

NEW PRODUCT

EOS4 is an important development in the field of optoelectronic safety light curtains.

Innovative features include:

- Minimal cross section 28 x 30 mm.
- No blind area on one side:

the position of first beam ensures that the sensitive area extends to end of the light curtain.

- The solution with two L-mounted light curtains, e.g. Master-Slave, maintains 40 mm resolution in corner (models with resolution 30 and 40 mm).
- Minimal blind area on connector side.
- Easy connection and installation thanks to the M12 connectors and the use of unshielded cables up to 100 m.
- **Integrated safety functions**, including self-monitoring of static outputs, control of external contactors (EDM) and automatic/manual selectable Restart.
- Exceptional mechanical and electrical robustness are the result of extensive experience gained hands-on with all kinds of applications.
- Operating temperature range -10 to 55 °C.
- Protection rate: IP 65 and IP 67 simultaneously

 High resistance to infiltration by dust and liquide in a highly see

High resistance to infiltration by dust and liquids in a highly compact light curtain.

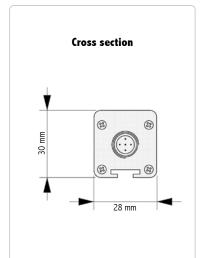
- Models Master/Slave for cascade connection of two or three light curtains.
- 2 safety PNP static outputs.

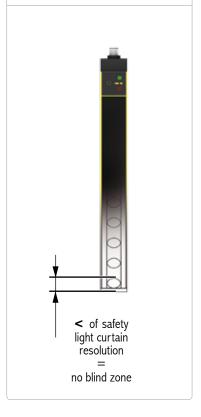
EOS4 light curtains may be connected to the dedicated safety interfaces series AD SR, or directly to contactors actuated and controlled by the light curtain, or to safety PLCs or to suitable commercial safety modules.

Special models complying with "Directive ATEX" 94/9/EC - Dust Zone 22 - Gas Zone 2 available on request.

Two L-mounted light curtains maintain 40 mm resolution in the corner (models with resolution 30 and 40 mm)







Safety level: Type 4 — SIL 3 — SILCL 3 — PL e — Cat. 4

- 2006/42/CE "Machinery Directive"
- 2004/108/CE "Electromagnetic Compatibility (EMC)"
- 2006/95/CE "Low Voltage Directive (LVD)"
- IEC/EN 61496-1 Ed. 2.1, IEC/TS 61496-2 Ed. 2 "Safety of machinery Electro-sensitive protective equipment- General requirements and tests"
- EN ISO 13849-1 "Safety of machinery Safety-related parts of control systems Part 1: General principles for design"
- IEC/EN 62061 "Safety of machinery Functional safety of safety-related electrical, electronic and programmable electronic control systems"
- IEC 61508 "Functional safety of electrical/electronic/programmable electronic safety-related systems"
- IEC/TS 62046 Ed. 2 "Safety of machinery Application of protective equipment to detect the presence of persons"
- UL (C+US) mark for USA and Canada
- ANSI / UL 1998 "Safety Software in Programmable Components".







THE EOS4 RANGE

EOS4 A

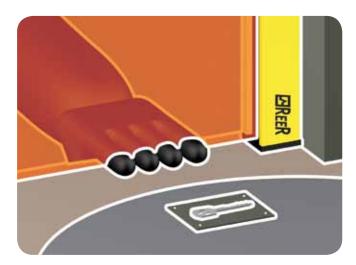
- Protected height range 160 to 1510 mm
- 5 types of detection:
- Resolution 30 40 mm for hand detection
- Resolution 50 90 mm for detection of the body in a dangerous area
- 2 3 4 beams for detection of the body in access control
- Max. range 12 m
- 2 safety static outputs PNP with auto-test protected against short circuits and overloads
- Automatic Start/Restart
- M12 5-pole connectors.

The ideal light curtain for straightforward interfacing with safety modules or safety PLCs.

