



# LP4ER\_M series

## Light curtains

### Type 4



Light curtains  
Type 4

## features

- Type 4 according IEC 61496-1 and IEC 61496-2
- Robust housing (50 x 60 mm) for applications in presence of heavy shocks and vibrations
- 30 and 40 mm hand protection, 90 mm presence control and 2, 3, 4 beams body protection/access control
- Protected height from 300 mm up to 1800 mm
- Integrated functions: AUTOMATIC/MANUAL Restart, EDM, range reduction selectable
- Muting and Override function selectable through dedicate wires
- M12 5 poles and M23 19 poles standard connectors



## web contents



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## code description

LP4 R / 30 - 030 M4 L

series	LP4	Type 4 Safety light Curtains 50 x 60 mm compact housing
couple	ER	Emitter + Receiver couple
beam	30	30 mm resolution, hand protection
	40	40 mm resolution, hand protection
	90	90 mm resolution, presence control
	0A	2 beam resolution, body protection, 500 mm protected height
height	0B	3 beam resolution, body protection, 800 mm protected height
	0C	4 beam resolution, body protection, 900 mm protected height
	050...180	Protected height from 300 to 1,800 mm
muting	M4	Integrated Muting function for 4 Muting sensors
range	L	Long range

## available models

30 mm resolution; 0...6 / 1...16 m controlled distance

protected height (mm)	n° of beams	response time (msec)	model
310	16	12	LP4ER/30-030M4
460	24	15	LP4ER/30-045M4
610	32	18	LP4ER/30-060M4
760	40	21	LP4ER/30-075M4
910	48	24	LP4ER/30-090M4
1,060	56	2	LP4ER/30-105M4
1,210	64	30	LP4ER/30-120M4

## available models

40 mm resolution; 0...6 / 1...16 m controlled distance

protected height (mm)	n° of beams	response time (msec)	model
310	10	9,5	LP4ER/40-030M4
460	15	11	LP4ER/40-045M4
610	20	13	LP4ER/40-060M4
760	25	15	LP4ER/40-075M4
910	30	17	LP4ER/40-090M4
1,060	35	19	LP4ER/40-105M4
1,210	40	21	LP4ER/40-120M4
1,360	45	23	LP4ER/40-135M4
1,510	50	25	LP4ER/40-150M4
1,660	55	27	LP4ER/40-165M4
1,810	60	28.5	LP4ER/40-180M4

## available models

40 mm resolution; 8...30 / 18...60 m controlled distance

protected height (mm)	n° of beams	response time (msec)	model
610	20	13	LP4ER/40-060M4L
910	30	23	LP4ER/40-090M4L
1,210	40	28.5	LP4ER/40-120M4L

## available models

90 mm resolution; 0...6 / 1...16 m controlled distance

protected height (mm)	n° of beams	response time (msec)	model
310	5	7	LP4ER/90-030M4
460	7	8	LP4ER/90-045M4
610	9	9	LP4ER/90-060M4
760	11	10	LP4ER/90-075M4
910	13	10.5	LP4ER/90-090M4
1,060	15	11	LP4ER/90-105M4
1,210	17	12	LP4ER/90-120M4
1,360	19	13	LP4ER/90-135M4
1,510	21	13.5	LP4ER/90-150M4
1,660	23	14	LP4ER/90-165M4
1,810	25	15	LP4ER/90-180M4

## available models

7 msec response time; 0...6 / 1...16 m controlled distance




protected height (mm)	n° of beams	response time (msec)	model
510	2	500	LP4ER/0A-050M4
810	3	800	LP4ER/0B-080M4
910	4	900	LP4ER/0C-090M4

## available models

7 msec response time; 8...30 / 18...60 m controlled distance

protected height (mm)	n° of beams	response time (msec)	model
510	2	500	LP4ER/0A-050M4L
810	3	800	LP4ER/0B-080M4L
910	4	900	LP4ER/0C-090M4L



