

## Technical data sheet

### Safety sensor/receiver set

Part no.: 544039  
MLC530R20-300-IP-25



For illustration purposes only

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## Technical data

### Basic data

Series	MLC 500
Device type	Receiver
Contains	2x BT-IP swivel mount
Application	Finger protection

### Functions

Function package	Extended
Functions	Automatic start/restart Configuration by means of wiring Transmission channel changeover

### 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 <sub>D</sub>	7.73E-09 per hour
Mission time T <sub>M</sub>	20 years, EN ISO 13849-1
Category	4, EN ISO 13849

### Protective field data

Resolution	20 mm
Protective field height	300 mm

### Optical data

Synchronization	Optical between transmitter and receiver
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### Electrical data

Protective circuit	Overvoltage protection Short circuit protected
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#### Performance data

Supply voltage U <sub>B</sub>	24 V, DC, -20 ... 20 %
Current consumption, max.	150 mA
Fuse	2 A semi time-lag

#### Outputs

Number of safety-related switching outputs (OSSDs)	2 Piece(s)
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#### 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, type.	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, type.	0.002 mA
Voltage drop	1.5 V

#### Safety-related switching output 1

Assignment	Connection 1, pin 2
Switching element	Transistor, PNP

#### Safety-related switching output 2

Assignment	Connection 1, pin 4
Switching element	Transistor, PNP

### Time behavior

Response time	7 ms
Restart delay time	100 ms

### Connection

Number of connections	1 Piece(s)
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#### Connection 1

Function	Machine interface
Type of connection	Cable with connector
Cable length	25,000 mm
Sheathing material	PVC
Thread size	M12
Material	Metal
No. of pins	8 -pin

#### Cable properties

Permissible conductor cross section, type.	0.25 mm <sup>2</sup>
Length of connection cable, max.	100 m
Permissible cable resistance to load, max.	200 Ω

### Mechanical data

Dimension (Ø x L)	52.5 mm x 500 mm
Housing material	Metal
Metal housing	Aluminum
Lens cover material	Plastic / PMMA
Material of end caps	Diecast zinc
Net weight	450 g
Housing color	Yellow, RAL 1021
Type of fastening	Swivel mount

#### Protective tube

Material	PMMA, clear
Material of end caps	V4A stainless steel (1.4404)
Material of clamping cylinder	PA 6
Material of pressure-equalization membrane	PA 6
Cable gland material	PA 6

### Operation and display

Type of display	LED
Number of LEDs	2 Piece(s)

### Environmental data

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

## Technical data

### Certifications

<b>Degree of protection</b>	IP 65
	IP 66
	IP 67
	IP 69K
<b>Protection class</b>	III
<b>Approvals</b>	c TÜV NRTL US
	c UL US
	S Mark
	TÜV Süd
<b>Vibration resistance</b>	50 m/s <sup>2</sup>
<b>Shock resistance</b>	100 m/s <sup>2</sup>
<b>US patents</b>	US 6,418,546 B

