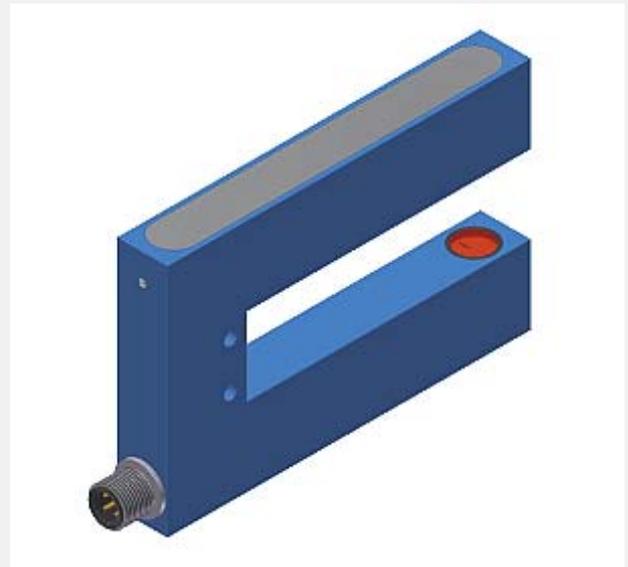


F-LAS Series

► F-LAS-16-AC-...

- Collimated, visible red laser beam, according to selected aperture size:
 - Laser class 1** (<0.39 mW, 670 nm) or
 - Laser class 2** (<1 mW, 670 nm)
- AC operation
- Switching frequency typ. 1 kHz
- Various fork sizes and aperture sizes available
- Potentiometer either for gain setting or for adjustment of comparator threshold
- Analog output (0 ... +10V)
- 4-pole M12-connector
- Scratch-resistant optics, sturdy aluminum housing, IP67



Design

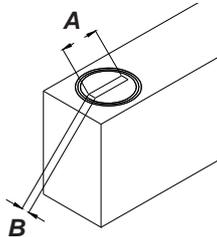
Product name:

F-LAS-16-AC-(fork size)-(aperture)-(potentiometer)-(output)

Available apertures:

Rectangular apertures (AxB):

- 0.2x5** (0.2 mm x 5 mm)
- 1.5x5** (1.5 mm x 5 mm)
- 0.2x9.5** (0.2 mm x 9.5 mm)
- 0.3x9.5** (0.3 mm x 9.5 mm)
- 0.5x3** (0.5 mm x 3 mm)
- 0.8x9.5** (0.8 mm x 9.5 mm)
- 1.5x9.5** (1.5 mm x 9.5 mm)
- 2.5x9.5** (2.5 mm x 9.5 mm)
- 3x0.5** (3 mm x 0.5 mm)
- 5x0.2** (5 mm x 0.2 mm)
- 5x1.5** (5 mm x 1.5 mm)
- 9.5x0.2** (9.5 mm x 0.2 mm)
- 9.5x0.3** (9.5 mm x 0.3 mm)
- 9.5x0.8** (9.5 mm x 0.8 mm)
- 9.5x1.5** (9.5 mm x 1.5 mm)
- 9.5x2.5** (9.5 mm x 2.5 mm)



Available fork sizes:

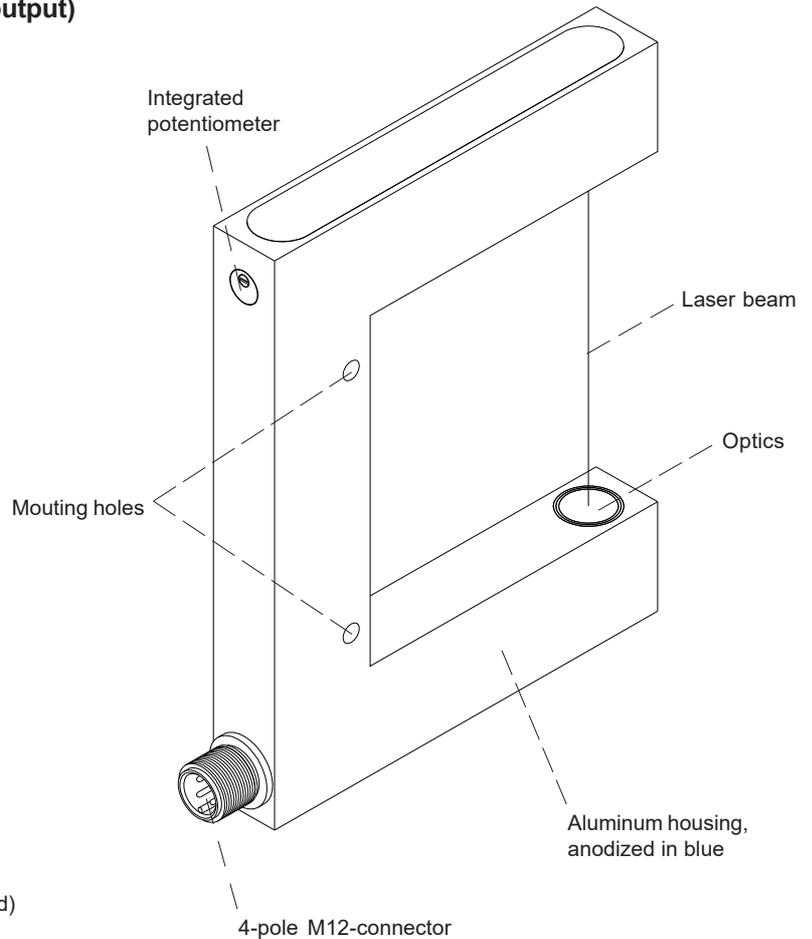
- 25/80** (fork width A=25 mm, fork depth B=80 mm)
- 80/40** (fork width A=80 mm, fork depth B=40 mm)
- 80/65** (fork width A=80 mm, fork depth B=65 mm)
- 80/80** (fork width A=80 mm, fork depth B=80 mm)
- 150/80** (fork width A=150 mm, fork depth B=80 mm)

