

## Technical data sheet Safety sensor/receiver set

Part no.: 544012

MLC510R14-1050-IP



Figure can vary

### Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Circuit diagrams
- Operation and display
- Suitable transmitters
- Part number code
- Notes
- Accessories



## Technical data

### Basic data

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

### Functions

Function package	Basic
Functions	Automatic start/restart 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	14 mm
Protective field height	1,050 mm

### Optical data

Synchronization	Optical between transmitter and receiver
-----------------	--

### Electrical data

Protective circuit	Overtoltage protection Short circuit protected
--------------------	---

### 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)
--	------------

### 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 2
Switching element	Transistor, PNP

### Safety-related switching output 2

Assignment	Connection 1, pin 4
Switching element	Transistor, PNP

### Timing

Response time	23 ms
Restart delay time	100 ms

### Connection

Number of connections	1 Piece(s)
-----------------------	------------

### Connection 1

Function	Machine interface
Type of connection	Cable with connector
Cable length	15,000 mm
Sheathing material	PVC
Thread size	M12
Material	Metal
No. of pins	5 -pin

### Cable properties

Permissible conductor cross section, typ.	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 1,250 mm
Housing material	Metal
Metal housing	Aluminum
Lens cover material	Plastic / PMMA
Material of end caps	Diecast zinc
Net weight	1,200 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

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

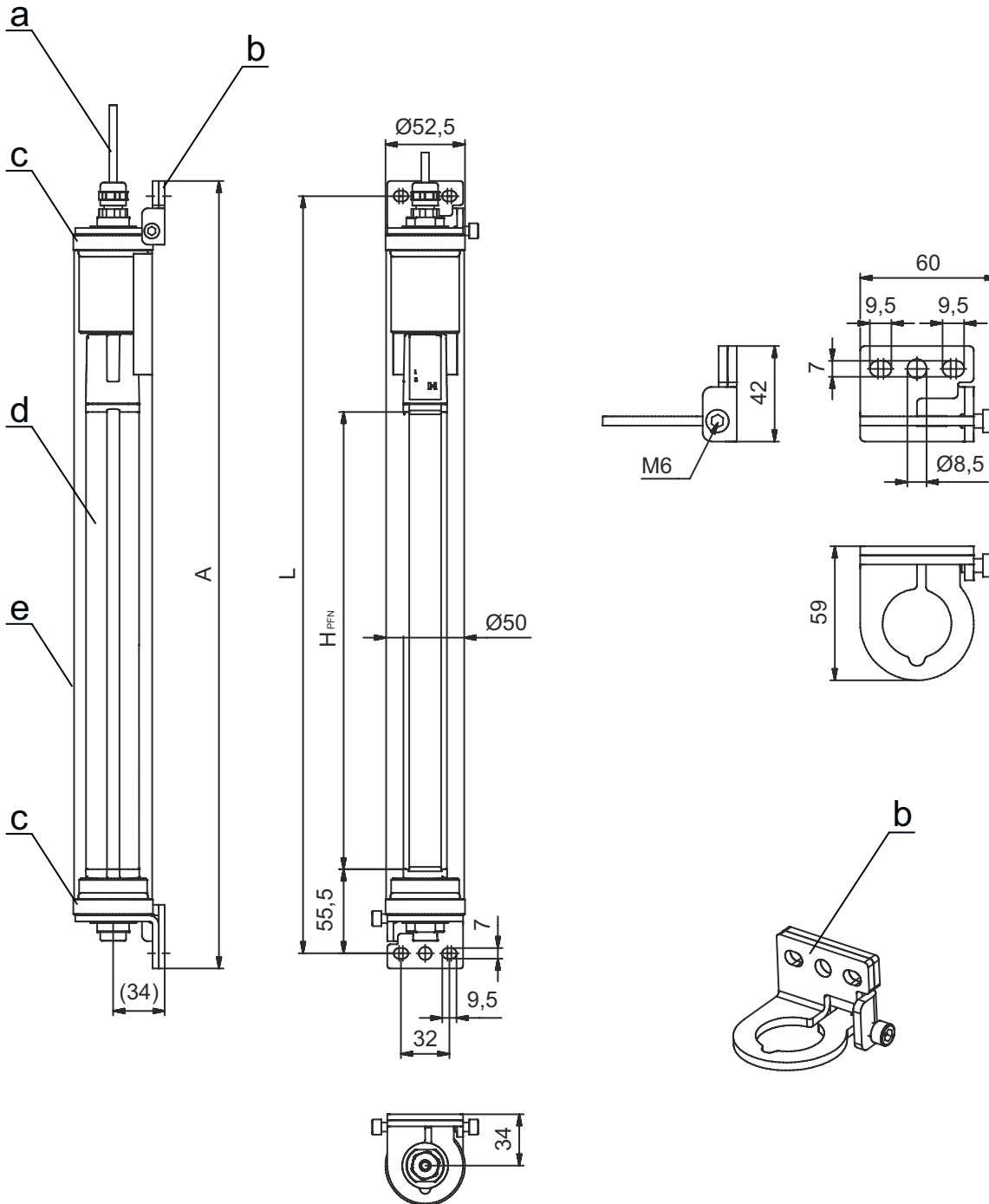
### Classification

Customs tariff number	85365019
eCl@ss 5.1.4	27272704
eCl@ss 8.0	27272704
eCl@ss 9.0	27272704
eCl@ss 10.0	27272704
eCl@ss 11.0	27272704
ETIM 5.0	EC002549
ETIM 6.0	EC002549
ETIM 7.0	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

