

**SAFEasy™ TYPE 4 LIGHT CURTAINS**

- **Integrated light curtains for HAND PROTECTION (30 mm resolution)**
- **EDM and Blanking functions**
- **Cascade configuration**
- **35 x 40 mm compact profile**

## SE4-PLUS HAND SERIES

The **SAFEasy™** light curtains, according to the IEC 61496-1 and IEC 61496-2, are particularly suitable for hand protection of operators exposed to risks.

Different models are available with heights ranging from 150 to 1650 mm, 30 mm resolution and operating distance reaching 15 m. Each model has one or more advanced functions: EDM, Blanking and Cascade. The light curtains are able to verify the integrity of external monitoring devices thanks to the EDM (External Device Monitoring) function. The Blanking function allows to deactivate a part of the detection area during functioning, allowing material passage or mechanical obstacle presence without causing machine interruption. Fixed Blanking and Floating Blanking can be selected. The Cascade configuration allows to combine the functioning of a couple of light curtains positioned in different areas.

Specific dip-switches, that can be reached through a slot present on the front of the active unit protected by a lid that and opened with a simple screwdriver, guarantee a rapid and safe configuration.

The compact dimensions (35 x 40 mm), easy installation and excellent performances make the **SAFEasy™** light curtains suitable to industrial applications requiring operator safety.

# SAFEASY™ TYPE 4 LIGHT CURTAINS

The features introduced by the safety light curtains of the SE4-PLUS HAND series are given below:

- **EDM function:** allows to verify the status of the external monitoring devices (typically safety relays), avoiding external malfunctions jeopardising correct device functioning.

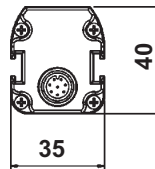
- **Fixed Blanking:** allows the operator to exclude the control of beams in a pre-set position.

- **Floating Blanking:** allows the operator to exclude the control of a pre-set number of beams in any position within the detection area.

- **Cascade configuration:** a couple of light curtains can function connected to each other in accordance to a Master-Slave protocol and combining the safety information relative to the two different sections of the controlled machine. The Master unit has a Blanking function and can be used without the Slave unit.

Models with the Muting function are not available in the SE4-PLUS HAND series.

## DIMENSIONS



VERSIONS	L <sub>1</sub>	L <sub>2</sub>
SE4-xx-015-PP-y	256	147
SE4-xx-030-PP-y	403	294
SE4-xx-045-PP-y	550	441
SE4-xx-060-PP-y	697	588
SE4-xx-075-PP-y	844	735
SE4-xx-090-PP-y	991	882
SE4-xx-105-PP-y	1138	1029
SE4-xx-120-PP-y	1285	1176
SE4-xx-135-PP-y	1432	1323
SE4-xx-150-PP-y	1579	1470
SE4-xx-165-PP-y	1726	1617

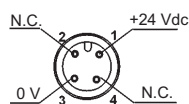
mm

## CONNECTIONS

Model	Emitter	Receiver
EDM	M12 4-poles	M12 8-poles
EMD+Blanking	M12 4-poles	M12 8-poles
EDM+Cascade (Master)*	M12 4-poles +M12 5-poles	M12 8-poles +M12 5-poles
EDM+Cascade (Slave)	M12 5-poles	M12 5-poles
EDM+Cascade+Blanking (Master)*	M12 4-poles +M12 5-poles	M12 8-poles +M12 5-poles

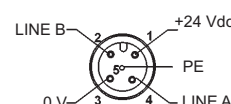
\* an electric terminal is able for the Master Cascade models for the M12 5-pole connection in order to use the Master unit without connecting the Slave unit

### 4-POLE M12 CONNECTOR



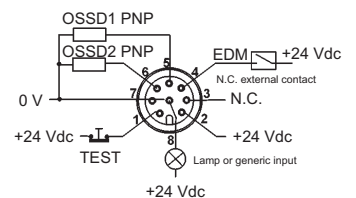
- 1 = brown = +24 Vdc
- 2 = white = N.C.
- 3 = blue = 0 V
- 4 = black = N.C.

