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**Part no.: 66576100**

**MLD535-R2L**

**Multiple light beam safety device receiver**



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## Technical data

<b>Basic data</b>	
Series	MLD 500
Device type	Receiver
<b>Special design</b>	
Special design	Reflective element for laser alignment aid
<b>Functions</b>	
Functions	Alternative connection for second muting signal Contactor monitoring (EDM), selectable Muting enable function Muting-timeout extension Partial muting Sequence controlled 2-sensor muting Start/restart interlock (RES) Timing controlled 4-sensor muting
<b>Characteristic parameters</b>	
Type	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
<b>Optical data</b>	
Number of beams	2 Piece(s)
Beam spacing	500 mm
<b>Electrical data</b>	
Selection of operating mode	Connection 1, pin 2: +24 V for operating mode 1, 2, 4 Connection 1, pin 2: 0 V for operating mode 3, 5, 6 Connection 1, pin 7: +24 V for operating mode 3, 5, 6 Connection 1, pin 7: 0 V for operating mode 1, 2, 4
Protective circuit	Overvoltage protection Short circuit protected
<b>Performance data</b>	
Supply voltage U <sub>B</sub>	24 V , DC , -20 ... 20 %
Current consumption, max.	150 mA , Without external load
Fuse	External with max. 3 A

<b>Inputs</b>	
Number of digital switching inputs	4 Piece(s)
<b>Switching inputs</b>	
Type	Digital switching input
Switching voltage high, min.	18.2 V
Switching voltage low, max.	2.5 V
Switching voltage, typ.	23 V
Voltage type	DC
Switching current, max.	5 mA
<b>Digital switching input 1</b>	
Assignment	Connection 1, pin 1
Function	Control input for start/restart interlock (RES)
<b>Digital switching input 2</b>	
Assignment	Connection 1, pin 3
Function	Control input for contactor monitoring (EDM)
<b>Digital switching input 3</b>	
Assignment	Connection 1, pin 4
Function	Control input, second muting signal
<b>Digital switching input 4</b>	
Assignment	Connection 1, pin 8
Function	Control input, muting enable/ timeout

<b>Outputs</b>	
Number of safety-related switching outputs (OSSDs)	2 Piece(s)
Number of digital switching outputs	1 Piece(s)
<b>Safety-related switching outputs</b>	
Type	Safety-related switching output OSSD
Switching voltage high, min.	18.2 V
Switching voltage low, max.	2.5 V
Switching voltage, typ.	23 V
Voltage type	DC
Current load, max.	380 mA
Load inductivity	2,200,000 $\mu$ H
Load capacity	0.3 $\mu$ F
Residual current, max.	0.2 mA
Residual current, typ.	0.002 mA
Voltage drop	1 V
<b>Safety-related switching output 1</b>	
Assignment	Connection 1, pin 6
Switching element	Transistor , PNP
<b>Safety-related switching output 2</b>	
Assignment	Connection 1, pin 5
Switching element	Transistor , PNP
<b>Switching outputs</b>	
Type	Digital switching output
Switching voltage high, min.	18.2 V
Switching voltage low, max.	2.5 V
Switching voltage, typ.	23 V
Voltage type	DC
<b>Switching output 1</b>	
Assignment	Connection 1, pin 1
Switching element	Transistor , PNP
Function	"State of OSSDs" signal output

<b>Timing</b>	
Response time	50 ms
Restart delay time	100 ms

<b>Connection</b>	
Number of connections	2 Piece(s)
<b>Cable properties</b>	
Permissible conductor cross section, typ.	0.25 mm <sup>2</sup>
Length of connection cable, max.	100 m
<b>Connection 1</b>	
Function	Machine interface
Type of connection	Connector
Thread size	M12
Material	Metal
No. of pins	8 -pin

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**Connection 2**

Function	Local interface
Type of connection	Connector
Thread size	M12
Material	Metal
No. of pins	8 -pin

**Cable properties**

Permissible cable resistance to load, max.	200 Ω
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**Mechanical data**

Dimension (W x H x L)	52 mm x 600 mm x 64.7 mm
Housing material	Metal , 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**

Type of display	LED
Number of LEDs	2 Piece(s)