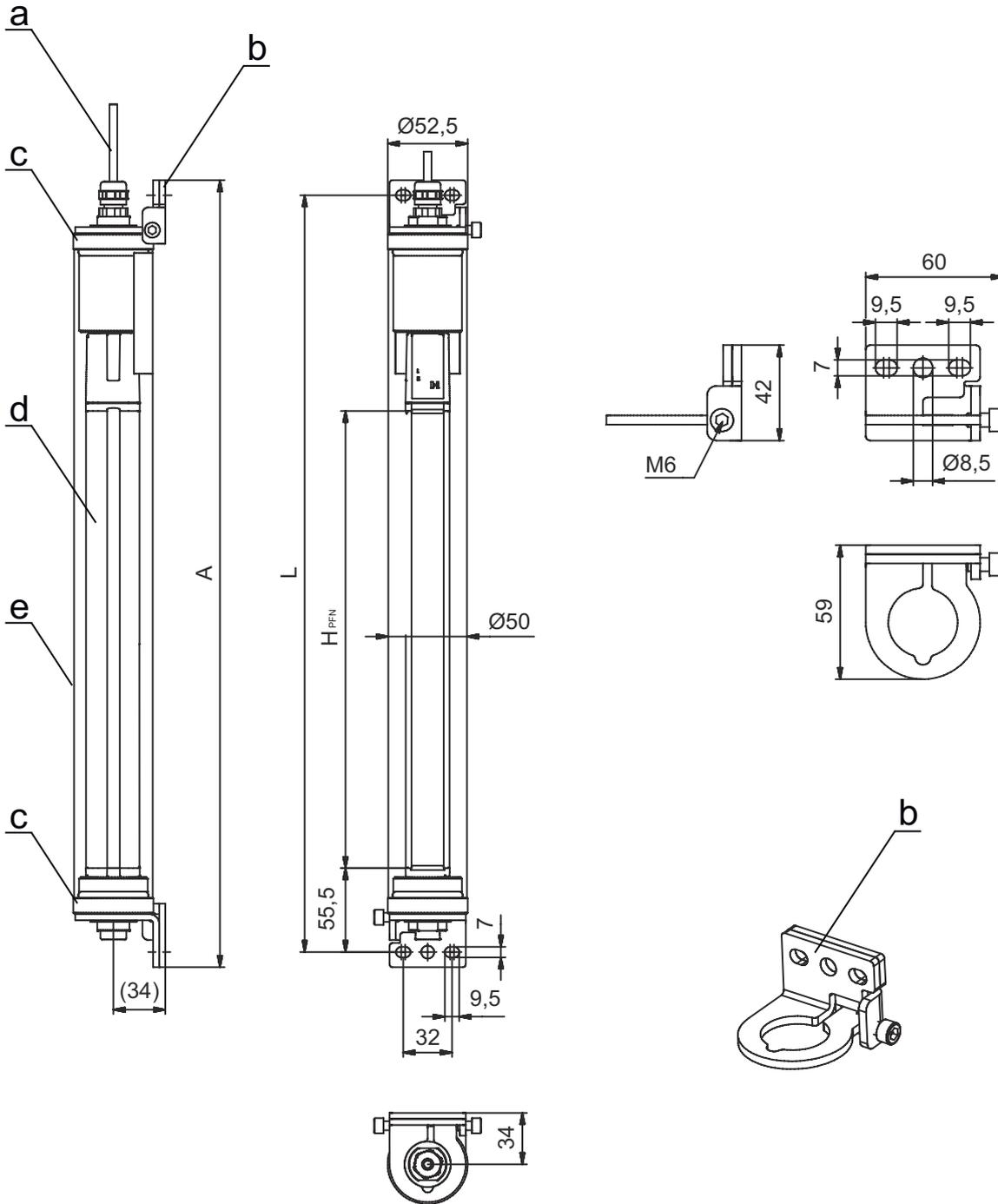
### Classification

<b>Customs tariff number</b>	85365019
<b>ECLASS 5.1.4</b>	27272704
<b>ECLASS 8.0</b>	27272704
<b>ECLASS 9.0</b>	27272704
<b>ECLASS 10.0</b>	27272704
<b>ECLASS 11.0</b>	27272704
<b>ECLASS 12.0</b>	27272704
<b>ECLASS 13.0</b>	27272704
<b>ECLASS 14.0</b>	27272704
<b>ECLASS 15.0</b>	27272704
<b>ECLASS 16.0</b>	27272704
<b>ETIM 5.0</b>	EC002549
<b>ETIM 6.0</b>	EC002549
<b>ETIM 7.0</b>	EC002549
<b>ETIM 8.0</b>	EC002549
<b>ETIM 9.0</b>	EC002549
<b>ETIM 10.0</b>	EC002549

## Dimensioned drawings

All dimensions in millimeters

MLC safety light curtains pre-mounted in the IP protective tube



- a Connection cable
- b Mounting brackets for mounting
- c End caps, stainless steel V4A
- d MLC receiver
- e IP protective tube

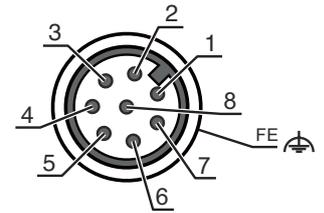
- A Total height incl. mounting brackets = 520 mm
- L Spacing of drilled holes for mounting brackets = 500 mm
- H<sub>PFN</sub> Effective protective field height = 300 mm

