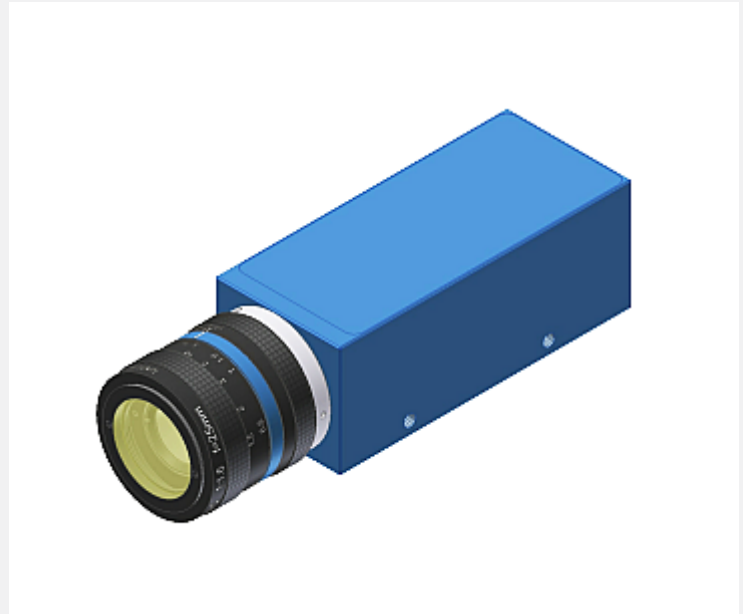


L-LAS Series

- ▶ L-LAS-CAM-256
- L-LAS-CAM-256-SL
- L-LAS-CAM-512
- L-LAS-CAM-512-SL
- L-LAS-CAM-1024
- L-LAS-CAM-1024-SL

- Various CCD line detectors available
- Several high-precise objectives to choose from
- Various optical filters and intermediate tubes available
- Sturdy metal housing, suitable for use in the industry
- Connection of external lighting units possible
- Various lighting units available



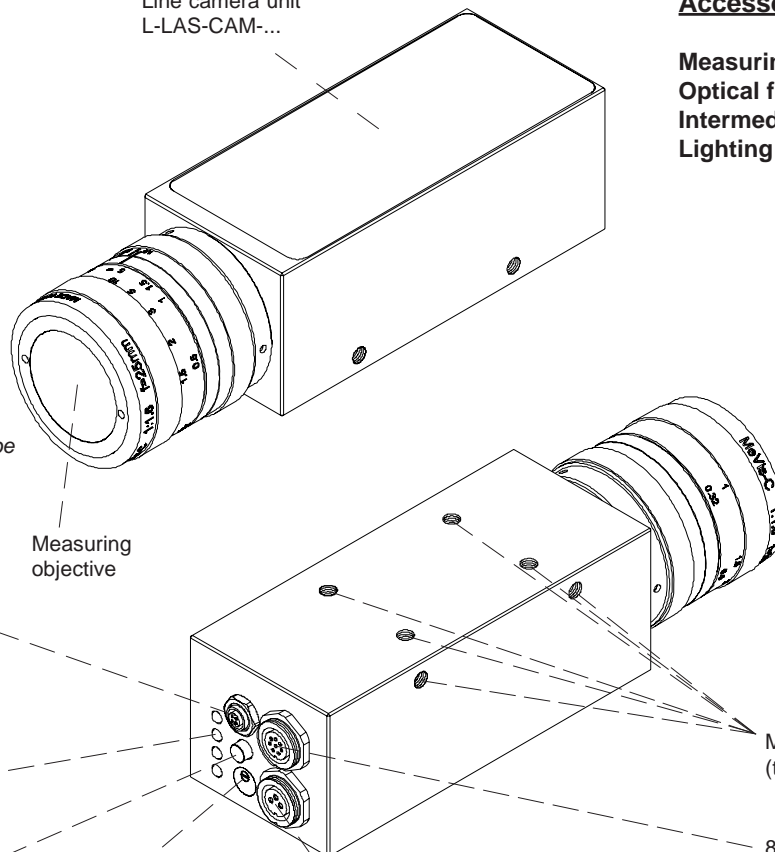
Design

Product name:

- L-LAS-CAM-256
- L-LAS-CAM-256-4/20
- L-LAS-CAM-256-SL
- L-LAS-CAM-256-SL-4/20
- L-LAS-CAM-512
- L-LAS-CAM-512-4/20
- L-LAS-CAM-512-SL
- L-LAS-CAM-512-SL-4/20
- L-LAS-CAM-1024
- L-LAS-CAM-1024-4/20
- L-LAS-CAM-1024-SL
- L-LAS-CAM-1024-SL-4/20

incl. Windows®-Software L-LAS-RL-Scope

Line camera unit
L-LAS-CAM-...



Accessories:

- Measuring objectives (p. 5-7)
- Optical filters (p. 8)
- Intermediate tubes (p. 8)
- Lighting units (p. 9-11)

4-pole fem. connector
Binder Series 707
(RS232 interface)

Connecting cable:
cab-las4/PC or
cab-las4/USB

LED display (cf. page 14)

TEACH/RESET button for
set point value teaching
(input IN1)

Potentiometer for
tolerance setting

4-pole fem. connector
Binder Series 712
(connection to lighting unit)

Connecting cable:
cab-las4-male-2m, cab-las4/4M12-fem-2m,
or cab-las4/4-y-2m

Mounting holes
(threaded)

8-pole fem. connector
Binder Series 712
(connection to PLC)