EOS4 X

- Protected height range 160 to 1510 mm
- 5 types of detection:
- Resolution 30 40 mm for hand detection
- Resolution 50 90 mm for detection of the body in a dangerous area
- 2 3 4 beams for detection of the body in access control
- Max. range 12 m
- M12 5-pole connector for emitter and M12 8-pole for receiver
- Integrated, selectable manual or automatic Start/Restart
- Feedback input for external relay monitoring (EDM)
- Master and Slave models for series connection of two or three light curtains regardless of height or resolution.

An effective light curtain for directly controlling and monitoring machine circuits with no need of external safety modules. Master/Slave models are also ideal for series connection of several light curtains and combined detection of hand and body or the protection of two different sides of a machine.



The protected area extends until the light curtain end maintaining the resolution



The resolution is maintained (up to 40 mm) in the junction between the 2 protected areas



EOS4 A

MAIN FEATURES

Automatic Start/Restart.

Two safety PNP static outputs, auto-controlled.

All connections and configurations through M12 5-pole connectors.

Unshielded cables up to 100 meter long.

Start/Restart interlock and EDM through external AD SR1 interface.

Muting function through external AD SRM interface.

TECHNICAL FEATURES

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Safety level	Type 4 according to IEC/TS 61496-2 SIL 3 — SILCL 3 according to IEC 61508 - IEC 62061 PL e — Cat. 4 according to ISO 13849-1
Protected heights (mm)	160 ÷ 1510
Resolutions (mm)	30 - 40 - 50 - 90
Numbers of beams for body detection in access control	2-3-4
Max. range (m)	4 – 12 selectable
Response time (ms)	2,5 ÷ 18.5
Safety outputs	2 PNP — 400 mA at 24 Vdc
Singnaling	LEDs for light curtain's status and diagnostic
Start/Restart	automatic
Power supply (Vdc)	24 ± 20%
Electrical connections	M12 - 5 poles
Max. cable lenght (m)	100
Operating temperature (°C)	-10 ÷ 55
Protection rating	IP 65 and IP 67
Fastening modes	back slot
Cross section (mm)	28 x 30





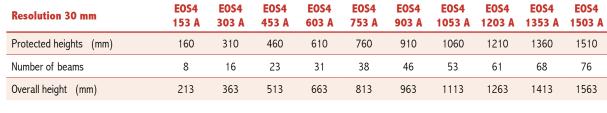






EOS4 A







Resolution 40 mm	E0S4 154 A	EOS4 304 A	EOS4 454 A	EOS4 604 A	EOS4 754 A	E0S4 904 A	E0S4 1054 A	E0S4 1204 A	E0S4 1354 A	EOS4 1504 A
Protected heights (mm)	160	310	460	610	760	910	1060	1210	1360	1510
Number of beams	6	11	16	21	26	31	36	41	46	51
Overall height (mm)	213	363	513	663	813	963	1113	1263	1413	1563



Resolution 50 mm	EOS4 155 A	EOS4 305 A	EOS4 455 A	EOS4 605 A	EOS4 755 A	EOS4 905 A	EOS4 1055 A	EOS4 1205 A	EOS4 1355 A	E0S4 1505 A
Protected heights (mm)	160	310	460	610	760	910	1060	1210	1360	1510
Number of beams	4	8	12	16	20	24	28	32	36	40
Overall height (mm)	213	363	513	663	813	963	1113	1263	1413	1563



Resolution 90 mm	EOS4 309 A	EOS4 459 A	EOS4 609 A	EOS4 759 A	EOS4 909 A	EOS4 1059 A	E0S4 1209 A	E0S4 1359 A	EOS4 1509 A
Protected heights (mm)	310	460	610	760	910	1060	1210	1360	1510
Number of beams	4	6	8	10	12	14	16	18	20
Overall height (mm)	363	513	663	813	963	1113	1263	1413	1563



2-3-4-beams	E0S4 2B A	EOS4 3B A	EOS4 4B A
Number of beams	2	3	4
Beam spacing (mm)	500	400	300
Protected heights (mm)	510	810	910
Overall height (mm)	653	953	1053

[•] For accessories see page 64 • For ordering codes see page 186



EOS4 X

WITH BUILT-IN CONTROL FUNCTIONS

MAIN FEATURES

Built-in, selectable manual/automatic Start/Restart

Feedback input for controlling external relays (EDM).