# Electrical connection

## Connection 1

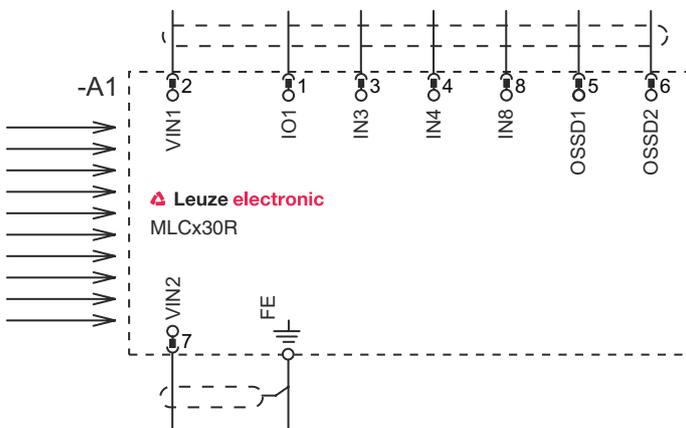
Function	Machine interface
Type of connection	Cable with connector
Cable length	25,000 mm
Sheathing material	PVC
Cable color	Gray
Thread size	M12
Type	Male
Material	Metal
No. of pins	8 -pin
Encoding	A-coded
Connector housing	FE/SHIELD

