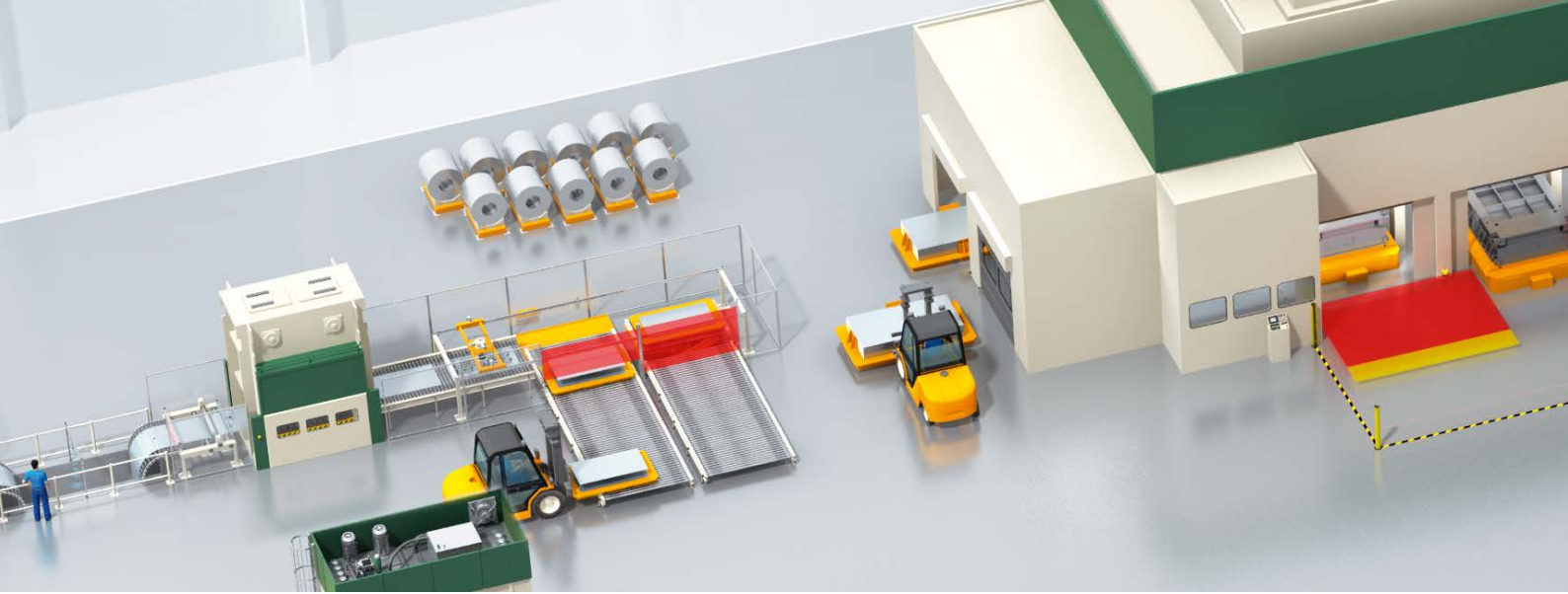# deTem4 Core / deTem2 Core
SIMPLY GOING FURTHER

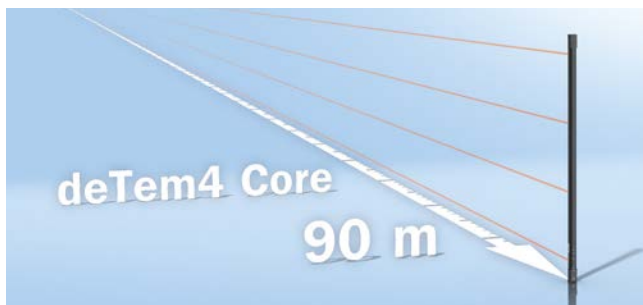**Safety multibeam sensors**

SICK
Sensor Intelligence.

