

# **Technical data sheet** Multiple light beam safety device receiver

Part no.: 66533100 MLD510-R2



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# **Technical data**

#### **Basic data**

Series	MLD 500	
Device type	Receiver	

#### **Functions**

Functions	Automatic restart
Reflective element for laser alignment aid	No
Integrated muting indicator	No
Integrated status indicator	No

#### **Characteristic parameters**

Туре	4, IEC/EN 61496
SIL	3, IEC 61508
SILCL	3, IEC/EN 62061
Performance Level (PL)	e, EN ISO 13849-1
MTTF <sub>d</sub>	204 years, EN ISO 13849-1
PFH <sub>D</sub>	6.6E-09 per hour
Mission time T <sub>M</sub>	20 years, EN ISO 13849-1
Category	4, EN ISO 13849

#### **Optical data**

Number of beams Beam spacing

#### **Electrical data**

Protective circuit

Overvoltage protection Short circuit protected

2 Piece(s)

500 mm

#### Performance data Supply voltage $\mathrm{U}_{\mathrm{B}}$ 24 V, DC, -20 ... 20 % Current consumption, max. 150 mA, Without external load Fuse External with max. 3 A

#### Outputs

Number of safety-related switching 2 Piece(s) outputs (OSSDs)

#### Safety-related switching outputs

Туре	Safety-related switching output OSSD
Switching voltage high, min.	18.2 V
Switching voltage low, max.	2.5 V
Switching voltage, type.	23 V
Voltage type	DC
Current load, max.	380 mA
Load inductivity	2,200,000 µH
Load capacity	0.3 µF
Residual current, max.	0.2 mA
Residual current, type.	0.002 mA
Voltage drop	1 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	

#### **Time behavior**

Dimension (W x H x L)       52 mm x 600 mm x 64.7 mm         Housing material       Metal         Metal housing       Aluminum         Lens cover material       Plastic / PMMA         Material of end caps       Diecast zinc         Net weight       1,400 g         Housing color       Yellow, RAL 1021         Type of fastening       Groove mounting Swivel mount         Operation and display       LED         Number of LEDs       1 Piece(s)         Environmental data       -30 55 °C         Ambient temperature, operation       -30 75 °C	Time benavior	
Connection       1 Piece(s)         Connection 1       Function         Function       Machine interface         Type of connection       Connector         Thread size       M12         Material       Metal         No. of pins       5 -pin         Cable properties       Permissible conductor cross section, type.         Length of connection cable, max.       100 m         Permissible cable resistance to load, max.       200 Ω         Nousing material       Metal         Metal fold caps       Dimension (W x H x L)         S2 mm x 600 mm x 64.7 mm       Metal         Metal fold caps       Diccast zinc         Naterial of end caps       Diccast zinc         Number of LEDs       1 Piece(s)         Envi	Response time	25 ms
Number of connections       1 Piece(s)         Connection 1       Function         Function       Machine interface         Type of connection       Connector         Thread size       M12         Material       Metal         No. of pins       5 -pin         Cable properties       0.25 mm²         Permissible conductor cross       0.25 mm²         section, type.       100 m         Length of connection cable, max.       100 m         Permissible conductor data       200 Ω         No. of pins       52 mm x 600 mm x 64.7 mm         Housing material       Metal         Metal housing       Aluminum         Lengt of end caps       Diecast zinc         No g       Pieck / PMMA         Material of end caps       Diecast zinc         Net weight       1,400 g         Housing color       Yellow, RAL 1021         Type of fastening       Groove mounting         Swivel mount       Swivel mount         Operation and display       LED         Number of LEDs       1 Piece(s)         Environmental data       -30 55 °C         Ambient temperature, operation       -30 75 °C	Restart delay time	100 ms
Connection 1       Machine interface         Function       Machine interface         Type of connection       Connector         Thread size       M12         Material       Metal         No. of pins       5 -pin         Cable properties       0.25 mm²         Permissible conductor cross       0.25 mm²         section, type.       100 m         Permissible cable resistance to       200 Ω         load, max.       200 Ω         Mechanical data       Metal         Dimension (W x H x L)       52 mm x 600 mm x 64.7 mm         Housing material       Metal         Metal housing       Aluminum         Lengt of end caps       Diecast zinc         Net weight       1,400 g         Housing color       Yellow, RAL 1021         Type of fastening       Groove mounting         Swivel mount       Swivel mount         Operation and display       LED         Number of LEDs       1 Piece(s)         Environmental data       -30 55 °C         Ambient temperature, operation       -30 75 °C	Connection	
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Swivel mount         Operation and display         Type of display       LED         Number of LEDs       1 Piece(s)         Environmental data         Ambient temperature, operation       -30 55 °C         Ambient temperature, storage       -40 75 °C		,
Operation and display         Type of display       LED         Number of LEDs       1 Piece(s)         Environmental data         Ambient temperature, operation       -30 55 °C         Ambient temperature, storage       -40 75 °C	Type of fastening	Groove mounting
Number of LEDs     1 Piece(s)       Environmental data     -30 55 °C       Ambient temperature, storage     -40 75 °C		Swivel mount
Number of LEDs     1 Piece(s)       Environmental data     -30 55 °C       Ambient temperature, storage     -40 75 °C	Operation and display	
Environmental data         Ambient temperature, operation       -30 55 °C         Ambient temperature, storage       -40 75 °C	Type of display	LED
Ambient temperature, operation       -30 55 °C         Ambient temperature, storage       -40 75 °C	Number of LEDs	1 Piece(s)
Ambient temperature, storage -40 75 °C	Environmental data	
	Ambient temperature, operation	-30 55 °C
Relative humidity (non-condensing) 0 95 %	Ambient temperature, storage	-40 75 °C
	Relative humidity (non-condensing)	0 95 %

