



Figure can vary

Part no.: 68009919
MLC530R90-1950-SPG
Safety light curtain receiver



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- Dimensioned drawings
- Electrical connection
- Circuit diagrams
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Technical data

Basic data	
Series	MLC 500
Device type	Receiver
Contains	2x BT-NC sliding block
Application	Danger zone guarding Smart Process Gating Access guarding
Functions	
Function package	Smart Process Gating
Functions	Start/restart interlock (RES) Smart Process Gating Integration of "electronic safety-related switching outputs" Integration of "contact-based safety circuit" Fixed blanking without tolerance Fixed blanking with 1-beam tolerance MaxiScan Transmission channel changeover Qualified stop
Characteristic parameters	
Type	4, IEC/EN 61496
SIL	3, IEC 61508
SILCL	3, IEC/EN 62061
Performance Level (PL)	e, EN ISO 13849-1
PFH _D	7.73E-09 per hour
Mission time T _M	20 years, EN ISO 13849-1
Category	4, EN ISO 13849
Protective field data	
Resolution	90 mm
Protective field height	1,950 mm
Optical data	
Synchronization	Optical between transmitter and receiver
Electrical data	
Protective circuit	Overvoltage protection Short circuit protected
Performance data	
Supply voltage	24 V, DC, -20 ... 20 %
Current consumption, max.	150 mA
Fuse	2 A semi time-lag
Inputs	
Number of digital switching inputs	3 Piece(s)
Switching inputs	
Type	Digital switching input
Switching voltage high, min.	18 V
Switching voltage low, max.	2.5 V
Switching voltage, typ.	22.5 V
Voltage type	DC

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 V
Switching voltage low, max.	2.5 V
Switching voltage, typ.	22.5 V
Voltage type	DC
Current load, max.	380 mA
Load inductivity	2,000 µH
Load capacity	0.3 µF
Residual current, max.	0.2 mA
Residual current, typ.	0.002 mA
Voltage drop	1.5 V

Safety-related switching output 1

Assignment	Connection 1, pin 5
Switching element	Transistor, PNP

Safety-related switching output 2

Assignment	Connection 1, pin 6
Switching element	Transistor, PNP

Timing

Response time	100 ms
Restart delay time	100 ms

Connection

Number of connections 1 Piece(s)

Connection 1

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

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)	29 mm x 2,016 mm x 35.4 mm
Housing material	Metal, Aluminum
Lens cover material	Plastic / PMMA
Material of end caps	Diecast zinc
Net weight	2,100 g
Housing color	Yellow, RAL 1021
Type of fastening	Mounting on Device Column Mounting bracket Groove mounting Swivel mount

Operation and display

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Type of display	7-segment display LED
Number of LEDs	3 Piece(s)

Environmental data

Ambient temperature, operation	-30 ... 55 °C
Ambient temperature, storage	-30 ... 70 °C
Relative humidity (non-condensing)	0 ... 95 %


Certifications

Degree of protection	IP 65
Protection class	III
Certifications	S Mark TÜV Süd c CSA US c TÜV NRTL US
Vibration resistance	50 m/s ²
Shock resistance	100 m/s ²
US patents	US 6,418,546 B

Classification

eCl@ss 8.0	27272704
eCl@ss 9.0	27272704
ETIM 5.0	EC002549

Suitable transmitters

	Part no.	Designation	Article	Description
	68000919	MLC500T90-1950	Safety light curtain transmitter	Resolution: 90 mm Protective field height: 1,950 mm Operating range: 0 ... 20 m Connection: Connector, M12, Metal, 5 -pin

Dimensioned drawings

All dimensions in millimeters

Calculation of the effective protective field height $H_{PFE} = H_{PFN} + B + C$



- H_{PFE} Effective protective field height = 2040 mm
- H_{PFN} Nominal protective field height = 1950 mm
- A Total height = 2016 mm
- B 50 mm
- C 40 mm
- R Effective protective field height H_{PFE} goes beyond the dimensions of the optics area to the outer borders of the circles labeled with R.

