530A10000	1211492	C4C-EA04530A10000	1211493
600 mm	C4C-SA06030A10000	1211494	C4C-EA06030A10000	1211495
750 mm	C4C-SA07530A10000	1211496	C4C-EA07530A10000	1211497
900 mm	C4C-SA09030A10000	1211498	C4C-EA09030A10000	1211516
1,050 mm	C4C-SA10530A10000	1211499	C4C-EA10530A10000	1211500
1,200 mm	C4C-SA12030A10000	1211501	C4C-EA12030A10000	1211502
1,350 mm	C4C-SA13530A10000	1211503	C4C-EA13530A10000	1211504
1,500 mm	C4C-SA15030A10000	1211505	C4C-EA15030A10000	1211506
1,650 mm	C4C-SA16530A10000	1211507	C4C-EA16530A10000	1211508
1,800 mm	C4C-SA18030A10000	1211509	C4C-EA18030A10000	1211510
1,950 mm	C4C-SA19530A10000	1211511	C4C-EA19530A10000	1211512
2,100 mm	C4C-SA21030A10000	1211513	C4C-EA21030A10000	1211514

Dimensional drawing (dimensions in mm (inch))

Protective field height	L
300 (11.81)	313 (12.32)
450 (17.72)	463 (18.23)
600 (23.62)	613 (24.13)
750 (29.53)	763 (30.04)
900 (35.43)	913 (35.94)
1,050 (41.34)	1,063 (41.85)
1,200 (47.24)	1,213 (47.76)
1,350 (53.15)	1,362 (53.62)
1,500 (59.06)	1,512 (59.53)
1,650 (64.96)	1,662 (65.43)
1,800 (70.87)	1,812 (71.34)
1,950 (76.77)	1,962 (77.24)
2,100 (82.68)	2,112 (83.15)

Connection diagrams

deTec safety light curtain connected to UE48-2OS safety relay

E114585/01/2014-05-08

Task

Connection of a deTec4 Core safety light curtain to UE48-2OS. Operating mode: with restart interlock and external device monitoring.

Function

When the light path is clear, the OSSD1 and OSSD2 outputs are live. The system is ready to switch on if K1 and K2 are de-energized. By pressing S1 (button is pressed and released), the UE48-2OS is energized and its 13 - 14 and 23 - 24 contacts activate K1 and K2. On interruption of one of the light beams, the UE48-2OS is de-energized by the OSSD1 and OSSD2 outputs and K1 and K2 are deactivated.

Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The incorrect functioning of one of the K1 or K2 contactors will be detected and does not result in the loss of the shutdown function. Jamming of the S1 button will prevent the UE48-2OS from enabling.

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 by taking the risk analysis into account.

Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	✔	➜ Terminal and alignment brackets
Connecting cable	2	–	➜ Plug connectors and cables
Operating instructions	1	✔	–
Test rod	1	✔	➜ Test and monitoring tools

Suitable accessories ➜ **page 42**

SIMPLY SAFE: EASILY OPERATED AND RUGGED IN EVERYDAY USE

Product description

The deTec2 Core safety light curtain is impressive with a new innovative system of brackets, no blind zones, and the increased height of its protective field. The effort required for commissioning and maintenance is minimized. The half-rounded contour of the rear of the housing enables the brackets to be positioned in any location on the housing. The FlexFix bracket facilitates alignment at up to +/–15°. Integrated LED displays, diagnostic functions, and automatic distance measurements help to save time and costs during commissioning. The deTec2 Core is also suitable for use in harsh ambient conditions thanks to the enclosure rating IP 65 and IP 67. The deTec2 Core provides reliable hand and finger protection at PL c protection level. With ambient operating temperatures of between –30 °C and +55 °C, the safety light curtain can also be used in low-temperature environments. The available protective field heights range from 300 mm to 2,100 mm.

At a glance

- Type 2 (IEC 61496), SIL1 (IEC 61508), PL c (EN ISO 13849)
- Absence of blind zones
- Resolution of 14 mm or 30 mm
- Protective field height of 300 mm to 2,100 mm
- Automatic calibration on the protective field width up to 10 m range
- Ambient operating temperature of –30 °C to +55 °C
- Enclosure rating IP 65 and IP 67
- Flexi Loop-compatible M12 male connector

Your benefits

- Simple assembly with innovative mounting and no blind zones
- Quick commissioning thanks to integrated LED display and automatic calibration on the protective field width up to 10 m range
- Simply safe: rugged and reliable thanks to enclosure rating IP 67 and an ambient operating temperature down to –30 °C, enabling use in harsh ambient conditions
- Intelligently standardized: M12, 5-pin provide cost reductions and enables a safe series connection with Flexi Loop
- Basic function without configuration effort enables quick replacement when servicing is required

CE

Additional information

→ **www.mysick.com/en/deTec2_Core**

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/IO**

Features

	Resolution 14 mm	Resolution 30 mm
Protective field height	300 mm … 1,200 mm (depending on type)	300 mm … 2,100 mm (depending on type)
Scanning range		
Minimum	0 m … 7 m	0 m … 10 m
Typical	0 m … 8 m	0 m … 12 m
Response time	11 ms … 16 ms (depending on type)	10 ms … 14 ms (depending on type)
Synchronization	Optical synchronisation	

Safety-related parameters

Type	Type 2 (IEC 61496)
Safety integrity level	SIL1 (IEC 61508) SILCL1 (EN 62061)
Category	Category 2 (EN ISO 13849)
Performance level	PL c (EN ISO 13849)
PFHd (mean probability of a dangerous failure per hour)	3.1×10^{-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.