A NEW STANDARD IN EVERY SENSE

Just how do we maintain our leading position in the industrial safety sector after 65 years?
Through continuous innovation.

deTem Core has laid the foundations for a new generation of safety multibeam sensors. Combining cost-effectiveness with reliability, deTem Core is the ideal solution for securing access to hazardous areas of machines.
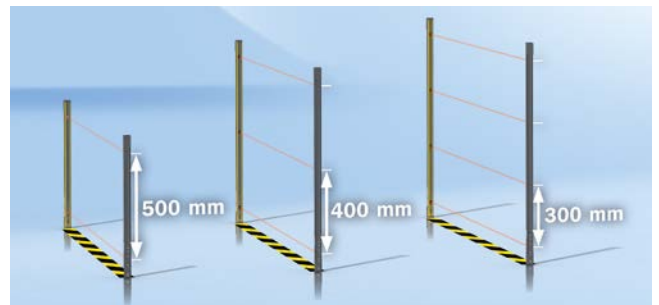
Access protection made easy and efficient
Focusing on the essential functions, deTem Core scores highly in particular for its wide scanning range. Commissioning has never been easier.

Radiating range – even around corners

With its wide scanning range, the deTem Core is able to protect access across very large areas. Mirror columns can deflect the beams from the photoelectric sensor multiple times if necessary.

Radiating safely

deTem Core delivers access protection in compliance with standards with 2, 3, and 4 beams and beam separation of 500, 400, and 300 mm.
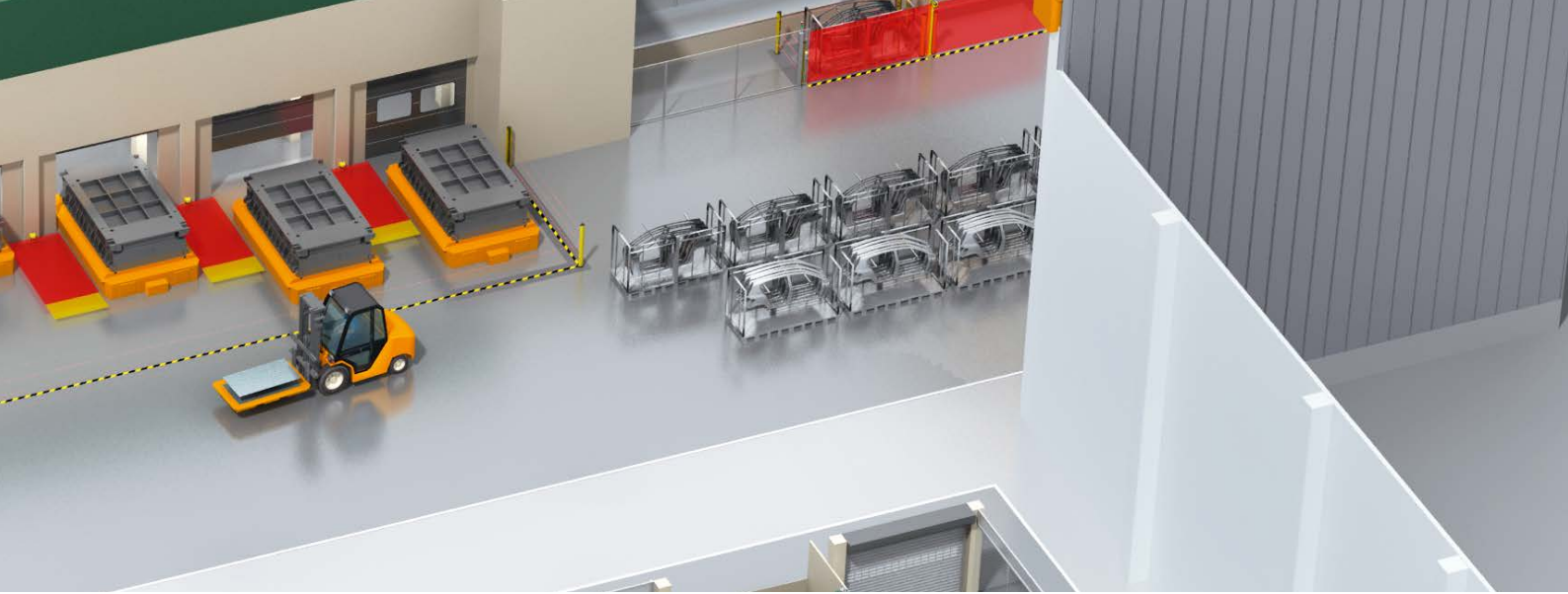

