

Technical data sheet Safety light curtain transmitter

Part no.: 68040216 MLC500T20-1650-EX2



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Technical data

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Basic data		Cable properties
Series	MLC 500	Permissible conduc section, typ.
Device type	Transmitter	Length of connectio
Contains	2x BT-NC sliding block	Permissible cable re
Application	Hand protection	load, max.
Functions		Mechanical data
Functions	Range reduction	Dimension (W x H x L)
	Transmission channel changeover	Housing material
Characteristic parameters		Lens cover material
		Material of end caps
Туре	4, IEC/EN 61496	Net weight
SIL	3, IEC 61508	Housing color
SILCL	3, IEC/EN 62061	Type of fastening
Mission time T _M	20 years, EN ISO 13849-1	
Protective field data		
Resolution	20 mm	Operation and displ
Protective field height	1,650 mm	
Operating range	0 15 m	Type of display Number of LEDs
Optical data		
Synchronization	Optical between transmitter and receiver	Environmental data
Light source	LED, Infrared	Ambient temperature,
LED light wavelength	940 nm	Ambient temperature,
Transmitted-signal shape	Pulsed	Relative humidity (non
LED risk group	Exempt group (in acc. with EN 62471:2008)	Ex specification
Electrical data		Ex device category
Protective circuit	Overvoltage protection	Ex-zone
	Short circuit protected	
Deufermen de la fe		Ex device group
Performance data Supply voltage U _B	24 V, DC, -20 20 %	Permissible surface ter
Current consumption, max.	50 mA	Ignition protection type
Fuse	2 A semi time-lag	
1 400		Certifications
Inputs		
Number of digital switching inputs	1 Piece(s)	Degree of protection
		Protection class Certifications
Switching inputs Type	Digital switching input	Certifications
Type	Digital Switching Input	
Switching voltage high min	18 V	Vibration resistance
Switching voltage high, min.	18 V 2 5 V	Vibration resistance
Switching voltage low, max.	2.5 V	Shock resistance
Switching voltage low, max. Switching voltage, typ. Voltage type	2.5 V 22.5 V	Shock resistance
Switching voltage low, max. Switching voltage, typ. Voltage type Connection	2.5 V 22.5 V DC	Shock resistance US patents Classification Customs tariff number
Switching voltage low, max. Switching voltage, typ. Voltage type	2.5 V 22.5 V	Shock resistance US patents Classification Customs tariff number eCl@ss 8.0
Switching voltage low, max. Switching voltage, typ. Voltage type Connection Number of connections	2.5 V 22.5 V DC	Shock resistance US patents Classification Customs tariff number eCl@ss 8.0 eCl@ss 9.0
Switching voltage low, max. Switching voltage, typ. Voltage type Connection Number of connections Connection 1	2.5 V 22.5 V DC 1 Piece(s)	Shock resistance US patents Classification Customs tariff number eCl@ss 8.0 eCl@ss 9.0 ETIM 5.0
Switching voltage low, max. Switching voltage, typ. Voltage type Connection Number of connections Connection 1 Function	2.5 V 22.5 V DC 1 Piece(s) Machine interface	Shock resistance US patents Classification Customs tariff number eCl@ss 8.0 eCl@ss 9.0
Switching voltage low, max. Switching voltage, typ. Voltage type Connection Number of connections Connection 1	2.5 V 22.5 V DC 1 Piece(s)	Shock resistance US patents Classification Customs tariff number eCl@ss 8.0 eCl@ss 9.0 ETIM 5.0
Switching voltage low, max. Switching voltage, typ. Voltage type Connection Number of connections Connection 1 Function Type of connection	2.5 V 22.5 V DC 1 Piece(s) Machine interface Connector	Shock resistance US patents Classification Customs tariff number eCl@ss 8.0 eCl@ss 9.0 ETIM 5.0
Switching voltage low, max. Switching voltage, typ. Voltage type Connection Number of connections Connection 1 Function Type of connection Thread size	2.5 V 22.5 V DC 1 Piece(s) Machine interface Connector M12	Shock resistance US patents Classification Customs tariff number eCl@ss 8.0 eCl@ss 9.0 ETIM 5.0