Two safety PNP static outputs, auto-controlled.

All connections and setting adjustments through M12 5-pole and 8-pole connectors.

Unshielded cables up to 100 meter long.

Master and Slave models for series connection of up to 3 light curtains.

Max. length of connections toward Slaves: 50 meters, through standard unshielded cable.

TECHNICAL FEATURES

TECHNICAL FEATURES	
Safety level	Type 4 according to IEC/TS 61496-2 SIL 3 — SILCL 3 according to IEC 61508 - IEC 62061 PL e — Cat. 4 according to ISO 13849-1
Protected heights (mm)	160 ÷ 1510
Resolutions (mm)	30 - 40 - 50 - 90
Numbers of beams for body detection in access control	2-3-4
Max. range (m)	4-12 selectable
Response time (ms)	2,5 ÷ 18.5
Safety outputs	2 PNP — 400 mA at 24 Vdc
Singnaling	LEDs for light curtain's status and diagnostic
Start/Restart	selectable automatic or manual
External Device Monitoring	external device monitoring feedback input with selectable enabling
Power supply (Vdc)	24 ± 20%
Electrical connections for EOS4 X and EOS4 X Master	M12 - 5 poles for emitter M12 - 8 poles for receiver
Electrical connections between Master and Slave	M12 - 5 poles for emitter and receiver
Max. cable lenght (m)	100 (50 between Master and Slave)
Operating temperature (°C)	-10 ÷ 55
Protection rating	IP 65 and IP 67
Fastening modes	back slot
Cross section (mm)	28 x 30





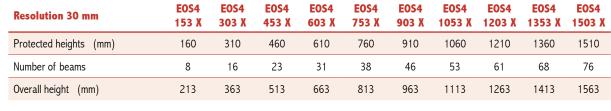






EOS4 X WITH BUILT-IN CONTROL FUNCTIONS







Resolution 40 mm	E0S4 154 X	E0S4 304 X	EOS4 454 X	EOS4 604 X	E0S4 754 X	E0S4 904 X	E0S4 1054 X	E0S4 1204 X	E0S4 1354 X	E0S4 1504 X
Protected heights (mm)	160	310	460	610	760	910	1060	1210	1360	1510
Number of beams	6	11	16	21	26	31	36	41	46	51
Overall height (mm)	213	363	513	663	813	963	1113	1263	1413	1563



Resolution 50 mm	EOS4 155 X	EOS4 305 X	EOS4 455 X	EOS4 605 X	EOS4 755 X	EOS4 905 X	EOS4 1055 X	EOS4 1205 X	EOS4 1355 X	EOS4 1505 X
Protected heights (mm)	160	310	460	610	760	910	1060	1210	1360	1510
Number of beams	4	8	12	16	20	24	28	32	36	40
Overall height (mm)	213	363	513	663	813	963	1113	1263	1413	1563



Resolution 90 mm	EOS4 309 X	EOS4 459 X	EOS4 609 X	EOS4 759 X	EOS4 909 X	EOS4 1059 X	E0S4 1209 X	EOS4 1359 X	E0S4 1509 X
Protected heights (mm)	310	460	610	760	910	1060	1210	1360	1510
Number of beams	4	6	8	10	12	14	16	18	20
Overall height (mm)	363	513	663	813	963	1113	1263	1413	1563



2-3-4-beams	EOS4 2B X	EOS4 3B X	EOS4 4B X
Number of beams	2	3	4
Beam spacing (mm)	500	400	300
Protected heights (mm)	510	810	910
Overall height (mm)	653	953	1053

