

# Leuze electronic

the sensor people





Part no.: 68001207 MLC510R20-750 Safety light curtain receiver















Figure can vary

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- 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	Hand protection
Functions	
	Basic
Function package	
Functions	Transmission channel changeover Automatic start/restart
Characteristic parameters	4 150/51 04400
Type	4, IEC/EN 61496
SIL	3, IEC 61508
SILCL	3, IEC/EN 62061
Performance Level (PL)	e, EN ISO 13849-1
PFH <sub>D</sub>	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	20 mm
Protective field height	750 mm
0.4.1.4.4.	
Optical data	Ontical between transmitter and receiver
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



Outputs				
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	14 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 Function	Connector			
umber of connections  Connection 1  Type of connection	Connector  Machine interface			
Connection 1 Type of connection Function Thread size	Connector  Machine interface  M12			
Connection 1 Type of connection Function Thread size Material No. of pins	Connector  Machine interface  M12  Metal			
Connection 1 Type of connection Function Thread size Material	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			
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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 816 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.	Connector  Machine interface  M12  Metal  5 -pin  0.25 mm²  100 m  200 Ω  29 mm x 816 mm x 35.4 mm  Metal, Aluminum  Plastic / PMMA			
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.  Pechanical data Imension (W x H x L) Dousing material Pens cover material	Connector  Machine interface  M12  Metal 5 -pin  0.25 mm² 100 m 200 Ω  29 mm x 816 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.  Permissible cable resistance to load, max.	Connector  Machine interface  M12  Metal  5 -pin  0.25 mm²  100 m  200 Ω  29 mm x 816 mm x 35.4 mm  Metal, Aluminum  Plastic / PMMA  Diecast zinc  900 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 816 mm x 35.4 mm  Metal, Aluminum  Plastic / PMMA  Diecast zinc 900 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.  Permissible cable resistance to load, max.	Connector  Machine interface  M12  Metal  5 -pin  0.25 mm²  100 m  200 Ω  29 mm x 816 mm x 35.4 mm  Metal, Aluminum  Plastic / PMMA  Diecast zinc  900 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		
Degree of protection	IP 65	
Protection class	III	
Certifications	TÜV Süd c CSA US S Mark c TÜV NRTL US	
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**

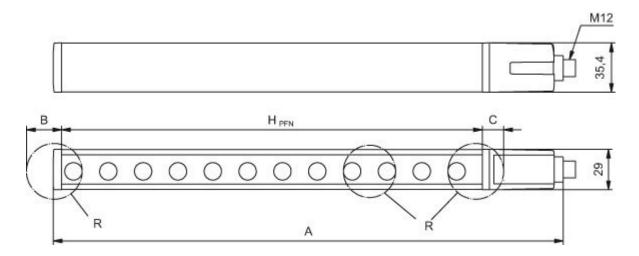
Part no.	Designation	Article	Description
68000207	MLC500T20-750	Safety light curtain transmitter	Resolution: 20 mm Protective field height: 750 mm Operating range: 0 15 m Connection: Connector, M12, Metal, 5 -pin
68008207	MLC502T20-750	Safety light curtain transmitter	Resolution: 20 mm Protective field height: 750 mm Operating range: 0 15 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 = 767 mm **HPFN** Nominal protective field height = 750 mm

Total height = 816 mm

A B C 7 mm 10 mm

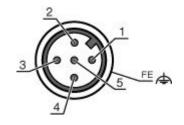
Effective protective field height HPFE goes beyond the dimensions of the optics area to the outer R

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

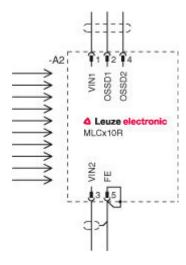


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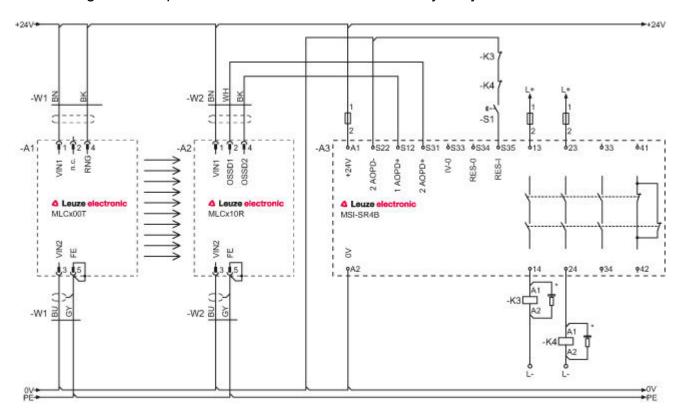
#### **Circuit diagrams**

#### 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





#### **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
Carlon Carlon	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. Co.	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

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	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
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

### Test rods

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

# 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
	560020	LA-78U	Alignment aid	Light source: laser, Red Housing material: Metal



Part no.	Designation	Article	Description
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
347075	MLC-PS750	Protective screen	Protective field height: 750 mm Material: PMMA, clear

# Deflecting mirror

Part no.	Designation	Article	Description
529607	UM60-750	Deflecting mirror	Dimensions: 25 mm x 820 mm x 68 mm Protected field height up to: 750 mm Mirror length: 810 mm

### Device columns

	Part no.	Designation	Article	Description
8	549856	UDC-1000-S2	Device column	Dimensions: 160 mm x 1,060 mm x 149 mm Column height without foot: 1,000 mm Functions: Mounting and protection of light curtains and multiple light beam devices, Adjustable, 3 directions
	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
	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



	Part no.	Designation	Article	Description
	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
1	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.