Connecting cable:
cab-las8/SPS



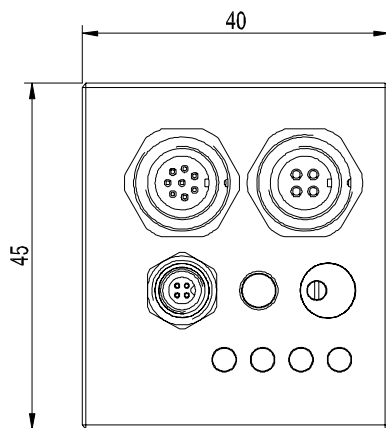
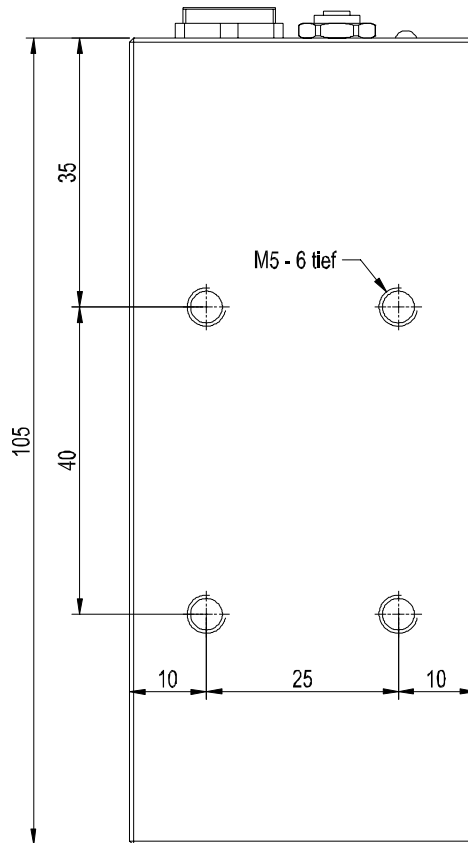
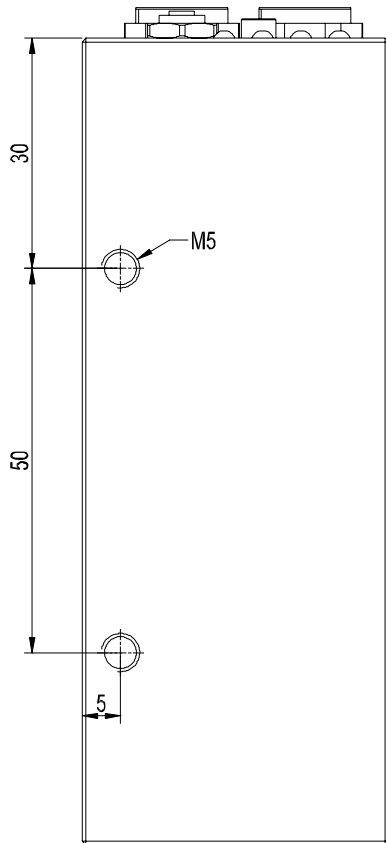
Technical Data

Model	L-LAS-CAM-256, -SL	L-LAS-CAM-512, -SL	L-LAS-CAM-1024, -SL
CCD line detector	L-LAS-CAM-256: Detector length approx. 16 mm, 256 pixel L-LAS-CAM-256-SL: Detector length approx. 6 mm, 256 pixel	L-LAS-CAM-512: Detector length approx. 12.5 mm, 512 pixel L-LAS-CAM-512-SL: Detector length approx. 6 mm, 512 pixel	L-LAS-CAM-1024: Detector length approx. 25 mm, 1024 pixel L-LAS-CAM-1024-SL: Detector length approx. 8 mm, 1024 pixel
Reference distance	Depends on the measuring object used		
Working distance	Depends on the measuring object used		
Measuring range	Depends on the measuring object used		
Resolution	typ. 0,4% of measuring range		
Light source	various external light sources are available		
Analog output (ANA)	Voltage output: 0 ... +10 V (Pin 8, red) optional type L-LAS-CAM-...-4/20: Current output: 4 ... 20 mA		
Digital outputs (OUT0, OUT1, OUT2)	pnp bright-switching/npn dark-switching or pnp dark-switching/npn bright-switching, adjustable under Windows®, 100 mA, short-circuit proof		
Digital inputs (IN0, IN1)	Input voltage +Ub/0V, with protective circuit IN0: External trigger, IN1: TEACH/RESET		
Output polarity	Bright/dark-switching, can be switched under Windows®		
Voltage supply	+15 ... +30 VDC		
Current consumption	typ. 200 mA		
Enclosure rating	IP54		
Sensitivity setting	adjustable with tolerance potentiometer or under Windows® at PC		
Teach button	for norm value teaching or for reset of maximum values		
Intensity correction	adjustable under Windows® at PC		
Operating temperature range	-10°C ... +60°C		
Storage temperature range	-20°C ... +85°C		
Housing material	Aluminium, anodized in blue		
Housing dimensions	LxWxH ca. 105 mm x 40 mm x 45 mm (without connector flanges)		
Type of connector	8-pole fem. connector type Binder 712 (PLC/Power), 4-pole fem. connector type Binder 707 (PC/RS232), 4-pole fem. connector type Binder 712 (connection to lighting unit)		
LED display	LED red (+) : Measuring value > upper tolerance threshold LED green : Measuring value within tolerance window LED red (-) : Measuring value < lower tolerance threshold LED yellow : LED for sensor adjustment (multifunctional)		
EMC test acc. to	DIN EN 60947-5-2		
Scan frequency	L-LAS-CAM-256: (to be def. yet) L-LAS-CAM-256-SL: (to be def. yet)	L-LAS-CAM-512: (to be def. yet) L-LAS-CAM-512-SL: (to be def. yet)	L-LAS-CAM-1024: (to be def. yet) L-LAS-CAM-1024-SL: (to be def. yet)
Max. switching current	Digital outputs OUT0, OUT1, OUT2: 100 mA, short-circuit proof		
Interface	RS232, parameterisable under Windows®		
Connecting cables	connection to PC: cab-las4/PC or cab-las4/PC-w bzw. cab-las4/USB connection to PLC: cab-las8/SPS or cab-las8/SPS-w connection to lighting unit: cab-las4-male-... or cab-las4/4M12-fem-...		



Dimensions

L-LAS-CAM-...:

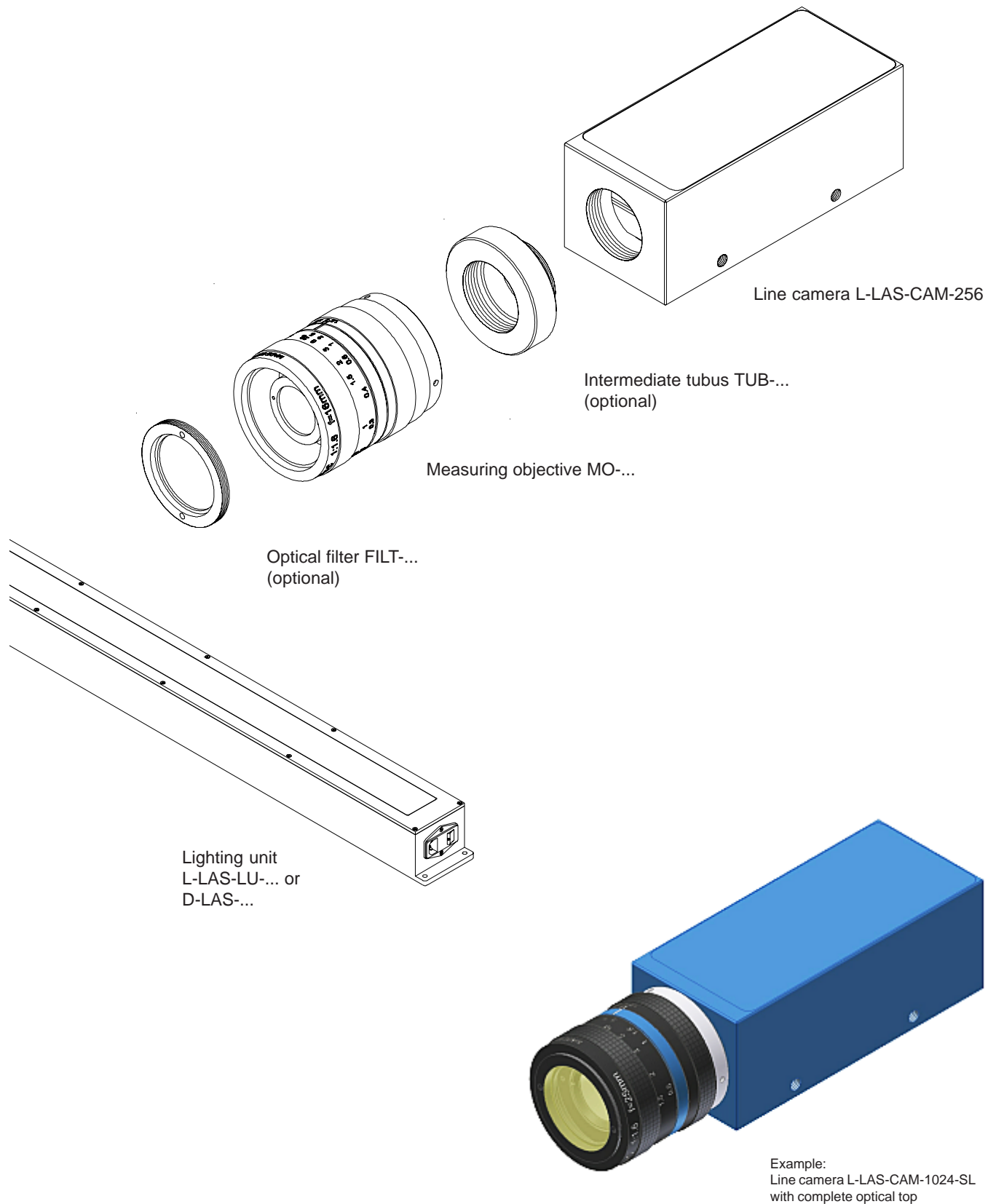


All dimensions in mm



Measuring System

Diagram of a complete measuring system L-LAS-CAM-256 with optics:





Measuring Objectives

Measuring objectives for L-LAS-CAM-... line cameras:

MO-C-1,8/75mm
MO-G-1,6/16mm
MO-G-1,6/25mm
MO-G-1,6/35mm
MO-G-1,8/50mm

MO-J-1x/50
MO-J-2x/56
MO-J-4x/20
MO-J-6x/13
MO-J-8x/9



MO-C-1,8/75



MO-G-1,6/16



MO-G-1,6/25



MO-G-1,6/35



MO-G-1,8/50



MO-J-4x/20

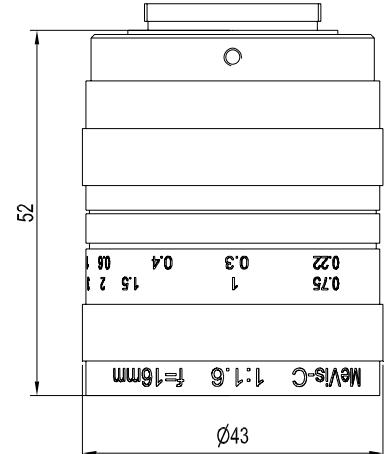
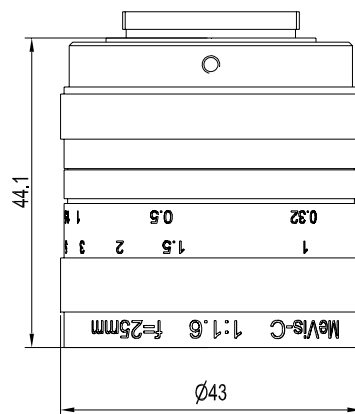
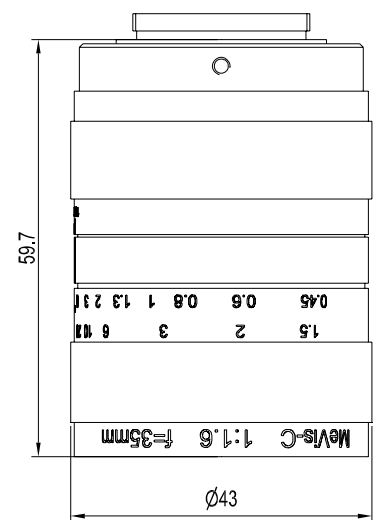
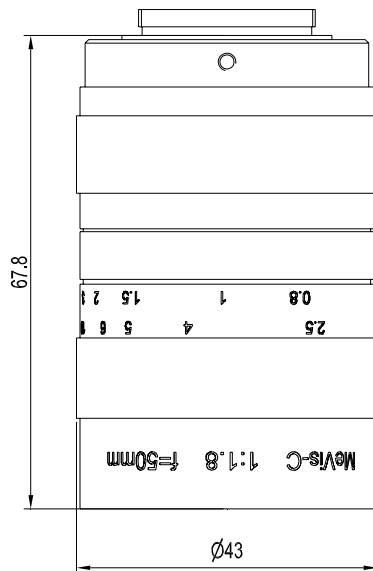
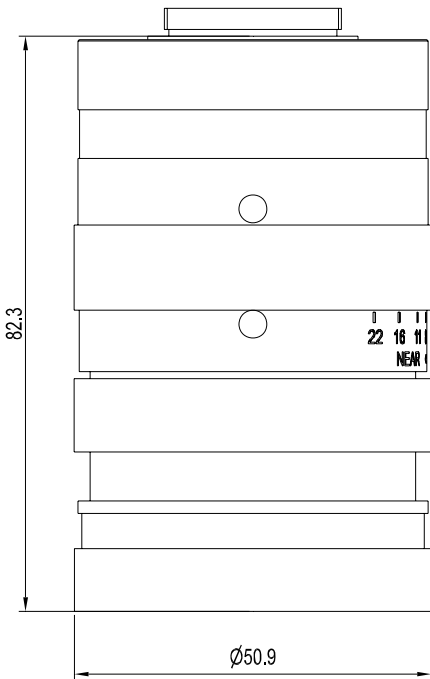
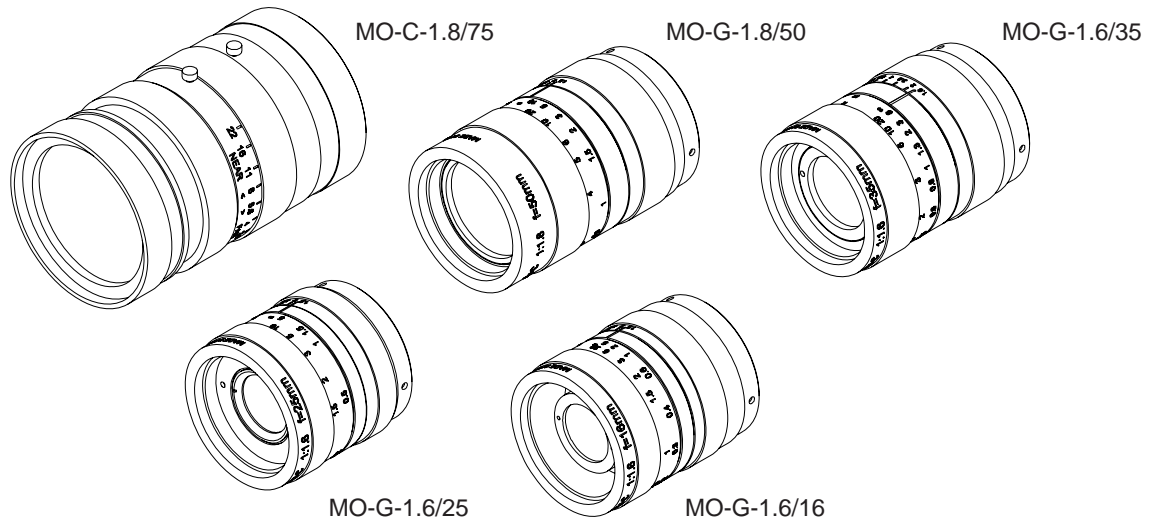
L-LAS-CAM-512-SL with measuring objective:	Reference distance	Working distance	Measuring distance
MO-G-1,6/16mm		(to be defined yet)	
MO-G-1,6/25mm		(to be defined yet)	
MO-G-1,6/35mm		(to be defined yet)	
MO-G-1,8/50mm		(to be defined yet)	
MO-C-1,8/75mm		(to be defined yet)	
MO-J-1x/50		(to be defined yet)	
MO-J-2x/26		(to be defined yet)	
MO-J-4x/20	typ. 75 mm	typ. 75 mm ± 2 mm	typ. 1,5 mm (± 0,75 mm)
MO-J-6x/13		(to be defined yet)	
MO-J-8x/9		(to be defined yet)	