Straightforward to align

The 4 integrated LEDs indicate how well the photoelectric sensor as a whole has been aligned and make it easy to align the sender and receiver.
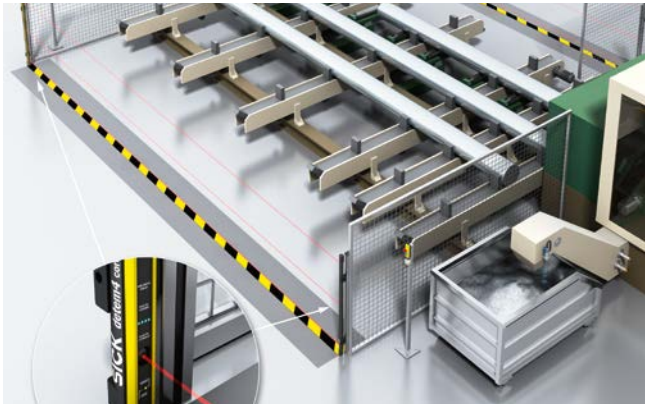

Smart mounting

deTem Core and brackets are tailored to one another All mounting concepts offer a high level of flexibility, a secure hold, and many alignment possibilities
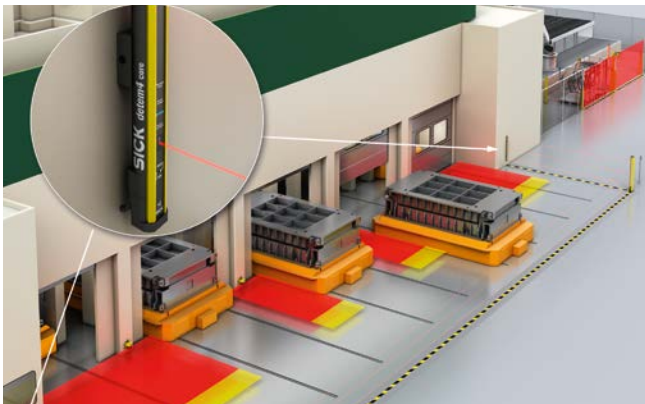
deTem Core IN ACTION

Single-sided access protection

deTem4 Core monitors material transportation at both ends of an automated sawing line. At the same time, the photoelectric sensor facilitates rapid access to the protected area on demand.
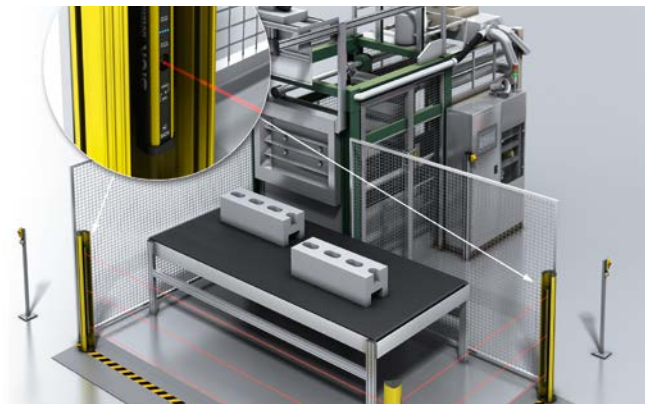
Their rugged housing makes these safety multibeam sensors ideal for use in harsh environments.

Multi-sided access protection

In conjunction with deflector mirrors, a deTem4 Core protects three sides of the change area for press tools. The system needs just one sender and one receiver to do this.

Installation and cabling overheads for this cost-efficient multi-sided access protection solution are low.

Multi-sided access protection

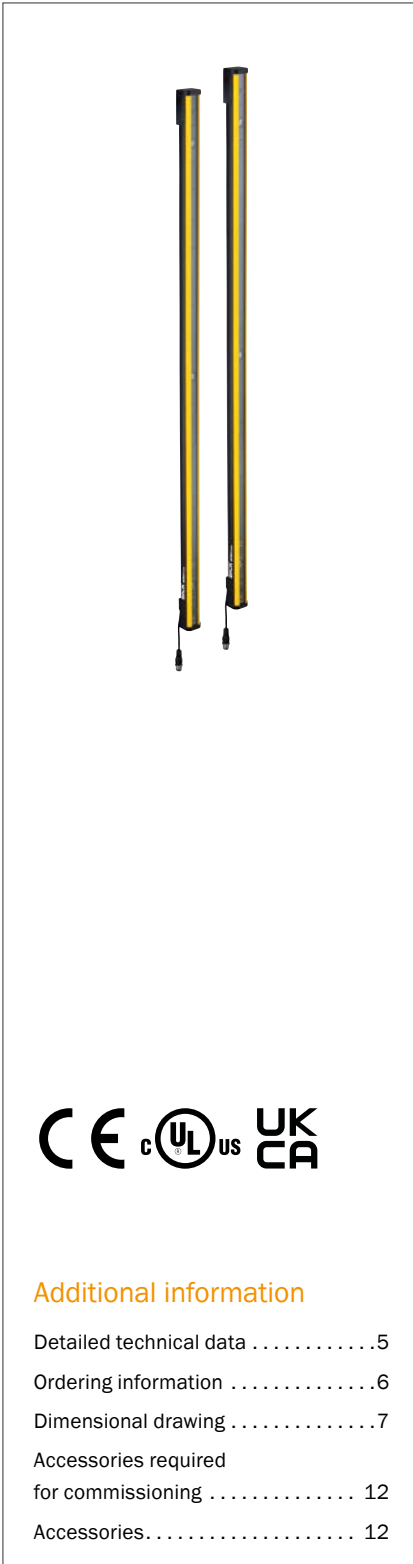deTem4 Core protects access to a shape molding machine. A mirror column deflects the beams from the photoelectric sensor horizontally through 90°.

