

Technical data sheet Multiple light beam safety device receiver

Part no.: 66535301 MLD510-R4LM/A



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We reserve the right to make technical changes

Technical data

Leuze

Basic data

Series	MLD 500
Device type	Receiver
Special version	

Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid

Functions

Special version

Functions	Automatic restart
Reflective element for laser alignment aid	Yes
Integrated muting indicator	No
Integrated status indicator	Yes

Characteristic parameters

Туре	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

Optical data

Number of beams	4 Piece(s)
Beam spacing	300 mm

Electrical data

Performance data Supply voltage U_B 26.5 ... 31.6 V Current consumption from AS-i 140 mA circuit

Time behavior

Response time	30 ms
Restart delay time	100 ms

Interface

Ţ	уре	AS-Interface Safety at Work
	AS-i	
	Function	Process
	AS-i profile	S-7.B.1
	Slave address	131 programmable, default=0
	Cycle time acc. to AS-i specifica- tions	Max. 5 ms ms

Connection

Number of connections

1 Piece(s)

| FunctionMachine interfaceType of connectionConnectorThread sizeM12MaterialMetalNo. of pins52 mm x 1,000 mm x 64.7 mmHousing materialMetalMetal housingAluminumLens cover materialPlastic / PMMAMaterial of end capsDiceast zincNet weight2,200 gHousing colorYellow, RAL 1021Type of fasteningGroove mountingSwivel mountSwivel mountOperation and displayLEDNumber of LEDs2 Piece(s)Environmental data 55 °CAmbient temperature, operation-30 55 °CAmbient temperature, operation0 95 %CertificationsUIPore of protectionIP 67Protection classIIIApprovalsCTÜV NRTL US
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Tread sizeM12MaterialMetalNo. of pins5 -pinMechanical dataDimension (W x H x L)52 mm x 1,000 mm x 64.7 mmHousing materialMetalMaterial of end capsDiecast zincNet weight2,200 gHousing colorYellow, RAL 1021Type of fasteningGroove mounting Swivel mountOperation and displayLEDNumber of LEDs2 Piece(s)Environmental data-30 55 °CAmbient temperature, operation-30 55 °CAmbient temperature, operation-30 55 °CAmbient temperature, storage40 75 °CRelative humidity (non-condensing)0 95 %CertificationsIIIMapprovalsCIU NNTL US c UL US TÜV SüdType of statiff number85365019Elessification27272703Classification27272703Class 51.427272703EleLASS 51.927272703EleLASS 51.027272703EleLASS 51

 | | Machine interface
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| Material
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 | Type of connection | Connector
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 | Thread size | M12
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| Mechanical data Dimension (W x H x L) 52 mm x 1,000 mm x 64.7 mm Housing material Metal Metal housing Aluminum Lens cover material Plastic / PMMA Material of end caps Diecast zinc Net weight 2,200 g Housing color Yellow, RAL 1021 Type of fastening Groove mounting
Swivel mount Operation and display LED Number of LEDs 2 Piece(s) Environmental data -30 55 °C Ambient temperature, operation -30 55 °C Ambient temperature, operation 0 95 % Certifications UI Degree of protection IP 67 Protection class III Approvals c TÜV NRTL US c UL US tU US t UV Süd US 6,418,546 B US 7,741,595 B US 6,218,546 B CLASS 5.1.4 27272703 ECLASS 5.1.4 27272703 ECLASS 1.0 27272703 ECLASS 1.0 27272703 ECLASS 1.0 27272703 ECLASS 1.0 27272703 </th <th>Material</th> <th>Metal</th>