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EOS4 X

WITH BUILT-IN CONTROL FUNCTIONS

MASTER/SLAVE MODELS

MASTER Resolution 30 mm		EOS4 303 XM	EOS4 453 XM	EOS4 603 XM	EOS4 753 XM	EOS4 903 XM	EOS4 1053 XM	EOS4 1203 XM	EOS4 1353 XM	EOS4 1503 XM
SLAVE Resolution 30 mm	EOS4 153 XS	EOS4 303 XS	EOS4 453 XS	EOS4 603 XS	EOS4 753 XS	EOS4 903 XS	EOS4 1053 XS	EOS4 1203 XS	EOS4 1353 XS	EOS4 1503 XS
SLAVE 2 Resolution 30 mm		EOS4 303 XS2	EOS4 453 XS2	EOS4 603 XS2	EOS4 753 XS2	EOS4 903 XS2	EOS4 1053 XS2	EOS4 1203 XS2	EOS4 1353 XS2	EOS4 1503 XS2
Protected heights (mm)	160	310	460	610	760	910	1060	1210	1360	1510
Number of beams	8	16	23	31	38	46	53	61	68	76
Overall height (mm)*	213	363	513	663	813	963	1113	1263	1413	1563



MASTER		EOS4								
Resolution 40 mm		304	454	604	754	904	104	1204	1354	1504
Resolution 40 mm		XM	MX							
SLAVE	EOS4									
Resolution 40 mm	154	304	454	604	754	904	1054	1204	1354	1504
Resolution 40 mm	XS									
CLAVE O		EOS4								
SLAVE 2		304	454	604	754	904	1054	1204	1354	1504
Resolution 40 mm		XS2								
Protected heights (mm)	160	310	460	610	760	910	1060	1210	1360	1510
Number of beams	6	11	16	21	26	31	36	41	46	51
Overall height (mm)*	213	363	513	663	813	963	1113	1263	1413	1563



MASTER Resolution 50 mm		EOS4 305 XM	EOS4 455 XM	EOS4 605 XM	EOS4 755 XM	EOS4 905 XM	EOS4 105 XM	EOS4 1205 XM	EOS4 1355 XM	EOS4 1505 XM
SLAVE Resolution 50 mm	EOS4 155 XS	EOS4 305 XS	EOS4 455 XS	EOS4 605 XS	EOS4 755 XS	EOS4 905 XS	EOS4 1055 XS	EOS4 1205 XS	EOS4 1355 XS	EOS4 1505 XS
SLAVE 2 Resolution 50 mm		EOS4 305 XS2	EOS4 455 XS2	EOS4 605 XS2	EOS4 755 XS2	EOS4 905 XS2	EOS4 1055 XS2	EOS4 1205 XS2	EOS4 1355 XS2	EOS4 1505 XS2
Protected heights (mm)	160	310	460	610	760	910	1060	1210	1360	1510
Number of beams	4	8	12	16	20	24	28	32	36	40
Overall height (mm)*	213	363	513	663	813	963	1113	1263	1413	1563



EOS4 X WITH BUILT-IN CONTROL FUNCTIONS

MASTER Resolution 90 mm	EOS4 309 XM	EOS4 459 XM	EOS4 609 XM	EOS4 759 XM	EOS4 909 XM	EOS4 1059 XM	EOS4 1209 XM	EOS4 1359 XM
SLAVE Resolution 90 mm	EOS4 309 XS	EOS4 459 XS	EOS4 609 XS	EOS4 759 XS	EOS4 909 XS	EOS4 1059 XS	E0S4 1209 XS	EOS4 1359 XS
SLAVE 2 Resolution 90 mm	EOS4 309 XS2	EOS4 459 XS2	EOS4 609 XS2	EOS4 759 XS2	EOS4 909 XS2	EOS4 1059 XS2	E0S4 1209 XS2	EOS4 1359 XS2
Protected heights (mm)	310	460	610	760	910	1060	1210	1360
Number of beams	4	6	8	10	12	14	16	18
Overall height (mm) *	363	513	663	813	963	1113	1263	1413



MASTER 2-3-4 beams	EOS4 2B XM	EOS4 3B XM	EOS4 4B XM
SLAVE 2-3-4 beams	EOS4 2B XS	EOS4 3B XS	EOS4 4B XS
SLAVE 2 2-3-4 beams	EOS4 2B XS2	EOS4 3B XS2	EOS4 4B XS2
Number of beams	2	3	4
Beam spacing (mm)	500	400	300
Protected heights (mm)	510	810	910
Overall height (mm)*	653	953	1053