Interfaces

System connection	
Connection type	Male connector M12, 5-pin
Flexi Loop-compatible M12 plug connector	✔
Permitted cable length	≤ 50 m
Fieldbus, industrial network	
Integration via Flexi Soft safety controller	CANopen, DeviceNet, EtherCAT, EtherNet/IP, Modbus TCP, PROFIBUS DP, PROFINET [1]

[1] For further information on Flexi Soft, please see sens:Control – safe control solutions product catalog or ➜ www.sick.com/FlexiSoft

Electrical data

	Sender	Receiver
Protection class	III (EN 50178)	
Supply voltage V_S	24 V DC (19.2 V DC … 28.8 V DC)	
Ripple	≤ 2.4 V_{pp} [1]	
Power consumption typical	0.82 W (DC) … 1.68 W (DC) (depending on type)	1.63 W (DC) … 3.36 W (DC) (depending on type)
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored [2]
Switching voltage HIGH	–	24 V DC (V_S – 2.25 V DC … V_S)
Switching voltage LOW	–	≤ 2 V DC
Switching current	–	≤ 300 mA

[1] Within the limits of V_S.

[2] Applies to the voltage range between –30 V and +30 V.

Mechanical data

	Sender	Receiver
Housing cross-section (incl. system connection)	34 mm x 30.7 mm	
Housing material	Aluminum extruded profile	
Weight	290 g .. 1,920 g (depending on type)	300 g ... 1,930 g (depending on type)

Ambient data

Enclosure rating	IP 65 (EN 60529) IP 67 (EN 60529)
Ambient operating temperature	–30 °C ... +55 °C
Storage temperature	–30 °C ... +70 °C
Air humidity	15 % ... 95 %, Non-condensing
Vibration resistance	5 g, 10 Hz ... 55 Hz (EN 60068-2-6)
Shock resistance	10 g, 16 ms (EN 60068-2-29)

Other information

Wave length	850 nm

Ordering information

Items supplied deTec2 Core:

- Safety light curtain consisting of a sender and a receiver
- 4 QuickFix brackets
- Test rod with diameter corresponding to the resolution of the safety light curtain
- Operating instructions on CD-ROM
- Adhesive label with information on the daily check

- **Resolution:** 14 mm
- **Minimum scanning range:** 0 m … 7 m
- **Typical scanning range:** 0 m … 8 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C2C-SA03010A10000	1213163	C2C-EA03010A10000	1213188
450 mm	C2C-SA04510A10000	1213189	C2C-EA04510A10000	1213190
600 mm	C2C-SA06010A10000	1213191	C2C-EA06010A10000	1213192
750 mm	C2C-SA07510A10000	1213193	C2C-EA07510A10000	1213194
900 mm	C2C-SA09010A10000	1213195	C2C-EA09010A10000	1213196
1,050 mm	C2C-SA10510A10000	1213197	C2C-EA10510A10000	1213198
1,200 mm	C2C-SA12010A10000	1213183	C2C-EA12010A10000	1213199

- **Resolution:** 30 mm
- **Minimum scanning range:** 0 m … 10 m
- **Typical scanning range:** 0 m … 12 m

Protective field height	Sender		Receiver	
	Type	Part no.	Type	Part no.
300 mm	C2C-SA03030A10000	1213200	C2C-EA03030A10000	1213184
450 mm	C2C-SA04530A10000	1213202	C2C-EA04530A10000	1213203
600 mm	C2C-SA06030A10000	1213204	C2C-EA06030A10000	1213205
750 mm	C2C-SA07530A10000	1213206	C2C-EA07530A10000	1213207
900 mm	C2C-SA09030A10000	1213208	C2C-EA09030A10000	1213209
1,050 mm	C2C-SA10530A10000	1213210	C2C-EA10530A10000	1213211
1,200 mm	C2C-SA12030A10000	1213212	C2C-EA12030A10000	1213213
1,350 mm	C2C-SA13530A10000	1213214	C2C-EA13530A10000	1213215
1,500 mm	C2C-SA15030A10000	1213216	C2C-EA15030A10000	1213217
1,650 mm	C2C-SA16530A10000	1213218	C2C-EA16530A10000	1213219
1,800 mm	C2C-SA18030A10000	1213220	C2C-EA18030A10000	1213221
1,950 mm	C2C-SA19530A10000	1213222	C2C-EA19530A10000	1213223
2,100 mm	C2C-SA21030A10000	1213201	C2C-EA21030A10000	1213164

Dimensional drawing (dimensions in mm (inch))

Protective field height	L
300 (11.81)	313 (12.32)
450 (17.72)	463 (18.23)
600 (23.62)	613 (24.13)
750 (29.53)	763 (30.04)
900 (35.43)	913 (35.94)
1,050 (41.34)	1,063 (41.85)
1,200 (47.24)	1,213 (47.76)
1,350 (53.15)	1,362 (53.62)
1,500 (59.06)	1,512 (59.53)
1,650 (64.96)	1,662 (65.43)
1,800 (70.87)	1,812 (71.34)
1,950 (76.77)	1,962 (77.24)
2,100 (82.68)	2,112 (83.15)

Connection diagrams

deTec safety light curtain connected to UE48-2OS safety relay

E114585/01/2014-05-08

Task

Connection of a deTec2 Core safety light curtain to UE48-2OS. Operating mode: with restart interlock and external device monitoring.