Potentiometer:

- A** (Potentiometer for adjustment of gain)
- T** (Potentiometer for adjustment of comparator threshold)

Switching output:

- Q** (pnp bright-switching = pnp n.c. / npn dark-switching = npn n.o.)
- Qinv** (pnp dark-switching = pnp n.o. / npn bright-switching = npn n.c.)



Connecting cable:
cab-M12/4-g-...





Technical Data

Type	F-LAS-16-AC-...
Laser	<p style="color: green;">With aperture size 0.2x5, 0.2x9.5, 0.3x9.5, 0.5x3, 0.8x9.5, 3x0.5, 5x0.2, 9.5x0.2, 9.5x0.3, 9.5x0.8:</p> <p>Semiconductor laser, 670 nm, 0.39 mW max. optical power, laser class 1 acc. to DIN EN 60825-1. The use of these laser light barriers therefore requires no additional protective measures.</p> <p style="color: red;">With aperture size 1.5x5, 1.5x9.5, 2.5x9.5, 5x1.5, 9.5x1.5, 9.5x2.5:</p> <p>Semiconductor laser, 670 nm, 1 mW max. optical power, laser class 2 acc. to DIN EN 60825-1. The use of these laser light barriers therefore requires no additional protective measures.</p>
Available aperture sizes	Rectangular apertures: 0.2 mm x 5 mm to 9.5 mm x 2.5 mm (cf. page 1)
Optical filters	Interference filter and red light filter RG 630
Min. detectable object	typ. 1% of aperture size
Reproducibility	typ. 1% of aperture size
Voltage supply	+12VDC ... +32VDC, reverse-polarity protected, overcurrent protected
Ambient light	up to 5000 Lux
Operation mode	AC operation, 100 kHz
Current consumption	typ. 60 mA
Max. switching current	100 mA, short-circuit protected
Digital output (1x)	Q = pnp bright-switching (pnp n.c.) / npn dark-switching (nnp n.o.) or Qinv = pnp dark-switching (pnp n.o.) / npn bright-switching (nnp n.c.) 100mA, short-circuit protection
Analog output (1x)	0 ... +10V
Potentiometer	either for adjustment of gain factor (A) or for adjustment of comparator threshold (T)
Switching frequency	typ. 1 kHz
Operating temperature range	-20°C ... +50 °C
Storage temperature range	-20°C ... +85°C
Housing material	Aluminum, anodized in blue
Housing dimensions	cf. page 4
Type of connector	4-pole M12-connector
Enclosure rating	IP67
EMC test acc. to	DIN EN 60947-5-2



Laser Warning

Laser class 1

is true for the following aperture sizes:

0.2x5, 0.2x9.5, 0.3x9.5, 0.5x3, 0.8x9.5, 3x0.5, 5x0.2, 9.5x0.2, 9.5x0.3, 9.5x0.8

In case that an aperture as listed above is used, the laser transmitters of F-LAS-16-AC series comply with laser class 1 according to EN 60825-1. Under reasonably foreseeable conditions a class 1 laser is safe. The reasonably foreseeable conditions are kept during specified normal operation. The use of these laser transmitters therefore requires no additional protective measures.

These laser transmitters of F-LAS-16-AC series series are supplied with an information label „CLASS 1 Laser Product“.



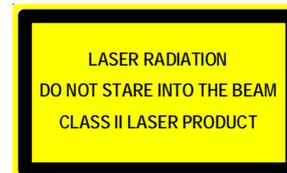
Laser class 2

is true for the following aperture sizes:

1.5x5, 1.5x9.5, 2.5x9.5, 5x1.5, 9.5x1.5, 9.5x2.5

In case that an aperture as listed above is used, the laser transmitters of F-LAS-16-AC series comply with laser class 2 according to EN 60825-1. The use of these laser transmitters therefore requires no additional protective measures.