### 5-POLE M12 CONNECTOR



- 1 = brown = +24 Vdc
- 2 = white = LINE A
- 3 = blue = 0 V
- 4 = black = LINE B
- 5 = grey = PE

### 8-POLE M12 CONNECTOR



- 1 = white = TEST/START
- 2 = brown = +24 Vdc
- 3 = green = N.C.
- 4 = yellow = EDM
- 5 = grey = OSSD1
- 6 = pink = OSSD2
- 7 = blue = 0 V
- 8 = red = LAMP

## TECHNICAL DATA

<b>Power supply:</b>	24 Vdc ± 20% (SELV / PELV)
<b>Consumption:</b>	55 mA max. / 1.5. W (emitter) 125 mA max. / 3.75 W (receiver without load)
<b>Light emission:</b>	infrared LED 880 nm
<b>Number of controlled beams:</b>	refer to table 1
<b>Optic interaxis:</b>	18.4 mm
<b>Resolution:</b>	30 mm
<b>Controlled height:</b>	refer to table 2
<b>Through beam operating distance:</b>	0.2 ... 15 m
<b>Receiver indicators:</b>	green / red SAFE/ BREAK LED 2 yellow ALIGNMENT LEDs green POWER ON LED yellow blinking FAILURE LED green POWER ON LED
<b>Emitter indicators:</b>	2 PNP
<b>Output type:</b>	2 PNP
<b>Output current:</b>	0.5 A max., short-circuit protection
<b>Response time:</b>	refer to table 3
<b>Selectable functions:</b>	refer dip-switches
<b>Time-out period:</b>	Muting: 10 minutes / infinite Override: 2 minutes
<b>Receiver connection:</b>	refer to connections
<b>Emitter connection:</b>	refer to connections
<b>Cable length:</b>	50 m max. (with 50 nF capacitive load)
<b>Safety category:</b>	Type 4
<b>Electrical protection:</b>	class 1
<b>Mechanical protection:</b>	IP65
<b>Housing material:</b>	aluminium with PC Makrolon plastic caps
<b>Weight:</b>	1.2 Kg max. / m of total height
<b>Operating temperature:</b>	-10 ... +55 °C
<b>Storage temperature:</b>	-25 ... +70 °C
<b>Reference standards:</b>	EN 954-1, IEC 61496-1, IEC 61496-2



## TABLES

Model	Beams
SE4 height 150	8
SE4 height 300	16
SE4 height 450	24
SE4 height 600	32
SE4 height 750	40
SE4 height 900	48
SE4 height 1050	56
SE4 height 1200	64
SE4 height 1350	72
SE4 height 1500	80
SE4 height 1650	88

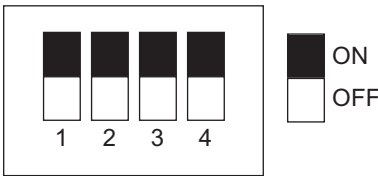
Table 1: NUMBER OF BEAMS

Model	mm
SE4 height 150	180
SE4 height 300	327
SE4 height 450	474
SE4 height 600	621
SE4 height 750	768
SE4 height 900	915
SE4 height 1050	1062
SE4 height 1200	1209
SE4 height 1350	1356
SE4 height 1500	1503
SE4 height 1650	1650

Table 2: CONTROLLED HEIGHT

Model	ms
SE4 height 150	16
SE4 height 300	20
SE4 height 450	23
SE4 height 600	25
SE4 height 750	27
SE4 height 900	30
SE4 height 1050	32
SE4 height 1200	35
SE4 height 1350	38
SE4 height 1500	40
SE4 height 1650	43