When the machine is at a standstill, the equipment is freely accessible for the removal of material. However, if anyone enters the hazardous area during active operation, the safety multibeam sensor safely shuts down the dangerous part of the machine.

ACCESS PROTECTION: EASY AND EFFICIENT

Product description

The deTem4 Core safety multibeam sensors, with 2, 3, or 4 beams as per the sender/receiver principle, provide simple and reliable protection when accessing hazardous machine areas. The small housing already typical of deTec devices saves space and can be easily integrated using tried-and-tested brackets and standardized connectivity products. Despite the small dimensions, the sensor can achieve a scanning range of up to 90 m and therefore enables multi-sided access protection with deflector mirrors.

At a glance

- Typical scanning range of up to 90 m
- 2 versions: small and wide scanning range
- Compact design
- The same housing as deTec
- Versions with 2, 3, and 4 light beams
- Ambient operating temperature of –30 °C to +55 °C
- Enclosure ratings IP65 and IP67

Your benefits

- Protection of large access areas with multiple beam deflections as well
- Little space required
- The same quick and easy mounting and commissioning as the deTec: the same accessories and connectivity
- Reduced variant diversity
- Reliable in challenging environments

Additional information

→ **www.sick.com/deTem4_Core**

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

Detailed technical data

Features

	Low scanning range	Great scanning range
Scanning range	17 m	90 m
Dimension of the light path		
Minimum	0.5 m … 15 m	10 m … 70 m
Typical	0.5 m … 17 m	10 m … 90 m
Number of beams	2 / 3 / 4 (depending on type)	
Beam separation	500 mm / 400 mm / 300 mm (depending on type)	
Response time	20 ms	
Synchronization	Optical synchronisation	

Safety-related parameters

Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508)
Category	Category 4 (ISO 13849)
Performance level	PL e (ISO 13849)
PFH$_D$ (mean probability of a dangerous failure per hour)	$3 * 10^{-9}$
T$_M$ (mission time)	20 years (ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Interfaces

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

[1] For additional information on Flexi Soft ➜ www.sick.com/Flexi_Soft

Electrical data

	Sender	Receiver
Protection class	III (IEC 61140) [1]	
Supply voltage V$_s$	24 V DC (19.2 V DC … 28.8 V DC) [2]	
Residual ripple	≤ 10 % [3]	
Power consumption	≤ 50 mA ≤ 1.44 W (DC)	≤ 150 mA ≤ 4.32 W (DC)
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored [4]
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] SELV/PELV safety/protective extra-low voltage.

[2] The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1.
Suitable power supplies are available as accessories from SICK.

[3] Within the limits of V$_s$.

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

Mechanical data

Housing cross-section	31 mm x 34 mm
Housing material	Aluminum extruded profile
Front screen material	Polycarbonate, scratch-resistant coating
Weight	560 g … 880 g (± 50 g)

Ambient data

Enclosure rating	IP65 (IEC 60529) IP67 (IEC 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 (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-27)