Electrical connection

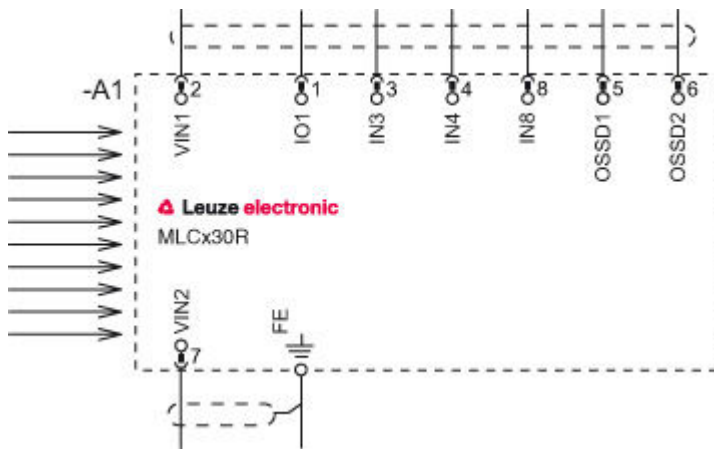
Connection 1	
Type of connection	Connector
Function	Machine interface
Thread size	M12
Type	Male
Material	Metal
No. of pins	8 -pin
Encoding	A-coded
Connector housing	FE/SHIELD

Pin	Pin assignment	Conductor color
1	IO1/RES	White
2	VIN1	Brown
3	IN3	Green
4	IN4	Yellow
5	OSSD1	Gray
6	OSSD2	Pink
7	VIN2	Blue
8	IN8	Red