LP4ER / **-***M4-		
	  	
operating voltage	19.2...28.8 Vdc	PELV power supplier according to EN 60204-1 Cap.6.4
power consumption, Receiver	6 W	no load
power consumption, Emitter	3 W	
output type	2 x PNP	OSSD safety outputs
output current	500 mA	higher values are considered overload
equivalent resistive load	48 Ω	lower values are considered short circuit
capacitive load	2 µF	lower values may be considered short circuit
recovery time	15 s	
response time OSSDs	30 ms	
effective aperture angle (EAA)	≤ ± 2.5°	IEC 61496-1
artificial light rejection	according to IEC 61496-2	] according to the reported standards
ambient light rejection	according to IEC 61496-2	
IP mechanical protection	IP65	without any additional precaution the device can't be used for outdoor applications
operating temperature	0...+55°C	no condensation
storage temperature	-25...+70°C	to be respected also during transportation
humidity	95%	no condensation
vibrations	according to IEC 61496-1	] according to the reported standards
shocks	according to IEC 61496-1	
cable length (power supply/outputs)	100 m	painting aluminium RAL 1012
dimension	50 mm (front) x 60 mm	
S0 connectors Emitter	1 x M12, 5p male, nickel-plated brass	
S0 connectors Receiver	1x M23, 19p, male, nickel-plated brass	
S1 and S2 connectors (or S1) receiver	2/1 M12 5p female	

## safety parameters

LP4ER/30-***M4	030	045	060	075	090	105	120
height (mm)	160	310	460	610	760	910	1,060
number of beams	16	24	32	40	48	56	64
response time (ms)	12	15	18	21	24	2	30
Type <sup>(1)</sup>	4						
SIL <sup>(2)</sup>	3						
SILCL <sup>(3)</sup>	3						
PL <sup>(4)</sup>	e						
PFHd	9.06E-09	9.89E-06	1.09E-08	1.18E-08	1.28E-08	1.37E-08	1.46E-08
DCavg	98.24%	98.35%	98.44%	98.50%	98.55%	98.56%	98.63%
MTTFd (years)	100						
CFF	80%						

<sup>(1)</sup> ref. CEI EN 61496-1; CEI EN 61496-2 <sup>(2)</sup> ref. CEI EN 61508  
<sup>(3)</sup> ref. CEI EN 62061 + CEI EN 62061/EC2 <sup>(4)</sup> ref. UNI EN ISO 13849-1

LP4ER/40-***M4	030	045	060	075	090	105	120	135	150	165	180
height (mm)	310	460	610	760	910	1,060	1,210	1,360	1,510	1,660	1,810
number of beams	10	15	20	25	30	35	40	45	50	55	60
response time (ms)	9,5	11	13	15	17	19	21	23	25	27	28,5
Type <sup>(1)</sup>	4										
SIL <sup>(2)</sup>	3										
SILCL <sup>(3)</sup>	3										
PL <sup>(4)</sup>	e										
PFHd	8.71E-09	9.45E-09	1.02E-08	1.10E-08	1.17E-08	1.25E-08	1.32E-08	1.40E-08	1.47E-08	1.55E-08	1.62E-08
DCavg	98.19%	98.29%	98.37%	98.44%	98.49%	98.53%	98.57%	98.60%	98.63%	98.65%	98.67%
MTTFd (years)	100										
CFF	80%										

LP4ER/40-***M4L	060	090	120
height (mm)	610	910	1,210
number of beams	20	30	40
response time (ms)	13	23	28.5
Type <sup>(1)</sup>	4		
SIL <sup>(2)</sup>	3		
SILCL <sup>(3)</sup>	3		
PL <sup>(4)</sup>	e		
PFHd	1.02E-08	1.17E-08	1.32E-08
DCavg	98.37%	98.49%	98.57%
MTTFd (years)	100		
CFF	80%		

LP4ER/90-***M4	030	045	060	075	090	105	120	135	150	165	180
height (mm)	310	460	610	760	910	1,060	1,210	1,360	1,510	1,660	1,810
number of beams	5	7	9	11	13	15	17	19	21	23	25
response time (ms)	7	8	9	10	10.5	11	12	13	13.5	14	15
Type <sup>(1)</sup>	4										
SIL <sup>(2)</sup>	3										
SILCL <sup>(3)</sup>	3										
PL <sup>(4)</sup>	e										
PFHd	8.91E-09	9.48E-09	1.01E-08	1.06E-08	1.12E-08	1.18E-08	1.24E-08	1.29E-08	1.35E-08	1.41E-08	1.47E-08
DCavg	98.22%	98.30%	98.36%	98.41%	98.46%	98.50%	98.53%	98.56%	98.58%	98.61%	98.63%
MTTFd (years)	100										
CFF	80%										