Function

When the light path is clear, the OSSD1 and OSSD2 outputs are live. The system is ready to switch on if K1 and K2 are de-energized. By pressing S1 (button is pressed and released), the UE48-2OS is energized and its 13 - 14 and 23 - 24 contacts activate K1 and K2. On interruption of one of the light beams, the UE48-2OS is de-energized by the OSSD1 and OSSD2 outputs and K1 and K2 are deactivated.

Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The incorrect functioning of one of the K1 or K2 contactors will be detected and does not result in the loss of the shutdown function. Jamming of the S1 button will prevent the UE48-2OS from enabling.

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 by taking the risk analysis into account.

Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	1	✔	➜ Terminal and alignment brackets
Connecting cable	2	–	➜ Plug connectors and cables
Operating instructions	1	✔	–
Test rod	1	✔	➜ Test and monitoring tools

Accessories

Mounting systems

Terminal and alignment brackets

Alignment brackets

Figure	Description	Packing unit	Type	Part no.	deTec4 Prime	deTec4 Core	deTec2 Core
	FlexFix bracket	4	BEF-1SHABPKU4	2066614	●	●	●
	QuickFix bracket	2	BEF-3SHABPKU2	2066048	●	●	●
	FlexFix brackets including alignment tool and mounting material suitable for fastening to device columns	2	BEF-1SHABBKU2	2073543	●	●	●
	Replacement bracket kit replaces swivel mount brackets 2019649 and 2019659 or side brackets 2019506 with FlexFix brackets by using the existing fixing holes	4	BEF-1SHABP004	2071021	●	●	●

Dimensional drawings

Device protection (mechanical)

Front screen protection

Figure	Description	Suitable for	Packing unit	Type	Part no.			
	Self-adhesive protective film for the front screen (protects sensors from damage by flying sparks and welding beads)	Sufficient for two sensors with a protective field height of 2.100 mm	1	Self-adhesive protective film	2069268	●	●	●

Other mounting accessories

Mounting tools

Figure	Description	Packing unit	Type	Part no.			
	Alignment tool for deTec4 and deTec2 in areas with limited accessibility	1	Alignment tool	4084133	●	●	●

Connection systems

Plug connectors and cables

System plugs

Figure	Description	Type	Part no.	deTec4 Prime	deTec4 Core	deTec2 Core
	System connection M12, 5-pin	1000	2076832	●	–	–
	System connection M12, 5-pin and extension connection M12, 5-pin	1100	2076833	●	–	–
	System connection M12, 8-pin	1200	2076834	●	–	–
	System connection M12, 8-pin and extension connection M12, 5-pin	1300	2076835	●	–	–

Connecting cables with female connector

Figure	Connection type	Model		Conductor cross-section	Cable length	Type	Part no.			
	Female connector, M12, 5-pin, straight	Cable	PUR, halogen-free, unshielded	0.34 mm²	2 m	DOL-1205-G02MC	6025906	●	●	●
					5 m	DOL-1205-G05MC	6025907	●	●	●
					10 m	DOL-1205-G10MC	6025908	●	●	●
					15 m	DOL-1205-G15MC	6051946	●	●	●
					20 m	DOL-1205-G20MC	6050247	●	●	●
					30 m	DOL-1205-G30MC	6050248	●	●	●
	Female connector, M12, 5-pin, angled	Cable	PUR, halogen-free, unshielded	0.34 mm²	2 m	DOL-1205-W02MC	6025909	●	●	●
					5 m	DOL-1205-W05MC	6025910	●	●	●
					10 m	DOL-1205-W10MC	6025911	●	●	●
	Female connector, M12, 8-pin, straight	Cable	PUR, halogen-free, unshielded	0.25 mm²	2.5 m	DOL-1208-G2M5C	6058863	●	–	–
					5 m	DOL-1208-G05MC	6035621	●	–	–
					7.5 m	DOL-1208-G7M5C	6058864	●	–	–
					10 m	DOL-1208-G10MC	6035622	●	–	–
					15 m	DOL-1208-G15MC	6038559	●	–	–
					20 m	DOL-1208-G20MC	6038560	●	–	–
					30 m	DOL-1208-G30MC	6058865	●	–	–
	Female connector, M12, 8-pin, angled	Cable	PUR, un-shielded	0.25 mm²	2 m	DOL-1208-W02MC	6035623	●	–	–
					5 m	DOL-1208-W05MC	6035624	●	–	–
					10 m	DOL-1208-W10MC	6035625	●	–	–