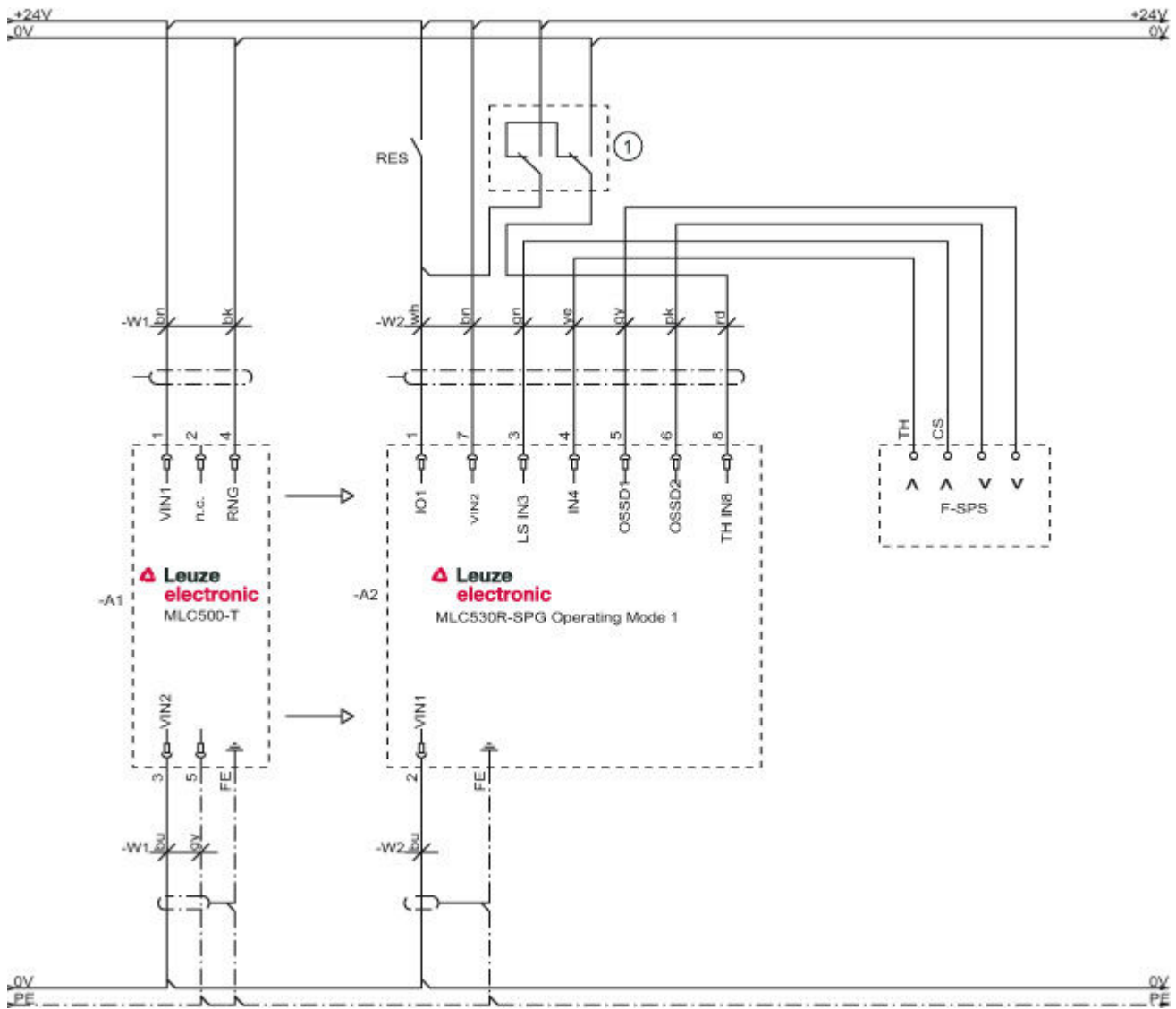
Circuit diagrams

Connection diagram receiver



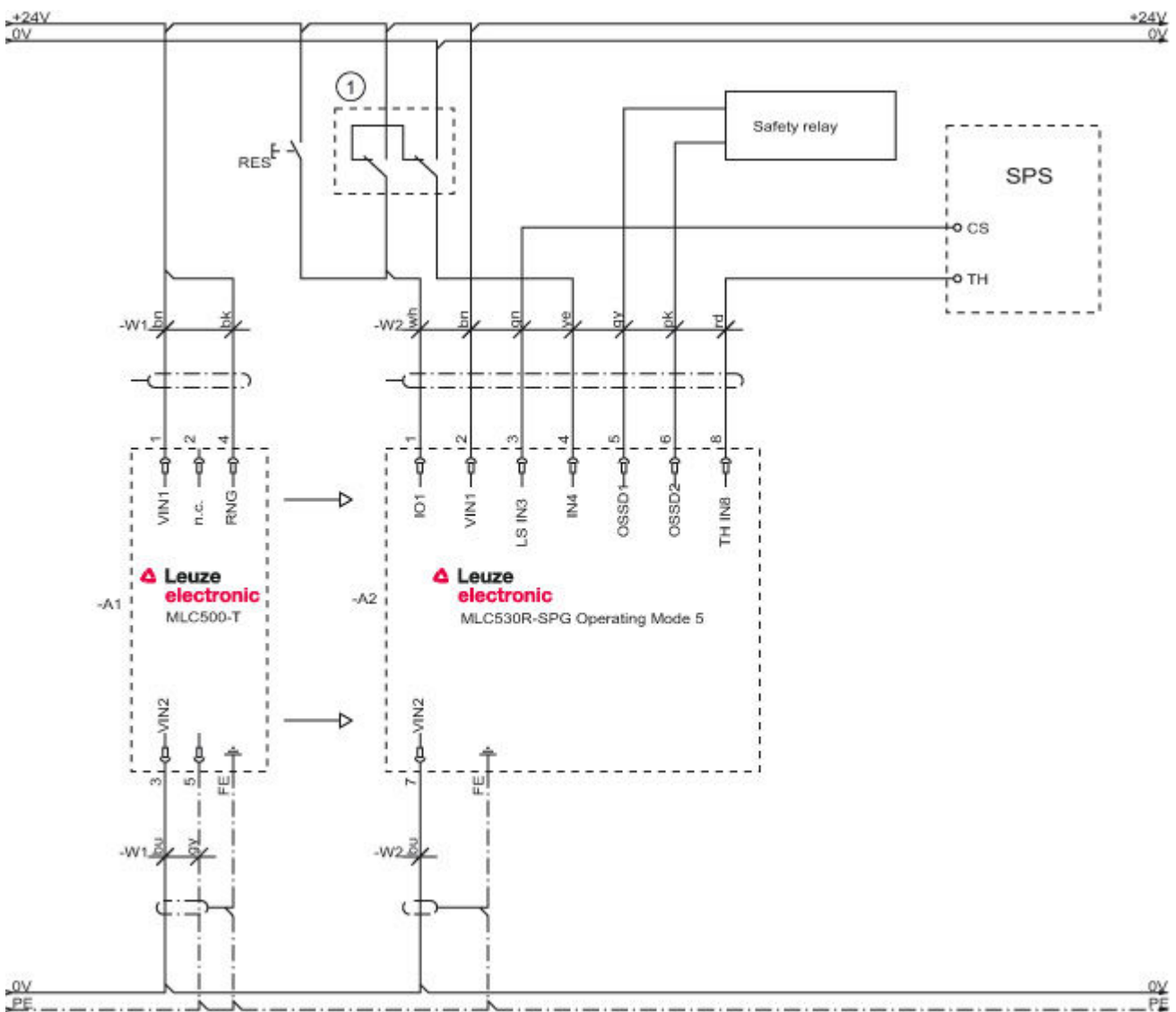
- VIN1 = +24 V, VIN2 = 0 V: transmission channel C1
- VIN1 = 0 V, VIN2 = +24 V: transmission channel C2

