# SMART SENSOR BUSINESS

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Part no.: 68001419 MLC510R40-1950 Safety light curtain receiver



Figure can vary

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- Suitable transmitters
- Dimensioned drawings
- Electrical connection
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## Part no.: 68001419 – MLC510R40-1950 – Safety light curtain receiver

### **Technical data**

Basic data		
Series	MLC 500	
Device type	Receiver	
Contains	2x BT-NC sliding block	
Application	Access guarding Hand protection Danger zone guarding	
Functions		
Function package	Basic	
Functions	Automatic start/restart Transmission channel changeover	
Characteristic parameters		
Туре	4, IEC/EN 61496	
SIL	3, IEC 61508	
SILCL	3, IEC/EN 62061	
Performance Level (PL)	e, EN ISO 13849-1	
PFHD	7.73E-09 per hour	
Mission time T <sub>M</sub>	20 years, EN ISO 13849-1	
Category	4, EN ISO 13849	
Protective field data		
Resolution	40 mm	
Protective field height	1,950 mm	
Optical data		
Synchronization	Optical between transmitter and receiver	
Electrical data		
Protective circuit	Short circuit protected Overvoltage protection	
Performance data		
Supply voltage	24 V, DC, -20 20 %	
Current consumption, max. 150 mA		
Fuse	2 A semi time-lag	

## Part no.: 68001419 – MLC510R40-1950 – Safety light curtain receiver

	2 Piece(s)			
lumber of safety-related switching outputs (OSSDs) Safety-related switching outputs	211000(0)			
Type	Safety-related switching output OSSD			
Switching voltage high, min.	18 V			
Switching voltage low, max.	2.5 V			
Switching voltage, typ.	22.5 V			
Voltage type	DC			
Current load, max.	380 mA			
Load inductivity	2,000 µH			
Load capacity	0.3 µF			
Residual current, max.	0.2 mA			
Residual current, typ.	0.002 mA			
Voltage drop	1.5 V			
Safety-related switching output 1				
Assignment	Connection 1, pin 2			
Switching element	Transistor, PNP			
Safety-related switching output 2				
Assignment	Connection 1, pin 4			
Switching element	Transistor, PNP			
ing				
ponse time	18 ms			
tart delay time	100 ms			
nection				
nnection nber of connections	1 Piece(s)			
	1 Piece(s)			
nber of connections	1 Piece(s) Connector			
nber of connections				
nber of connections Connection 1 Ype of connection	Connector			
nber of connections Connection 1 Sype of connection unction	Connector Machine interface			
nber of connections Connection 1 Type of connection Tunction hread size	Connector Machine interface M12			
nber of connections Connection 1 ype of connection unction thread size Material lo. of pins Cable properties	Connector Machine interface M12 Metal 5 -pin			
hber of connections Connection 1 Type of connection Tunction Thread size Material Io. of pins Cable properties Permissible conductor cross section, typ.	Connector Machine interface M12 Metal 5 -pin 0.25 mm <sup>2</sup>			
nber of connections Connection 1  ype of connection  unction  hread size  laterial  lo. of pins Cable properties  ermissible conductor cross section, typ. ength of connection cable, max.	Connector Machine interface M12 Metal 5 -pin 0.25 mm <sup>2</sup> 100 m			
hber of connections Connection 1 Type of connection Tunction Thread size Material Io. of pins Cable properties Permissible conductor cross section, typ.	Connector Machine interface M12 Metal 5 -pin 0.25 mm <sup>2</sup>			
nber of connections Connection 1  ype of connection  unction  hread size  laterial  lo. of pins Cable properties  ermissible conductor cross section, typ. ength of connection cable, max.	Connector Machine interface M12 Metal 5 -pin 0.25 mm <sup>2</sup> 100 m			
nber of connections Connection 1  ype of connection  unction  hread size  laterial  lo. of pins Cable properties  ermissible conductor cross section, typ. ength of connection cable, max.	Connector Machine interface M12 Metal 5 -pin 0.25 mm <sup>2</sup> 100 m			
hber of connections	Connector           Machine interface           M12           Metal           5 -pin           0.25 mm²           100 m           200 Ω           29 mm x 2,016 mm x 35.4 mm			
hber of connections Connection 1  ype of connection  unction  hread size  Aaterial  lo. of pins Cable properties Permissible conductor cross section, typ.  ength of connection cable, max.  Permissible cable resistance to load, max.  chanical data	Connector Machine interface M12 Metal 5 -pin 0.25 mm² 100 m 200 Ω 29 mm x 2,016 mm x 35.4 mm Metal, Aluminum			
hber of connections	Connector         Machine interface         M12         Metal         5 -pin         0.25 mm²         100 m         200 Ω         29 mm x 2,016 mm x 35.4 mm         Metal, Aluminum         Plastic / PMMA			
hber of connections Connection 1  ype of connection  unction  hread size  Aaterial  lo. of pins Cable properties  remissible conductor cross section, typ.  ength of connection cable, max.  remissible cable resistance to load, max.  chanical data ension (W x H x L) sing material	Connector Machine interface M12 Metal 5 -pin 0.25 mm² 100 m 200 Ω 29 mm x 2,016 mm x 35.4 mm Metal, Aluminum			
hber of connections  Connection 1  ype of connection  unction  hread size  Aaterial  lo. of pins  Cable properties  remissible conductor cross section, typ.  ength of connection cable, max.  remissible cable resistance to load, max.  remissible cable resistance to load, max.  chanical data ension (W x H x L) sing material erial of end caps weight	Connector Machine interface M12 Metal 5 -pin 0.25 mm² 100 m 200 Ω 29 mm x 2,016 mm x 35.4 mm Metal, Aluminum Plastic / PMMA Diecast zinc 2,100 g			
hber of connections	Connector Machine interface M12 Metal 5 -pin 0.25 mm <sup>2</sup> 100 m 200 Ω 29 mm x 2,016 mm x 35.4 mm Metal, Aluminum Plastic / PMMA Diecast zinc			

