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Part no.: 68008916 MLC502T90-1650 Safety light curtain transmitter















Figure can vary

# **Contents**

- Technical data
- Dimensioned drawings
- Electrical connection
- Circuit diagrams
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### **Technical data**

Series MLC 500  Device type Transmitter  Contains 2x BT-NC sliding block  Application Access guarding    Danger zone guarding    Danger zone guarding    Danger zone guarding  Functions  Functions  Test signal input    Transmission channel changeover  Characteristic parameters  Type 4. IEC/EN 61496  SIL 3, IEC/EN 62691  SILC 3, IEC/EN 62691  Mission time T <sub>M</sub> 20 years , EN ISO 13849-1  Protective field data  Resolution 90 mm  Protective field height 1,850 mm  Operating range 0 20 m  Optical data  Synchronization Optical between transmitter and receiver  Light source LED ight wavelength 940 nm  Transmitted-signal shape Pulsed  LED group Exempt group in acc. with EN 62471-2008  Electrical data  Protective iciuit Overvoltage protection    Short circuit protected  Performance data  Supply voltage Us 24 V , DC , -20 20 %  Current consumption, max. 50 mA  Fuse 2 A semi time-lag  Inputs  Number of digital switching inputs  Switching inputs	Basic data	
Contains 2x BT-NC sliding block Application Access guarding Danger zone guarding  Functions  Functions  Test signal input Transmission channel changeover  Characteristic parameters  Type 4, IEC/EN 61496 SIL 3, IEC 61508 SILC 3, IEC/EN 62061 Mission time T <sub>M</sub> 20 years , EN ISO 13849-1  Protective field data Resolution 90 mm  Protective field height 1,550 mm  Operating range 0 20 m  Optical data Synchronization Optical between transmitter and receiver Light source LED, Infrared LED light wevelength 940 nm  Transmitted-signal shape Pulsed LED group Exempt group in acc. with EN 62471:2008  Electrical data Protective circuit Overvoltage protection Short circuit protected  Performance data Supply voltage UB 24 V , DC , -20 20 % Current consumption, max. 50 mA Fuse 2 A semi time-lag Inputs Number of digital switching inputs 1 Piece(s)		MLC 500
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Optical data         Synchronization       Optical between transmitter and receiver         Light source       LED, Infrared         LED light wavelength       940 nm         Transmitted-signal shape       Pulsed         LED group       Exempt group in acc. with EN 62471:2008         Electrical data         Performance data         Supply voltage UB       24 V , DC , -20 20 %         Current consumption, max.       50 mA         Fuse       2 A semi time-lag         Inputs       Number of digital switching inputs         Switching inputs       1 Piece(s)		
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Electrical data  Protective circuit  Performance data Supply voltage UB  Current consumption, max.  Fuse  2 A semi time-lag  Inputs  Number of digital switching inputs  Exempt group in acc. with EN 62471:2008  Overvoltage protection Short circuit protected  24 V , DC , -20 20 %  24 V , DC , -20 20 %  1 Piece(s)	LED light wavelength	940 nm
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Performance data  Supply voltage UB  Current consumption, max.  Fuse  Inputs  Number of digital switching inputs  Overvoltage protection Short circuit protected  24 V , DC , -20 20 %  24 V , DC , -20 20 %  2 A semi time-lag  Inputs  1 Piece(s)	LED group	Exempt group in acc. with EN 62471:2008
Protective circuit  Overvoltage protection Short circuit protected  Performance data  Supply voltage UB  Current consumption, max.  Fuse  2 A semi time-lag  Inputs  Number of digital switching inputs  1 Piece(s)  Switching inputs	Flactuical data	
Short circuit protected  Performance data Supply voltage UB 24 V , DC , -20 20 %  Current consumption, max. 50 mA  Fuse 2 A semi time-lag  Inputs Number of digital switching inputs 1 Piece(s)  Switching inputs		Overveltage protection
Supply voltage UB  24 V , DC , -20 20 %  Current consumption, max.  50 mA  Fuse  2 A semi time-lag  Inputs  Number of digital switching inputs  1 Piece(s)  Switching inputs	Frotective Circuit	
Current consumption, max. 50 mA  Fuse 2 A semi time-lag  Inputs  Number of digital switching inputs 1 Piece(s)  Switching inputs	Performance data	
Fuse 2 A semi time-lag  Inputs  Number of digital switching inputs 1 Piece(s)  Switching inputs	Supply voltage U <sub>B</sub>	24 V , DC , -20 20 %
Inputs Number of digital switching inputs  1 Piece(s)  Switching inputs	Current consumption, max.	50 mA
Number of digital switching inputs 1 Piece(s)  Switching inputs	Fuse	2 A semi time-lag
Switching inputs	Inputs	
	Number of digital switching inputs	1 Piece(s)
Type Digital switching input	Switching inputs	
. 15-0	Туре	Digital switching input
Switching voltage high, min. 18 V	Switching voltage high, min.	18 V
Switching voltage low, max. 2.5 V	Switching voltage low, max.	2.5 V
Switching voltage, typ. 22.5 V	Switching voltage, typ.	22.5 V
Voltage type DC	Voltage type	DC
Connection	Connection	
Number of connections 1 Piece(s)	Number of connections	1 Piece(s)



Connection 1		
Type of connection	Connector	
Function	Machine interface	
Thread size	M12	
Material	Metal	
No. of pins	5 -pin	
Cable properties		
Permissible conductor cross section, typ.	0.25 mm²	
Length of connection cable, max.	100 m	
Permissible cable resistance to load, max.	200 Ω	
echanical data		
imension (W x H x L)	29 mm x 1.716 mm x 35.4 mm	

