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Part no.: 68040215 MLC500T20-1500-EX2 Safety light curtain transmitter











Figure can vary

# **Contents**

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



### **Technical data**

Series MLC 500 Device type Transmitter Contains 2x BTNC skiding block Application Hand protection  Functions Functio	Series MLC 500 Device type Transmitter Contains 2x BT-NC stding block Application Hand protection  Functions Functio	Basic data	
Device type	Device type Transmitter Contains 2x BT-NC sliding block Application Hand protection  Functions Functions Functions Functions Functions  Range reduction Transmission channel changeover  Characteristic parameters Type 4, IEC/EN 61496 SIL 3, IEC/EN 02061 SILC 3, IEC/EN 02061 Mission time T <sub>M</sub> 20 years , EN ISO 13849-1  Protective field data Resolution 20 mm Protective field height 1,500 mm Operating range 0,9 m  Optical data Synchronization Optical between transmitter and receiver LED light wavelength 940 mm Transmitted-signal shape LED risk group Exempt group in acc. with EN 62471:2008  Electrical 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 18 V Switching voltage low, max. 2 55 V Switching voltage type. DC Connection  Connection  Connection		MLC 500
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Synchronization Optical between transmitter and receiver Light source LED, Infrared LED light wavelength 940 nm  Transmitted-signal shape Pulsed LED risk 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)  Switching inputs Type Digital switching input Switching voltage low, max. 2.5 V Switching voltage typ. 22.5 V Voltage type DC  Connection	Synchronization Optical between transmitter and receiver Light source LED , Infrared LED light wavelength 940 nm  Transmitted-signal shape Pulsed LED risk 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)  Switching inputs Type Digital switching input Switching voltage ligh, min. 18 V Switching voltage low, max. 2.5 V Switching voltage, typ. 22.5 V Voltage type DC  Connection		
LED , Infrared  LED , Infrared  LED light wavelength  940 nm  Transmitted-signal shape  Pulsed  LED risk group  Exempt group in acc. with EN 62471:2008  Electrical data  Protective circuit  Overvoltage protection Short circuit protected  Performance data  Supply voltage UB  Current consumption, max.  50 mA  Fuse  1 puse  1 puse  Inputs  Number of digital switching inputs  Type  Digital switching input  Switching voltage low, max.  Switching voltage low, max.  Switching voltage, typ.  Voltage type  Connection	LED light source  LED light wavelength  940 nm  Transmitted-signal shape  Pulsed  LED risk group  Exempt group in acc. with EN 62471:2008  Electrical data  Protective circuit  Overvoltage protection Short circuit protected  Performance data  Supply voltage UB  Current consumption, max.  50 mA  Fuse  2 A semi time-lag  Inputs  Number of digital switching inputs  Type  Digital switching input  Switching voltage low, max.  Switching voltage low, max.  Switching voltage, typ.  Voltage type  DC  Connection	Optical data	
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Transmitted-signal shape Pulsed  LED risk 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)  Switching inputs  Type Digital switching input  Switching voltage ligh, min. 18 V  Switching voltage low, max. 2.5 V  Switching voltage, typ. 22.5 V  Voltage type DC  Connection	Transmitted-signal shape  LED risk group  Exempt group in acc. with EN 62471:2008  Electrical data  Protective circuit  Overvoltage protection Short circuit protected  Performance data  Supply voltage UB  Current consumption, max.  50 mA  Fuse  2 A semi time-lag  Inputs  Number of digital switching inputs  Type  Digital switching input  Switching inputs  Type  Digital switching input  Switching voltage low, max.  2.5 V  Switching voltage, typ.  22.5 V  Voltage type  DC  Connection	Light source	LED , Infrared
Electrical data  Protective circuit  Overvoltage protection Short circuit protected  Performance data Supply voltage UB Current consumption, max.  Fuse  1 Piece(s)  Switching inputs  Type  Digital switching input  Switching voltage low, max.  Switching voltage low, max.  Switching voltage low, max.  Switching voltage, typ.  Voltage type  DC  Connection	Electrical data  Protective circuit  Overvoltage protection Short circuit protected  Performance data Supply voltage UB Current consumption, max.  Fuse  1 Piece(s)  Switching inputs Type Digital switching input Switching voltage low, max.  Switching voltage low, max.  Switching voltage, typ.  Overvoltage protection Short circuit protected  2 4 V , DC , -20 20 %  Current consumption, max.  50 mA  1 Piece(s)  Switching inputs  1 Piece(s)  Switching inputs  1 8 V  Switching voltage low, max.  2.5 V  Voltage type DC  Connection	LED light wavelength	940 nm