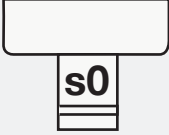
LP4ER/**-***M4	0A-050	0B-080	0C-090
dist. between beams	500	800	900
number of beams	2	3	4
response time (ms)	7	7	7
Type <sup>(1)</sup>	4		
SIL <sup>(2)</sup>	3		
SILCL <sup>(3)</sup>	3		
PL <sup>(4)</sup>	e		
PFHd	7.53E-09	7.70E-09	7.87E-09
DCavg	97.94%	97.99%	98.03%
MTTFd (years)	100		
CFF	80%		

LP4ER/**-***M4L	0A-050	0B-080	0C-090
dist. between beams	500	800	900
number of beams	2	3	4
response time (ms)	7	7	7
Type <sup>(1)</sup>	4		
SIL <sup>(2)</sup>	3		
SILCL <sup>(3)</sup>	3		
PL <sup>(4)</sup>	e		
PFHd	7.53E-09	7.70E-09	7.87E-09
DCavg	97.94%	97.99%	98.03%
MTTFd (years)	100		
CFF	80%		


# electrical diagrams of the connections

**LP4ER\_M series**

**M12**  
(5 poles male unit)



LP4ER/ \*\*-\*\*\*\_



pin	color	signal	type	description
1	BN	24V <sub>DC</sub>	POWER	power supply input
2	WH	range H/Test	IN	selection input
3	BU	0V	POWER	supply voltage reference
4	BK	range H/Test	IN	selection input
5	GY	PE	GND	protection earth

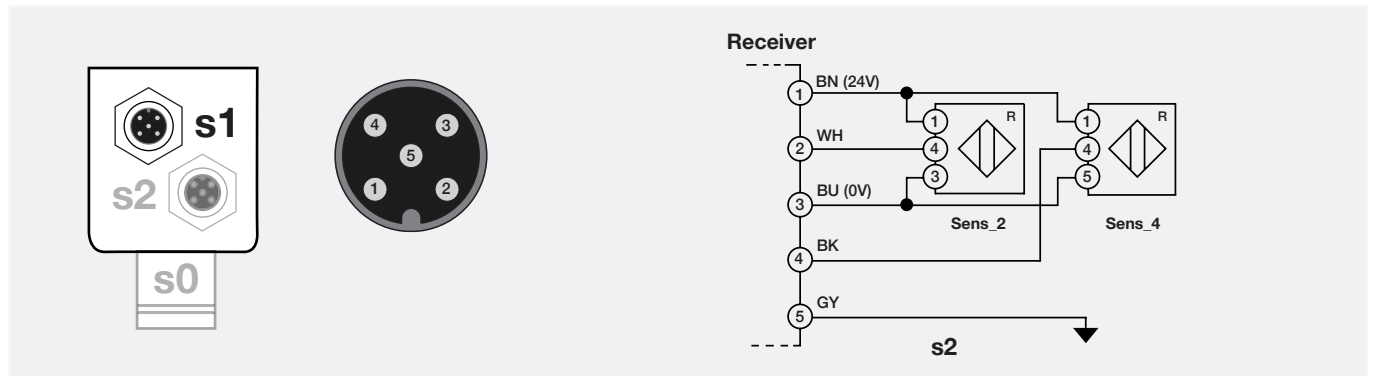
possible combinations		
pin 2	pin 4	function
LO		test (no emission)
LO	HI	emission with high range
HI	LO	emission with low range
HI		not admitted

levels: LO = <5 V or open; HI = 11 to 30 V

<b>BK</b> black	<b>OG</b> orange
<b>BN</b> brown	<b>GN</b> green
<b>RD</b> red	<b>BU</b> blue
<b>YE</b> yellow	<b>GY</b> grey
<b>WH</b> white	<b>VT</b> violet
<b>PK</b> pink	

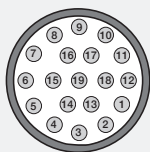
The Test contact is necessary only if the entire safety chain of the receiver downstream must be tested.  
If the Test is not necessary replace the TEST contact with direct wiring at 24 V<sub>DC</sub>.