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

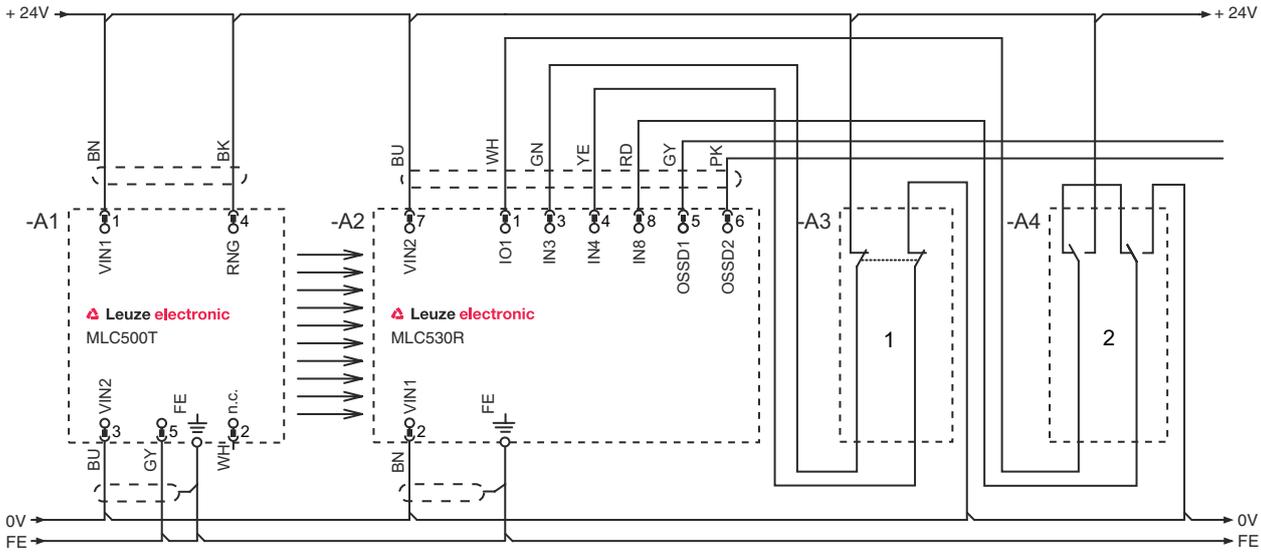
### Connection diagram receiver



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

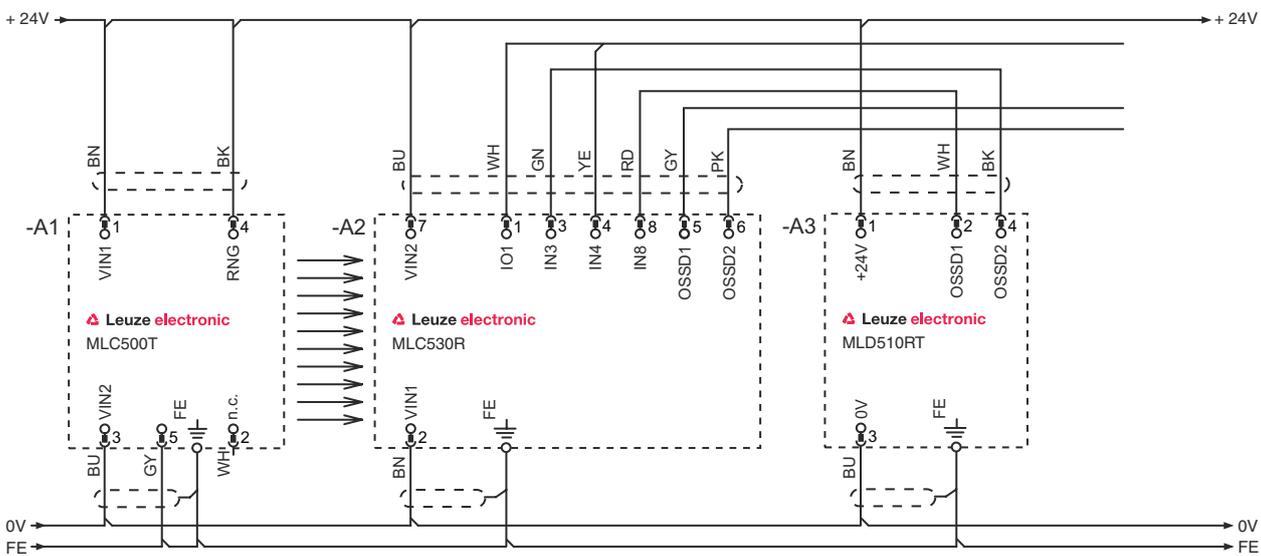
# Circuit diagrams

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



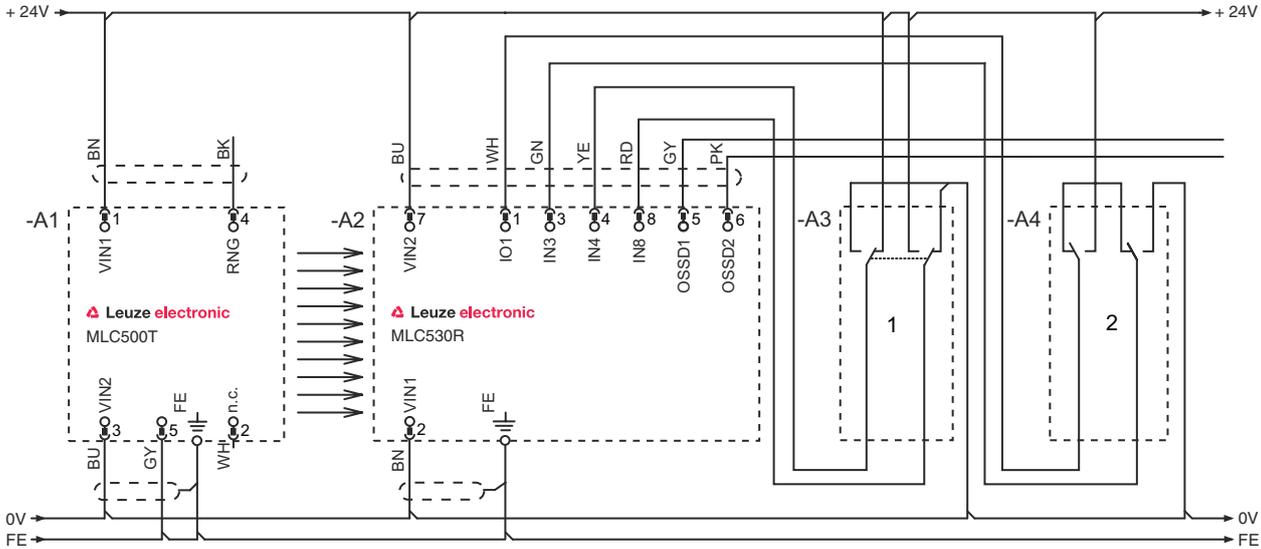
- 1 Linked safety sensor, e.g. safety door switch
- 2 Key switch for teaching ("teach key switch")

## Operating mode 2: circuit diagram example of linkage of electronic safety-related switching outputs for the combined monitoring of access points and areas



