## SMART SENSOR BUSINESS

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Part no.: 68016407 MLC500T40-750H/A Safety light curtain transmitter

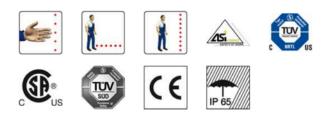


Figure can vary

# Contents

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## Part no.: 68016407 – MLC500T40-750H/A – Safety light curtain transmitter

#### **Technical data**

Series     MLC 500       Device type     Transmitter       Cascading     Host       Contains     2x BT-NC sliding block       Application     Access guarding Damper zone guarding Hand protection       Characteristic parameters     Type       Type     4. IEC/EN 61496       Sill     3. IEC 61508       Sill/L     20 years , EN ISO 13849-1       Protective field data     Protective field height       Protective field height     750 mm       Operating range     020 m       Optical between transmitter and receiver     Light source       LED light wavelength     940 mm       Trasmetited signal shape     Pule	Basic data			
Cascading     Host       Contains     2x BT-NC sliding block       Application     Acress guarding Danger zone guarding Hand protection       Characteristic parameters     Type       Type     4, IEC/EN 61496       SiL     3, IEC 61508       SiLCL     3, IEC/EN 62061       Mission time T <sub>M</sub> 20 years, EN ISO 13849-1       Protective field data     Resolution       Protective field height     750 nm       Operating range     0 20 m       Optical data     Number of beams       Number of beams     30 Piece(s)       Synchronization     Optical between transmitter and receiver       LED light wavelength     940 nm       Transmitted-signal shape     Pulsed       LED group     Exempt group in acc. with EN 62471:2008       Electrical data     Supply voltage Ua       Number of digital switching inputs     1 Piece(s)       Switching ubage Ua     2.6	Series	MLC 500		
Contains       2x BT-NC silding block         Application       Access guarding Danger zone guarding Hand protection         Characteristic parameters       Type         Type       4, IEC/EN 61496         SiL       3, IEC 61508         SiLCL       3, IEC 61508         SiLCL       3, IEC 61508         Mission time TM       20 years , EN ISO 13849-1         Protective field data       Resolution         Resolution       40 mm         Protective field height       750 mm         Operating range       0 20 m         Optical data       Number of beams         Number of beams       30 Piece(s)         Synchronization       Optical between transmitter and receiver         Light wavelength       940 mm         Transmitted-signal shape       Pulsed         LED group       Exempt group in acc. with EN 62471:2008         Electrical data       Protective of usult         Number of digital switching inputs       1 Piece(s)         Supply voltage Us       2.5 31.6 V         Current consumption from AS-i circuit       50 mA         Impti       Number of digital switching inputs         Type       Digital switching input         Switching voltage Us, max.	Device type	Transmitter		
Application       Access guarding Darget zeros guarding Hand protection         Characteristic parameters       ************************************		Host		
Characteristic parameters         Type       4. IEC/EN 61496         SiL       3. IEC 61508         SiLCL       3. IEC 61508         Mission time TM       20 years , EN ISO 13849-1         Protective field data         Resolution       40 mm         Protective field data       750 mm         Operating range       0 20 m         Optical data         Number of beams       30 Pice(s)         Synchronization       Optical between transmitter and receiver         Light source       LED, Infrared         LED light wavelength       940 nm         Transmitted-signal shape       Pulsed         LED roup       Exempt group in acc. with EN 62471:2008         Electrical data         Protective circuit       Overvoltage protection Short circuit protected         Short circuit protected       Electrical data         Protective circuit       26.531.6 V         Current consumption from AS-i circuit       50 mA         Inputs       1 Pice(s)         Switching uptage ligh, min.       1 Pice(s)         Switching voltage, typ.       22.5 V         Voltage type       DC	Contains	2x BT-NC sliding block		
Type       4, IEC/EN 61498         SIL       3, IEC 61508         SILCL       3, IEC/EN 62061         Mission time TM       20 years, EN ISO 13849-1         Protective field data         Resolution       40 mm         Protective field height       750 mm         Operating range       0 20 m         Optical data         Number of beams       30 Piece(s)         Synchronization       Optical between transmitter and receiver         Light source       LED , Infrared         LED ight wavelength       940 nm         Transmitted-signal shape       Pulsed         LED group       Exempt group in acc. with EN 62471:2008         Electrical data         Protective circuit         Overvaltage protection Short circuit protected         Supply voltage Up       26.5 31.6 V         Current consumption from AS-i circuit         Switching inputs       1 Piece(s)         Switching inputs       1 Piece(s)         Switching inputs       1 Piece(s)         Switching voltage high, min.       18 V         Switching voltage high, min.       18 V         Switching voltage high, min.       18 V	Application	Danger zone guarding		
SiL     3, IEC 61508       SILCL     3, IEC/EN 62061       Mission time T <sub>M</sub> 20 years, EN ISO 13849-1       Protective field data       Resolution     40 mm       Protective field height     750 mm       Operating range     0 20 m       Optical data       Number of beams     30 Piece(s)       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       Protective circuit     Overvoltage protection Short circuit protected       Supply voltage Us     26.5 31.6 V       Current consumption from AS-i circuit       Type     Digital switching inputs       Type     Digital switching inputs       Type     Digital switching input       Switching voltage high, min.     18 V       Switching voltage type     DC       Voltage type     DC	Characteristic parameters			