pin	color	signal	type	function	levels
1	BN	24 V <sub>DC</sub>	POWER	supply voltage output	max. total output current: 100 mA
2	WH	sens_1	IN	muting 1 sensor input	LO: < 5 V or open; HI: 11 to 30 V
3	BU	0 V <sub>DC</sub>	POWER	power supply reference	-
4	BK	sens_3	IN	muting 3 sensor input	input selection
5	GY	PE	GND	earth protection	LO: < 5 V or open; HI: 11 to 30 V
LO: < 5 V or open; HI: 11 to 30 V					

NOTE: The sensors can be of any type, the output level must be high when there is material (HI).

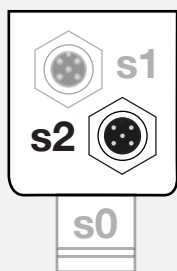
M23  
(19 poles male RX unit)



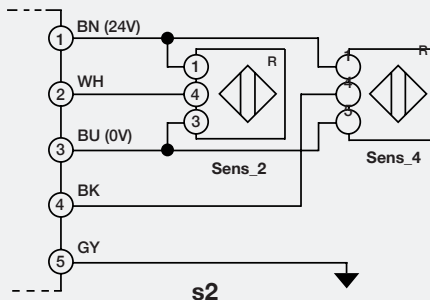
NOTE: The Muting Enabling signal (pin 15) must be LO before the HI enabling signal of the single sensors, and it must remain low for the entire duration of the sensor enabling signal, otherwise Muting will stop. The System Status output signal (pin 4) repeats the state of the OSSD outputs, HI= safety light curtain ON, LO= safety light curtain OFF; on models in which the signal level indication is present, the output status is momentarily denied with a pulse lasting 15 to 45ms and period 800ms if the signal is weak.

- BK** black      **OG** orange
- BN** brown    **GN** green
- RD** red        **BU** blue
- YE** yellow    **GY** grey
- WH** white    **VT** violet
- PK** pink

pin	color	signal	type	description
1	WH	Lamp. Muting	-	output for piloting the external Muting Lamp
2	RD	OSSD2	OUT	second safety static output (PNP)
3	GY	OSSD1	OUT	first safety static output (PNP)
4	YE	System Status + Sign. level	OUT	repetition of OSSDs status, see note + low signal level indication, see note
5	GN	N.C.	- a b	active with Muting, HI:Muting ON; LO:Muting OFF
6	BU	0V <sub>CC</sub>	POWER	supply voltage reference
7	VT	Mode_0	-	input config. for the other models with Muting
8	GY - PK	Mode_1	-	input config. for the other models with Muting
9	RD - BU	Mode_2	-	input config. for the other models with Muting
10	WH - GN	Mode_3	-	input config. for the other models with Muting
11	BK	Abilitaz. EDM	IN	enabling for external contactor control
12	WH - GN	PE	GND	earth protection connection
13	WH - YE	Man. / Autom.	IN	selection of the Start/Restart mode
14	BN - YE	start	IN	connection to the Start/Restart button
15	WH - GY	N.C.	-	not connected
16	BN - GY	override_1	-	input 1 for the forced control of Muting
17	WH - PK	override_2	-	input 2 for the forced control of Muting
18	BN - GN	EDM	IN	connection to the external control contacts
19	BN	24V <sub>CC</sub>	POWER	supply voltage input