Operating mode 1: connection example with Smart Process Gating (SPG)



1 Optional teach key switch

Operating mode 5: circuit diagram example with Smart Process Gating (SPG)



1 Optional teach key switch

Operation and display

LEDs

LED	Display	Meaning
1	Off	Device switched off
	Red, continuous light	OSSD off
	Red, flashing, 1 Hz	External error
	Red, flashing, 10 Hz	Internal error
	Green, flashing, 1 Hz	OSSD on, weak signal
	Green, continuous light	OSSD on
2	Off	RES deactivated or RES activated and enabled or RES blocked and protective field interrupted
	Yellow, continuous light	RES activated and blocked but ready to be unlocked - protective field free and linked sensor is enabled if applicable

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LED	Display	Meaning
	Yellow, flashing	Upstream safety circuit opened
	Yellow, flashing (1x or 2x)	Changeover of the upstream safety circuit
3	Off	No special function (blinking, muting, etc.) active
	Blue, continuous light	Protective field parameter (blinking) correctly taught
	Blue, flashing, 1 Hz	Muting active
	Blue, short flashing	Teaching of protective field parameters or muting restart required or muting override active
	Blue, flashing, 10 Hz	Error during teaching of protective field parameters

Part number code

Part designation: **MLCxyy-za-hhhhei-ooo**



















MLC	Safety light curtain
x	Series: 3: MLC 300 5: MLC 500
yy	Function classes: 00: Transmitter 01: transmitter (AIDA) 02: Transmitter with test input 10: Basic receiver - automatic restart 11: basic receiver - automatic restart (AIDA) 20: Standard receiver - EDM/RES selectable 30: Extended receiver - blanking/muting
z	Device type: T: transmitter R: receiver
a	Resolution: 14: 14 mm 20: 20 mm 30: 30 mm 40: 40 mm 90: 90 mm
hhhh	Protective field height: 150 ... 3000: from 150 mm to 3000 mm
e	Host/Guest (optional): H: Host MG: Middle Guest G: Guest
i	Interface (optional): /A: AS-i
ooo	Option: /V: high Vibration-proof EX2: explosion protection (zones 2 + 22) SPG: Smart Process Gating

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
 	429288	CB-M12-25000-8GF	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: No Cable length: 25,000 mm Sheathing material: PUR
 	429289	CB-M12-50000-8GF	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: No Cable length: 50,000 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
 	50135122	KD U-M12-8A-P1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PUR
 	50135123	KD U-M12-8A-P1-100	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PUR