^{*} On master and slave 2 the total height of light curtain is 24 mm greater owing to the addition of a secondary connector

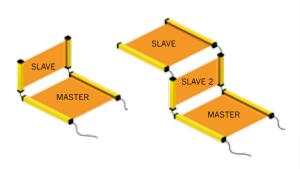
[•] For accessories see page 64 • For ordering codes see page 186



MASTER/SLAVE MODELS

Master/Slave models permit series connection of up to three light curtains and combined detection of hand and presence of a person or of more sides of the machine, with the following major benefits:

- A single pair of safety outputs
- No interference between light curtains installed adjacent to one another.

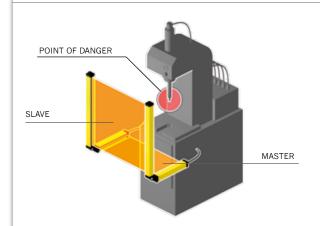


EXAMPLES OF SERIES CONNECTION OF MASTER AND SLAVE LIGHT CURTAINS

Any Master model can be used together with any Slave model.

All electrical connections are made using M12 5-pole connectors, except for Master receivers which necessitate the adoption of M12 8-pole connectors.

Accessory pre-wired cable with twin connectors are available for connection of Master to Slave.

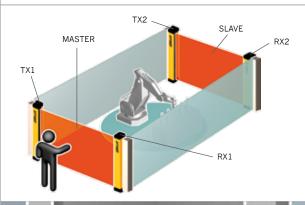


EXAMPLES OF SERIES CONNECTION OF MASTER AND SLAVE LIGHT CURTAINS

Master light curtain is placed horizontally for detection of the person and Slave light curtain is placed vertically to detect fingers or hands.

The arrangement can be reversed to have the Master light curtain vertical for finger and hand detection and the Slave light curtain horizontally for detecting the presence of a person.

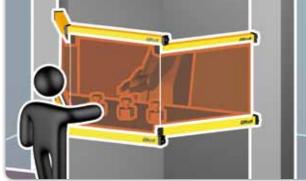
The application shown is one of the most common: horizontal curtains are used to prevent the operator from being undetected in the space between vertical light curtain and dangerous machine, upon system start-up or restarting.



EXAMPLE OF SERIES CONNECTION OF MASTER AND SLAVE LIGHT CURTAINS FOR PROTECTION OF TWO SIDES OF MACHINE

On EOS4 X the connecting cable across Master and Slave is a standard (unshielded) cable up to 50 meter long.

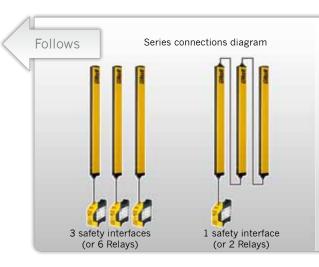
Thus, two series connected curtains may be located one at the front of the machine and the other at the rear, with a single connection to the machine power and control circuitry.



EXAMPLE OF SERIES CONNECTION OF ONE MASTER AND TWO SLAVE LIGHT CURTAINS FOR THE PROTECTION OF THREE SIDES OF THE MACHINE

Benefit: unimpeded operator access to work area from front and sides.

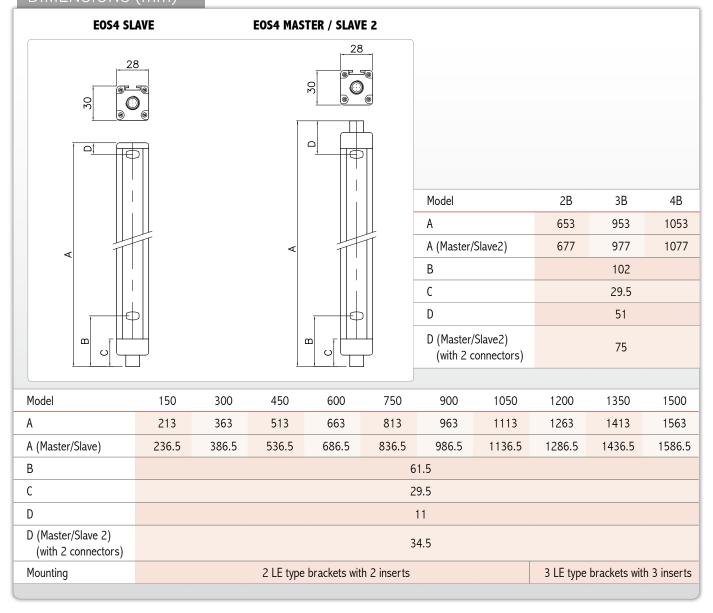
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Benefit: with three standard curtains it will be necessary to use and wire up 3 safety interfaces or 6 contactors.

