C-LAS Series

C-LAS-LT-35 Laser displacement sensor with background suppression

- High dynamic range, high switching accuracy
- Automatic laser power correction
- Working range typ. 25 mm ... 50 mm
- Two switching outputs (PNP no/nc or NPN no/nc)
- Scratch-resistant optics made of glass
- Short circuit protection, reversed polarity protection
- 4-pole M8-connector made of metal, LED indicator
- Visible red laser light 670 nm, class 2 laser product

Design

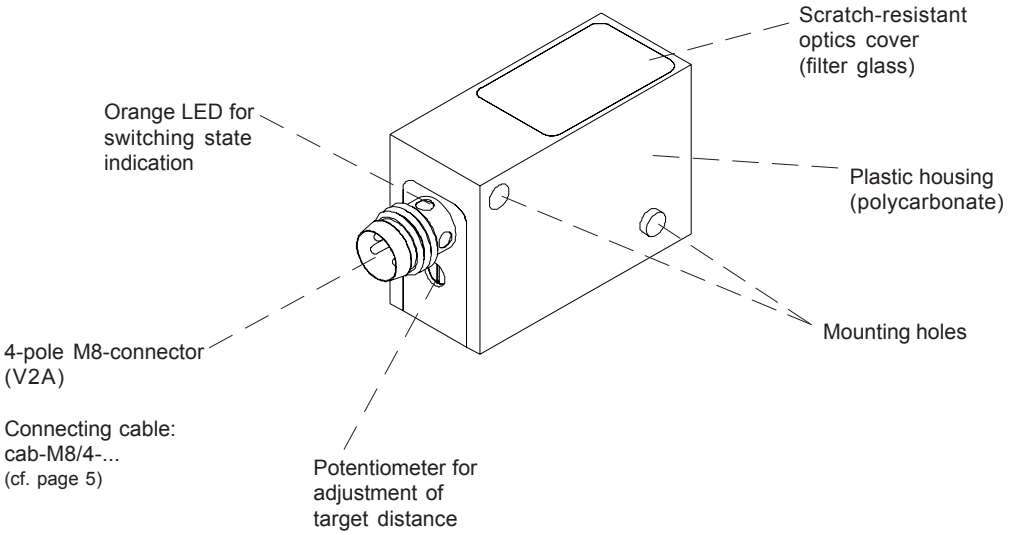
Product name:

C-LAS-LT-35-(switching output)

Switching outputs:

P = 1x PNP dark-switching (PNP n.o.),
1x PNP bright-switching (PNP n.c.)

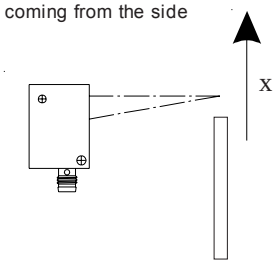
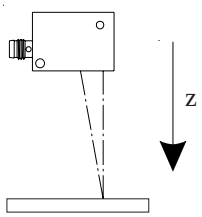
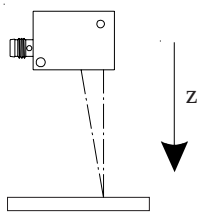
N = 1x NPN dark-switching (NPN n.o.),
1x NPN bright-switching (NPN n.c.)



