

# Technical data sheet Safety light curtain receiver

Part no.: 68003922

MLC530R90-2250



#### Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Circuit diagrams
- Operation and display
- Suitable transmitters
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### **Technical data**



#### Basic data

Series	MLC 500
Device type	Receiver
Contains	2x BT-NC sliding block
Application	Access guarding
	Danger zone guarding

#### **Functions**

Function package	Extended
Functions	Combination of floating/fixed blanking, can be changed to "fixed blanking" during operation
	Configuration by means of wiring
	Contactor monitoring (EDM)
	Fixed blanking with 1-beam tolerance
	Fixed blanking without tolerance
	Fixed blanking without tolerance, can be activated/deactivated during operation
	Floating blanking, can be changed to "fixed blanking" during operation
	Integration of "contact-based safety circuit"
	Integration of "electronic safety-related switching outputs"
	MaxiScan
	Partial muting
	Reduced resolution, can be changed to "fixed blanking" during operation
	Start/restart interlock (RES)
	Timing controlled 2-sensor muting
	Transmission channel changeover

#### **Characteristic parameters**

Туре	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	90 mm
Protective field height	2,250 mm

#### **Optical data**

Synchronization	Optical between transmitter and receive

### **Electrical data**

Protective circuit	Overvoltage 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

### Inputs

Number of digital switching inputs 3 Piece(s)

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Switching inputs	
Туре	Digital switching input
Switching voltage high, min.	18 V
Switching voltage low, max.	2.5 V
Switching voltage, type.	22.5 V
Voltage type	DC

#### Outputs

Number of safety-related switching	2 Piece(s)
outputs (OSSDs)	

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

#### Time behavior

Response time	8 ms
Restart delay time	100 ms

#### Connection

Number of connections	1 Piece(s)

#### **Connection 1**

Function	Machine interface
Type of connection	Connector
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

We reserve the right to make technical

## **Technical data**



#### Mechanical data

Dimension (W x H x L)	29 mm x 2,316 mm x 35.4 mm
Housing material	Metal
Metal housing	Aluminum
Lens cover material	Plastic / PMMA
Material of end caps	Diecast zinc
Net weight	2,400 g
Housing color	Yellow, RAL 1021
Type of fastening	Groove mounting
	Mounting brackets
	Mounting on Device Column
	Swivel mount

#### **Operation and display**

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
Approvals	c TÜV NRTL US
	c UL US
	KCs
	S Mark
	TÜV Süd
Vibration resistance	50 m/s <sup>2</sup>
Shock resistance	100 m/s²
US patents	US 6,418,546 B

#### Classification

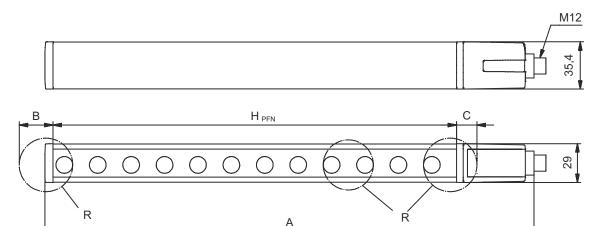
Customs tariff number	85365019
ECLASS 5.1.4	27272704
ECLASS 8.0	27272704
ECLASS 9.0	27272704
ECLASS 10.0	27272704
ECLASS 11.0	27272704
ECLASS 12.0	27272704
ECLASS 13.0	27272704
ECLASS 14.0	27272704
ECLASS 15.0	27272704
ETIM 5.0	EC002549
ETIM 6.0	EC002549
ETIM 7.0	EC002549
ETIM 8.0	EC002549
ETIM 9.0	EC002549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

## **Dimensioned drawings**



All dimensions in millimeters

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



 $H_{\mathsf{PFE}}$  Effective protective field height = 2340 mm

 $H_{\mathsf{PFN}}$  Nominal protective field height = 2250 mm

Total height = 2316 mm

50 mm

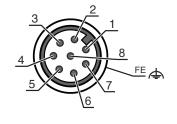
- С 40 mm
- Effective protective field height  $H_{\text{PFE}}$  goes beyond the dimensions of the optics area to the outer borders of the circles labeled with R.