Mechanical data	
Dimension (W x H x L)	29 mm x 1,716 mm x 35.4 mm
Housing material	Metal , Aluminum
Lens cover material	Plastic / PMMA
Material of end caps	Diecast zinc
Net weight	1,800 g
Housing color	Yellow, RAL 1021
Type of fastening	Groove mounting Mounting bracket Mounting on Device Column Swivel mount

Operation and display	
Type of display	LED
Number of LEDs	2 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	c CSA US c TÜV NRTL US TÜV Süd	
Vibration resistance	50 m/s <sup>2</sup>	
Shock resistance	100 m/s²	
US patents	US 6,418,546 B	

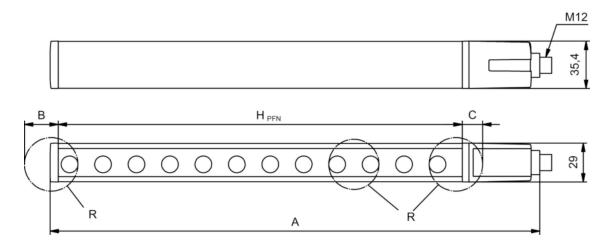
Classification		
Customs tariff number	85365019	
eCl@ss 8.0	27272704	
eCl@ss 9.0	27272704	
ETIM 5.0	EC002549	
ETIM 6.0	EC002549	



#### **Dimensioned drawings**

All dimensions in millimeters

Calculation of the effective protective field height HPFE = HPFN + B + C



HPFE Effective protective field height = 1740 mm

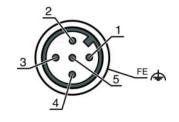
H<sub>PFN</sub> Nominal protective field height = 1650 mm

- A Total height = 1716 mm
- B 50 mm
- C 40 mm
- R Effective protective field height HPFE 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
Туре	Male
Material	Metal
No. of pins	5 -pin
Encoding	A-coded
Connector housing	FE/SHIELD

Pin	Pin assignment	Conductor color
1	VIN1	Brown
2	n.c.	White
3	VIN2	Blue
4	Test in	Black
5	FE/SHIELD	Gray

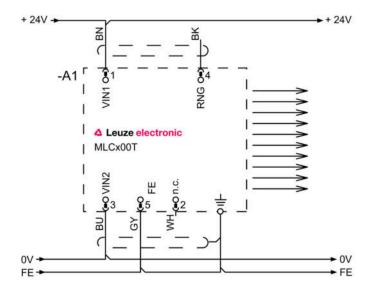


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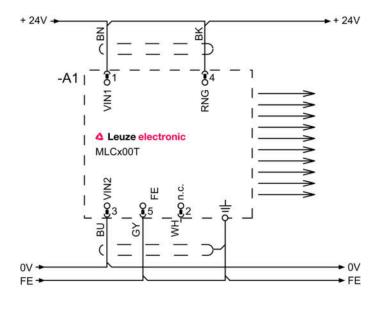
#### **Circuit diagrams**

Transmission channel C1, OSSDs deactivated on the receiver



- 1 VIN1 = +24 V
- 3 VIN2 = 0 V4 RNG = 0 V or open

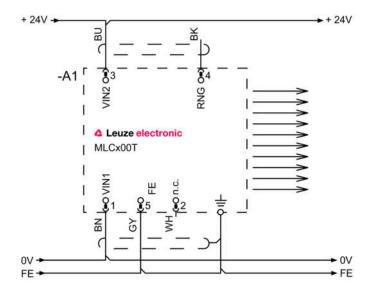
Transmission channel C1, OSSDs activated on the receiver



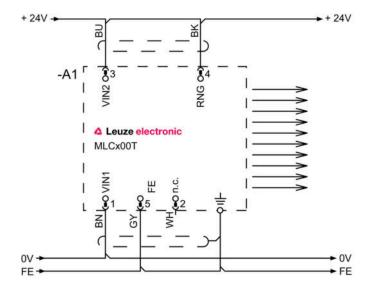
- 1 VIN1 = +24 V
- 3 VIN2 = 0 V
- 4 RNG = +24 V



#### Transmission channel C2, OSSDs deactivated on the receiver



- 1 VIN1 = 0 V
- 3 VIN2 = +24 V 4 RNG = 0 V or open
- Transmission channel C2, OSSDs activated on the receiver



- 1 VIN1 = 0 V
- 3 VIN2 = +24 V
- 4 RNG = +24 V

## Operation and display

#### **LEDs**

LED	Display	Meaning
1	Off	Device switched off



LED	Display	Meaning
	Red, continuous light	Device error
	Green, continuous light	Normal operation
2	Green, flashing, 10 s long after switching on	Test input activated
	Off	Transmission channel C1
	Green, continuous light	Transmission channel C2

#### Suitable receivers

Part no.	Designation	Article	Description
68001916		receiver	Resolution: 90 mm Protective field height: 1,650 mm Response time: 6 ms Connection: Connector, M12, Metal, 5 -pin Function package: Basic

#### 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 - blanking/muting
z	Device type: T: transmitter R: receiver
а	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: /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.



#### **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**

### Connection technology - Connection cables

Part no.	Designation	Article	Description
50133860	KD S-M12-5A- P1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR

## Mounting technology - Swivel mounts

	Part no.	Designation	Article	Description
P.C.	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

### Alignment aids

	Part no.	Designation	Article	Description
1	520101	AC-ALM-M	Alignment aid	Housing material: Plastic

### Services

Part no.	Designation	Article	Description
S981050	CS40-I-140	Safety inspection "Safety light barriers"	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.  Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure.
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.  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.



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