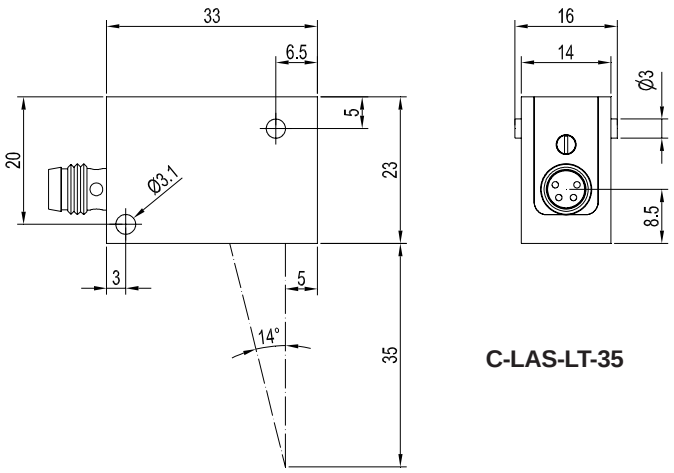
Technical Data

Model	C-LAS-LT-35
Laser	Semiconductor laser: 670 nm, 1 mW max. opt. output, class 2 laser product acc. to DIN EN 60825-1. The use of these laser transmitters therefore requires no additional protective measures.
Reference distance	typ. 35 mm
Min. detectable object (at a distance of 50 mm)	typ. 50 µm
Target distance	typ. 25 mm ... 50 mm
Laser spot diameter	beam diameter in the focus (at 50 mm distance): typ. < 0,2 mm beam diameter at transmitter optic output: typ. < 2 mm
Optical filter	Red light filter RG645
Voltage supply	+10VDC ... +32VDC, reversed-polarity protection, overcurrent protection
Power supply	AC-operation, typ. 100 kHz
Ambient light	Up to 5000 Lux
Enclosure rating	IP67
Current consumption	Approx. 50 mA
Focusing of laser beam	At a distance of 50 mm (typ.)
EMC test acc. to	DIN EN 60947-5-2 CE
Connector type	Connection to PLC: 4-pole M8-connector
Working temperature range	-20°C to +55°C
Storage temperature range	-20°C to +85°C
Housing	Polycarbonate, black
Rise time / fall time	<= 1 ms
Max. switching current	100 mA, short-circuit protection
Switching frequency	typ. 1 kHz
Outputs	with C-LAS-LT-35-P: PNP normally open and PNP normally closed with C-LAS-LT-35-N: NPN normally open and NPN normally closed
Switching state indication	By means of an orange LED (integrated in the M8-plug)
Laser power correction	Due to integrated laser power correction, the sensor is largely independent of brightness of measuring object (for instance KODAK white and KODAK black)

Technical Data

Model	C-LAS-LT-35
Repeatability for targets coming from the side 	to the target (black mat): typ. ± 30 µm (at distance 25 mm ... 45 mm) to the target (white mat): typ. ± 20 µm (at distance 25 m m... 45 mm) from the target (black mat): typ. ± 30 µm (at distance 25 mm ... 45 mm) from the target (white mat): typ. ± 20 µm (at distance 25 mm ... 45 mm) Switching hysteresis (to the target/from the target): typ. < 100 µm
Offset caused due to change of the target from white mat to black mat (target coming from the side)	typ. < 250 µm (at distance 25 mm ... 45 mm)
Repeatability for targets moved directly to the sensor respectively from the sensor 	to the target (black mat): typ. ± 100 µm (at distance 25 mm ... 45 mm) to the target (white mat): typ. ± 50 µm (at distance 25 mm ... 45 mm) from the target (black mat): typ. ± 100 µm (at distance 25 mm ... 45 mm) from the target (white mat): typ. ± 50 µm (at distance 25 mm ... 45 mm) Switching hysteresis (to the target/from the target): typ. 1 mm (at distance 25 mm ... 35 mm) typ. 2 mm (at distance 35 mm ... 45 mm) typ. 4 mm (at distance 50 mm)
Offset caused by a target change from white mat to black mat (target moved directly to the sensor) 	typ. < ± 150 µm (at distance 25 mm ... 45 mm)

Dimensions

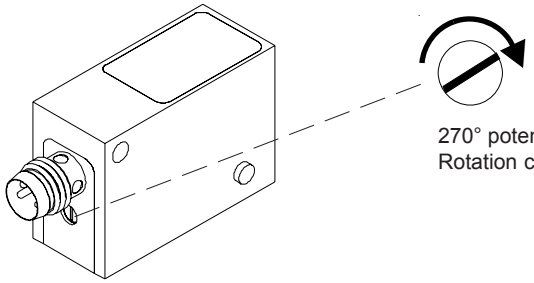


C-LAS-LT-35

(All dimensions in mm)

Adjustment

Potentiometer for adjustment of target distance:



270° potentiometer:
Rotation clockwise = reduction of target distance

Laser Warning

The transmitters of the laser sensors of C-LAS Series comply with laser class 2 according to EN 60825-1. The use of these transmitter requires no additional protective measures.

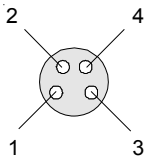
The transmitters of C-LAS Series are supplied with a laser warning label.

Connector Assignment

Connection to PLC:

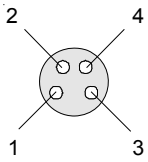
Type C-LAS-LT-35-P (switching output P):
4-pole M8-connector

Pin No.:	Color:	Assignment:
1	brown	+10VDC ... +32VDC
2	white	OUTPUT PNP dark-switching (PNP n.o.)
3	blue	GND (0V)
4	black	OUTPUT PNP bright-switching (PNP n.c.)



Type C-LAS-LT-35-N (switching output N):
4-pole M8-connector

Pin No.:	Color:	Assignment:
1	brown	+10VDC ... +32VDC
2	white	OUTPUT NPN dark-switching (NPN n.o.)
3	blue	GND (0V)
4	black	OUTPUT NPN bright-switching (NPN n.c.)