 | Material | Metal
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 | No. of pins | 5 -pin
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| Housing materialMetalMetal housingAluminumLens cover materialPlastic / PMMAMaterial of end capsDiecast zincNet weight2,200 gHousing colorYellow, RAL 1021Type of fasteningGroove mounting
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 | Mechanical data |
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| Metal housingAluminumLens cover materialPlastic / PMMAMaterial of end capsDiecast zincNet weight2,200 gHousing colorYellow, RAL 1021Type of fasteningGroove mountingSwivel mountOperation and displayLEDNumber of LEDs2 Piece(s)Environmental data-30 55 °CAmbient temperature, operation-30 55 °CRelative humidity (non-condensing)0 95 %CertificationsIIIApprovalsC1ÜV NRTL US
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 | Dimension (W x H x L) | 52 mm x 1,000 mm x 64.7 mm
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| Lens cover materialPlastic / PMMAMaterial of end capsDiecast zincNet weight2,200 gHousing colorYellow, RAL 1021Type of fasteningGroove mounting
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 | Housing material |
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| Material of end capsDiscust zincNet weight2,200 gHousing colorYellow, RAL 1021Type of fasteningGroove mounting
Swivel mountOperation and displayLEDType of displayLEDNumber of LEDs2 Piece(s)Environmental data-30 55 °CAmbient temperature, operation-30 55 °CAmbient temperature, storage-40 75 °CRelative humidity (non-condensing)0 95 %CertificationsIIIApprovalsCU US
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Swivel mountOperation and displayLEDType of displayLEDNumber of LEDs2 Piece(s)Environmental data</th><th>Material of end caps</th><th>Diecast zinc</th></tr> <tr><th>Type of fasteningGroove mounting
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Ambient temperature, storage
Relative humidity (non-condensing)-30 55 °CAmbient temperature, storage
Relative humidity (non-condensing)-40 75 °CRelative humidity (non-condensing)0 95 %CertificationsIP 67Protection classIIIApprovalsc TÜV NRTL US
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| Net weight2,200 gHousing colorYellow, RAL 1021Type of fasteningGroove mounting
Swivel mountOperation and displayLEDType of displayLEDNumber of LEDs2 Piece(s)Environmental data-30 55 °CAmbient temperature, operation-30 55 °CRelative humidity (non-condensing)0 95 %CertificationsIIIPorection classIIIApprovalsC TÜV NRTL US
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 | Lens cover material | Plastic / PMMA
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| Housing colorYellow, RAL 1021Type of fasteningGroove mounting
Swivel mountOperation and displayLEDType of displayLEDNumber of LEDs2 Piece(s)Environmental data

 | Material of end caps | Diecast zinc
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| Type of fasteningGroove mounting
Swivel mountOperation and displayLEDType of displayLEDNumber of LEDs2 Piece(s)Environmental data-30 55 °CAmbient temperature, operation-30 55 °CAmbient temperature, storage-40 75 °CRelative humidity (non-condensing)0 95 %CertificationsIIIDegree of protectionIP 67Protection classIIIApprovalsc TÜV NRTL US
c UL US
TÜV SüdUS patentsUS 6,418,546 B
US 7,741,595 BClassification27272703ECLASS 5.1.427272703ECLASS 9.027272703ECLASS 9.027272703ECLASS 10.027272703ECLASS 11.027272703ECLASS 13.027272703ECLASS 14.027272703ECLASS 14.027272703ECLASS 14.0ECO01832ETIM 5.0ECO01832ETIM 5.0ECO01832ETIM 5.0ECO01832