Other information

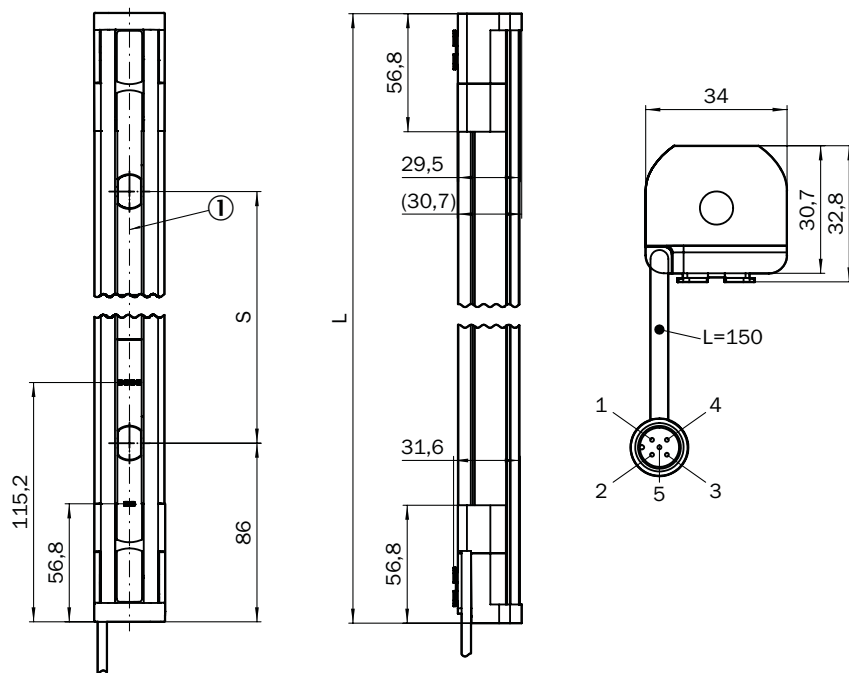|	
Wave length	Near-infrared (NIR), invisible

Ordering information

Items supplied deTem4 Core:

- Safety multibeam sensor consisting of a sender and a receiver
- Mounting instructions
- Safety instruction
- Operating instructions for download ➜ **www.sick.com/deTem4_Core**

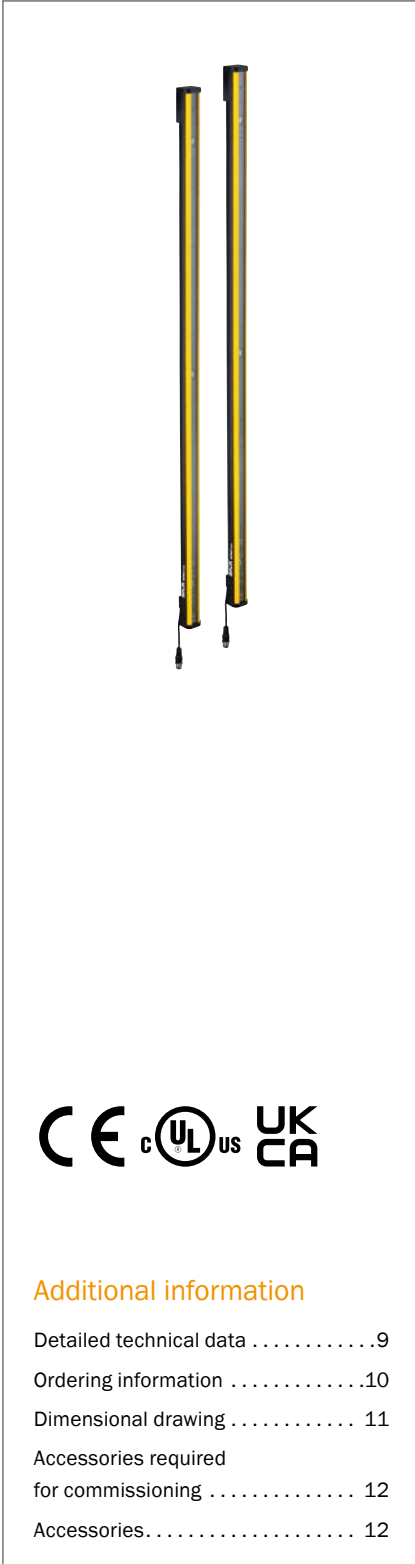| Scanning range	Number of beams	Beam separation	Sender		Receiver	
			Type	**Part no.**	**Type**	**Part no.**
17 m	2	500 mm	M4C-SA0250LA10	1082684	M4C-EA02500A10	1082686
	3	400 mm	M4C-SA0340LA10	1082687	M4C-EA03400A10	1082689
	4	300 mm	M4C-SA0430LA10	1082690	M4C-EA04300A10	1082692
90 m	2	500 mm	M4C-SA0250HA10	1082685	M4C-EA02500A10	1082686
	3	400 mm	M4C-SA0340HA10	1082688	M4C-EA03400A10	1082689
	4	300 mm	M4C-SA0430HA10	1082691	M4C-EA04300A10	1082692