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#### Certifications

Degree of protection	IP 67
Protection class	III
Approvals	c TÜV NRTL US
	c UL US
	TÜV Süd
US patents	US 6,418,546 B
	US 7,741,595 B

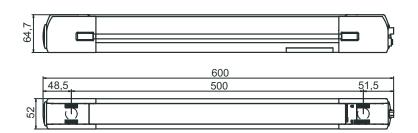
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# **Technical data**

Customs tariff number	85365019
ECLASS 5.1.4	27272703
ECLASS 8.0	27272703
ECLASS 9.0	27272703
ECLASS 10.0	27272703
ECLASS 12.0	27272703
ECLASS 13.0	27272703
ECLASS 14.0	27272703
ECLASS 15.0	27272703
ETIM 5.0	EC001832
ETIM 6.0	EC001832
ETIM 7.0	EC001832
ETIM 8.0	EC001832
ETIM 9.0	EC001832
ETIM 10.0	EC001832

# **Dimensioned drawings**

All dimensions in millimeters

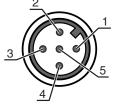


# **Electrical connection**

#### **Connection 1**

Function	Machine interface
Type of connection	Connector
Thread size	M12
Туре	Male
Material	Metal
No. of pins	5 -pin
Encoding	A-coded

Pin	Pin assignment	Conductor color
1	+24 V	Brown
2	OSSD1	White
3	0 V	Blue
4	OSSD2	Black
5	n.c.	Gray



## **Operation and display**

LED	Display	Meaning
1	Red, continuous light	OSSD off.

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# **Operation and display**

Display	Meaning
Green, continuous light	OSSD on
Red, flashing, 1 Hz	External error
Red, flashing, 10 Hz	Internal error
Green, flashing, 1 Hz	Weak signal, device not optimally aligned or soiled.
	Green, continuous light Red, flashing, 1 Hz Red, flashing, 10 Hz

### Suitable transmitters

 Part no.	Designation	Article	Description
66501100	MLD500-T2	Multiple light beam safety device transmitter	Operating range: 0.5 50 m Number of beams: 2 Piece(s) Beam spacing: 500 mm Connection: Connector, M12, Metal, 5 -pin

### Part number code

Part designation: MLDxyy-zab/t

MLD	Multiple light beam safety device
x	Series 3: MLD 300 5: MLD 500
уу	Function classes 00: transmitter 10: automatic restart 12: external testing 20: EDM/RES 30: muting 35: timing controlled 4-sensor muting
z	Device type T: transmitter R: receiver RT: transceiver xT: transmitter with high range xR: receiver for high range
а	Number of beams
b	Option L: integrated laser alignment aid (for transmitter/receiver) M: integrated status indicator (MLD 320, MLD 520) or integrated status and muting indicator (MLD 330, MLD 335, MLD 510/A, MLD 530, MLD 535) E: Connection socket for external muting indicator (AS-i models only)
/t	Safety-related switching outputs (OSSDs), connection technology -: transistor output, M12 plug A: Integrated AS-i interface, M12 plug, (safety bus system)
Ν	Note
	♦ A list with all available device types can be found on the Leuze website at www.leuze.com.

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### Accessories

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# Connection technology - Connection cables

	Part no.	Designation	Article	Description
	50133859	KD S-M12-5A-P1-020	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 2.000 mm Sheathing material: PUR
	50133860	KD S-M12-5A-P1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 5.000 mm Sheathing material: PUR
	50136146	KD S-M12-5A-P1-250	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 25.000 mm Sheathing material: PUR

# Mounting technology - Swivel mounts

 Part no.	Designation	Article	Description
560340	BT-SET-240BC	Mounting bracket set	Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 240° Material: Metal Shock absorber: No
540350	BT-SET-240BC-E	Mounting bracket set	Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 240° Material: Metal, Plastic Shock absorber: No

# Services

	Part no.	Designation	Article	Description
$\bigcirc$	S981050	CS40-I-140	Safety inspection	Details: Checking of a safety light barrier application in accordance with current standards and guidelines. Inclusion of the device and machine data in a database, production of a test log per application. Conditions: It must be possible to stop the machine, support provided by customer's employees and access to the machine for Leuze employees must be ensured.
	S981046	CS40-S-140	Start-up support	Details: For safety devices including stopping time measurement and initial inspection. Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses.

## Accessories





♦ A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.