Connection cables with female connector and male connector

Figure	Connection type	Model	Conductor cross-section	Cable length	Packing unit	Type	Part no.	deTec4 Prime	deTec4 Core	deTec2 Core
		Male connector, M12, 5-pin, straight	PUR, halogen-free, un-shielded	0.6 m	1	DSL-1205-G0M6C	6025930	●	●	●
				1 m	1	DSL-1205-G01MC	6029280	●	●	●
				2 m	1	DSL-1205-G02MC	6025931	●	●	●
				5 m	1	DSL-1205-G05MC	6029282	●	●	●
				10 m	1	DSL-1205-G10MC	6038954	●	●	●
				15 m	1	DSL-1205-G15MC	6038956	●	●	●
	Female connector, M12, 5-pin, straight	Male connector, M12, 8-pin, straight	PVC, un-shielded	0.34 mm²	0.25 m	2	DSL-1285GM25034KM1	2070987	●	●	●
		Male connector, M26, 12-pin, straight	PVC, un-shielded	0.34 mm²	0.25 m	2	DSL-6182GM25034KM1	2070989	●	●	●
		Male connector, M26, 7-pin, straight	PVC, un-shielded	0.34 mm²	0.25 m	2	DSL-6187GM25034KM1	2070988	●	●	●
		Male connector, M12, 8-pin, straight	PUR, halogen-free, un-shielded	0.25 mm²	0.6 m	1	DSL-1208-G0M6C	6044991	●	–	–
				1 m	1	DSL-1208-G01MC	6051940	●	–	–
				2 m	1	DSL-1208-G02MC	6051942	●	–	–
				5 m	1	DSL-1208-G05MC	6051943	●	–	–
				10 m	1	DSL-1208-G10MC	6051944	●	–	–
	Female connector, M12, 8-pin, straight	Male connector, M26, 12-pin, straight	PUR, halogen-free, un-shielded	0.25 mm²	0.25 m	2	DSL-6129GM25034KM1	2081442	●	–	–
		Male connector, M26, 7-pin, straight	PUR, halogen-free, un-shielded	0.25 mm²	0.25 m	2	DSL-6130GM25034KM1	2081443	●	–	–

Adapters and distributors

T-junctions

Figure	Description	Type	Part no.			
	T-distributor for simultaneous connection to sender and receiver, splits the cable from the control cabinet between the sender and receiver, 5-pin	DSC-1205T000025KM0	6030664	●	●	●
	T-distributor for simultaneous connection to sender and receiver, splits the cable from the control cabinet between the sender and receiver, 8-pin	DSC-1208T000025KM0	6058647	●	–	–

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.			
	100 V AC … 240 V AC	24 V DC	≤ 2.1 A	PS50WE24V	7028789	●	●	●
			≤ 3.9 A	PS95WE24V	7028790	●	●	●

Reflectors and optics

Alignment aids

Figure	Description	Type	Part no.	deTec4 Prime	deTec4 Core	deTec2 Core
	Laser alignment aid for various sensors, laser class 2 (IEC 60825): Never look into the beam.	AR60	1015741	●	●	●
	Adapter AR60 for deTec4, deTec2 and MLG-2	Adapter AR60, deTec, MLG-2	4070854	●	●	●

Deflector mirrors

- **Mirror material:** glass

Figure	Description	Items supplied	Suitable for protective field height	Type	Part no.			
	Horizontal deflection. Pay attention to the reduction of the scanning range!	Incl. mounting kit swivel mount.	≤ 300 mm	PNS125-034	1019425	●	●	●
			≤ 450 mm	PNS125-049	1019426	●	●	●
			≤ 600 mm	PNS125-064	1019427	●	●	●
			≤ 750 mm	PNS125-079	1019428	●	●	●
			≤ 900 mm	PNS125-094	1019429	●	●	●
			≤ 1,050 mm	PNS125-109	1019430	●	●	●
			≤ 1,200 mm	PNS125-124	1019431	●	●	●
			≤ 1,350 mm	PNS125-139	1019432	●	●	●
			≤ 1,500 mm	PNS125-154	1019433	●	●	●
			≤ 1,650 mm	PNS125-169	1019434	●	●	●
			≤ 1,800 mm	PNS125-184	1019435	●	●	●
	Horizontal deflection. Pay attention to the reduction of the scanning range!	Incl. mounting kit swivel mount.	≤ 300 mm	PNS75-034	1019414	●	●	●
			≤ 450 mm	PNS75-049	1019415	●	●	●
			≤ 600 mm	PNS75-064	1019416	●	●	●
			≤ 750 mm	PNS75-079	1019417	●	●	●
			≤ 900 mm	PNS75-094	1019418	●	●	●
			≤ 1,050 mm	PNS75-109	1019419	●	●	●
			≤ 1,200 mm	PNS75-124	1019420	●	●	●
			≤ 1,350 mm	PNS75-139	1019421	●	●	●
			≤ 1,500 mm	PNS75-154	1019422	●	●	●
			≤ 1,650 mm	PNS75-169	1019423	●	●	●
			≤ 1,800 mm	PNS75-184	1019424	●	●	●

Optics cloths

Figure	Description	Type	Part no.			
	Cloth for cleaning the front screen	Lens cloth	4003353	●	●	●

Further accessories

Test and monitoring tools

Figure	Description		Type	Part no.	deTec4 Prime	deTec4 Core	deTec2 Core
	14 mm diameter		Test rod 14 mm	2022599	●	●	●
	30 mm diameter		Test rod 30 mm	2022602	●	●	●
	Test rod holder		BEF-3WNAAAAL1	2052249	●	●	●

Programming and configuration tools

Figure	Description	Type	Part no.			
	The 5-pin M12 button makes it possible to switch on and off the laser alignment aid integrated into the deTec4 Prime sender.	5-pin M12 button	2082166	●	–	–
	The 8-pin M12 button makes it possible to switch on and off the laser alignment aid integrated into the deTec4 Prime sender.	8-pin M12 button	2082167	●	–	–

Cleaning agent

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

Safety command devices

Reset pushbutton

Figure	Description	Items supplied	Type	Part no.			
	Illuminated reset pushbutton, slim plastic housing with quick disconnect mounting clip, 1 NO, 5-pin M12 plug connector	Including retaining clip, "RESET" cover and "RESET/OVERRIDE" cover	ER12-SB3C5	6045316	●	●	●