Dimensional drawing (Dimensions in mm (inch))

① Optical axis

Number of beams	S (Beam separation)	L (Length)
2	500 (19.69)	672 (26.46)
3	400 (15.75)	972 (38.27)
4	300 (11.81)	1,072 (42.2)

Accessories required for commissioning ➜ **page 12**

Accessories ➜ **page 12**

ACCESS PROTECTION: EASY AND EFFICIENT

Product description

The deTem2 Core safety multibeam sensors, with 2, 3, or 4 beams as per the sender/receiver principle, provide simple and reliable protection when accessing hazardous machine areas. The small housing already typical of deTec devices saves space and can be easily integrated using tried-and-tested brackets and standardized connectivity products. Despite the small dimensions, the sensor can achieve a scanning range of up to 90 m and therefore enables multi-sided access protection with deflector mirrors.

At a glance

- Typical scanning range of up to 90 m
- 2 versions: small and wide scanning range
- Compact design
- The same housing as deTec
- Versions with 2, 3, and 4 light beams
- Ambient operating temperature of –30 °C to +55 °C
- Enclosure ratings IP65 and IP67

Your benefits

- Protection of large access areas with multiple beam deflections as well
- Little space required
- The same quick and easy mounting and commissioning as the deTec: the same accessories and connectivity
- Reduced variant diversity
- Reliable in challenging environments

Additional information

➜ **www.sick.com/deTem2_Core**

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

Detailed technical data

Features

	Low scanning range	Great scanning range
Scanning range	17 m	90 m
Dimension of the light path		
Minimum	0.5 m ... 15 m	10 m ... 70 m
Typical	0.5 m ... 17 m	10 m ... 90 m
Number of beams	2 / 3 / 4 (depending on type)	
Beam separation	500 mm / 400 mm / 300 mm (depending on type)	
Response time	20 ms	
Synchronization	Optical synchronisation	

Safety-related parameters

Type	Type 2 (IEC 61496)
Safety integrity level	SIL1 (IEC 61508)
Category	Category 2 (ISO 13849)
Performance level	PL c (ISO 13849)
PFH_D (mean probability of a dangerous failure per hour)	$3 * 10^{-9}$
T_M (mission time)	20 years (ISO 13849)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Interfaces

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

[1] For additional information on Flexi Soft ➔ **www.sick.com/Flexi_Soft**

Electrical data

	Sender	Receiver
Protection class	III (IEC 61140) [1]	
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC) [2]	
Residual ripple	≤ 10 % [3]	
Power consumption	≤ 50 mA ≤ 1.44 W (DC)	≤ 150 mA ≤ 4.32 W (DC)
Safety outputs (OSSD)		
Type of output	–	2 PNP semiconductors, short-circuit protected, cross-circuit monitored [4]
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] SELV/PELV safety/protective extra-low voltage.

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Suitable power supplies are available as accessories from SICK.

[3] Within the limits of V_S.

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

Mechanical data

Housing cross-section	31 mm x 34 mm
Housing material	Aluminum extruded profile
Front screen material	Polycarbonate, scratch-resistant coating

Ambient data

Enclosure rating	IP65 (IEC 60529) IP67 (IEC 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 (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-27)

Other information

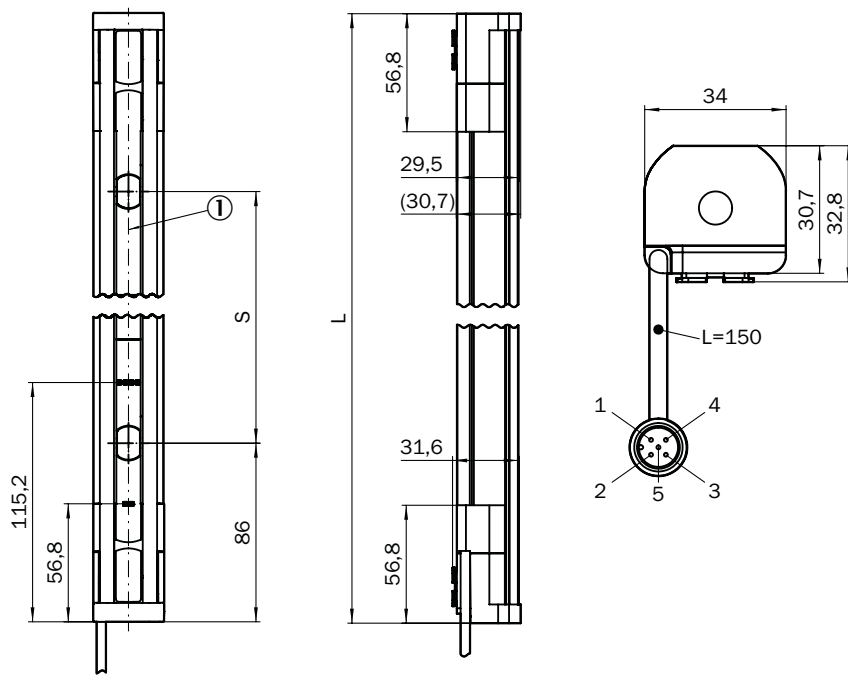|	
Wave length	Near-infrared (NIR), invisible