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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)  Switching inputs  Type  Digital switching input  Switching voltage high, min.  18 V  Switching voltage low, max.  2.5 V  Switching voltage, typ.  Voltage type  DC  Connection	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)  Switching inputs  Type  Digital switching input  Switching voltage high, min.  18 V  Switching voltage low, max.  2.5 V  Switching voltage, typ.  Voltage type  DC  Connection	LED risk group	Exempt group in acc. with EN 62471:2008
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Supply voltage UB  Current consumption, max.  50 mA  Fuse  2 A semi time-lag  Inputs  Number of digital switching inputs  1 Piece(s)  Switching inputs  Type  Digital switching input  Switching voltage high, min.  18 V  Switching voltage low, max.  Switching voltage, typ.  Voltage type  DC  Connection	Supply voltage UB  Current consumption, max.  50 mA  Fuse  2 A semi time-lag  Inputs  Number of digital switching inputs  1 Piece(s)  Switching inputs  Type  Digital switching input  Switching voltage high, min.  Switching voltage low, max.  Switching voltage, typ.  Voltage type  Connection		
Current consumption, max.  Fuse  2 A semi time-lag  Inputs  Number of digital switching inputs  1 Piece(s)  Switching inputs  Type  Digital switching input  Switching voltage high, min.  18 V  Switching voltage low, max.  Switching voltage, typ.  Voltage type  Connection	Current consumption, max.  Fuse  2 A semi time-lag  Inputs  Number of digital switching inputs  1 Piece(s)  Switching inputs  Type  Digital switching input  Switching voltage high, min.  18 V  Switching voltage low, max.  2.5 V  Switching voltage, typ.  Voltage type  DC  Connection		
Fuse 2 A semi time-lag  Inputs  Number of digital switching inputs 1 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	Fuse 2 A semi time-lag  Inputs  Number of digital switching inputs 1 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	Supply voltage U <sub>B</sub>	24 V , DC , -20 20 %
Inputs Number of digital switching inputs  Switching inputs  Type Digital switching input Switching voltage high, min. 18 V Switching voltage low, max. 2.5 V Switching voltage, typ.  Voltage type DC  Connection	Inputs Number of digital switching inputs  Switching inputs  Type Digital switching input Switching voltage high, min. 18 V Switching voltage low, max. 2.5 V Switching voltage, typ.  Voltage type DC  Connection	Current consumption, max.	50 mA
Number of digital switching inputs  Type Digital switching input  Switching voltage high, min.  Switching voltage low, max.  Switching voltage, typ.  Voltage type  DC  Connection	Number of digital switching inputs  Switching inputs  Type  Digital switching input  Switching voltage high, min.  Switching voltage low, max.  Switching voltage, typ.  Voltage type  Connection	Fuse	2 A semi time-lag
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	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  Connection	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  Connection	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  Connection	Number of digital switching inputs	1 Piece(s)
Switching voltage high, min.  Switching voltage low, max.  Switching voltage, typ.  22.5 V  Voltage type  DC  Connection	Switching voltage high, min.  Switching voltage low, max.  Switching voltage, typ.  22.5 V  Voltage type  DC  Connection	Switching inputs	
Switching voltage low, max.  Switching voltage, typ.  22.5 V  Voltage type  DC  Connection	Switching voltage low, max.  Switching voltage, typ.  22.5 V  Voltage type  DC  Connection	Туре	Digital switching input
Switching voltage, typ. 22.5 V  Voltage type DC  Connection	Switching voltage, typ. 22.5 V  Voltage type DC  Connection	Switching voltage high, min.	18 V
Voltage type DC  Connection	Voltage type DC  Connection	Switching voltage low, max.	2.5 V
Connection	Connection	Switching voltage, typ.	22.5 V
		Voltage type	DC
	Number of connections 1 Piece(s)		
Number of connections 1 Piece(s)		Number of connections	1 Piece(s)