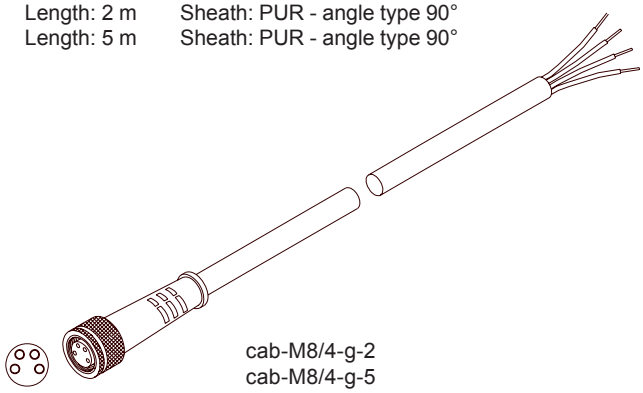


Connecting cable for each type:
cab-M8/4-g-(length) or
cab-M8/4-w-(length) (angle type 90°)
(standard length 2m)

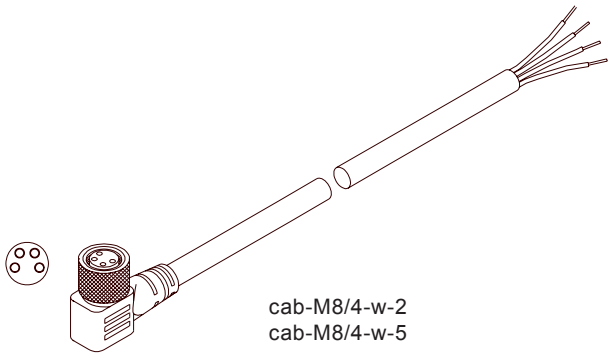
Connecting Cables

Available connecting cables:

cab-M8/4-g-2	Length: 2 m	Sheath: PUR
cab-M8/4-g-5	Length: 5 m	Sheath: PUR
cab-M8/4-w-2	Length: 2 m	Sheath: PUR - angle type 90°
cab-M8/4-w-5	Length: 5 m	Sheath: PUR - angle type 90°



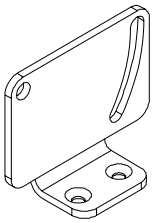
cab-M8/4-g-2
cab-M8/4-g-5

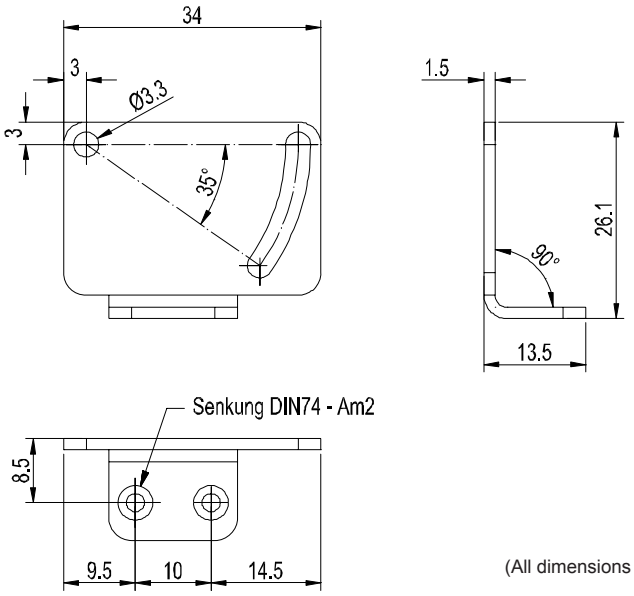


cab-M8/4-w-2
cab-M8/4-w-5

Mounting

Mounting device: MOUNT-23/34 (please order separately)





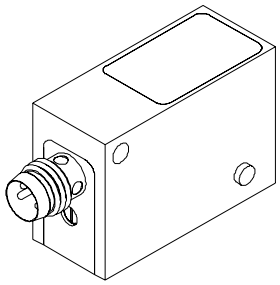
(All dimensions in mm)

Product Line

Summary Compact Laser Sensors:

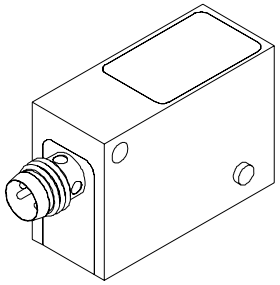
C-LAS-LT-35
C-LAS-LT-65

Laser displacement sensor
with background suppression



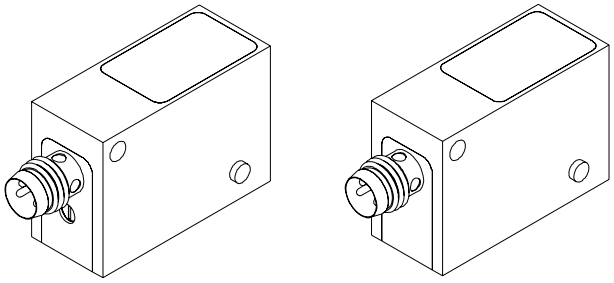
C-LAS-LT-35-ANA
C-LAS-LT-65-ANA

Laser displacement sensor
with analog output



C-LAS-14 (transmitter and receiver)

Laser oneway light barrier



C-LAS-LR-RP2
C-LAS-LR-OP2

Laser reflection light barriers