Ordering information

Items supplied deTem2 Core:

- Safety multibeam sensor consisting of a sender and a receiver
- Mounting instructions
- Safety instruction
- Operating instructions for download ➜ www.sick.com/deTem2_Core

Scanning range	Number of beams	Beam separation	Sender		Receiver	
			Type	**Part no.**	**Type**	**Part no.**
17 m	2	500 mm	M2C-SA0250LA10	1085562	M2C-EA02500A10	1085564
	3	400 mm	M2C-SA0340LA10	1085565	M2C-EA03400A10	1085567
	4	300 mm	M2C-SA0430LA10	1085568	M2C-EA04300A10	1085570
90 m	2	500 mm	M2C-SA0250HA10	1085563	M2C-EA02500A10	1085564
	3	400 mm	M2C-SA0340HA10	1085566	M2C-EA03400A10	1085567
	4	300 mm	M2C-SA0430HA10	1085569	M2C-EA04300A10	1085570

Dimensional drawing (Dimensions in mm (inch))

① Optical axis

Number of beams	S (Beam separation)	L (Length)
2	500 (19.69)	672 (26.46)
3	400 (15.75)	972 (38.27)
4	300 (11.81)	1,072 (42.2)

Accessories required for commissioning ➜ page 12

Accessories ➜ page 12

Accessories required for commissioning

Description	Number	Items supplied	Further information
Mounting bracket	2	–	➜ Terminal and alignment brackets
Connecting cable	2	–	➜ Plug connectors and cables

Accessories

Mounting systems

Terminal and alignment brackets

Figure	Description	Packing unit	Suitable for	Type	Part no.
	QuickFix bracket	2 pieces	1 device (sender or receiver)	BEF-3SHABPKU2	2066048
		4 pieces	2 devices (sender and receiver)	BEF-3SHABPKU4	2098710
	FlexFix bracket Sensor alignment ± 15° Including screw M5	2 pieces	1 device (sender or receiver)	BEF-1SHABPKU2	2098709
		4 pieces	2 devices (sender and receiver)	BEF-1SHABPKU4	2066614
	Compact FlexFix bracket Sensor alignment ± 15° Including screw M5	2 pieces	1 device (sender or receiver)	BEF-1SHTBPKU2	2117730
		4 pieces	2 devices (sender and receiver)	BEF-1SHTBPKU4	2117731
	Swivel mount bracket for 1 device (e.g. sender or receiver), 360° alignment possible, consisting of swivel mount port and swivel mount adapter, including M5 screw, plastic	2 pieces	1 device (sender or receiver)	BEF-2SMJEPKU2	2121685
	Swivel mount bracket for 2 devices (e.g. sender or receiver), 360° alignment possible, consisting of swivel mount port and swivel mount adapter, including M5 screw, plastic	4 pieces	2 devices (sender and receiver)	BEF-2SMJEPKU4	2118584
	Flat mount bracket comprising one A bracket and one B bracket for one device (e.g., sender or receiver), plastic	2 pieces	1 device (sender or receiver)	BEF-3SHAHPKU2	2121705
	Flat mount bracket comprising two A brackets and two B brackets for two devices (e.g., sender and receiver), plastic	4 pieces	2 devices (sender and receiver)	BEF-3SHAHPKU4	2118327
	Mounting kit FlexFix (FlexFix brackets, alignment tool and mounting material suitable for fastening to device columns PU3H)	2 pieces	1 device (sender or receiver)	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, Aluminum (anodised), plastic	4 pieces	2 devices (sender and receiver)	BEF-1SHABP004	2071021