Measuring Objectives

Dimensions of measuring objectives for L-LAS-CAM-... line cameras:

- MO-C-1,8/75mm
- MO-G-1,6/16mm
- MO-G-1,6/25mm
- MO-G-1,6/35mm
- MO-G-1,8/50mm



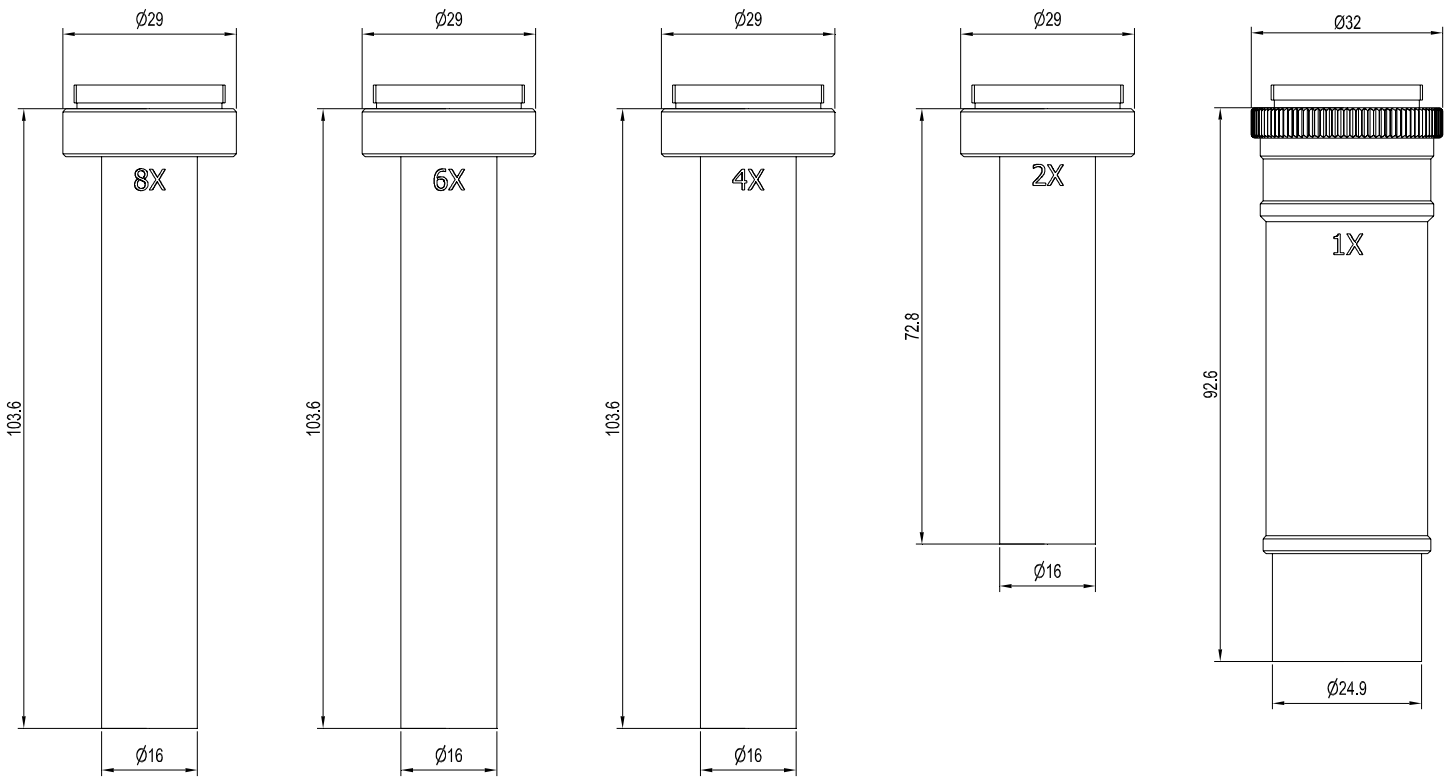
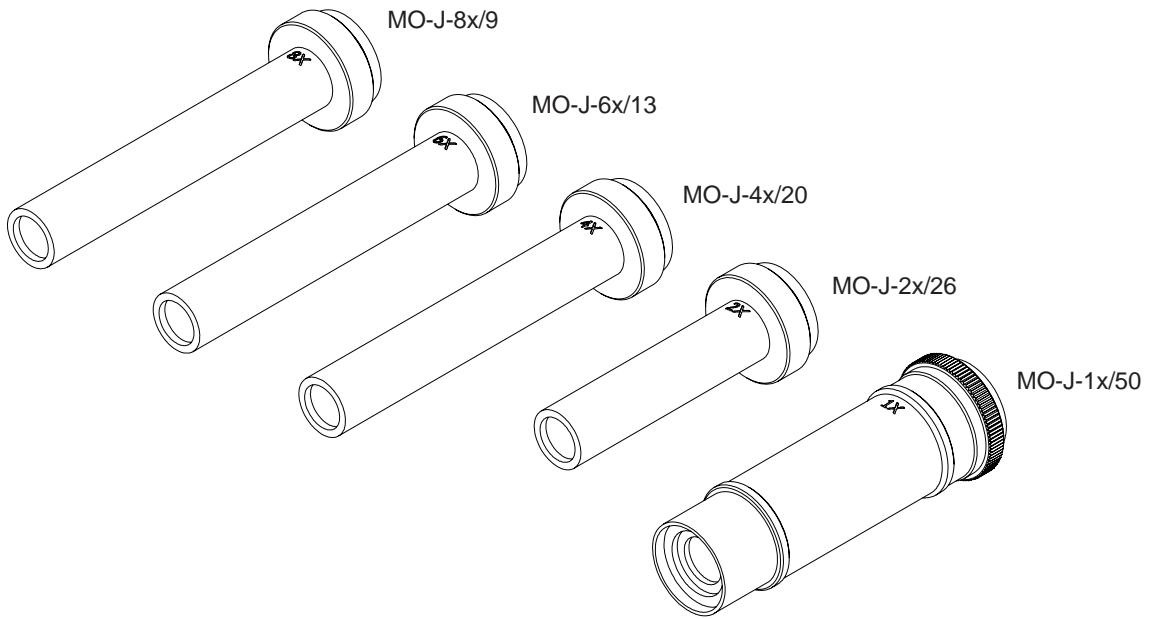
All dimensions in mm