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	Part no.	Designation	Article	Description
	50135124	KD U-M12-8A-P1-150	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Open end Shielded: No Cable length: 15,000 mm Sheathing material: PUR



Connection technology - Connectors

	Part no.	Designation	Article	Description
	429178	CB-M12-8GF	Connector	Connection: Connector, M12, Axial, Female, A-coded, 8 -pin


Mounting technology - Mounting brackets

	Part no.	Designation	Article	Description
	429056	BT-2L	Mounting bracket set	Design of mounting device: Angle, L-shape Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Material: Metal
	429057	BT-2Z	Mounting bracket set	Design of mounting device: Angle, Z-shape Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Material: Metal






Mounting technology - Swivel mounts

	Part no.	Designation	Article	Description
	429393	BT-2HF	Mounting bracket set	Contains: 2x BT-HF swivel mount, 1 cylinder for mounting on the light curtain Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 360° Material: Metal, Plastic
	429394	BT-2HF-S	Mounting bracket set	Contains: 2x BT-HF swivel mount, 1 cylinder for mounting on the light curtain Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 360° Material: Metal, Plastic Shock absorber: Yes



Mounting technology - Other

	Part no.	Designation	Article	Description
	425740	BT-10NC60	Sliding block set	Contains: 10x BT-NC sliding block Bore hole 1: Ø 4.7 mm Bore hole 2: M6 Design of mounting device: Sliding block Fastening, at system: Mounting thread Mounting bracket, at device: Groove mounting Material: Metal





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	Part no.	Designation	Article	Description
	425741	BT-10NC64	Sliding block set	Contains: 10x BT-NC-M4-M6 sliding block Bore hole 1: M4 Bore hole 2: M6 Design of mounting device: Sliding block Fastening, at system: Mounting thread Mounting bracket, at device: Groove mounting Material: Metal
	425742	BT-10NC65	Sliding block set	Contains: 10x BT-NC-M5-M6 sliding block Bore hole 1: M5 Bore hole 2: M6 Design of mounting device: Sliding block Fastening, at system: Mounting thread Mounting bracket, at device: Groove mounting Material: Metal
	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
	424422	BT-2SB10	Mounting bracket set	Contains: 2x BT-SB10 Design of mounting device: Mounting clamp Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable, On the lateral C-groove Type of mounting device: Swiveling Swivel range: -8 ... 8 ° Material: Metal
	424423	BT-2SB10-S	Mounting bracket set	Contains: 2x BT-SB10-S Design of mounting device: Mounting clamp Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable, On the lateral C-groove Swivel range: -8 ... 8 ° Material: Metal Shock absorber: Yes




Muting - Indicators

	Part no.	Designation	Article	Description
	50135453	M4-V1-MW3-DS-C-T-M12-200	Muting indicator	Signaling: Optical Supply voltage: 24 V, AC/DC Current consumption, max.: 27 mA Connection: Cable with connector, 2,000 mm Design: Cylindrical Diameter: 40 mm Illuminant: LED/24V Signal image: Continuous light Lens color: Clear Angle of radiation: 360° Ambient temperature: -30 ... 60 °C Degree of protection: IP 66 Certifications: CSA
	50135452	M7-V1-MW3-DS-C-T-M12-200	Muting indicator	Signaling: Optical Supply voltage: 24 V, AC/DC Current consumption, max.: 58 mA Connection: Cable with connector, 2,000 mm Design: Cylindrical Diameter: 70 mm Illuminant: LED/24V Signal image: Continuous light Lens color: Clear Angle of radiation: 360° Ambient temperature: -30 ... 60 °C Degree of protection: IP 66 Certifications: CSA

Alignment aids

	Part no.	Designation	Article	Description
	427300	AC-ALM	Alignment aid	Housing material: Plastic
	520101	AC-ALM-M	Alignment aid	Housing material: Plastic
	560020	LA-78U	Alignment aid	Light source: laser, Red Housing material: Metal
	520004	LA-78UDC	Alignment aid	Light source: laser, Red Housing material: Metal

Device columns

	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

Notes

Observe intended use!

- The product may only be put into operation by competent persons.
- Only use the product in accordance with its intended use.