Other mounting accessories

Mounting tools

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

Connection systems

Plug connectors and cables

Connecting cables

- **Model:** PUR, halogen-free, unshielded

Figure	Connection type		Conductor cross-section	Cable length	Type	Part no.
	Female connector, M12, 5-pin, straight	Flying leads	0.34 mm²	2 m	YF2A15-020UB5XLEAX	2095617
				5 m	YF2A15-050UB5XLEAX	2095618
				10 m	YF2A15-100UB5XLEAX	2095619
				15 m	YF2A15-150UB5XLEAX	2095620
				20 m	YF2A15-200UB5XLEAX	2095614
				30 m	YF2A15-300UB5XLEAX	2095621
	Female connector, M12, 5-pin, angled	Flying leads	0.34 mm²	2 m	YG2A15-020UB5XLEAX	2095772
				5 m	YG2A15-050UB5XLEAX	2095773
				10 m	YG2A15-100UB5XLEAX	2095774

Connection cables

- **Model:** PVC, unshielded
- **Cable length:** 0.25 m

Figure	Connection type		Conductor cross-section	Items supplied	Type	Part no.
	Female connector, M12, 5-pin, straight	Male connector, M12, 8-pin, straight	0.34 mm²	Packaging unit: 2 pcs.	DSL-1285GM25034KM1	2070987
		Male connector, M26, 12-pin, straight	0.34 mm²	Packaging unit: 2 pcs.	DSL-6182GM25034KM1	2070989
		Male connector, M26, 7-pin, straight	0.34 mm²	Packaging unit: 2 pcs.	DSL-6187GM25034KM1	2070988

Adapters and distributors

T-junctions

Figure	Description	Type	Part no.
	CANopen, T-piece, 5-pin	DSC-1205T000025KM0	6030664

Power supply units and power cord connectors

Figure	Input voltage	Output voltage	Output current	Type	Part no.
Illustration may differ	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.
	Laser alignment aid for various sensors, laser class 2 (IEC 60825). Do not look into the beam!	AR60	1015741
	Adapter AR60 for deTec4, deTec2 and MLG-2	AR60 adapter, deTec, MLG-2	4070854

Deflector mirrors

Figure	Mirror material	Description	Items supplied	Type	Part no.
	Glass	Horizontal deflection, 75 mm x 80 mm reflector surface	Incl. mounting kit (2 x swivel mount)	PNS75-008	1026647

Further accessories

Test and monitoring tools

Figure	Description	Type	Part no.
	30 mm diameter	Test rod 30 mm	2022602
	Test rod holder	BEF-3WNAAAAL1	2052249

Cleaning agent

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

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

Mirror columns and device columns

Mirror columns with separate mirrors

Figure	Suitable for number of beams	Suitable for beam separation	Column height	Type	Part no.
Illustration may differ	2	500 mm	985 mm	PM3S96-00240020	1040619
	3	400 mm	1,185 mm	PM3S11-00330030	1040625
	4	300 mm	1,285 mm	PM3S13-00430040	1040626

Device columns with two external mounting grooves

Figure	Suitable for number of beams	Height of first beam above ground	Max. installation length	Column height	Type	Part no.
	2	400	965 mm	985 mm	PU3H96-00000000	2045490
	3	300	1.165 mm	1.185 mm	PU3H11-00000000	2045641
	4	300	1.265 mm	1.285 mm	PU3H13-00000000	2045642
	–	–	1.550 mm	1.570 mm	PU3H15-00000000	2068813
	–	–	1.720 mm	1.740 mm	PU3H17-00000000	2045643
	–	–	2.020 mm	2.040 mm	PU3H21-00000000	2045644
	–	–	2.250 mm	2.270 mm	PU3H22-00000000	2045645
	–	–	2.400 mm	2.420 mm	PU3H24-00000000	2045646

Accessories for mirror columns and device columns

Mounting plates

Figure	Description	Type	Part no.
	Adjusting plate for floor mounting of device columns, height 3 mm, steel	Adjusting plate	4031053

Others

Figure	Description	Packing unit	Type	Part no.
	M10 steel wall plug, for floor mounting the compensation plate for device columns, steel, zinc coated	1 piece	Steel plugs	5308961

SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 11,000 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, SICK is always close to its 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.

SICK has extensive experience in various industries and understands their processes and requirements. With intelligent sensors, SICK delivers exactly what the 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 SICK a reliable supplier and development partner.

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

That is "Sensor Intelligence."

Worldwide presence:

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

Detailed addresses and further locations ➜ **www.sick.com**

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SICK
Sensor Intelligence.