SILCL     3, IEC/EN 62061       Mission time T <sub>M</sub> 20 years, EN ISO 13849-1       Protective field data       Resolution     40 mm       Protective field height     750 mm       Operating range     0 20 m       Optical data     0 protective field height       Number of beams     30 Piece(s)       Synchronization     Optical between transmitter and receiver       Light source     LED, Infrared       LED ight wavelength     940 nm       Transmitted-signal shape     Pulsed       LED group     Exempt group in acc. with EN 62471:2008       Electrical data     Overvoltage protection Short circuit Toolected       Protective circuit     Overvoltage protection Short circuit protected       Supply voltage UB     26.5 31.6 V       Current consumption from AS-i circuit     50 mA       Ipputs     Number of digital switching inputs       Number of digital switching inputs     1 Piece(s)       Switching voltage low, max.     2.5 V       Switching voltage low,	Туре	4 , IEC/EN 61496		
Mission time T <sub>M</sub> 20 years , EN ISO 13849-1       Protective field data       Resolution     40 mm       Protective field height     750 mm       Operating range     0 20 m       Optical data        Number of beams     30 Piece(s)       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        Protective circuit     Overvoltage protection Short circuit protected       Supply voltage UB     26.5 31.6 V       Current consumption from AS-i circuit     50 mA       Inputs     1 Piece(s)       Number of digital switching inputs     1 Piece(s)       Switching voltage log, max.     2.5 V       Switching voltage low, max.     2.5 V       Switching voltage, typ.     22.5 V       Vidtage type     DC	SIL	3 , IEC 61508		
Protective field data         Resolution       40 mm         Protective field height       750 mm         Operating range       0 20 m         Optical data       0 20 m         Number of beams       30 Piece(s)         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       Protective circuit         Protective circuit       Overvoltage protection Short circuit protected         Supply voltage UB       26.5 31.6 V         Current consumption from AS-i circuit       50 mA         Inputs       1 Piece(s)         Switching inputs       1 Piece(s)         Switching voltage low, max.       2.5 V         Switching voltage low, max.       2.5 V         Switching voltage, typ.       22.5 V         Voltage type       DC	SILCL	3 , IEC/EN 62061		
Resolution     40 mm       Protective field height     750 mm       Operating range     0 20 m       Optical data     0 20 m       Number of beams     30 Piece(s)       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       Protective circuit     Overvoltage protection Short circuit protected       Supply voltage Ug     26.5 31.6 V       Current consumption from AS-i circuit     50 mA       Interface       Type     Digital switching inputs       Type     Digital switching input       Switching voltage high, min.     18 V       Switching voltage high, min.     18 V       Switching voltage, typ.     22.5 V       Voltage type     DC	Mission time $T_M$	20 years , EN ISO 13849-1		
Protective field height       750 mm         Operating range       0 20 m         Optical data       20 m         Number of beams       30 Piece(s)         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         Protective circuit       Overvoltage protection Short circuit protected         Performance data       Supply voltage UB         Supply voltage UB       26.5 31.6 V         Current consumption from AS-i circuit       50 mA         Inputs       1 Piece(s)         Switching inputs       1 Piece(s)         Switching voltage high, min.       18 V         Switching voltage high, min.       18 V         Switching voltage high, min.       2.5 V         Switching voltage, typ.       2.5 V         Voltage type       DC	Protective field data			
Operating range       0 20 m         Optical data       30 Piece(s)         Number of beams       30 Piece(s)         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       Protective circuit         Protective circuit       Overvoltage protection Short circuit protected         Performance data       Supply voltage UB         Supply voltage UB       26.5 31.6 V         Current consumption from AS-i circuit       50 mA         Inputs       I Piece(s)         Switching inputs       1 Piece(s)         Switching voltage ligh, min.       18 V         Switching voltage low, max.       2.5 V         Voltage type       DC	Resolution	40 mm		
Optical data         Number of beams       30 Piece(s)         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       Protective circuit         Overvoltage protection Short circuit protected       Short circuit protected         Performance data       26.5 31.6 V         Supply voltage UB       26.5 31.6 V         Current consumption from AS-i circuit       50 mA         Inputs       Number of digital switching inputs         Number of digital switching inputs       1 Piece(s)         Switching voltage high, min.       18 V         Switching voltage high, min.       18 V         Switching voltage kigh, min.       25.5 V         Switching voltage, typ.       22.5 V         Voltage type       DC	Protective field height	750 mm		
