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Part no.: 66577200
MLD535-RT3
Multiple light beam safety device
transceiver



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Technical data

Basic data	
Series	MLD 500
Device type	Transceiver
Functions	
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 2-sensor muting Timing controlled 4-sensor muting
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 _d	204 years , EN ISO 13849-1
PFH _D	6.6E-09 per hour
Mission time T _M	20 years , EN ISO 13849-1
Category	4 , EN ISO 13849
Protective field data	
Operating range	0.5 ... 6 m
Operating range in connection with MLD-XM03	0.5 ... 8 m
Optical data	
Number of beams	3 Piece(s)
Beam spacing	400 mm
Light source	LED , Infrared
LED light wavelength	850 nm
Mean power of transmitter diode	1.369 µW
Transmitted-signal shape	Pulsed
LED group	Exempt group in acc. with EN 62471:2008
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 _B	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)
Switching inputs	
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
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)
Number of digital switching outputs	1 Piece(s)

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, typ.	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, typ.	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, typ.	23 V
Voltage type	DC

Switching output 1

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

Timing

Response time	50 ms
Restart delay time	100 ms

Connection

Number of connections	2 Piece(s)
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Connection 1

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

Connection 2

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

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Cable properties

Permissible conductor cross section, typ.	0.25 mm ²
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 900 mm x 64.7 mm
Housing material	Metal , Aluminum
Lens cover material	Plastic / PMMA
Material of end caps	Diecast zinc
Net weight	2,000 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

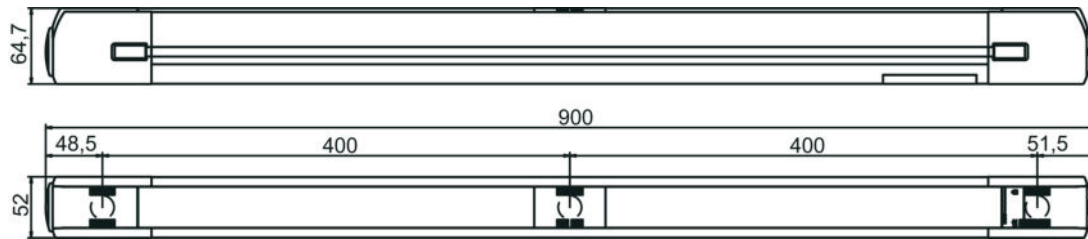
Degree of protection	IP 67
Protection class	III
Certifications	c CSA US c TÜV NRTL US TÜV Süd
US patents	US 6,418,546 B US 7,741,595 B

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

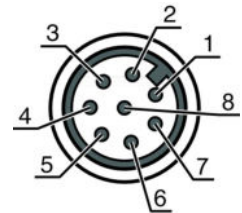
All dimensions in millimeters



Electrical connection

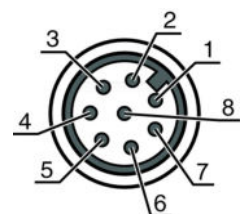
Connection 1	
Type of connection	Connector
Function	Machine interface
Thread size	M12
Type	Male
Material	Metal
No. of pins	8 -pin
Encoding	A-coded

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	
Type of connection	Connector
Function	Local interface
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 deflecting mirrors

	Part no.	Designation	Article	Description
	66500200	MLD-M003	Deflecting mirror	Number of beams: 3 Piece(s) Beam spacing: 400 mm Type of fastening: Groove mounting, Swivel mount, Mounting on Device Column
	66500201	MLD-XM03	Deflecting mirror	Number of beams: 3 Piece(s) Beam spacing: 400 mm Type of fastening: Groove mounting, Swivel mount, Mounting on Device Column

Part number code

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

MLD	Multiple light beam safety device
x	Series: 3: MLD 300 5: MLD 500
yy	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
a	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)




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Note



A list with all available device types can be found on the Leuze electronic website at www.leuze.com.

Accessories

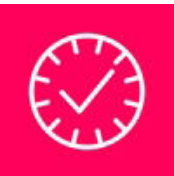
Connection technology - Connection cables

	Part no.	Designation	Article	Description
	50133859	KD S-M12-5A-P1-020	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 2,000 mm Sheathing material: PUR
	50136146	KD S-M12-5A-P1-250	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
	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.

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	Part no.	Designation	Article	Description
	S981046	CS40-S-140	Start-up support	<p>Details: For safety devices including stopping time measurement and initial inspection.</p> <p>Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses.</p> <p>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.</p>

Note

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