Cable properties	
Permissible conductor cross	0.25 mm ²
section, typ.	100
Length of connection cable, max.	100 m
Permissible cable resistance to load, max.	200 Ω
loud, muxi	
Mechanical data	
	29 mm x 1,716 mm x 35.4 mm
Dimension (W x H x L) Housing material	Metal, Aluminum
Lens cover material	Plastic/PC
Material of end caps	Diecast zinc
Net weight	1,800 g
Housing color	Silver
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	0 55 °C
Ambient temperature, storage	-30 70 °C
Relative humidity (non-condensing)	095%
(non condensity)	
Ex specification	
Ex device category	3D
Ex device category	3D 3G
	3G
Ex device category	3G 2
Ex-zone	3G 2 22
Ex-zone Ex device group	3G 2
Ex-zone Ex device group Permissible surface temperature	3G 2 22 II T<85° (T4) °C
Ex-zone Ex device group	3G 2 22 II
Ex-zone Ex device group Permissible surface temperature	3G 2 22 II T<85° (T4) °C "nA" non-sparking
Ex-zone Ex device group Permissible surface temperature	3G 2 22 II T<85° (T4) °C "nA" non-sparking
Ex-zone Ex device group Permissible surface temperature Ignition protection type Certifications	3G 2 22 II T<85° (T4) °C "nA" non-sparking
Ex-zone Ex device group Permissible surface temperature Ignition protection type	3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing
Ex-zone Ex device group Permissible surface temperature Ignition protection type Certifications Degree of protection	3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing IP 65
Ex-zone Ex device group Permissible surface temperature Ignition protection type Certifications Degree of protection Protection class	3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing IP 65 III
Ex-zone Ex device group Permissible surface temperature Ignition protection type Certifications Degree of protection Protection class	3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing "tc" protection through housing
Ex-zone Ex device group Permissible surface temperature Ignition protection type Certifications Degree of protection Protection class Certifications	3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing "tc" protection through housing IIP 65 III c TÜV NRTL US TÜV Süd
Ex-zone Ex device group Permissible surface temperature Ignition protection type Certifications Degree of protection Protection class Certifications Vibration resistance	3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing "tc" protection through housing IIP 65 III c TÜV NRTL US TÜV Süd 50 m/s²
Ex-zone Ex device group Permissible surface temperature Ignition protection type Certifications Degree of protection Protection class Certifications Vibration resistance Shock resistance	3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing IP 65 III c TÜV NRTL US TÜV Süd 50 m/s ² 100 m/s ²
Ex-zone Ex device group Permissible surface temperature Ignition protection type Certifications Degree of protection Protection class Certifications Vibration resistance Shock resistance US patents Classification	3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing IP 65 III c TÜV NRTL US TÜV Süd 50 m/s ² 100 m/s ² US 6,418,546 B
Ex-zone Ex device group Permissible surface temperature Ignition protection type Certifications Certifications Degree of protection Protection class Certifications Vibration resistance Shock resistance US patents Classification Customs tariff number	3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing IP 65 III c TÜV NRTL US TÜV Süd 50 m/s ² 100 m/s ² US 6,418,546 B 85365019
Ex-zone Ex device group Permissible surface temperature Ignition protection type Certifications Certifications Certifications Vibration resistance Shock resistance US patents Classification Customs tariff number eCl@ss 8.0	3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing "tc" protection through housing IP 65 III c TÜV NRTL US TÜV Süd 50 m/s ² 100 m/s ² US 6,418,546 B 85365019 27272704
Ex-zone Ex device group Permissible surface temperature Ignition protection type Certifications Certifications Certifications Vibration resistance Shock resistance US patents Classification Customs tariff number eCl@ss 8.0 eCl@ss 9.0	3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing IP 65 III c TÜV NRTL US TÜV Süd 50 m/s ² 100 m/s ² US 6,418,546 B 85365019 27272704 27272704
Ex-zone Ex device group Permissible surface temperature Ignition protection type Certifications Certifications Certifications Vibration resistance Shock resistance US patents Classification Customs tariff number eCl@ss 8.0 eCl@ss 9.0 ETIM 5.0	3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing IP 65 III c TÜV NRTL US TÜV Süd 50 m/s ² 100 m/s ² US 6,418,546 B 85365019 27272704 27272704 EC002549
Ex-zone Ex device group Permissible surface temperature Ignition protection type Certifications Certifications Certifications Vibration resistance Shock resistance US patents Classification Customs tariff number eCl@ss 8.0 eCl@ss 9.0	3G 2 22 II T<85° (T4) °C "nA" non-sparking "tc" protection through housing IP 65 III c TÜV NRTL US TÜV Süd 50 m/s ² 100 m/s ² US 6,418,546 B 85365019 27272704 27272704
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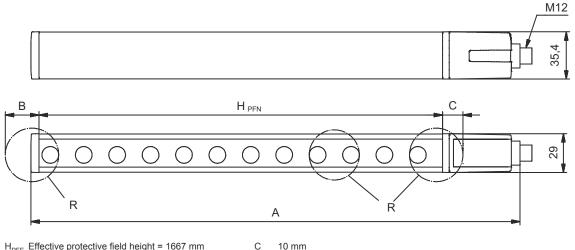
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Dimensioned drawings