Measuring Objectives

Dimensions of measuring objectives for L-LAS-CAM-... line cameras:

- MO-J-1x/50
- MO-J-2x/56
- MO-J-4x/20
- MO-J-6x/13
- MO-J-8x/9



All dimensions in mm



Optical Filters

Optical filters (optional) for L-LAS-CAM-... line cameras:

(Tool for mounting FILT-MOUNT: please order separately)

- FILT-G-9-3-IF670** (suitable for measuring objectives MO-G-...)
- FILT-G-9-3-GG475** (suitable for measuring objectives MO-G-...)
- FILT-G-9-3-KG5** (suitable for measuring objectives MO-G-...)
- FILT-G-9-3-RG715** (suitable for measuring objectives MO-G-...)

- IF670 = Interference filter 670 nm
- GG 475 = UV block filter
- KG5 = IR block filter
- RG715 = Day light block filter

- FILT-G-17-3-IF670** (suitable for measuring objectives MO-G-...)
- FILT-G-17-3-GG475** (suitable for measuring objectives MO-G-...)
- FILT-G-17-3-KG5** (suitable for measuring objectives MO-G-...)
- FILT-G-17-3-RG715** (suitable for measuring objectives MO-G-...)

Product name	A	ØB	t
FILT-G-9-3-...	M35.5x0.5	9mm	3mm
FILT-G-17-3-...	M35.5x0.5	17mm	3mm
FILT-G-26-3-...	M35.5x0.5	26mm	3mm
FILT-G-26-4-...	M35.5x0.5	26mm	4mm
FILT-C-9-3-...	M49x0.75	9mm	3mm
FILT-C-17-3-...	M49x0.75	17mm	3mm
FILT-C-26-3-...	M49x0.75	26mm	3mm

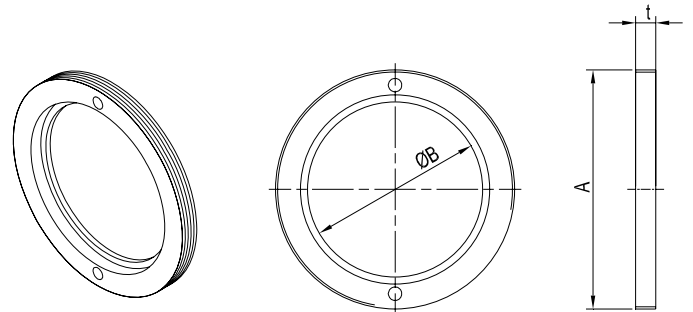
- FILT-G-26-3-GG475** (suitable for measuring objectives MO-G-...)

- FILT-G-26-4-KG5** (suitable for measuring objectives MO-G-...)

- FILT-C-9-3-IF670** (suitable for measuring objectives MO-C-...)
- FILT-C-9-3-GG475** (suitable for measuring objectives MO-C-...)
- FILT-C-9-3-KG5** (suitable for measuring objectives MO-C-...)
- FILT-C-9-3-RG715** (suitable for measuring objectives MO-C-...)

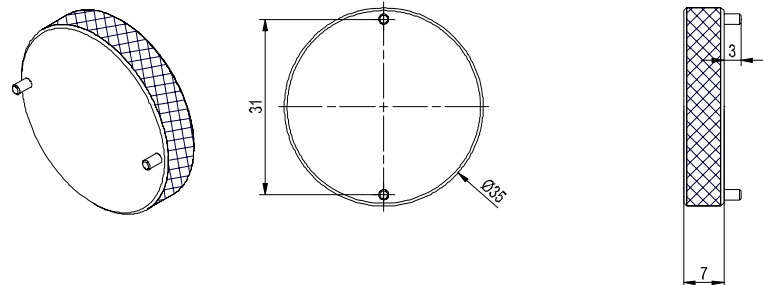
- FILT-C-17-3-IF670** (suitable for measuring objectives MO-C-...)
- FILT-C-17-3-GG475** (suitable for measuring objectives MO-C-...)
- FILT-C-17-3-KG5** (suitable for measuring objectives MO-C-...)
- FILT-C-17-3-RG715** (suitable for measuring objectives MO-C-...)

- FILT-C-26-3-GG475** (suitable for measuring objectives MO-C-...)



Tool for mounting of optical filters FILT-G-... and FILT-C:

MOUNT-FILT
(please order separately)

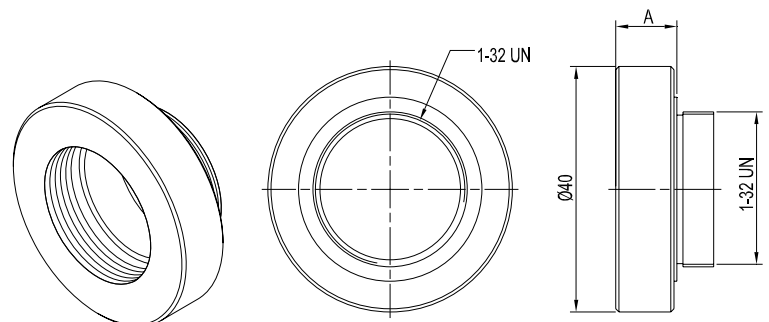


Intermediate Tubes

Intermediate tubes / adapter ring (optional) for L-LAS-CAM-... line cameras:

- TUB-10** (suitable for all measuring objectives MO-...)
- TUB-20** (suitable for all measuring objectives MO-...)
- TUB-30** (suitable for all measuring objectives MO-...)
- TUB-50** (suitable for all measuring objectives MO-...)
- TUB-100** (suitable for all measuring objectives MO-...)