**Operation and display** 

## Part no.: 68001419 – MLC510R40-1950 – Safety light curtain receiver

Type of display	LED	
Number of LEDs	2 Piece(s)	
Environmental data		
Ambient temperature, operation	-30 55 °C	
Ambient temperature, storage	-30 70 °C	
Relative humidity (non-condensing)	0 95 %	
Certifications		
Degree of protection	IP 65	
Protection class	III	
Certifications	S Mark c CSA US c TÜV NRTL US TÜV Süd	
Vibration resistance	50 m/s²	
Shock resistance	100 m/s²	
US patents	US 6,418,546 B	
Classification		
eCl@ss 8.0	27272704	
eCl@ss 9.0	27272704	
ETIM 5.0	EC002549	

### Suitable transmitters

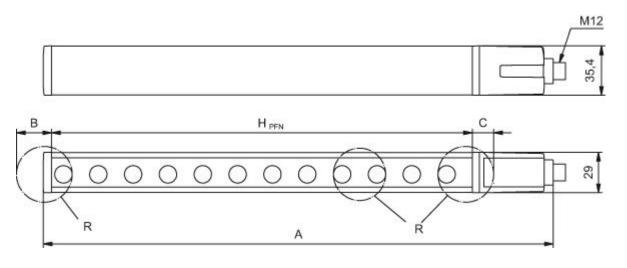
Part no.	Designation	Article	Description
68000419		transmitter	Resolution: 40 mm Protective field height: 1,950 mm Operating range: 0 20 m Connection: Connector, M12, Metal, 5 -pin

## **Dimensioned drawings**

All dimensions in millimeters

## Part no.: 68001419 – MLC510R40-1950 – Safety light curtain receiver

### Calculation of the effective protective field height HPFE = HPFN + B + C

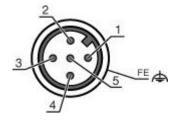


- HPFE Effective protective field height = 1990 mm
- Hpfn Nominal protective field height = 1950 mm
- Total height = 2016 mm
- A B C
- 15 mm
- Effective protective field height HPFE goes beyond the dimensions of the optics area to the outer R borders of the circles labeled with R.