Table 3: RESPONSE TIME

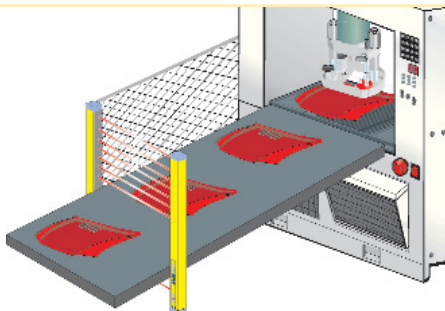


### DIP-SWITCHES

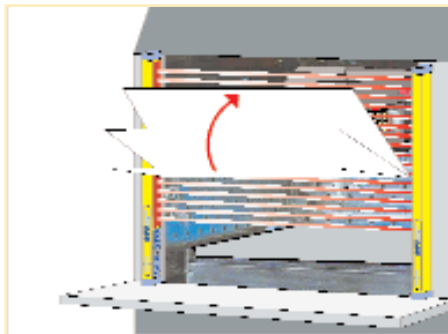
- 1 - Floating function: refer to table
- 2 - Floating function: refer to table
- 3 - EDM inactive (ON) / EDM active (OFF)
- 4 - Automatic (ON) / manual (OFF) reset

DIP1	DIP2	FUNCTION
ON	ON	Floating function active,
ON	OFF	Floating function active, 1 Blanking beam
OFF	ON	Floating function active, 2 adjacent Blanking beams
OFF	OFF	Floating function active, 1, 2 or 3 adjacent Blanking beams

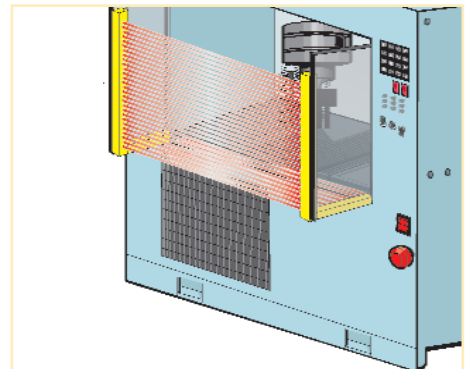
## FUNCTIONING MODE



Example of 'Fixed Blanking'



Example of 'Floating Blanking'