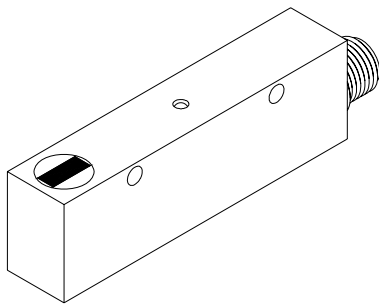
Product name	A
TUB-10	10mm
TUB-20	20 mm
TUB-30	30mm
TUB-50	50mm
TUB-100	100mm



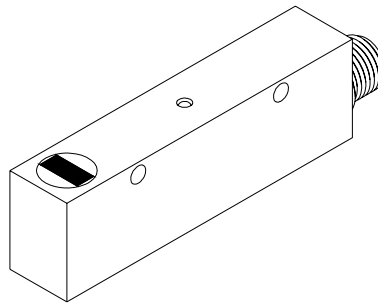
All dimensions in mm

LASER lighting units for L-LAS-CAM-... line cameras:

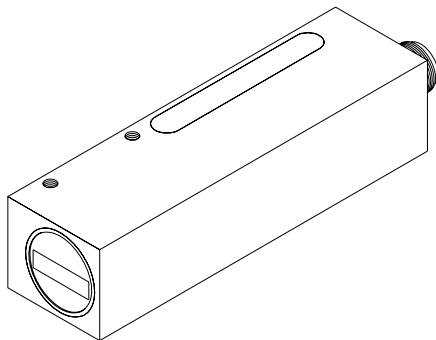
D-LAS-ED1-11x4-T	(Laser beam cross-section approx. 11 mm x 4 mm)
D-LAS-ED1-4x11-T	(Laser beam cross-section approx. 4 mm x 11 mm)
D-LAS-24-T (without aperture)	(Laser beam cross-section approx. 18 mm x 8 mm)
D-LAS-24/90-T (without aperture)	(Laser beam cross-section approx. 18 mm x 8 mm)
D-LAS-34-T (without aperture)	(Laser beam cross-section approx. 32 mm x 12 mm)



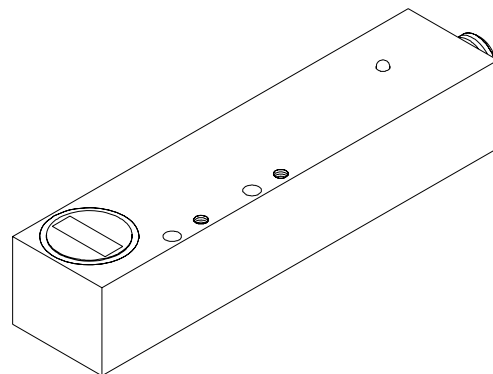
D-LAS-ED1-11x4-T



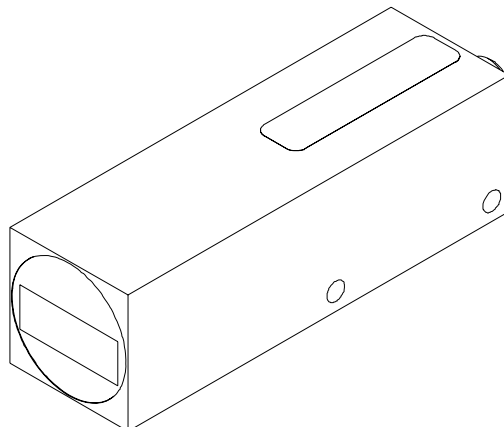
D-LAS-ED1-4x11-T



D-LAS-24-T



D-LAS-24/90-T



D-LAS-34-T

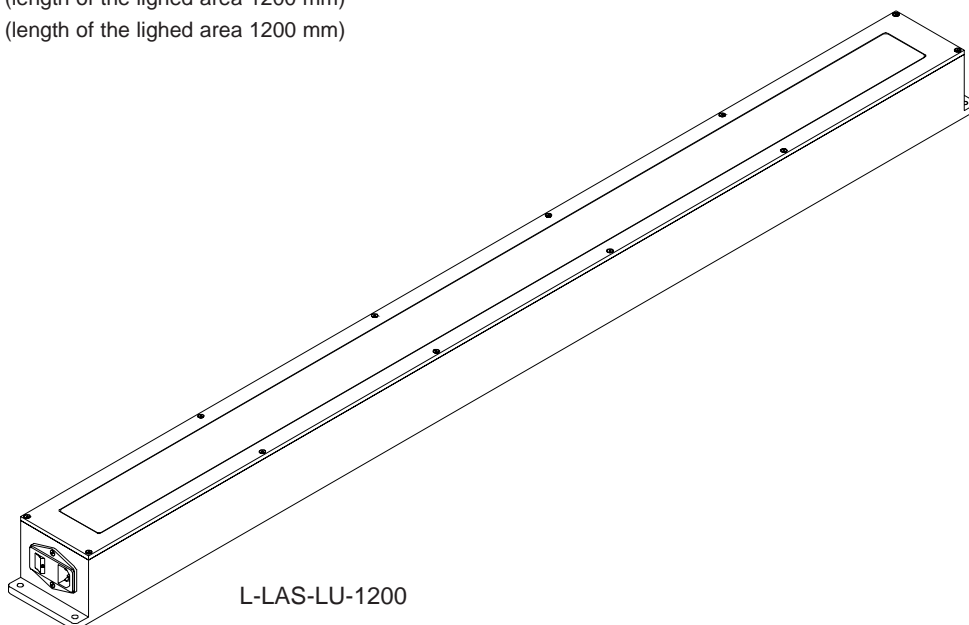


Lighting Units

Lighting units for L-LAS-CAM-... line cameras:

L-LAS-LU-50-VIS	(length of the lighed area 50 mm)
L-LAS-LU-50-UV	(length of the lighed area 50 mm)
L-LAS-LU-50-IR	(length of the lighed area 50 mm)
L-LAS-LU-100-VIS	(length of the lighed area 100 mm)
L-LAS-LU-100-UV	(length of the lighed area 100 mm)
L-LAS-LU-100-IR	(length of the lighed area 100 mm)
L-LAS-LU-150-VIS	(length of the lighed area 150 mm)
L-LAS-LU-150-UV	(length of the lighed area 150 mm)
L-LAS-LU-150-IR	(length of the lighed area 150 mm)
L-LAS-LU-200-VIS	(length of the lighed area 200 mm)
L-LAS-LU-200-UV	(length of the lighed area 200 mm)
L-LAS-LU-200-IR	(length of the lighed area 200 mm)
L-LAS-LU-300-VIS	(length of the lighed area 300 mm)
L-LAS-LU-300-UV	(length of the lighed area 300 mm)
L-LAS-LU-300-IR	(length of the lighed area 300 mm)
L-LAS-LU-400-VIS	(length of the lighed area 400 mm)
L-LAS-LU-400-UV	(length of the lighed area 400 mm)
L-LAS-LU-400-IR	(length of the lighed area 400 mm)
L-LAS-LU-500-VIS	(length of the lighed area 500 mm)
L-LAS-LU-500-UV	(length of the lighed area 500 mm)
L-LAS-LU-500-IR	(length of the lighed area 500 mm)
L-LAS-LU-600-VIS	(length of the lighed area 600 mm)
L-LAS-LU-600-UV	(length of the lighed area 600 mm)
L-LAS-LU-1200-VIS	(length of the lighed area 1200 mm)
L-LAS-LU-1200-UV	(length of the lighed area 1200 mm)