## **Electrical connection**

#### **Connection 1**

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

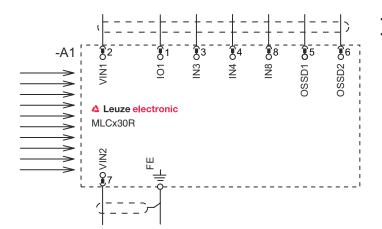
Pin	Pin assignment	Conductor color
1	IO1	White
2	VIN1	Brown
3	IN3	Green
4	IN4	Yellow
5	OSSD1	Gray
6	OSSD2	Pink
7	VIN2	Blue
8	IN8	Red



## **Circuit diagrams**

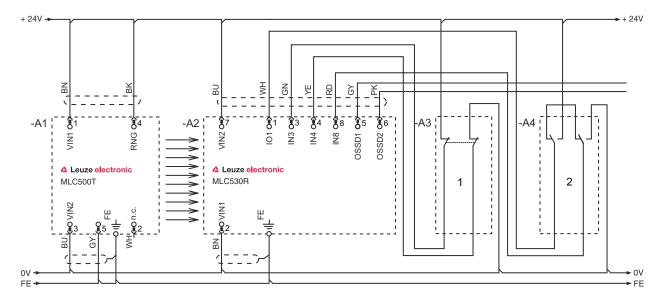


### Connection diagram receiver



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

Operating mode 1: circuit diagram example of linkage with position switch for monitoring for the presence of machine parts with fixed blanking

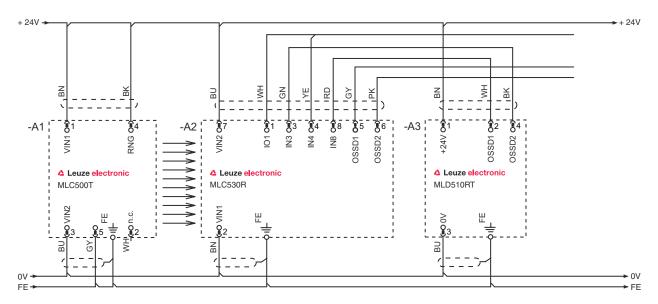


- Linked safety sensor, e.g. safety door switch
- Key switch for teaching ("teach key switch")

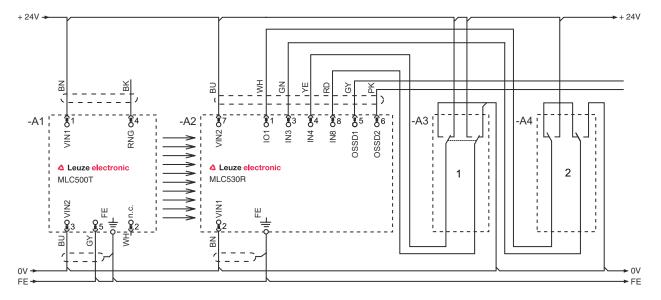
## **Circuit diagrams**



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



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

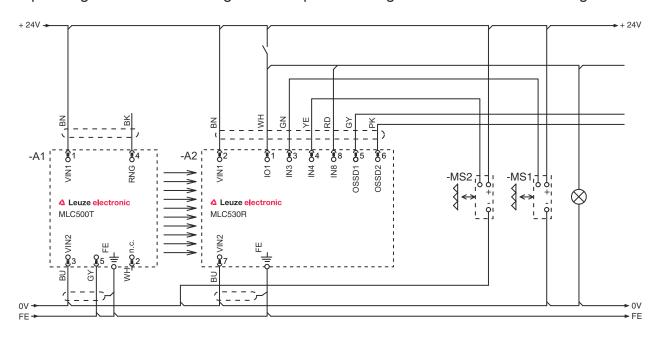


- Changeover key switch for switching between function groups FG1 and FG2
- Key switch for teaching blanking areas

## **Circuit diagrams**



## 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
	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
	Yellow, flashing	Upstream safety circuit opened
	Yellow, flashing (1x or 2x)	Changeover of the upstream safety circuit
3	Off	No special function (blanking, muting, etc.) active
	Blue, continuous light	Protective field parameter (blanking) 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

## Suitable transmitters

Part no.	Designation	Article	Description
68000922	MLC500T90-2250	Safety light curtain transmitter	Resolution: 90 mm Protective field height: 2,250 mm Operating range: 0 20 m Connection: Connector, M12, Metal, 5 -pin

### Part number code



Part designation: MLCxyy-za-hhhhei-ooo

MLC	Safety light curtain
х	Series 3: MLC 300 5: MLC 500
уу	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 - Baking/muting or gating  35: Extended receiver - Gating
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
е	Host/Guest (optional) H: Host MG: Middle Guest G: Guest
i	Interface (optional) /A: AS-i
000	Option  //: 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.

## **Notes**



#### Observe intended use!



### **Accessories**



## Connection technology - Connection cables

Part no.	Designation	Article	Description
50135128	KD S-M12-8A-P1-050	Connection cable	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

## Mounting technology - Swivel mounts

	Part no.	Designation	Article	Description
Paga	429393	BT-2HF	Mounting bracket set	Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable Type of mounting device: Turning, 360° Material: Metal, Plastic

## 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.