With the master/slave solution having 3 series light curtains it will be enough to use and wire up only 1 safety interface or 2 contactors.

DIMENSIONS (mm)





ORDERING INFORMATION (for ordering codes see page 186)

Each EOS4 light curtain comprises:

- Emitter and Receiver pair
- Brackets and inserts
- CD-ROM containing the multi-language instruction manual complete with CE declaration of conformity
- Quick installation guide

ACCESSORIES

EOS4 light curtains	can be supplied w	rith the following accessories, to be ordered separately:				
AD SR Safety Relays	se	e page 158				
• LAD laser alignment	levice se	e page 182				
• FMC floor mounting of	olumns se	e page 178				
SP deflection mirrors	s see page 181					
• SAV E vibrations dam	brations dampers see page 183					
SFB swivel fixing brack	kets se	e page 183				
• Connectors see list hereunder:						
CONNECTORS EOS4	EOS4 A emitter a	and receiver EOS4 X emitter)				
Model	Description					
CD 5	M12 straight connector, 5 poles, pre-wired cable 5 m					
CD 10	M12 straight connector, 5 poles, pre-wired cable 10 m					
CD 15	M12 straight connector, 5 poles, pre-wired cable 15 m					
CD 20	M12 straight connector, 5 poles, pre-wired cable 20 m					
CD 25	M12 straight connector, 5 poles, pre-wired cable 25 m					
CD 95	M12 90° angle connector, 5 poles, pre-wired cable 5 m					
CD 910	M12 90° angle connector, 5 poles, pre-wired cable 10 m					
CD 915	M12 90° angle connector, 5 poles, pre-wired cable 15 m					
CDM 9	M12 straight connector, 5 poles with screw terminal, PG9 cable gland					
CDM 99	M12 angle connector, 5 poles with screw terminal, PG9 cable gland					
CONNECTORS EOS4	receivers					
Model	Description					
C8D 5	M12 straight connector, 8 poles, pre-wired cable 5 m					
C8D 10	M12 straight connector, 8 poles, pre-wired cable 10 m					
C8D 15	M12 straight connector, 8 poles, pre-wired cable 15 m					
C8D 95	M12 90° angle connector, 8 poles, pre-wired cable 5 m					
C8D 910	M12 90° angle connector, 8 poles, pre-wired cable 10 m					
C8D 915	M12 90° angle connector, 8 poles, pre-wired cable 15 m					
C8DM 11	M12 straight connector, 8 poles with screw terminal, PG9/11 cable gland					
C8DM 911	M12 90° angle connector, 8 poles with screw terminal, PG9/11 cable gland					
CONNECTION BETWE	EN MASTER AND S	LAVE				
Model	Description					
CDS 03	0,3 m pre-wired	0,3 m pre-wired cable with 2 straight connectors, M12 5 poles				
CJBE 3	3 m pre-wired cable with 2 straight connectors, M12 5 poles					
CJBE 5	5 m pre-wired cable with 2 straight connectors, M12 5 poles					



CJBE 10

WARNING!

• Where the light curtain is subjected to strong vibrations (presses, textile looms, etc.) always use vibrations dampers SAV E (available as accessories) in order to prevent damaging the light curtain

10 m pre-wired cable with 2 straight connectors, M12 5 poles

• Where protections are to be placed over long distances or on several sides using deflection mirrors, it is advisable to use laser alignment aid LAD 4 to ensure simple, quick and perfect alignment of light curtains.

ADMIRAL