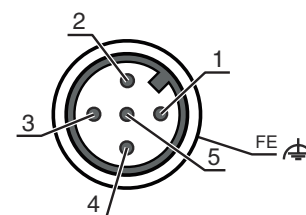
- A Total height incl. mounting brackets = 1270 mm
- L Spacing of drilled holes for mounting brackets = 1250 mm
- H<sub>PFN</sub> Effective protective field height = 1050 mm

# Electrical connection

## Connection 1

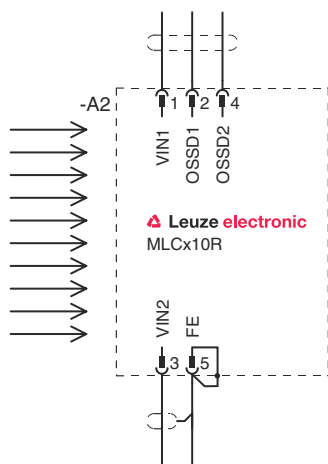
Function	Machine interface
Type of connection	Cable with connector
Cable length	15,000 mm
Sheathing material	PVC
Cable color	Black
Thread size	M12
Type	Male
Material	Metal
No. of pins	5 -pin
Encoding	A-coded
Connector housing	FE/SHIELD

Pin	Pin assignment	Conductor color
1	VIN1	Brown
2	OSSD1	White
3	VIN2	Blue
4	OSSD2	Black
5	FE/SHIELD	Gray



## Circuit diagrams

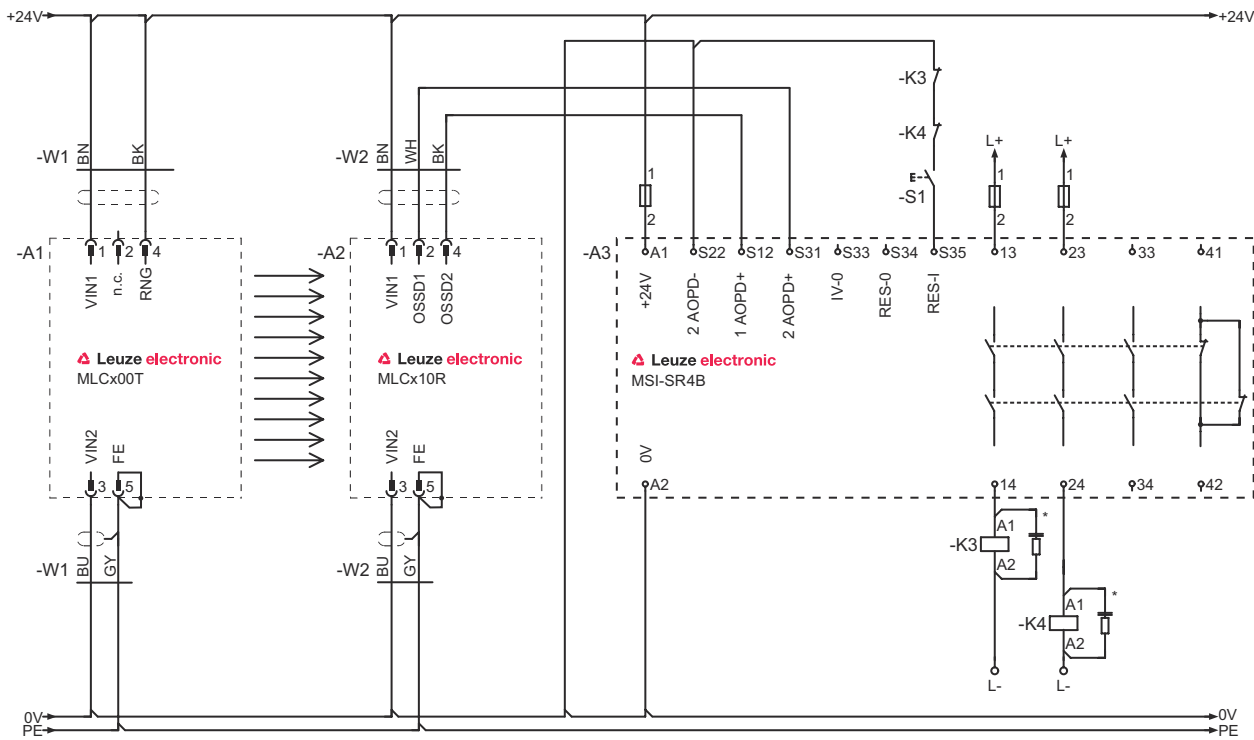
### Connection diagram receiver



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

# Circuit diagrams

## Circuit diagram example with downstream MSI-SR4B safety relay



## 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
	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
544005	MLC500T14-1050-IP	Safety sensor/ transmitter set	Resolution: 14 mm Protective field height: 1.050 mm Operating range: 0 ... 4.8 m Connection: Cable with connector, M12, Metal, 5 -pin, 15,000 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
<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


**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.

# Accessories

## Services

	Part no.	Designation	Article	Description
	S981050	CS40-I-140	Safety inspection "Safety light barriers"	<p>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.</p> <p>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.</p> <p>Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure.</p>
	S981046	CS40-S-140	Start-up support	<p>Details: For safety devices including stopping time measurement and initial inspection.</p> <p>Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses.</p> <p>Restrictions: Max. 2 h., no mechanical (mounting) and electrical (wiring) work performed, no changes (attachments, wiring, programming) to third-party components in the nearby environment.</p>

**Note**

 A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.