Example of 'Cascade' configuration

## SELECTION AND ORDER INFORMATION TABLE

MODEL	DESCRIPTION	FUNCTION	ORDER N°
SE4-30-015-PP-E	Type 4 safety light curtain	EDM	957201890
SE4-30-030-PP-E	Type 4 safety light curtain	EDM	957201900
SE4-30-045-PP-E	Type 4 safety light curtain	EDM	957201910
SE4-30-060-PP-E	Type 4 safety light curtain	EDM	957201920
SE4-30-075-PP-E	Type 4 safety light curtain	EDM	957201930
SE4-30-090-PP-E	Type 4 safety light curtain	EDM	957201940
SE4-30-105-PP-E	Type 4 safety light curtain	EDM	957201950
SE4-30-120-PP-E	Type 4 safety light curtain	EDM	957201960
SE4-30-135-PP-E	Type 4 safety light curtain	EDM	957201970
SE4-30-150-PP-E	Type 4 safety light curtain	EDM	957201980
SE4-30-165-PP-E	Type 4 safety light curtain	EDM	957201990
SE4-30-015-PP-B	Type 4 safety light curtain	Blanking	957202080
SE4-30-030-PP-B	Type 4 safety light curtain	Blanking	957202090
SE4-30-045-PP-B	Type 4 safety light curtain	Blanking	957202100
SE4-30-060-PP-B	Type 4 safety light curtain	Blanking	957202110
SE4-30-075-PP-B	Type 4 safety light curtain	Blanking	957202120
SE4-30-090-PP-B	Type 4 safety light curtain	Blanking	957202130
SE4-30-105-PP-B	Type 4 safety light curtain	Blanking	957202140
SE4-30-120-PP-B	Type 4 safety light curtain	Blanking	957202150
SE4-30-135-PP-B	Type 4 safety light curtain	Blanking	957202160
SE4-30-150-PP-B	Type 4 safety light curtain	Blanking	957202170
SE4-30-165-PP-B	Type 4 safety light curtain	Blanking	957202180
SE4-30-015-PP-M	Type 4 safety light curtain	Master	957202280
SE4-30-030-PP-M	Type 4 safety light curtain	Master	957202290
SE4-30-045-PP-M	Type 4 safety light curtain	Master	957202300
SE4-30-060-PP-M	Type 4 safety light curtain	Master	957202310
SE4-30-075-PP-M	Type 4 safety light curtain	Master	957202320
SE4-30-090-PP-M	Type 4 safety light curtain	Master	957202330
SE4-30-105-PP-M	Type 4 safety light curtain	Master	957202340
SE4-30-120-PP-M	Type 4 safety light curtain	Master	957202350
SE4-30-135-PP-M	Type 4 safety light curtain	Master	957202360
SE4-30-150-PP-M	Type 4 safety light curtain	Master	957202370
SE4-30-165-PP-M	Type 4 safety light curtain	Master	957202380
SE4-30-015-PP-N	Type 4 safety light curtain	Master Blanking	957202480
SE4-30-030-PP-N	Type 4 safety light curtain	Master Blanking	957202490
SE4-30-045-PP-N	Type 4 safety light curtain	Master Blanking	957202500
SE4-30-060-PP-N	Type 4 safety light curtain	Master Blanking	957202510
SE4-30-075-PP-N	Type 4 safety light curtain	Master Blanking	957202520
SE4-30-090-PP-N	Type 4 safety light curtain	Master Blanking	957202530
SE4-30-105-PP-N	Type 4 safety light curtain	Master Blanking	957202540
SE4-30-120-PP-N	Type 4 safety light curtain	Master Blanking	957202550
SE4-30-135-PP-N	Type 4 safety light curtain	Master Blanking	957202560
SE4-30-150-PP-N	Type 4 safety light curtain	Master Blanking	957202570
SE4-30-165-PP-N	Type 4 safety light curtain	Master Blanking	957202580
SE4-30-015-PP-S	Type 4 safety light curtain	Slave	957202680
SE4-30-030-PP-S	Type 4 safety light curtain	Slave	957202690
SE4-30-045-PP-S	Type 4 safety light curtain	Slave	957202700
SE4-30-060-PP-S	Type 4 safety light curtain	Slave	957202710
SE4-30-075-PP-S	Type 4 safety light curtain	Slave	957202720
SE4-30-090-PP-S	Type 4 safety light curtain	Slave	957202730
SE4-30-105-PP-S	Type 4 safety light curtain	Slave	957202740
SE4-30-120-PP-S	Type 4 safety light curtain	Slave	957202750
SE4-30-135-PP-S	Type 4 safety light curtain	Slave	957202760
SE4-30-150-PP-S	Type 4 safety light curtain	Slave	957202770
SE4-30-165-PP-S	Type 4 safety light curtain	Slave	957202780

## ACCESSORIES SELECTION AND ORDER INFORMATION TABLE

MODEL	DESCRIPTION	ORDER N°
CV-A1-23-B-005-2F	M12 5-pole shielded axial 0.5 m connector	95ACC2440
CV-A1-23-B-01-2F	M12 5-pole shielded axial 1 m connector	95ACC2450
SE-C	5 pole-connector cap	95ACC2460

Please refer to **Safety Device Accessories**

**Note:** all accessories have to be ordered separately

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### HEADQUARTERS

#### DATASENSOR SpA

via Lavino, 265 - 40050 Monte San Pietro, BO - Italy  
Tel. +39 051/6765611 • Fax +39 051/6759324  
www.datasensor.com • e-mail info@datasensor.com

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# SAFETY DEVICES