



the sensor people





Part no.: 68001910 MLC510R90-1050 Safety light curtain receiver

















Figure can vary

Contents

- Technical data
- Suitable transmitters
- Dimensioned drawings
- Electrical connection
- Circuit diagrams
- Operation and display
- · Part number code
- Accessories
- Notes



Technical data

Basic data		
Series	MLC 500	
Device type	Receiver	
Contains	2x BT-NC sliding block	
Application	Danger zone guarding Access 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 _M	20 years, EN ISO 13849-1	
Category	4, EN ISO 13849	
Protective field data		
Resolution	90 mm	
Protective field height	1,050 mm	
Optical data		
Synchronization	Optical between transmitter and receiver	
Electrical data		
Protective circuit	Overvoltage protection Short circuit protected	
Performance data		
Supply voltage	24 V, DC, -20 20 %	
Current consumption, max.	150 mA	
Fuse	2 A semi time-lag	



Dutputs	
Number of safety-related switching outputs (OSSDs)	2 Piece(s)
Safety-related switching outputs	
Туре	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 μΗ
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
ming	
esponse time	4 ms
estart delay time	100 ms
onnection	
onnection umber of connections	1 Piece(s)
	1 Piece(s)
umber of connections	1 Piece(s) Connector
Connection 1	
Connection 1 Type of connection	Connector
Type of connection Function	Connector Machine interface
Type of connection Function Thread size	Connector Machine interface M12
Thread size Material	Connector Machine interface M12 Metal
Type of connection Function Thread size Material No. of pins	Connector Machine interface M12 Metal
Connection 1 Type of connection Function Thread size Material No. of pins Cable properties	Connector Machine interface M12 Metal 5 -pin
Connection 1 Type of connection Function Thread size Material No. of pins Cable properties Permissible conductor cross section, typ.	Connector Machine interface M12 Metal 5 -pin 0.25 mm²
Connection 1 Type of connection Function Thread size Material No. of pins Cable properties Permissible conductor cross section, typ. Length of connection cable, max.	Connector Machine interface M12 Metal 5 -pin 0.25 mm² 100 m
Connection 1 Type of connection Function Thread size Material No. of pins Cable properties Permissible conductor cross section, typ. Length of connection cable, max.	Connector Machine interface M12 Metal 5 -pin 0.25 mm² 100 m
Connection 1 Type of connection Function Thread size Material No. of pins Cable properties Permissible conductor cross section, typ. Length of connection cable, max. Permissible cable resistance to load, max.	Connector Machine interface M12 Metal 5 -pin 0.25 mm² 100 m
Connection 1 Type of connection Function Thread size Material No. of pins Cable properties Permissible conductor cross section, typ. Length of connection cable, max. Permissible cable resistance to load, max.	Connector Machine interface M12 Metal 5 -pin 0.25 mm² 100 m 200 Ω
Connection 1 Type of connection Function Thread size Material No. of pins Cable properties Permissible conductor cross section, typ. Length of connection cable, max. Permissible cable resistance to load, max.	Connector Machine interface M12 Metal 5 -pin 0.25 mm² 100 m 200 Ω
Connection 1 Type of connection Function Thread size Material No. of pins Cable properties Permissible conductor cross section, typ. Length of connection cable, max. Permissible cable resistance to load, max.	Connector Machine interface M12 Metal 5 -pin 0.25 mm² 100 m 200 Ω 29 mm x 1,116 mm x 35.4 mm Metal, Aluminum
Connection 1 Type of connection Function Thread size Material No. of pins Cable properties Permissible conductor cross section, typ. Length of connection cable, max. Permissible cable resistance to load, max. echanical data mension (W x H x L) busing material ens cover material enterial of end caps	Connector Machine interface M12 Metal 5 -pin 0.25 mm² 100 m 200 Ω 29 mm x 1,116 mm x 35.4 mm Metal, Aluminum Plastic / PMMA Diecast zinc
Connection 1 Type of connection Function Thread size Material No. of pins Cable properties Permissible conductor cross section, typ. Length of connection cable, max. Permissible cable resistance to load, max. echanical data mension (W x H x L) busing material and cover material atterial of end caps et weight	Connector Machine interface M12 Metal 5 -pin 0.25 mm² 100 m 200 Ω 29 mm x 1,116 mm x 35.4 mm Metal, Aluminum Plastic / PMMA Diecast zinc 1,200 g
Connection 1 Type of connection Function Thread size Material No. of pins Cable properties Permissible conductor cross section, typ. Length of connection cable, max. Permissible cable resistance to load, max. Permissible cable resistance to load, max.	Connector Machine interface M12 Metal 5 -pin 0.25 mm² 100 m 200 Ω 29 mm x 1,116 mm x 35.4 mm Metal, Aluminum Plastic / PMMA Diecast zinc 1,200 g Yellow, RAL 1021
Connection 1 Type of connection Function Thread size Material No. of pins Cable properties Permissible conductor cross section, typ. Length of connection cable, max. Permissible cable resistance to load, max. echanical data mension (W x H x L) busing material and cover material atterial of end caps et weight	Connector Machine interface M12 Metal 5 -pin 0.25 mm² 100 m 200 Ω 29 mm x 1,116 mm x 35.4 mm Metal, Aluminum Plastic / PMMA Diecast zinc 1,200 g