Number of beams       30 Piece(s)         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         Fetertrical data         Protective circuit         Overvoltage protection Short circuit protected         Supply voltage UB         Query         Protective circuit         Overvoltage protection Short circuit protected         Supply voltage UB         Query         Protective circuit         Overvoltage protection Short circuit protected         Supply voltage UB         Query         Query         Protective circuit         So mA         Inputs         Type         Digital switching input         Switching voltage high, min.         Switching voltage low, max.         Query         Switching voltage tow, max.       2.5 V	Operating range	0 20 m		
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         Protective circuit         Overvoltage protection Short circuit protected         Performance data         Supply voltage UB         Supply voltage UB         Outrent consumption from AS-i circuit         Digital switching inputs         Interface         Number of digital switching inputs         Interface	Optical data			
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         Protective circuit       Overvoltage protection Short circuit protected         Performance data	Number of beams	30 Piece(s)		
LED light wavelength       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       26.5 31.6 V         Current consumption from AS-i circuit       50 mA         Inputs       Number of digital switching inputs         Type       Digital switching input         Switching voltage low, max.       2.5 V         Switching voltage low, max.       2.5 V         Switching voltage, typ.       22.5 V         Voltage type       DC	Synchronization	Optical between transmitter and receiver		
Transmitted-signal shape       Pulsed         LED group       Exempt group in acc. with EN 62471:2008         Electrical data       Overvoltage protection Short circuit protected         Protective circuit       Overvoltage protection Short circuit protected         Performance data       Supply voltage UB         Supply voltage UB       26.5 31.6 V         Current consumption from AS-i circuit       50 mA         Inputs       Number of digital 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	Light source	LED , Infrared		
LED group       Exempt group in acc. with EN 62471:2008         Electrical data         Protective circuit       Overvoltage protection Short circuit protected         Performance data         Supply voltage UB       26.5 31.6 V         Current consumption from AS-i circuit       50 mA         Inputs       Inputs         Number of digital switching inputs       1 Piece(s)         Switching inputs       1 Switching input         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	LED light wavelength	940 nm		
Electrical data         Protective circuit       Overvoltage protection Short circuit protected         Performance data         Supply voltage UB       26.5 31.6 V         Current consumption from AS-i circuit       50 mA         Inputs       1 Piece(s)         Switching inputs       1 Piece(s)         Switching voltage ligh, min.       18 V         Switching voltage low, max.       2.5 V         Switching voltage, typ.       22.5 V         Voltage type       DC	Transmitted-signal shape	Pulsed		
Protective circuit       Overvoltage protection Short circuit protected         Supply voltage UB       26.5 31.6 V         Current consumption from AS-i circuit       50 mA         Inputs       Inputs         Number of digital switching inputs       1 Piece(s)         Switching inputs       Digital switching input         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	LED group	Exempt group in acc. with EN 62471:2008		
Short circuit protected         Performance data         Supply voltage UB       26.5 31.6 V         Current consumption from AS-i circuit       50 mA         Inputs       Inputs         Number of digital switching inputs       1 Piece(s)         Switching inputs       1 Piece(s)         Switching voltage high, min.       18 V         Switching voltage low, max.       2.5 V         Switching voltage, typ.       22.5 V         Voltage type       DC	Electrical data			
Supply voltage UB       26.5 31.6 V         Current consumption from AS-i circuit       50 mA         Inputs       Inputs         Number of digital switching inputs       1 Piece(s)         Switching inputs       1 Piece(s)         Switching voltage high, min.       18 V         Switching voltage low, max.       2.5 V         Switching voltage, typ.       22.5 V         Voltage type       DC	Protective circuit	Overvoltage protection Short circuit protected		
Current consumption from AS-i circuit       50 mA         Inputs       Inputs         Number of digital switching inputs       1 Piece(s)         Switching inputs       Type         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	Performance data			
Inputs       1 Piece(s)         Switching inputs       1 Piece(s)         Switching inputs       Digital switching input         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 UB	26.5 31.6 V		
Number of digital switching inputs       1 Piece(s)         Switching inputs       Digital switching input         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	Current consumption from AS-i circuit	50 mA		
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	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	Number of digital switching inputs	1 Piece(s)		
Switching voltage high, min.     18 V       Switching voltage low, max.     2.5 V       Switching voltage, typ.     22.5 V       Voltage type     DC	Switching inputs			
Switching voltage low, max.     2.5 V       Switching voltage, typ.     22.5 V       Voltage type     DC	Туре	Digital switching input		
Switching voltage, typ.     22.5 V       Voltage type     DC	Switching voltage high, min.			
Voltage type DC Interface	Switching voltage low, max.	2.5 V		
Interface	Switching voltage, typ.	22.5 V		
	Voltage type	DC		
Type AS-Interface Safety at Work	Interface			
	Туре	AS-Interface Safety at Work		

