

## Technical data sheet

### Multiple light beam safety device receiver

Part no.: 66574100

MLD535-R2M



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## Technical data

### Basic data

Series	MLD 500
Device type	Receiver

### Special version

Special version	Integrated muting indicator
	Integrated status indicator

### Functions

Functions	Alternative connection for second muting signal
	Configuration by means of wiring
	Contacting 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
Reflective element for laser alignment aid	No
Integrated muting indicator	Yes
Integrated status indicator	Yes

### Characteristic parameters

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

### Optical data

Number of beams	2 Piece(s)
Beam spacing	500 mm

### Electrical data

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

### Performance data

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

### Inputs

Number of digital switching inputs	4 Piece(s)
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### Switching inputs

Type	Digital switching input
Switching voltage high, min.	18.2 V
Switching voltage low, max.	2.5 V
Switching voltage, type.	23 V
Voltage type	DC
Switching current, max.	5 mA

#### Digital switching input 1

Assignment	Connection 1, pin 1
Function	Control input for start/restart interlock (RES)

#### Digital switching input 2

Assignment	Connection 1, pin 3
Function	Control input for contactor monitoring (EDM)

#### Digital switching input 3

Assignment	Connection 1, pin 4
Function	Control input, second muting signal

#### Digital switching input 4

Assignment	Connection 1, pin 8
Function	Control input, muting enable/ timeout

### Outputs

Number of safety-related switching outputs (OSSDs)	2 Piece(s)
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Number of digital switching outputs	1 Piece(s)
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#### Safety-related switching outputs

Type	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 6
Switching element	Transistor, PNP

#### Safety-related switching output 2

Assignment	Connection 1, pin 5
Switching element	Transistor, PNP

### Switching outputs

Type	Digital switching output
Switching voltage high, min.	18.2 V
Switching voltage low, max.	2.5 V
Switching voltage, type.	23 V
Voltage type	DC

#### Switching output 1

Assignment	Connection 1, pin 1
Switching element	Transistor, PNP
Function	"State of OSSDs" signal output

## Technical data

### Time behavior

Response time	50 ms
Restart delay time	100 ms

### Connection

Number of connections	2 Piece(s)
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#### Connection 1

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

#### Connection 2

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

#### Cable properties

Permissible conductor cross section, type.	0.25 mm <sup>2</sup>
Length of connection cable, max.	100 m
Permissible cable resistance to load, max.	200 Ω

### Mechanical data

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

Type of display	7-segment 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

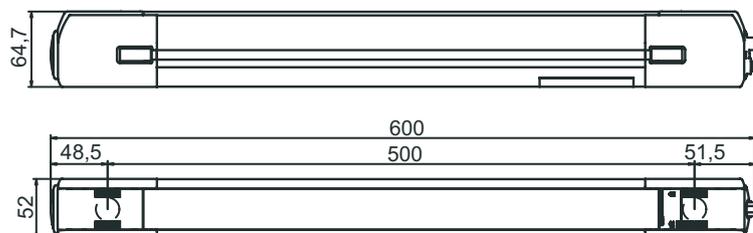
Degree of protection	IP 67
Protection class	III
Approvals	c TÜV NRTL US c UL US TÜV Süd
US patents	US 6,418,546 B US 7,741,595 B

### Classification

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
ECLASS 16.0	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

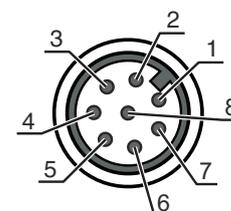


## Electrical connection

### Connection 1

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

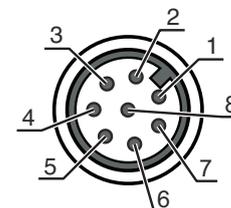
Pin	Pin assignment	Conductor color
1	RES/OSSD status signal	White
2	VIN	Brown
3	EDM	Green
4	MS2	Yellow
5	OSSD2	Gray
6	OSSD1	Pink
7	VIN	Blue
8	M-EN/TO	Red



### 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	+24 V	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

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
	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

<b>MLD</b>	<b>Multiple light beam safety device</b>
<b>x</b>	<b>Series</b> 3: MLD 300 5: MLD 500
<b>yy</b>	<b>Function classes</b> 00: transmitter 10: automatic restart 12: external testing 20: EDM/RES 30: muting 35: timing controlled 4-sensor muting
<b>z</b>	<b>Device type</b> T: transmitter R: receiver RT: transceiver xT: transmitter with high range xR: receiver for high range
<b>a</b>	Number of beams
<b>b</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)
<b>/t</b>	<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).

## Accessories

### Connection technology - Connection cables

	Part no.	Designation	Article	Description
	50135128	KD S-M12-8A-P1-050	Connection cable	Application: Oil and lubricant resistant Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR

## Accessories

### 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
	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.

#### Note



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