Mirror columns and device columns

Device columns with external grooves

Figure	Suitable for protective field height	Max. installation length	Column height	Type	Part no.	deTec4 Prime	deTec4 Core	deTec2 Core
	≤ 900 mm	965 mm	985 mm	PU3H96-00000000	2045490	●	●	●
	≤ 1,050 mm	1,165 mm	1,185 mm	PU3H11-00000000	2045641	●	●	●
	≤ 1,200 mm	1,265 mm	1,285 mm	PU3H13-00000000	2045642	●	●	●
	≤ 1,500 mm	1,550 mm	1,570 mm	PU3H15-00000000	2068813	●	●	●
	≤ 1,650 mm	1,720 mm	1,740 mm	PU3H17-00000000	2045643	●	●	●
	≤ 1,950 mm	2,020 mm	2,040 mm	PU3H21-00000000	2045644	●	●	●
	≤ 2,100 mm	2,250 mm	2,270 mm	PU3H22-00000000	2045645	●	●	●
		2,400 mm	2,420 mm	PU3H24-00000000	2045646	●	●	●

Dimensional drawings ➜ page 51

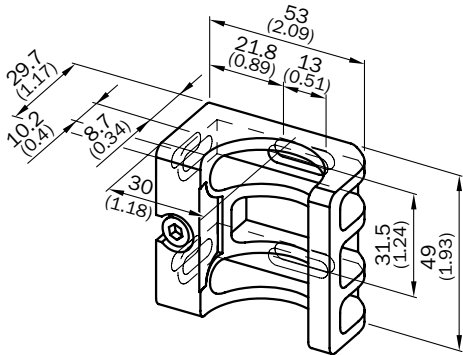Mirror columns with protective field height mirror

Figure	Suitable for protective field height	Mirror length	Column height	Type	Part no.			
	≤ 1,050 mm	1,082 mm	1,281.5 mm	PM3C13-00030000	1043453	●	●	●
	≤ 1,350 mm	1,382 mm	1,569 mm	PM3C15-00030000	1077525	●	●	●
	≤ 1,500 mm	1,532 mm	1,716.5 mm	PM3C17-00030000	1043454	●	●	●
	≤ 1,650 mm	1,682 mm	2,016.5 mm	PM3C19-00030000	1043455	●	●	●
	≤ 1,800 mm	1,832 mm	2,216.5 mm	PM3C20-00030000	1043456	●	●	●