 | Net weight | 2,200 g
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| Swivel mountOperation and displayType of displayLEDNumber of LEDs2 Piece(s)Environmental dataAmbient temperature, operation-30 55 °CAmbient temperature, storage-40 75 °CRelative humidity (non-condensing)0 95 %CertificationsIIIDegree of protectionIP 67Protection classIIIApprovalsc TÜV NRTL US
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 | Housing color | Yellow, RAL 1021
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| Operation and displayType of displayLEDNumber of LEDs2 Piece(s)Environmental dataAmbient temperature, operation-30 55 °CAmbient temperature, storage-40 75 °CRelative humidity (non-condensing)0 95 %CertificationsIIIPortection classIIIApprovalsc TÜV NRTL US
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 | Type of fastening | , and the second s | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Type of displayLEDNumber of LEDs2 Piece(s)Environmental data-30 55 °CAmbient temperature, operation-30 55 °CAmbient temperature, storage-40 75 °CRelative humidity (non-condensing)0 95 %CertificationsIIIDegree of protectionIP 67Protection classIIIApprovalsc TÜV NRTL US
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 | | Swivel mount
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| Number of LEDs2 Piece(s)Environmental dataAmbient temperature, operation-30 55 °CAmbient temperature, storage-40 75 °CRelative humidity (non-condensing)0 95 %CertificationsIIIDegree of protectionIP 67Protection classIIIApprovalsc TÜV NRTL US
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 | Operation and display |
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| Environmental dataAmbient temperature, operation
Ambient temperature, storage
Relative humidity (non-condensing)-30 55 °CAmbient temperature, storage
Relative humidity (non-condensing)-40 75 °CRelative humidity (non-condensing)0 95 %CertificationsIP 67Protection classIIIApprovalsc TÜV NRTL US
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 | Type of display | LED
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| Ambient temperature, operation -30 55 °C Ambient temperature, storage -40 75 °C Relative humidity (non-condensing) 0 95 % Certifications 0 95 % Degree of protection IP 67 Protection class III Approvals c TÜV NRTL US
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TÜV Süd US patents US 6,418,546 B
US 7,741,595 B Classification 27272703 ECLASS 5.1.4 27272703 ECLASS 1.0 27272703 ECLASS 12.0 27272703 ECLASS 13.0 27272703 ECLASS 14.0 27272703 ETIM 5.0 EC001832 ETIM 5.0 EC001832 ETIM 5.0 EC001832 ETIM 5.0 EC001832

 | Number of LEDs | 2 Piece(s)
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| Ambient temperature, storage
Relative humidity (non-condensing)-40 75 °CRelative humidity (non-condensing)0 95 %CertificationsIP 67Pogree of protection
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TÜV SüdUS patentsUS 6,418,546 B
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 | Environmental data |
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| Ambient temperature, storage
Relative humidity (non-condensing)-40 75 °CRelative humidity (non-condensing)0 95 %CertificationsIP 67Pogree of protection
Protection classIIIApprovalsc TÜV NRTL US
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TÜV SüdUS patentsUS 6,418,546 B
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 | Ambient temperature. operation | -30 55 °C
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| Relative humidity (non-condensing)0 95 %CertificationsIP 67Pogree of protectionIP 67Protection classIIIApprovalsc TÜV NRTL US
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 | | -40 75 °C
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 | Certifications |
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 | Degree of protection | IP 67
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US patents
Classification | c TÜV NRTL US
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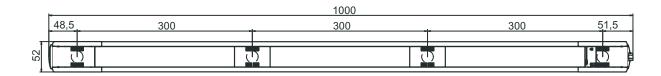
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Dimensioned drawings



All dimensions in millimeters





Electrical connection

Connection 1

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

Pin	Pin assignment	Conductor color	2
1	AS-i+	Brown	
2	n.c.	White	
3	AS-i-	Blue	3
4	n.c.	Black	
5	n.c.	Gray	4

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.
	Off	No voltage on AS-i cable.
	Red, continuous light	AS-i slave not communicating with AS-i master
	Yellow, flashing	AS-i slave has invalid address 0
	Red/green, flashing alternately	AS-i slave device error or AS-i connection defective
	Green, continuous light, flashing red at the same time	Periphery error
	Green, continuous light	AS-i slave communicating with AS-i master

Suitable transmitters



 Part no.	Designation	Article	Description
66502301	MLD500-T4L/A	Multiple light beam safety device transmitter	Special version: Integrated laser alignment aid Operating range: 0.5 50 m Number of beams: 4 Piece(s) Beam spacing: 300 mm Type of interface: AS-Interface Safety at Work Connection: Connector, M12, Metal, 5 -pin

Part number code

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
а	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)
Ν	lote
6	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
50133859	KD S-M12-5A-P1-020	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 2.000 mm Sheathing material: PUR

Accessories

Leuze

 Part no.	Designation	Article	Description
50136146	KD S-M12-5A-P1-250	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 25.000 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 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
\bigcirc	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.
y, U	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.