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## Part no.: 68016407 – MLC500T40-750H/A – Safety light curtain transmitter

AS-i	
Function	Process
AS-i profile	S-0.B.F
Slave address	131 programmable, default=0
Cycle time acc. to AS-i specifications	Max. 5 ms
Connection	
Number of connections	2 Piece(s)
Connection 1	
Type of connection	Connector
Function	Machine interface
Thread size	M12
Material	Metal
No. of pins	5 -pin
Connection 2	
Type of connection	Cable with connector
Function	Cascade, Guest Out
	Cascade, Middle Guest Out
Cable length	330 mm
Sheathing material	PUR
Thread size	M12
Material	Plastic
No. of pins	8 -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 (W x H x L)	29 mm x 816 mm x 35.4 mm
Housing material	Metal, Aluminum
Lens cover material	Plastic / PMMA
Material of end caps	Diecast zinc
Net weight	975 g
Housing color	Yellow, RAL 1021
Type of fastening	Groove mounting
	Mounting bracket Swivel mount
Operation and display	
Type of display	LED
Number of LEDs	2 Piece(s)
	2 1 1000(0)
Environmental data	
Ambient temperature, operation	0 55 °C
Ambient temperature, storage	-30 70 °C
Relative humidity (non-condensing)	0 95 %
	0 30 /0
Certifications	
Degree of protection	IP 65

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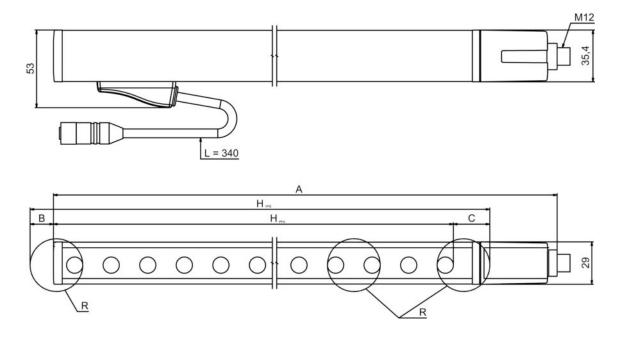
## Part no.: 68016407 – MLC500T40-750H/A – Safety light curtain transmitter

Protection class	III		
Certifications	c CSA US c TÜV NRTL US TÜV Süd		
Vibration resistance	50 m/s²		
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 = 790 mm HPFN Nominal protective field height = 750 mm

- A Total height = 816 mm
- B 25 mm

C 15 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.

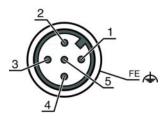
## Leuze electronic

## Part no.: 68016407 – MLC500T40-750H/A – Safety light curtain transmitter

#### **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

Pin	Pin assignment
1	AS-i+
2	n.c.
3	AS-i-
4	n.c.
5	n.c.



Connection 2		
Type of connection	Cable with connector	
Function	Cascade, Guest Out Cascade, Middle Guest Out	
Cable length	330 mm	
Sheathing material	PUR	
Cable color	Black	
Wire cross section	0.14 mm <sup>2</sup>	
Type of stranding	Pair stranding (twisted pair)	
Thread size	M12	
Туре	Female	
Material	Plastic	
No. of pins	8 -pin	
Encoding	A-coded	

### **Operation and display**

#### LEDs

LED	Display	Meaning
1	Off	Device switched off
	Red, continuous light	Device error
	Green, continuous light	Normal operation

## Part no.: 68016407 – MLC500T40-750H/A – Safety light curtain transmitter

#### Suitable receivers

Part no.	Designation	Article	Description
68017407	MLC510R40-750H/ A	Safety light curtain receiver	Resolution: 40 mm Protective field height: 750 mm Response time: 8 ms Interface: AS-Interface Safety at Work Connection: Connector, M12, Metal, 5 -pin

#### Part number code

Part designation: MLCxyy-za-hhhhei-ooo

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
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.

### Part no.: 68016407 – MLC500T40-750H/A – Safety light curtain transmitter

#### Accessories

Connection technology - Interconnection cables

Part no.	Designation	Article	Description
429278	CB- M12-2000E-8TP	Interconnection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 8 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 8 -pin Shielded: Yes Cable length: 2,000 mm Sheathing material: PUR

## Mounting technology - Swivel mounts

	Part no.	Designation	Article	Description
<b>PPPPPPPPPPPPP</b>	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
520101	AC-ALM-M	Alignment aid	Housing material: Plastic

#### Services

	Part no.	Designation	Article	Description
$\bigcirc$	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.