L-LAS-LU-400

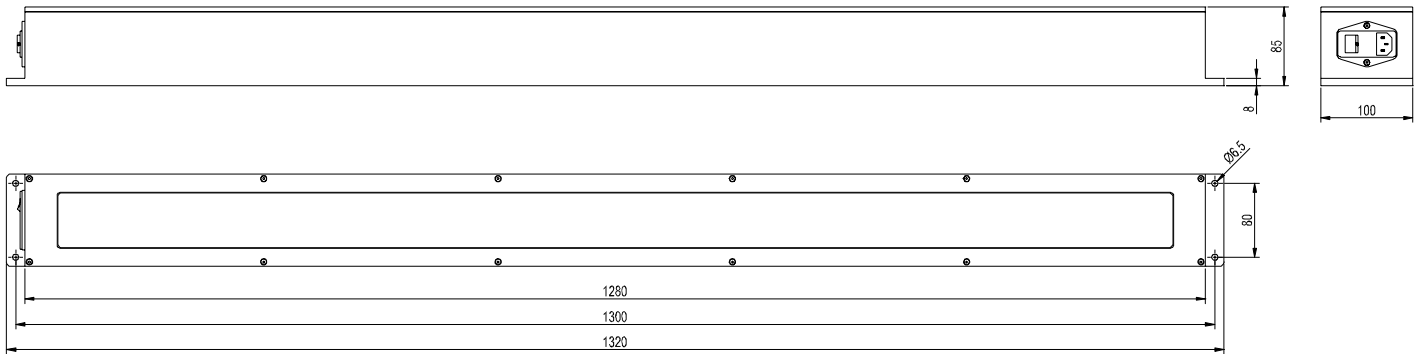


L-LAS-LU-1200



Lighting Units

Dimensions of L-LAS-LU-1200-....:



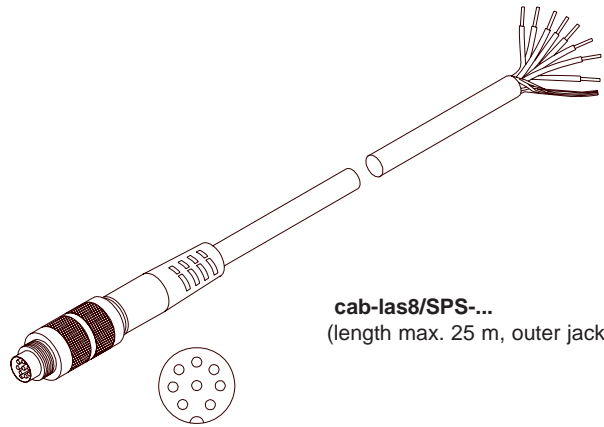
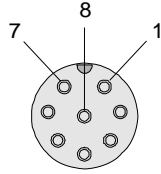
All dimensions in mm



Connector Assignment

**Connection to PLC:
8-pole fem. connector Binder Series 712**

Pin:	Color:	Assignment:
1	white	GND (0V)
2	brown	+15VDC ... +30VDC (+Ub)
3	green	IN0 (EXT TRIGGER)
4	yellow	IN1 (TEACH / RESET)
5	grey	OUT0 (-)
6	pink	OUT1 (+)
7	blue	OUT2 (OK)
8	red	ANA (voltage 0 ... +10V) optional with type 4/20: ANA (current 4 ... 20mA)

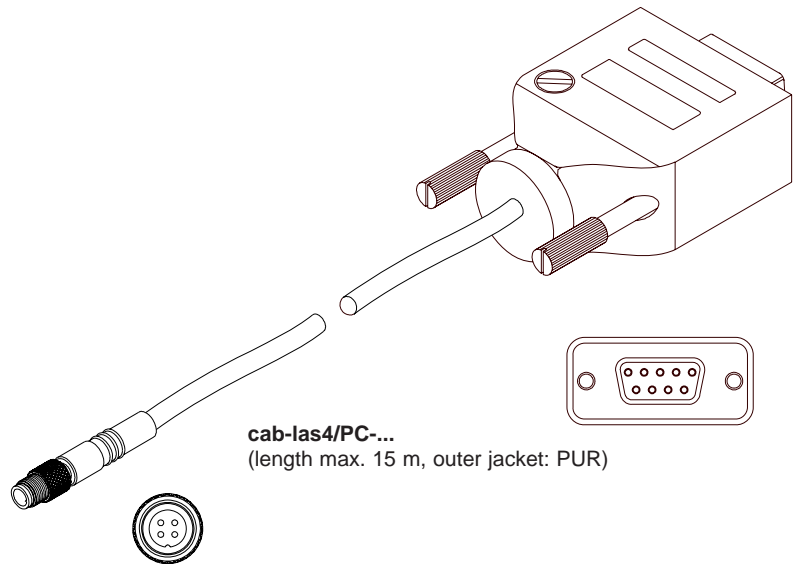
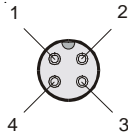


cab-las8/SPS-...
(length max. 25 m, outer jacket: PUR)

Connecting cable:
cab-las8/SPS-2m or
cab-las8/SPS-w-2m (angle type 90°)
(standard length 2m)