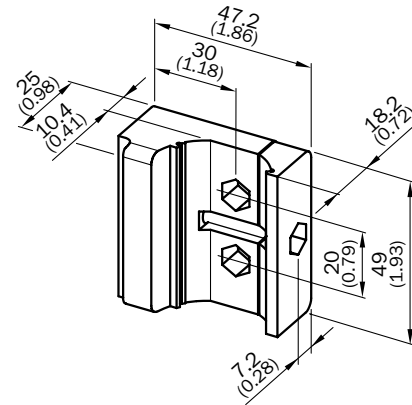Dimensional drawings ➜ page 52

Dimensional drawings for accessories (dimensions in mm (inch))
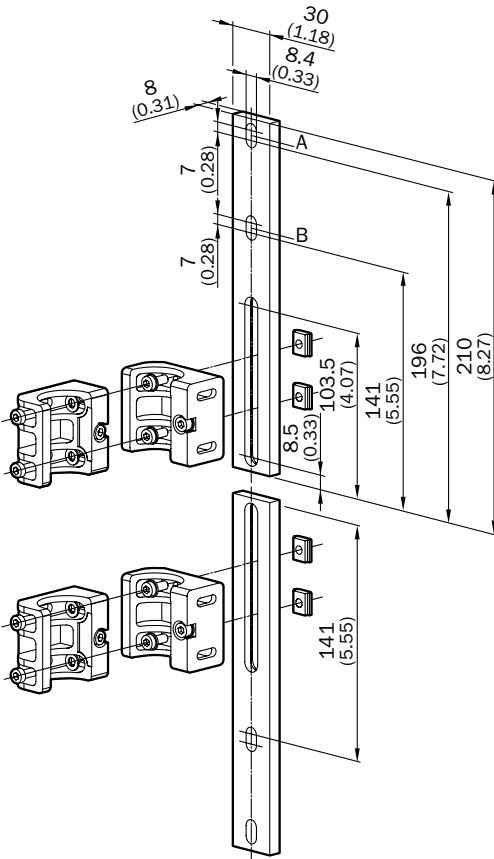
Terminal and alignment brackets
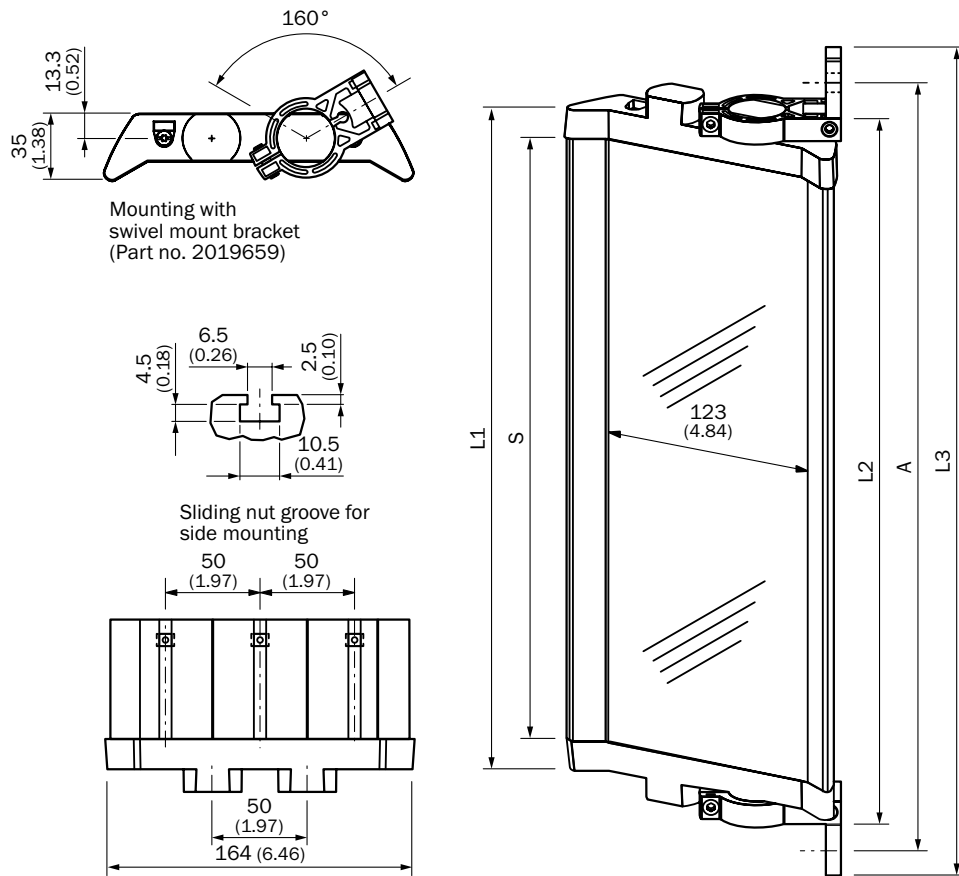
BEF-1SHABPKU4
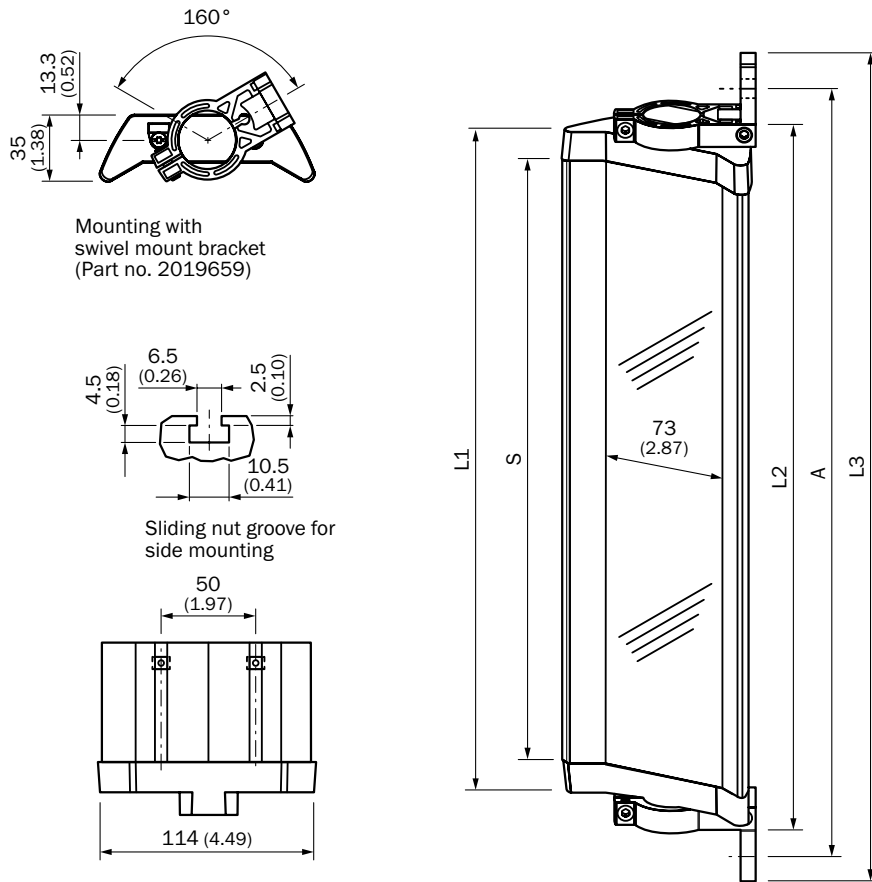BEF-1SHABBKU2

BEF-3SHABPKU2

BEF-1SHABP004

Deflector mirrors

PNS125

160°

13.3 (0.52)

35 (1.38)

Mounting with
swivel mount bracket
(Part no. 2019659)

4.5 (0.18) 6.5 (0.26) 2.5 (0.10)

10.5 (0.41)

Sliding nut groove for
side mounting

50 (1.97) 50 (1.97)

50 (1.97)

164 (6.46)