Cable properties	
Permissible conductor cross section, typ.	0.25 mm²
Length of connection cable, max.	100 m
	100 111
Connection 1 Function	Machine interface
Type of connection	Connector
Thread size	M12
Material	Metal
No. of pins	5 -pin
Cable properties	3 -piii
Permissible cable resistance to load, max.	200 Ω
Termissible cable resistance to load, max.	200 12
Mechanical data	
Dimension (W x H x L)	30.7 mm x 1,566 mm x 40.3 mm
lousing material	Metal , Aluminum
ens cover material	Plastic/PC
Naterial of end caps	Diecast zinc
let weight	1,650 g
lousing color	Silver
ype of fastening	Groove mounting
	Mounting bracket Mounting on Device Column Swivel mount
ype of display	LED 2 Piece(s)
nvironmental data	
anvironmentar uata	
ambient temperature, operation	0 55 °C
	0 55 °C -30 70 °C
ambient temperature, operation	
Ambient temperature, operation Ambient temperature, storage Relative humidity (non-condensing)	-30 70 °C
Ambient temperature, operation Ambient temperature, storage Relative humidity (non-condensing)	-30 70 °C
Ambient temperature, operation Ambient temperature, storage Relative humidity (non-condensing)	-30 70 °C 0 95 %
Ambient temperature, operation Ambient temperature, storage Relative humidity (non-condensing)	-30 70 °C 0 95 % 3D
Ambient temperature, operation Ambient temperature, storage Relative humidity (non-condensing)  Ex specification Ex device category	-30 70 °C 0 95 % 3D 3G 2
Ambient temperature, operation Ambient temperature, storage Relative humidity (non-condensing)  Ex specification Ex device category  Ex-zone	-30 70 °C 0 95 % 3D 3G 2 2
Ambient temperature, operation Ambient temperature, storage Relative humidity (non-condensing)  Ex specification Ex device category  Ex-zone Ex device group	-30 70 °C 0 95 % 3D 3G 2 22
Ambient temperature, operation Ambient temperature, storage Relative humidity (non-condensing)  Ex specification Ex device category  Ex-zone Ex device group Permissible surface temperature gnition protection type	-30 70 °C  0 95 %  3D 3G 2 22 II T<85° (T4) °C "nA" non-sparking
Ambient temperature, operation Ambient temperature, storage Relative humidity (non-condensing)  Ex specification Ex device category  Ex-zone Ex device group Permissible surface temperature Ignition protection type  Certifications	-30 70 °C  0 95 %  3D 3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing
Ambient temperature, operation Ambient temperature, storage Relative humidity (non-condensing)  Ex specification Ex device category Ex-zone Ex device group Permissible surface temperature Ignition protection type  Certifications Degree of protection	-30 70 °C  0 95 %  3D 3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing
Ambient temperature, operation Ambient temperature, storage Relative humidity (non-condensing)  Ex specification Ex device category  Ex-zone Ex device group Permissible surface temperature gnition protection type  Certifications Perotection class	-30 70 °C  0 95 %  3D 3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing
Ambient temperature, operation Ambient temperature, storage Relative humidity (non-condensing)  Ex specification Ex device category Ex-zone Ex device group Permissible surface temperature Ignition protection type  Certifications Degree of protection	-30 70 °C  0 95 %  3D 3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing
Ambient temperature, operation Ambient temperature, storage Relative humidity (non-condensing)  Ex specification Ex device category  Ex-zone Ex device group Permissible surface temperature gnition protection type  Certifications Perotection class	-30 70 °C  0 95 %  3D 3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing  IP 65 III c TÜV NRTL US
Ambient temperature, operation Ambient temperature, storage Relative humidity (non-condensing)  Ex specification Ex device category  Ex-zone Ex device group Permissible surface temperature Ignition protection type  Certifications Protection class Perfections Protection class Perfections	-30 70 °C  0 95 %  3D 3G 2 22 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing  IP 65 III c TÜV NRTL US TÜV Süd

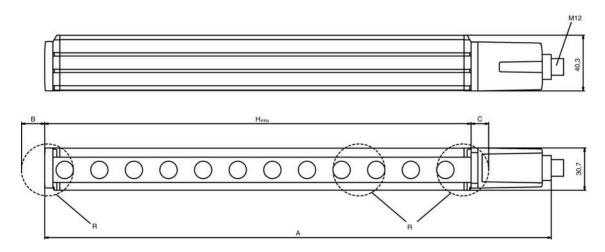


Classification	
Customs tariff number	85365019
eCl@ss 8.0	27272704
eCl@ss 9.0	27272704
ETIM 5.0	EC002549
ETIM 6.0	EC002549

