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Part no.: 66568200
MLD530-RT3M
Multiple light beam safety device
transmitter/receiver



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- Dimensioned drawings
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Part no.: 66568200 – MLD530-RT3M – Multiple light beam safety device

Technical data

Basic data		
Series	MLD 500	
Device type	Transceiver	
Special design		
Special design	Integrated status indicator Integrated muting indicator	
Functions		
Functions	Muting enable function Timing controlled 2-sensor muting Contactor monitoring (EDM), selectable Partial muting Alternative connection for second muting signal Sequence controlled 2-sensor muting Muting-timeout extension Start/restart interlock (RES)	
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 7: 0 V for operating mode 1, 2, 4 Connection 1, pin 2: +24 V for operating mode 1, 2, 4 Connection 1, pin 2: 0 V for operating mode 3, 5, 6	
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)
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Switching inputs

Type	Digital switching input
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Switching voltage high, min.	18.2 V
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Switching voltage low, max.	2.5 V
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Switching voltage, typ.	23 V
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Voltage type	DC
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Switching current, max.	5 mA
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Digital switching input 1

Assignment	Connection 1, pin 1
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Function	Control input for start/restart interlock (RES)
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Digital switching input 2

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

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

Assignment	Connection 1, pin 8
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Function	Control input, muting enable/ timeout
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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	5 -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	Swivel mount Groove mounting

Operation and display

Type of display	Integrated muting indicator 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	TÜV Süd c CSA US c TÜV NRTL US
US patents	US 6,418,546 B US 7,741,595 B

Classification

eCl@ss 8.0	27272703
eCl@ss 9.0	27272703
ETIM 5.0	EC001832

Suitable deflecting mirrors

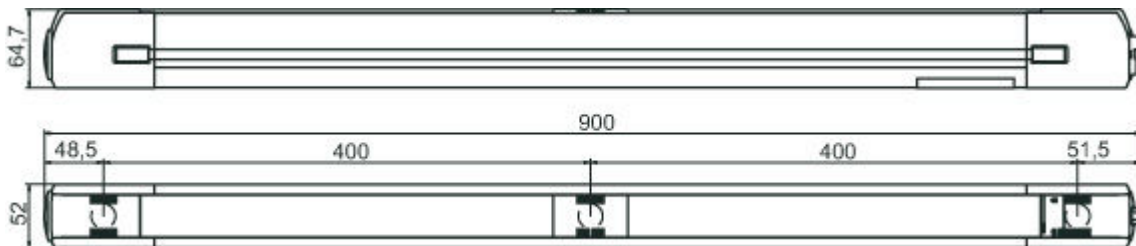
	Part no.	Designation	Article	Description
	66500200	MLD-M003	Deflecting mirror	Number of beams: 3 Piece(s) Beam spacing: 400 mm Type of fastening: Groove mounting, Swivel mount, Mounting on Device Column

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	Part no.	Designation	Article	Description
	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

Dimensioned drawings

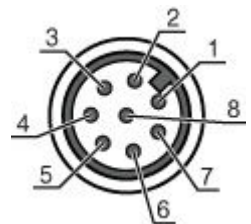
All dimensions in millimeters



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

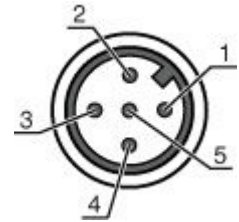


Connection 2	
Type of connection	Connector
Function	Local interface
Thread size	M12
Type	Female
Material	Metal

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Connection 2	
No. of pins	5 -pin
Encoding	A-coded

Pin	Pin assignment	Conductor color
1	+24V	Brown
2	MS2	White
3	0 V	Blue
4	MS1	Black
5	RES/LMP	Gray



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.

Part number code

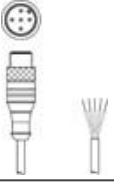
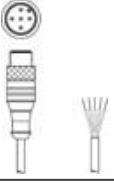
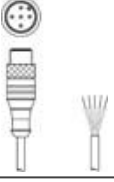
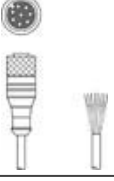
Part designation: **MLDxyy-zab/t**

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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Accessories

Connection technology - Connection cables

	Part no.	Designation	Article	Description
	678051	CB-M12-10000E-5GM	Connection cable	Connection 1: Connector, M12, Axial, Male, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 10,000 mm Sheathing material: PUR
	678052	CB-M12-15000E-5GM	Connection cable	Connection 1: Connector, M12, Axial, Male, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 15,000 mm Sheathing material: PUR
	678053	CB-M12-25000E-5GM	Connection cable	Connection 1: Connector, M12, Axial, Male, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 25,000 mm Sheathing material: PUR
	678050	CB-M12-5000E-5GM	Connection cable	Connection 1: Connector, M12, Axial, Male, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR
	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
	50135129	KD S-M12-8A-P1-100	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: Yes Cable length: 10,000 mm Sheathing material: PUR
	50135130	KD S-M12-8A-P1-150	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: Yes Cable length: 15,000 mm Sheathing material: PUR
	50135131	KD S-M12-8A-P1-250	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: Yes Cable length: 25,000 mm Sheathing material: PUR
	50135132	KD S-M12-8A-P1-500	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: Yes Cable length: 50,000 mm Sheathing material: PUR

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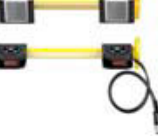
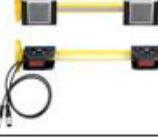
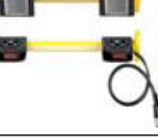
Mounting technology - Swivel mounts