L1 S 123 (4.84) L2 A L3

| Mirror height S	L1	L2	L3	A
340 (13.39)	372 (14.65)	396 (15.59)	460 (18.11)	440 (17.32)
490 (19.29)	522 (20.55)	546 (21.5)	610 (24.02)	590 (23.23)
640 (25.2)	672 (26.46)	696 (27.4)	760 (29.92)	740 (29.13)
790 (31.1)	822 (32.36)	846 (33.31)	910 (35.83)	890 (35.04)
940 (37.01)	972 (38.27)	996 (39.21)	1,060 (41.73)	1,040 (40.94)
1,090 (42.91)	1,122 (44.17)	1,146 (45.12)	1,210 (47.64)	1,190 (46.85)
1,240 (48.82)	1,272 (50.08)	1,296 (51.02)	1,360 (53.54)	1,340 (52.76)
1,390 (54.72)	1,422 (55.98)	1,446 (56.93)	1,510 (59.45)	1,490 (58.66)
1,540 (60.63)	1,572 (61.89)	1,596 (62.83)	1,660 (65.35)	1,640 (64.57)
1,690 (66.54)	1,722 (67.8)	1,746 (68.74)	1,810 (71.26)	1,790 (70.47)
1,840 (72.44)	1,872 (73.7)	1,896 (74.65)	1,960 (77.17)	1,940 (76.38)

PNS75

Mounting with
swivel mount bracket
(Part no. 2019659)

Sliding nut groove for
side mounting

Mirror height S	L1	L2	L3	A
340 (13.39)	372 (14.65)	396 (15.59)	460 (18.11)	440 (17.32)
490 (19.29)	522 (20.55)	546 (21.50)	610 (24.02)	590 (23.23)
640 (25.20)	672 (26.46)	696 (27.40)	760 (29.92)	740 (29.13)
790 (31.10)	822 (32.36)	846 (33.31)	910 (35.83)	890 (35.04)
940 (37.01)	972 (38.27)	996 (39.21)	1,060 (41.73)	1,040 (40.94)
1,090 (42.91)	1,122 (44.17)	1,146 (45.12)	1,210 (47.64)	1,190 (46.85)
1,240 (48.82)	1,272 (50.08)	1,296 (51.02)	1,360 (53.54)	1,340 (52.76)
1,390 (54.72)	1,422 (55.98)	1,446 (56.93)	1,510 (59.45)	1,490 (58.66)
1,540 (60.63)	1,572 (61.89)	1,596 (62.83)	1,660 (65.35)	1,640 (64.57)
1,690 (66.54)	1,722 (67.80)	1,746 (68.74)	1,810 (71.26)	1,790 (70.47)
1,840 (72.44)	1,872 (73.70)	1,896 (74.65)	1,960 (77.17)	1,940 (76.38)