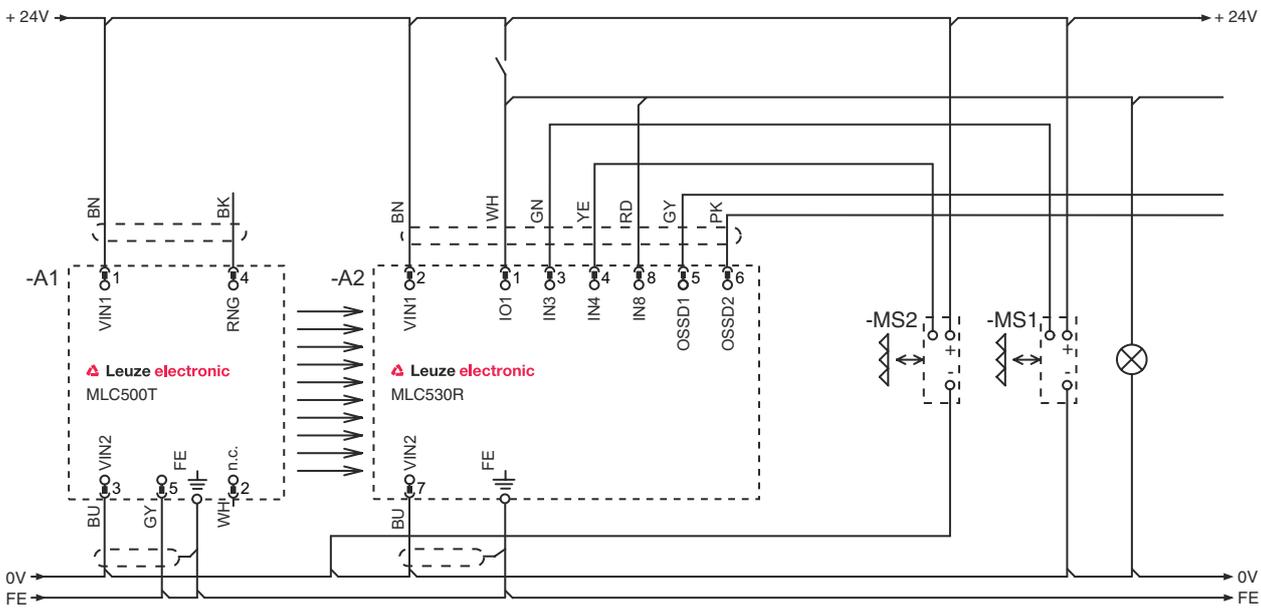
# Circuit diagrams

Operating mode 3: circuit diagram example of a linked, contact-based position switch for monitoring of the blanked object and a changeover switch for switching between function groups FG1 and FG2



Changeover key switch for switching between function groups FG1 and FG2  
Key switch for teaching blanking areas

Operating mode 4: circuit diagram example for timing controlled 2-sensor muting



## Operation and display

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

# Operation and display

LED	Display	Meaning
1	Green, flashing, 1 Hz	OSSD on, weak signal
	Green, continuous light	OSSD on
2	Off	Transmission channel C1
	Red, continuous light	OSSD off, transmission channel C2

## Suitable transmitters

	Part no.	Designation	Article	Description
	544038	MLC500T20-300-IP-25	Safety sensor/transmitter set	Resolution: 20 mm Protective field height: 300 mm Operating range: 0 ... 12 m Connection: Cable with connector, M12, Metal, 5 -pin, 25,000 mm, PVC

## Part number code

Part designation: MLCxyy-za-hhhhei-ooo

<b>MLC</b>	<b>Safety light curtain</b>
<b>x</b>	<b>Series</b> 3: MLC 300 5: MLC 500
<b>yy</b>	<b>Function classes</b> 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 or gating 35: Extended receiver – Gating
<b>z</b>	<b>Device type</b> T: transmitter R: receiver
<b>a</b>	<b>Resolution</b> 14: 14 mm 20: 20 mm 30: 30 mm 40: 40 mm 90: 90 mm
<b>hhhh</b>	<b>Protective field height</b> 150 ... 3000: from 150 mm to 3000 mm
<b>e</b>	<b>Host/Guest (optional)</b> H: Host MG: Middle Guest G: Guest
<b>i</b>	<b>Interface (optional)</b> /A: AS-i
<b>ooo</b>	<b>Option</b> /V: high Vibration-proof EX2: explosion protection (zones 2 + 22) SPG: Smart Process Gating SPG RR: Smart Process Gating – Reduced resolution

### Note



A list with all available device types can be found on the Leuze website at [www.leuze.com](http://www.leuze.com).

## 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.