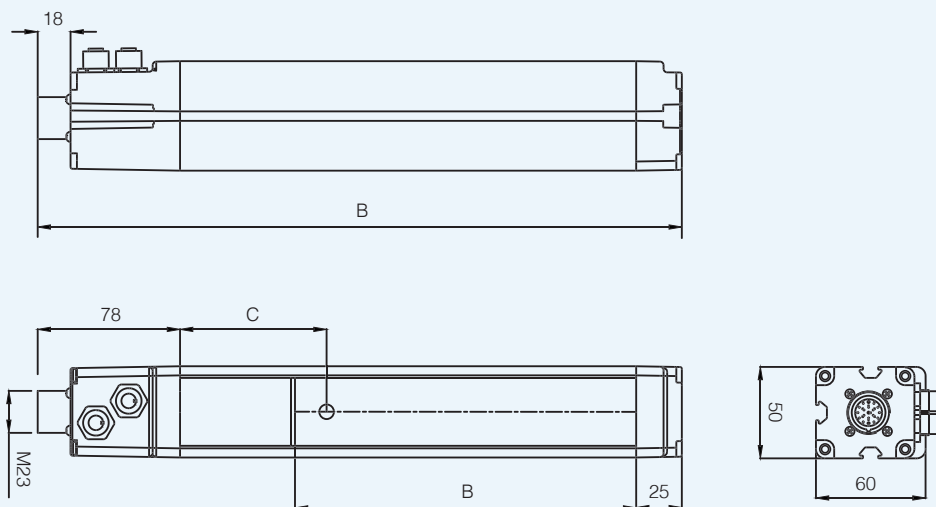
Receiver



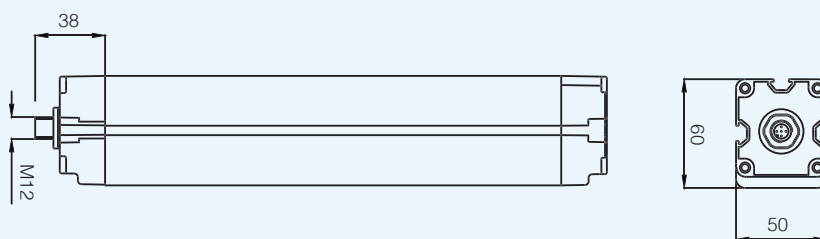
pin	color	signal	type	function	levels
1	BN	24 V <sub>DC</sub>	POWER	supply voltage output	max. total output current: 100 mA
2	WH	sens_2	IN	muting 2 sensor input	LO: < 5 V or open; HI: 11 to 30 V
3	BU	0 V <sub>DC</sub>	POWER	power supply reference	-
4	BK	sens_4	IN	muting 4 sensor input	input selection
5	GY	PE	GND	earth protection	LO: < 5 V or open; HI: 11 to 30 V
LO: < 5 V or open; HI: 11 to 30 V					

NOTE: The sensors can be of any type, the output level must be high when there is material (HI).

LP4ER/\*\*-\*\*\*M4 - Receiver



LP4ER/\*\*-\*\*\*M4 - Emitter


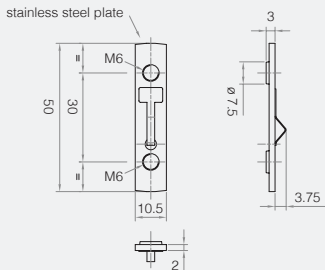


dimensions	LP4ER/**-***M4														LP4ER/**-***M4L		
	030	045	060	075	090	105	120	135	150	165	180	0A	0B	0C	0A	0B	0C
A (TX)	436	586	736	886	1,036	1,186	1,336	1,486	1,636	1,786	1,936	736	1,036	1,136	736	1,036	1,136
A (RX)	476	626	776	926	1,076	1,226	1,376	1,526	1,676	1,826	1,976	776	1,076	1,176	776	1,076	1,176
B (protected height)	310	460	610	760	910	1,060	1,210	1,360	1,510	1,660	1,810	510*	810*	910*	510*	810*	910*
C (first beam quote)	72											120			76		


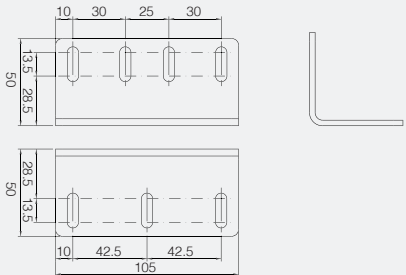




ST203 / outfit mounting accessories

product	to be used with	dimensions (mm)	description / installation
	LP4 series		<p><b>Fastening insert for 50x60 profile. Part of the standard kit</b></p> <p>Two pieces are provided for each bracket ST202.</p>

ST202 / outfit mounting accessories

product	to be used with	dimensions (mm)	description / installation
	LP4 series		<p><b>L Bracket</b></p> <p>Long bracket. Part of the standard kit. Two pieces are provided for each couples. Must be applied in the housin part of the body.</p>