Device columns with external grooves

PU3H
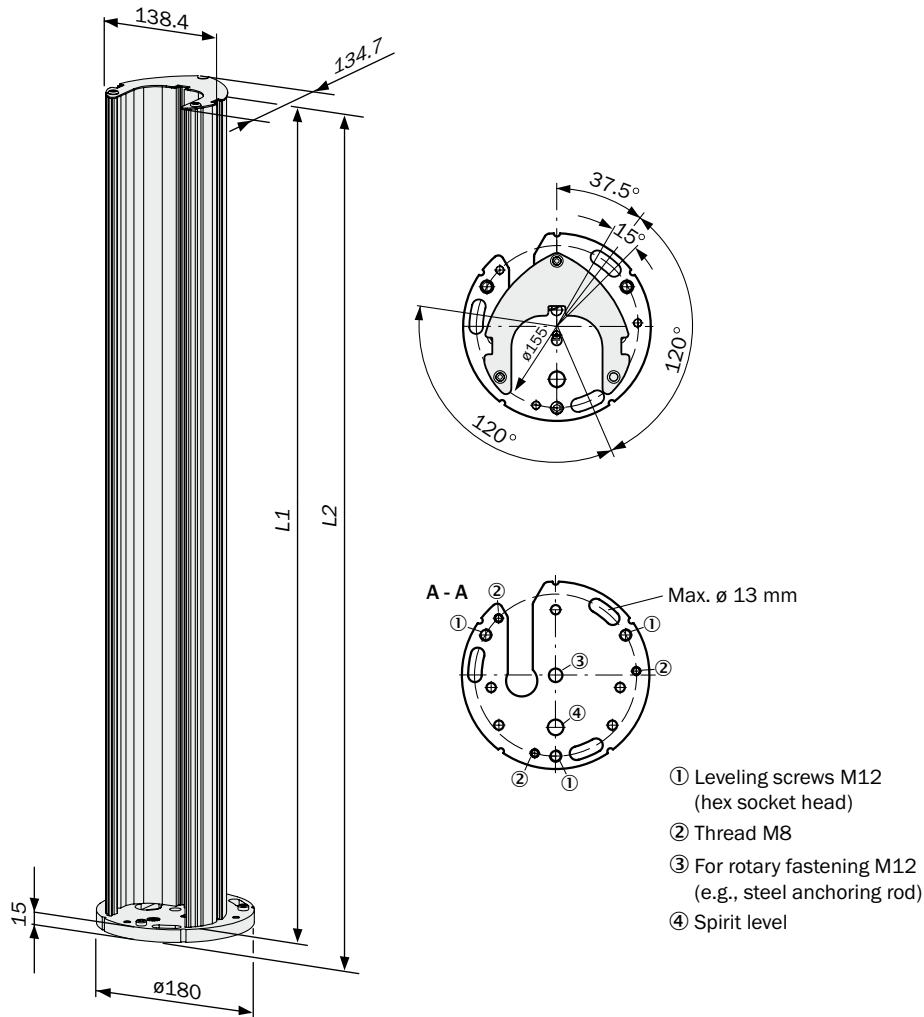
138.4
134.7

37.5°
15°
120°
120°
ø156

L1
L2

A - A   ② ① ③ ② ④ ②   Max. ø 13 mm

15
ø180
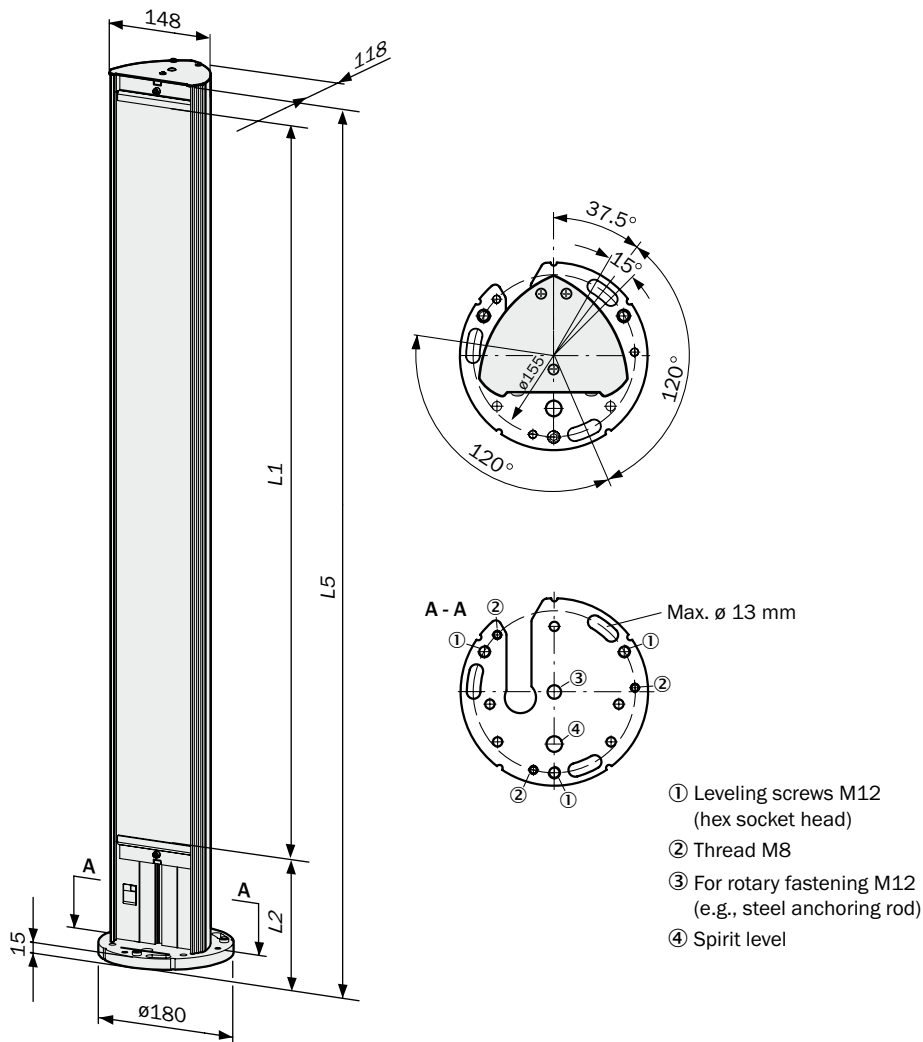
① Leveling screws M12
(hex socket head)
② Thread M8
③ For rotary fastening M12
(e.g., steel anchoring rod)
④ Spirit level

Suitable for protective field height	L1	L2	Part no.
≤ 900	965	985	2045490
≤ 1,050	1,165	1,185	2045641
≤ 1,200	1,265	1,285	2045642
≤ 1,500	1,550	1,570	2068813
≤ 1,650	1,720	1,740	2045643
≤ 1,950	2,020	2,040	2045644
≤ 2,100	2,250	2,270	2045645
≤ 2,100	2,400	2,420	2045646

Mirror columns with protective field height mirror

PM3C

① Leveling screws M12
   (hex socket head)
② Thread M8
③ For rotary fastening M12
   (e.g., steel anchoring rod)
④ Spirit level

Suitable for protective field height	L1	L2	L5	Part no.
≤ 1,050	1,082	160	1,281.5	1043453
≤ 1,350	1,382	145	1,569	1077525
≤ 1,500	1,532	145	1,716.5	1043454
≤ 1,650	1,682	295	2,016.5	1043455
≤ 1,800	1,832	345	2,216.5	1043456

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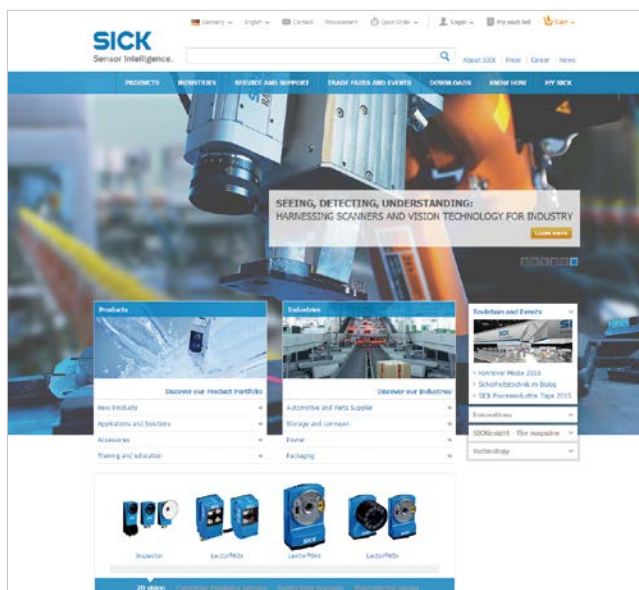
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