### **Electrical connection**

Connection 1	
Type of connection	Connector
Function	Machine interface
Thread size	M12
Туре	Male
Material	Metal
No. of pins	5 -pin
Encoding	A-coded
Connector housing	FE/SHIELD

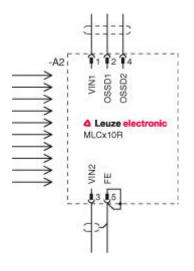
Pin	Pin assignment	Conductor color
1	VIN1	Brown
2	OSSD1	White
3	VIN2	Blue
4	OSSD2	Black
5	FE/SHIELD	Gray



## Part no.: 68001419 – MLC510R40-1950 – Safety light curtain receiver

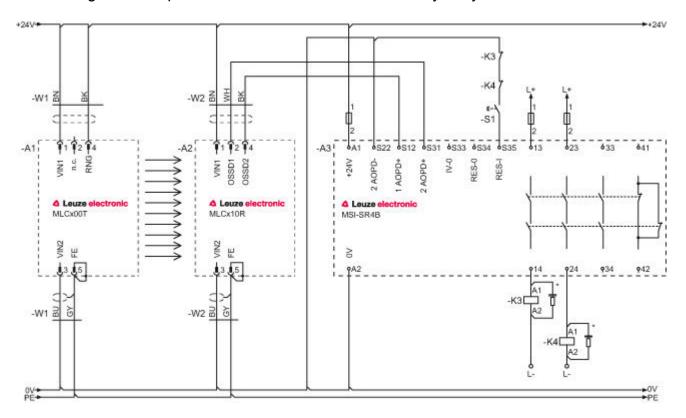
### Circuit diagrams

Connection diagram receiver



VIN1 = +24 V, VIN2 = 0 V: transmission channel C1
 VIN1 = 0 V, VIN2 = +24 V: transmission channel C2

Circuit diagram example with downstream MSI-SR4B safety relay



## Part no.: 68001419 – MLC510R40-1950 – Safety light curtain receiver

### **Operation and display**

#### LEDs

LED	Display	Meaning
1	Off	Device switched off
	Red, continuous light	OSSD off.
	Red, flashing, 1 Hz	External error
	Red, flashing, 10 Hz	Internal error
	Green, flashing, 1 Hz	OSSD on, weak signal
	Green, continuous light	OSSD on
2	Off	Transmission channel C1
	Red, continuous light	OSSD off, transmission channel C2

### Part number code

Part designation: MLCxyy-za-hhhhei-ooo

MLC	Safety light curtain
х	Series: 3: MLC 300 5: MLC 500
уу	Function classes: 00: Transmitter 01: transmitter (AIDA) 02: Transmitter with test input 10: Basic receiver - automatic restart 11: basic receiver - automatic restart (AIDA) 20: Standard receiver - EDM/RES selectable 30: Extended receiver - blanking/muting
Z	Device type: T: transmitter R: receiver
а	Resolution:         14: 14 mm         20: 20 mm         30: 30 mm         40: 40 mm         90: 90 mm
hhhh	Protective field height: 150 3000: from 150 mm to 3000 mm
e	Host/Guest (optional): H: Host MG: Middle Guest G: Guest
i	Interface (optional): /A: AS-i
000	Option: /V: high Vibration-proof EX2: explosion protection (zones 2 + 22) SPG: Smart Process Gating

#### Note

A list with all available device types can be found on the Leuze electronic website at www.leuze.com.

### Accessories

Connection technology - Connection cables

Part no.	Designation	Article	Description
429088	CB- M12-15000-5GF	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: No Cable length: 15,000 mm Sheathing material: PUR
678057	CB- M12-15000E-5GF	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 15,000 mm Sheathing material: PUR
429089	CB- M12-25000-5GF	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: No Cable length: 25,000 mm Sheathing material: PUR
678058	CB- M12-25000E-5GF	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 25,000 mm Sheathing material: PUR
429281	CB- M12-50000-5GF	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: No Cable length: 50,000 mm Sheathing material: PUR
50133860	KD S-M12-5A- P1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR
50133861	KD S-M12-5A- P1-100	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 10,000 mm Sheathing material: PUR
50137013	KD S-M12-5A- P1-500	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 10,000 mm Sheathing material: PVC
50133841	KD U-M12-5A- P1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PUR

## Part no.: 68001419 – MLC510R40-1950 – Safety light curtain receiver

	Part no.	Designation	Article	Description
50		KD U-M12-5A- P1-100		Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PUR

## Connection technology - Connectors

	Part no.	Designation	Article	Description
· Dedu	429175	CB-M12-5GF	Connector	Connection: Connector, M12, Axial, Female, A-coded, 5 -pin

