Technical data sheet
Multiple light beam safety device transceiver
Part no.: 66588100
MLD531-RT2M



For Illustration purposes only

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Technical data

Basic data

Series	MLD 500
Device type	Transceiver

Special version

Special version	Integrated muting indicator
	Integrated status indicator

Functions

Functions	Alternative connection for second muting signal
	Configuration by means of wiring
	Contactor monitoring (EDM), selectable
	Sequence controlled 2-sensor muting
	Shortened muting timeout (10 sec)
	Start/restart interlock (RES)
	Timing controlled 2-sensor muting
Integrated 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
$MTTF_d$	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 ... 8 m

Optical data

Number of beams	2 Piece(s)
Beam spacing	500 mm
Light source	LED, Infrared
Wavelength	850 nm
Mean power of transmitter diode	1.369 µW
Transmitted-signal shape	Pulsed
LED risk 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
	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	3 Piece(s)

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

Outputs

Number of safety-related switching outputs (OSSDs)	2 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, 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

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

Time behavior

Response time	50 ms
Restart delay time	100 ms

Technical data

Connection

Number of connections	2 Piece(s)

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	5 -pin

Cable properties

Permissible conductor cross section, type.	0.25 mm²
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	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

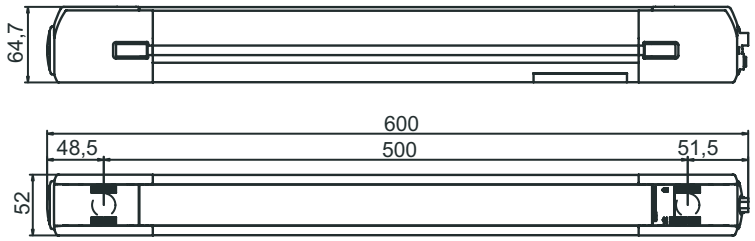
Degree of protection	IP 67
Protection class	III
Approvals	c UL US
	TÜV Süd
US patents	US 6,418,546 B
	US 7,741,595 B

Classification

Customs tariff number	85365019
ECLASS 5.1.4	27272703
ECLASS 8.0	27272703
ECLASS 9.0	27272703
ECLASS 10.0	27272703
ECLASS 11.0	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
UNSPSC 26.08	32151804

Dimensioned drawings

All dimensions in millimeters

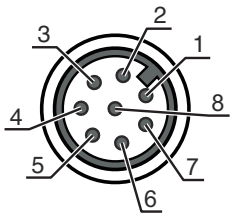


Electrical connection

Connection 1

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

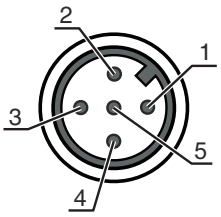
Pin	Pin assignment	Conductor color
1	RES/OSSD status signal	White
2	VIN	Brown
3	EDM	Green
4	MS2	Yellow
5	OSSD2	Gray
6	OSSD1	Pink
7	VIN	Blue
8	MODE	Red



Connection 2

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

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



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 deflecting mirrors

	Part no.	Designation	Article	Description
	66500100	MLD-M002	Deflecting mirror	Number of beams: 2 Piece(s) Beam spacing: 500 mm Type of fastening: Groove mounting, Mounting on Device Column, Swivel mount

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: 2-sensor muting 31: 2-sensor muting, shortened timeout 35: 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)

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

Accessories

Connection technology - Connection cables

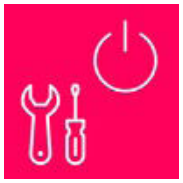
	Part no.	Designation	Article	Description
	50135128	KD S-M12-8A-P1-050	Connection cable	Application: Oil and lubricant resistant Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR

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.