**Environmental data**

Ambient temperature, operation	-30 ... 55 °C
Ambient temperature, storage	-40 ... 75 °C
Relative humidity (non-condensing)	0 ... 95 %

**Certifications**

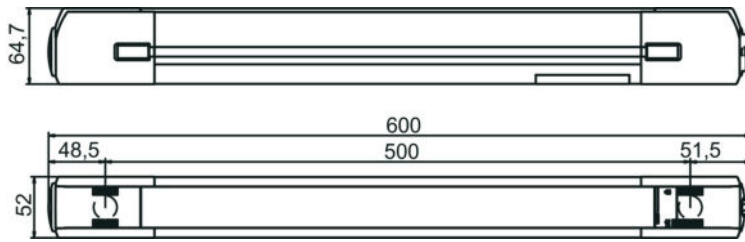
Degree of protection	IP 67
Protection class	III
Certifications	c CSA US c TÜV NRTL US TÜV Süd
US patents	US 6,418,546 B US 7,741,595 B

**Classification**

Customs tariff number	85365019
eCl@ss 8.0	27272703
eCl@ss 9.0	27272703
ETIM 5.0	EC001832
ETIM 6.0	EC001832

## Dimensioned drawings

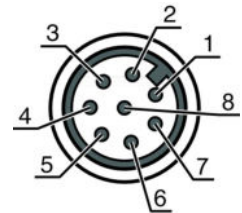
All dimensions in millimeters



## Electrical connection

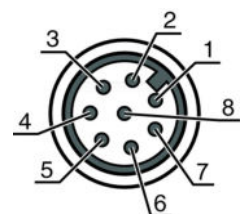
Connection 1	
Function	Machine interface
Type of connection	Connector
Thread size	M12
Type	Male
Material	Metal
No. of pins	8 -pin
Encoding	A-coded

Pin	Pin assignment	Conductor color
1	RES/OSSD status signal	White
2	VIN	Brown
3	EDM	Green
4	MS2	Yellow
5	OSSD2	Gray
6	OSSD1	Pink
7	VIN	Blue
8	M-EN/TO	Red



Connection 2	
Function	Local interface
Type of connection	Connector
Thread size	M12
Type	Female
Material	Metal
No. of pins	8 -pin
Encoding	A-coded

Pin	Pin assignment	Conductor color
1	MS4	White
2	+24V	Brown
3	MS2	Green
4	MS1	Yellow
5	RES/LMP	Gray
6	MS3	Pink
7	0 V	Blue
8	n.c.	Red




## Operation and display

### LEDs

LED	Display	Meaning
1	Red, continuous light	OSSD off.
	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.
2	Yellow, continuous light	Start/restart interlock locked.

### Suitable transmitters

	Part no.	Designation	Article	Description
	66502100	MLD500-T2L	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 Special design: Integrated laser alignment aid

### Part number code

Part designation: **MLDxyy-zab/t**

MLD	Multiple light beam safety device
x	<b>Series:</b> 3: MLD 300 5: MLD 500
yy	<b>Function classes:</b> 00: transmitter 10: automatic restart 12: external testing 20: EDM/RES 30: muting 35: timing controlled 4-sensor muting
z	<b>Device type:</b> T: transmitter R: receiver RT: transceiver xT: transmitter with high range xR: receiver for high range
a	Number of beams
b	<b>Option:</b> 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	<b>Safety-related switching outputs (OSSDs), connection technology:</b> -: transistor output, M12 plug A: integrated AS-i interface, M12 plug, (safety bus system)

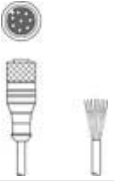
#### Note

A list with all available device types can be found on the Leuze website at [www.leuze.com](http://www.leuze.com).



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## Accessories



### Connection technology - Connection cables

	Part no.	Designation	Article	Description
	50135128	KD S-M12-8A-P1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: Yes Cable length: 5,000 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
	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

## Services

	Part no.	Designation	Article	Description
	S981050	CS40-I-140	Safety inspection "Safety light barriers"	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. Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure.
	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. Restrictions: Max. 2 h., no mechanical (mounting) and electrical (wiring) work performed, no changes (attachments, wiring, programming) to third-party components in the nearby environment.

### Note

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