# Mounting technology - Mounting brackets

	Part no.	Designation	Article	Description
	429056	BT-2L	Mounting bracket set	Design of mounting device: Angle, L-shape Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Screw type Material: Metal
The state	429057	BT-2Z	Mounting bracket set	Design of mounting device: Angle, Z-shape Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Screw type Material: Metal

# Mounting technology - Swivel mounts

	Part no.	Designation	Article	Description
P.a.	429393	BT-2HF	Mounting bracket set	Contains: 2x BT-HF swivel mount, 1 cylinder for mounting on the light curtain Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 360° Material: Metal, Plastic
<b>P</b>	429394	BT-2HF-S	Mounting bracket set	Contains: 2x BT-HF swivel mount, 1 cylinder for mounting on the light curtain Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 360° Material: Metal, Plastic Shock absorber: Yes

# Mounting technology - Other

Part no.	Designation	Article	Description
425740	BT-10NC60	Sliding block set	Contains: 10x BT-NC sliding block Bore hole 1: Ø 4.7 mm Bore hole 2: M6 Design of mounting device: Sliding block Mounting bracket, at system: Mounting thread Mounting bracket, at device: Groove mounting Material: Metal

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## Part no.: 68001419 – MLC510R40-1950 – Safety light curtain receiver

	Part no.	Designation	Article	Description
	425741	BT-10NC64	Sliding block set	Contains: 10x BT-NC-M4-M6 sliding block Bore hole 1: M4 Bore hole 2: M6 Design of mounting device: Sliding block Mounting bracket, at system: Mounting thread Mounting bracket, at device: Groove mounting Material: Metal
	425742	BT-10NC65	Sliding block set	Contains: 10x BT-NC-M5-M6 sliding block Bore hole 1: M5 Bore hole 2: M6 Design of mounting device: Sliding block Mounting bracket, at system: Mounting thread Mounting bracket, at device: Groove mounting Material: Metal
E.E.	424417	BT-2P40	Mounting bracket set	Contains: 2x BT-P40 clamp bracket Design of mounting device: Mounting clamp Mounting bracket, at system: Groove mounting Mounting bracket, at device: Groove mounting Type of mounting device: Clampable Material: Metal
And	424422	BT-2SB10	Mounting bracket set	Contains: 2x BT-SB10 Design of mounting device: Mounting clamp Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Clampable, an der seitlichen C-Nut Type of mounting device: Swiveling Swivel range: -8 8 ° Material: Metal
A CONTRACT	424423	BT-2SB10-S	Mounting bracket set	Contains: 2x BT-SB10-S Design of mounting device: Mounting clamp Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Clampable, an der seitlichen C-Nut Swivel range: -8 8 ° Material: Metal Shock absorber: Yes

## Test rods

Part no.	Designation	Article	Description
349939	AC-TR20/40	Test piece	Diameter 1: 20mm Diameter 2: 40mm Housing material: Plastic, Terluran HH106 black

# Alignment aids

	Part no.	Designation	Article	Description
0	427300	AC-ALM	Alignment aid	Housing material: Plastic
	520101	AC-ALM-M	Alignment aid	Housing material: Plastic
	560020	LA-78U	Alignment aid	Light source: laser, Red Housing material: Metal

## Part no.: 68001419 – MLC510R40-1950 – Safety light curtain receiver

Part no.	Designation	Article	Description
520004	LA-78UDC	Alignment aid	Light source: laser, Red Housing material: Metal

## Device columns

Part no.	Designation	Article	Description
549867	UDC-2100-S2	Device column	Dimensions: 160 mm x 2,160 mm x 149 mm Column height without foot: 2,100 mm Functions: Adjustable, 3 directions, Mounting and protection of light curtains and multiple light beam devices
549857	UDC-2500-S2	Device column	Dimensions: 160 mm x 2,560 mm x 149 mm Column height without foot: 2,500 mm Functions: Adjustable, 3 directions, Mounting and protection of light curtains and multiple light beam devices
549865	UDC-3100-S2	Device column	Dimensions: 160 mm x 3,160 mm x 149 mm Column height without foot: 3,100 mm Functions: Mounting and protection of light curtains and multiple light beam devices, Adjustable, 3 directions

### Notes

#### Observe intended use!

- The product may only be put into operation by competent persons.
- Only use the product in accordance with its intended use.