All dimensions in millimeters

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



 H_{PFE} Effective protective field height = 1667 mm

10 mm

 H_{PFN} Nominal protective field height = 1650 mm

А Total height = 1716 mm

В 7 mm R

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

Electrical connection

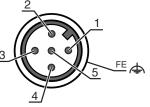
Connection 1

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

Pin **Pin assignment**

Conductor color

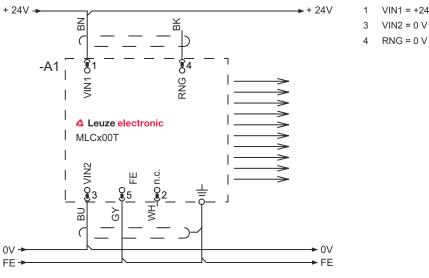
1	VIN1	Brown	
2	n.c.	White	
3	VIN2	Blue	3
4	RNG	Black	
5	FE/SHIELD	Gray	4
			4



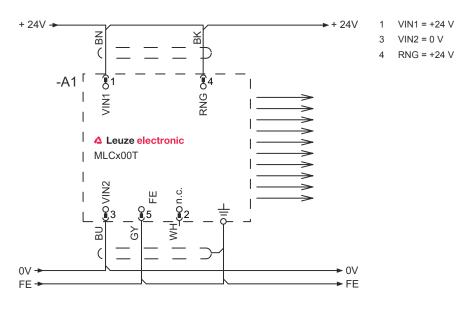
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Circuit diagrams

Transmission channel C1, reduced range



Transmission channel C1, standard range

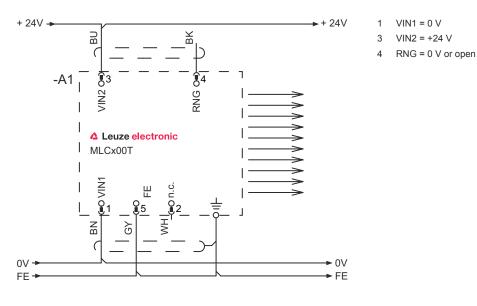


- VIN1 = +24 V
- RNG = 0 V or open

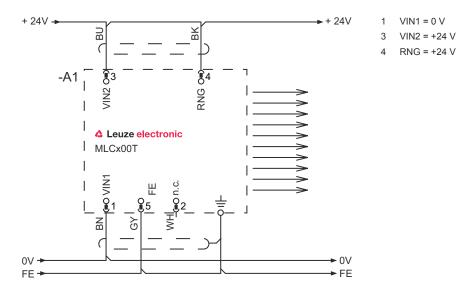
Circuit diagrams

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Transmission channel C2, reduced range



Transmission channel C2, standard range



Operation and display

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

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 Part no.	Designation	Article	Description
68042216	MLC520R20-1650- EX2	Safety light curtain receiver	Resolution: 20mm Protective field height: 1,650mm Response time: 29ms Connection: Connector, M12, Metal, 8-pin Function package: Standard

Part number code

MLC	Safety light curtain
x	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
e	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
N	Note

Notes

 Observe intended use!

 Image: The product may only be put into operation by competent persons.

 Image: Only use the product in accordance with its intended use.

Accessories

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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	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

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

No. A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.