### **Dimensioned drawings**

All dimensions in millimeters

Calculation of the effective protective field height H<sub>PFE</sub> = H<sub>PFN</sub> + B + C

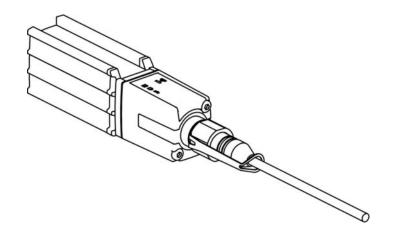


HPFE Effective protective field height = 1517 mm

HPFN Nominal protective field height = 1500 mm

- A Total height = 1566 mm
- B 7 mm
- C 10 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.

### K-VM12-Ex interlocking guard

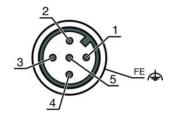




#### **Electrical connection**

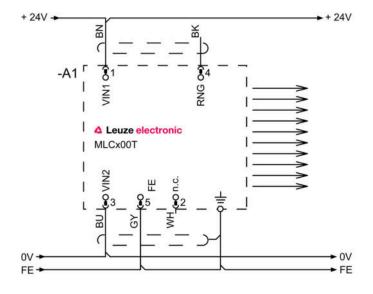
Connection 1	
Function	Machine interface
Type of connection	Connector
Thread size	M12
Туре	Male
Material	Metal
No. of pins	5 -pin
Encoding	A-coded
Connector housing	FE/SHIELD

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



### **Circuit diagrams**

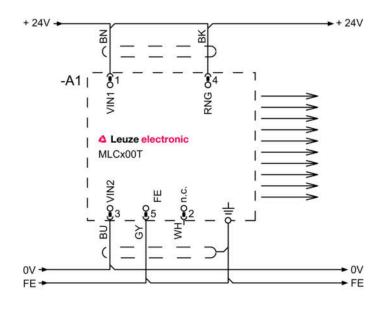
Transmission channel C1, reduced range



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

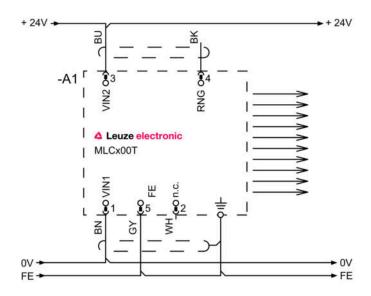


### Transmission channel C1, standard range



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

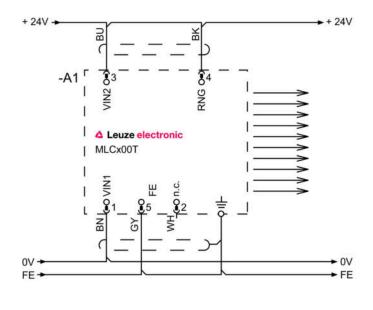
### Transmission channel C2, reduced range



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



### Transmission channel C2, standard range



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

### **Operation and display**

#### **LEDs**

LED	Display	Meaning
1	Off	Device switched off
	Red, continuous light	Device error
	Green, continuous light	Normal operation
2	Green, flashing, 10 s long after switching on	Reduced range selected by the wiring of pin 4
	Off	Transmission channel C1
	Green, continuous light	Transmission channel C2

#### Suitable receivers

Part no.	Designation	Article	Description
68042215	MLC520R20-1500-EX2	curtain receiver	Resolution: 20 mm Protective field height: 1,500 mm Response time: 26 ms Connection: Connector, M12, Metal, 8 -pin Function package: Standard

#### Part number code

Part designation: MLCxyy-za-hhhhei-ooo



MLC	Safety light curtain
х	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
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 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

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## Mounting technology - Swivel mounts

	Part no.	Designation	Article	Description
P.C.	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

## Alignment aids

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

### General

Part no.	Designation	Article	Description
50109217	K-V M12-Ex	Safety locking device	Housing material: Plastic, PA

### 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.

#### Note

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