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	Certifications		
Degree of protection	IP 65		
Protection class	III		
Certifications	c CSA US c TÜV NRTL US S Mark 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

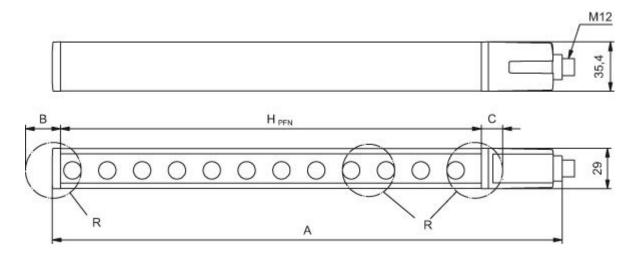
Part no.	Designation	Article	Description
68000910	MLC500T90-1050	Safety light curtain transmitter	Resolution: 90 mm Protective field height: 1,050 mm Operating range: 0 20 m Connection: Connector, M12, Metal, 5 -pin
68008910	MLC502T90-1050	Safety light curtain transmitter	Resolution: 90 mm Protective field height: 1,050 mm Operating range: 0 20 m Connection: Connector, M12, Metal, 5 -pin

Dimensioned drawings

All dimensions in millimeters



Calculation of the effective protective field height Hpfe = Hpfn + B + C



HPFE Effective protective field height = 1140 mm **HPFN** Nominal protective field height = 1050 mm

Total height = 1116 mm 50 mm

A B C 40 mm

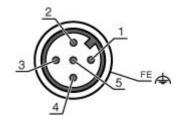
Effective protective field height HPFE goes beyond the dimensions of the optics area to the outer R

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

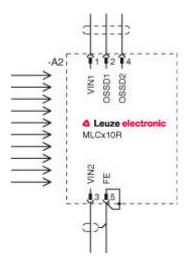
Pin	Pin assignment	Conductor color
1	VIN1	Brown
2	OSSD1	White
3	VIN2	Blue
4	OSSD2	Black
5	FE/SHIELD	Gray





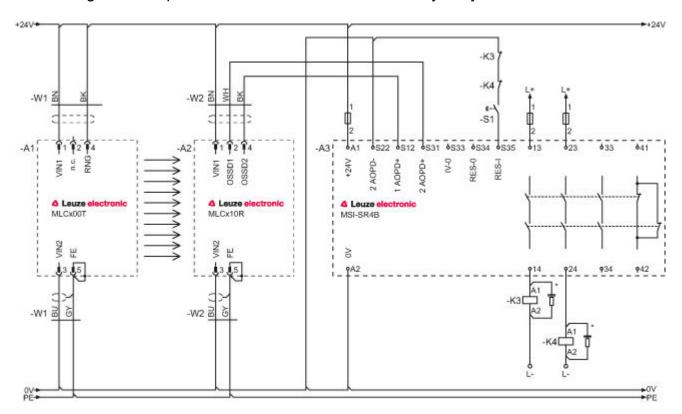
Circuit diagrams

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





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
е	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.	Designation	Article	Description
50132534	KD U-M12-5A- P1-100	Connection cable	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
· Marie	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
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.C.	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
	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

Leuze electronic GmbH + Co. KG, In der Braike 1, D-73277 Owen Phone: +49 7021 573-0, Fax +49 7021 573-199



	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
Wall and	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
Ti in	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
The state of the s	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

Alignment aids

	Part no.	Designation	Article	Description
	427300	AC-ALM	Alignment aid	Housing material: Plastic
1	520101	AC-ALM-M	Alignment aid	Housing material: Plastic
0	560020	LA-78U	Alignment aid	Light source: laser, Red Housing material: Metal
	520004	LA-78UDC	Alignment aid	Light source: laser, Red Housing material: Metal



Protective screens

Part no.	Designation	Article	Description
429038	MLC-2PSF	Mounting bracket set	Type of fastening: Clampable Mounting device material: Metal
347077	MLC-PS1050	Protective screen	Protective field height: 1,050 mm Material: PMMA, clear

Deflecting mirror

Part no.	Designation	Article	Description
529610	UM60-1050	Deflecting mirror	Dimensions: 25 mm x 1,120 mm x 68 mm Protected field height up to: 1,050 mm Mirror length: 1,110 mm

Device columns

	Part no.	Designation	Article	Description
2	549852	UDC-1300-S2	Device column	Dimensions: 160 mm x 1,360 mm x 149 mm Column height without foot: 1,300 mm Functions: Mounting and protection of light curtains and multiple light beam devices, Adjustable, 3 directions
200	549853	UDC-1600-S2	Device column	Dimensions: 160 mm x 1,660 mm x 149 mm Column height without foot: 1,600 mm Functions: Mounting and protection of light curtains and multiple light beam devices, Adjustable, 3 directions
	549854	UDC-1900-S2	Device column	Dimensions: 160 mm x 1,960 mm x 149 mm Column height without foot: 1,900 mm Functions: Mounting and protection of light curtains and multiple light beam devices, Adjustable, 3 directions
151	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



Part no.	Designation	Article	Description
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.