	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
	560342	BT-SET-240BCS	Mounting bracket set	Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 240°, Shock absorber Material: Metal Shock absorber: Yes
	540352	BT-SET-240BCS-E	Mounting bracket set	Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Shock absorber, Turning, 240° Material: Metal, Plastic Shock absorber: Yes

Mounting technology - Other

	Part no.	Designation	Article	Description
	424417	BT-2P40	Mounting bracket set	Contains: 2x BT-P40 clamp bracket Design of mounting device: Mounting clamp Fastening, at system: Groove mounting Mounting bracket, at device: Groove mounting Type of mounting device: Clampable Material: Metal

Muting - Mounting systems

	Part no.	Designation	Article	Description
	426490	Set-AC-ML-2SA	Muting sensor set	Operating range: 0 ... 4 m Cable length of muting sensors: 300 mm Type of muting sensors: Retro-reflective photoelectric sensors PRK 3B Number of muting sensors: 2 Piece(s) Number of reflectors: 2 Piece(s)
	426491	Set-AC-ML-2SB	Muting sensor set	Operating range: 0 ... 4 m Cable length of muting sensors: 300 mm Type of muting sensors: Retro-reflective photoelectric sensors PRK 3B Number of muting sensors: 2 Piece(s) Number of reflectors: 2 Piece(s)
	426520	Set-AC-MLX-2SA	Muting sensor set	Operating range: 0 ... 8 m Cable length of muting sensors: 700 mm Type of muting sensors: PRK 25B retro-reflective photoelectric sensors Number of muting sensors: 2 Piece(s) Number of reflectors: 2 Piece(s)
	426521	Set-AC-MLX-2SB	Muting sensor set	Operating range: 0 ... 8 m Cable length of muting sensors: 700 mm Type of muting sensors: PRK 25B retro-reflective photoelectric sensors Number of muting sensors: 2 Piece(s) Number of reflectors: 2 Piece(s)

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	Part no.	Designation	Article	Description
	426526	Set-AC-MLX.2-2SA	Muting sensor set	Operating range: 0 ... 8 m Cable length of muting sensors: 2,000 mm Type of muting sensors: PRK 25B retro-reflective photoelectric sensors Number of muting sensors: 2 Piece(s) Number of reflectors: 2 Piece(s)
	426527	Set-AC-MLX.2-2SB	Muting sensor set	Operating range: 0 ... 8 m Cable length of muting sensors: 2,000 mm Type of muting sensors: PRK 25B retro-reflective photoelectric sensors Number of muting sensors: 2 Piece(s) Number of reflectors: 2 Piece(s)
	426494	Set-AC-MT-2S	Muting sensor set	Operating range: 0 ... 4 m Cable length of muting sensors: 300 mm Type of muting sensors: Retro-reflective photoelectric sensors PRK 3B Number of muting sensors: 2 Piece(s) Number of reflectors: 2 Piece(s)
	426524	Set-AC-MTX-2S	Muting sensor set	Operating range: 0 ... 8 m Cable length of muting sensors: 300 mm Type of muting sensors: PRK 25B retro-reflective photoelectric sensors Number of muting sensors: 2 Piece(s) Number of reflectors: 2 Piece(s)
	426529	Set-AC-MTX.2-2S	Muting sensor set	Operating range: 0 ... 8 m Cable length of muting sensors: 2,000 mm Type of muting sensors: PRK 25B retro-reflective photoelectric sensors Number of muting sensors: 2 Piece(s) Number of reflectors: 2 Piece(s)

Muting - Connection technology

	Part no.	Designation	Article	Description
	520150	AC-SCM5U	Sensor connection module	Suitable for: MLD 330, MLD 530 multiple light beam safety devices Supply voltage: 24 V, DC, -20 ... 20 % Number of connections: 5 Piece(s) Connection: Cable with connector, M12, 500 mm Type of fastening: Through-hole mounting
	520151	AC-SCM5U-BT	Sensor connection module	Suitable for: MLD 330, MLD 530 multiple light beam safety devices Supply voltage: 24 V, DC, -20 ... 20 % Number of connections: 5 Piece(s) Connection: Cable with connector, M12, 500 mm Type of fastening: Mounting plate, Groove mounting
	520152	AC-SCM5U-BT-L	Sensor connection module	Suitable for: MLD 330, MLD 530 multiple light beam safety devices Supply voltage: 24 V, DC, -20 ... 20 % Number of connections: 5 Piece(s) Connection: Cable with connector, M12, 500 mm Type of fastening: Mounting plate with L-angle, Groove mounting

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Display/operating elements

	Part no.	Designation	Article	Description
	426296	AC-ABF70	Acknowledgment unit	Switching current via button: 1 ... 1,000 mA Housing material: Glass fiber reinforced (PPS), self-extinguishing Clamping plate material: Stainless steel Degree of protection: IP 67, IP 69K Functions: Reset of the start/restart interlock, Overriding with AOPDs with muting function, Illuminated reset buttons Reset buttons: Yes LED indicators: Yes

Alignment aids

	Part no.	Designation	Article	Description
	520023	LA-78M	Alignment aid	Light source: laser, Red Housing material: Metal
	520024	LA-78M-UDC	Alignment aid	Light source: laser, Red Housing material: Metal

Device columns

	Part no.	Designation	Article	Description
	549879	UDC-1140-S2	Device column	Dimensions: 160 mm x 1,200 mm x 149 mm Column height without foot: 1,140 mm Functions: Adjustable, 3 directions, Mounting and protection of light curtains and multiple light beam devices
	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
	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

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	Part no.	Designation	Article	Description
	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