**Connection to PC:
4-pole fem. connector Binder Series 707**

Pin:	Assignment:
1	+24VDC (+Ub)
2	GND (0V)
3	RxD
4	TxD

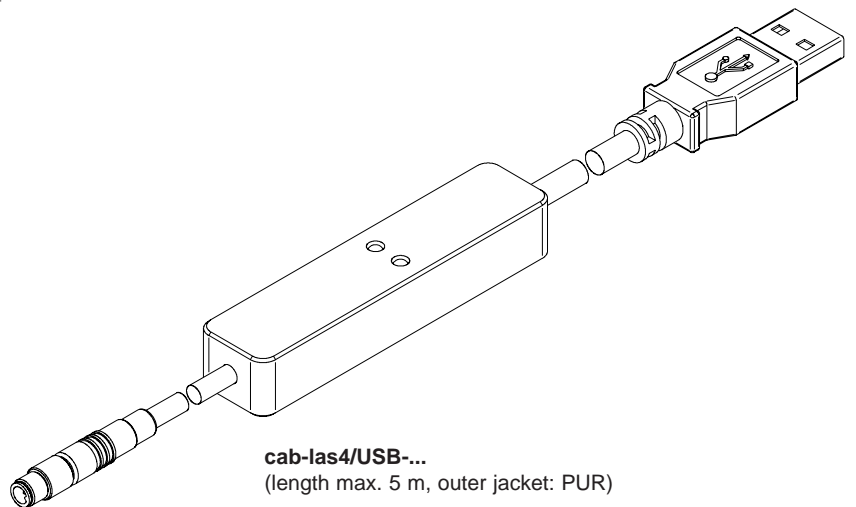


cab-las4/PC-...
(length max. 15 m, outer jacket: PUR)

Connecting cable:
cab-las4/PC-2m or
cab-las4/PC-w-2m (angle type 90°)
(standard length 2m)

**alternative:
Connection via USB interface at the PC:**

Connecting cable:
cab-las4/USB-0.5m
cab-las4/USB-1m
cab-las4/USB-2m
(incl. driver software)



cab-las4/USB-...
(length max. 5 m, outer jacket: PUR)



Connector Assignment

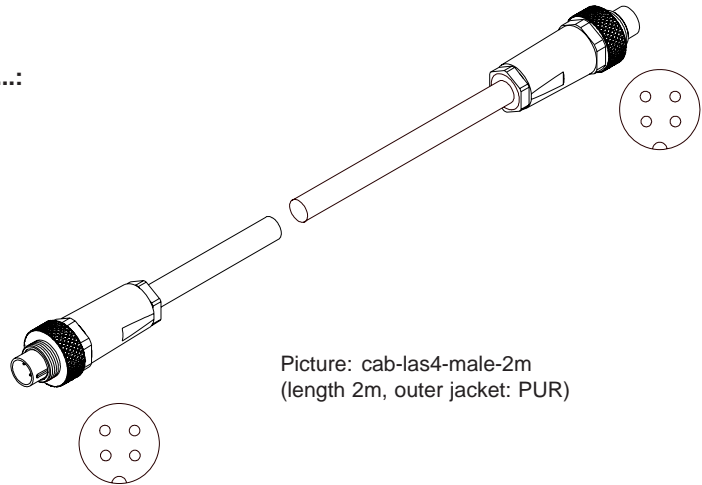
Connection L-LAS-CAM-... to the various lighting units:

Connection L-LAS-CAM-... to lighting unit L-LAS-LU-...:

4-pole fem. connector Binder Series 712

Pin:	Assignment:
1	+15VDC ... +30VDC (+Ub)
2	I-CONTROL 2
3	GND (0V)
4	I-CONTROL1

Connecting cable:
cab-las4-male-2m
(standard length 2m)



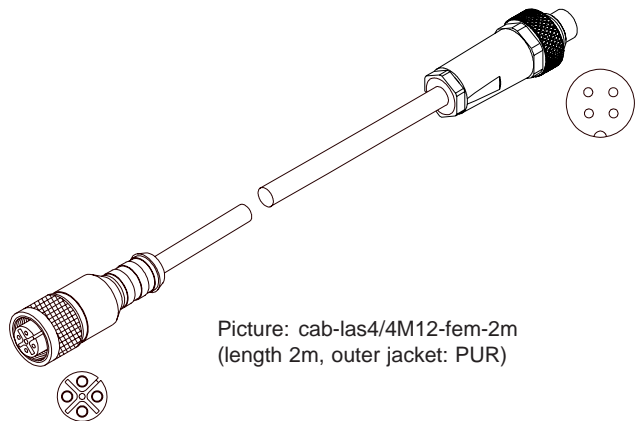
Picture: cab-las4-male-2m
(length 2m, outer jacket: PUR)

Connection L-LAS-CAM-... to laser lighting unit D-LAS-...:

4-pole fem. connector Binder Series 712

Pin:	Assignment:
1	+15VDC ... +30VDC (+Ub)
2	I-CONTROL 2
3	GND (0V)
4	I-CONTROL1

Connecting cable:
cab-las4/4M12-fem-2m
(standard length 2m)



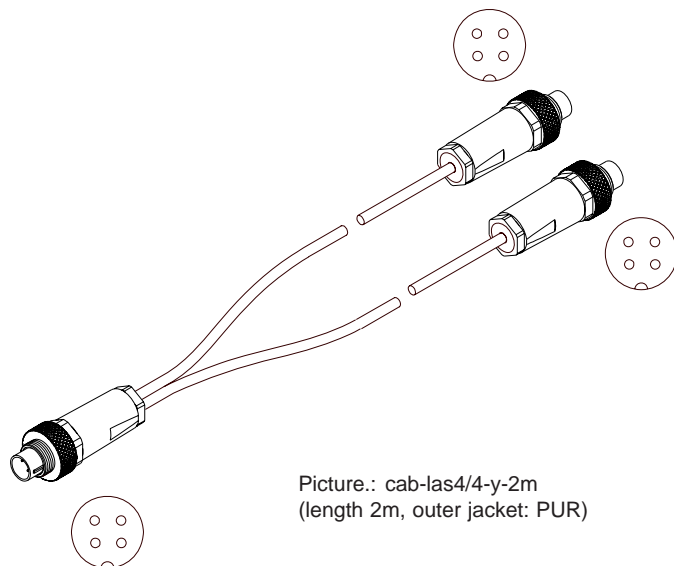
Picture: cab-las4/4M12-fem-2m
(length 2m, outer jacket: PUR)

Connection L-LAS-CAM-... to two lighting units L-L

4-pole fem. connector Binder Series 712

Pin:	Assignment:
1	+15VDC ... +30VDC (+Ub)
2	I-CONTROL 2
3	GND (0V)
4	I-CONTROL1

Connecting cable:
cab-las4/4-y-2m
(standard length 2m)



Picture.: cab-las4/4-y-2m
(length 2m, outer jacket: PUR)





LED Display

Potentiometer for tolerance setting



TEACH/RESET button for set point value teaching (input IN1)



-  LED red (+)
Measuring value > upper tolerance threshold
-  LED green
Measuring value within tolerance window
-  LED red (-)
Measuring value < lower toleranz threshold
-  LED yellow
Voltage indication (multifunctional)



Windows® Software

Windows® software L-LAS-RL-Scope:

The L-LAS-CAM electronic control unit can be easily parameterised with the Windows® user interface. For this purpose the sensor is connected to the PC with the serial interface cable cab-las4/PC.

When parameterisation is finished, the PC can be disconnected again (press STOP button), the sensor systems then continues to operate with the current parameters in "stand alone" mode without a PC.