These laser transmitters of the F-LAS-16-AC Series are supplied with a laser warning label.

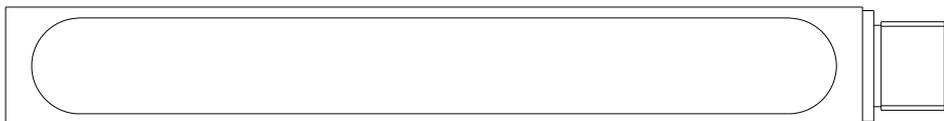
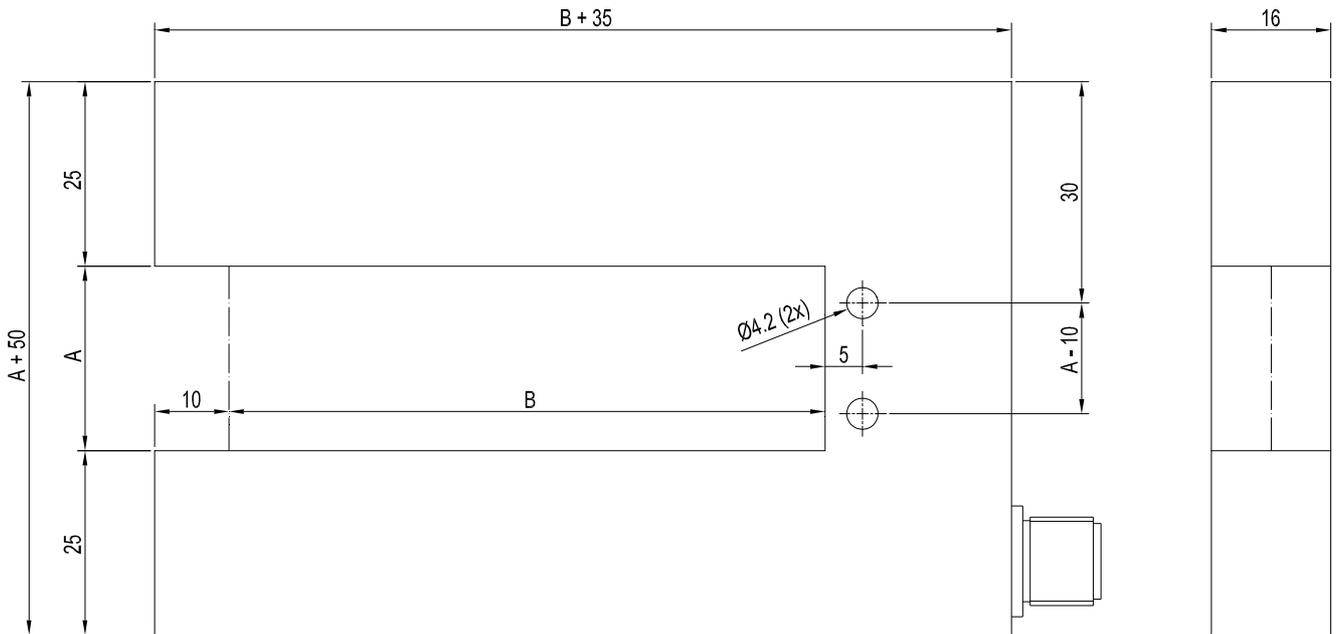
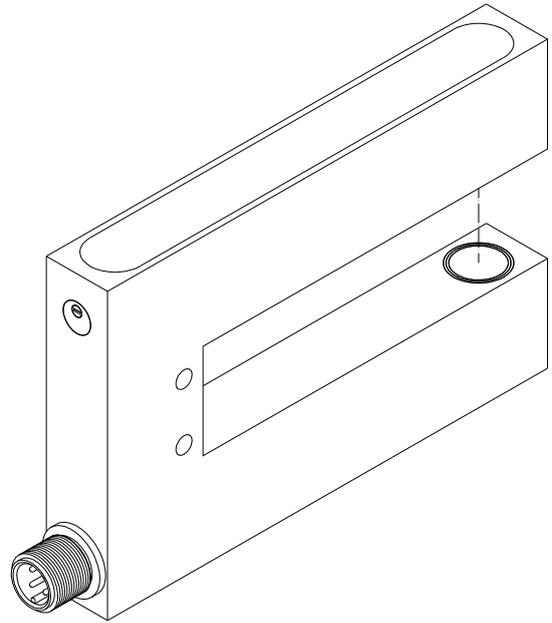




Dimensions

Type	Fork width (Dim. A)	Fork depth (Dim. B)
F-LAS-16-AC-25/80-...	25 mm	80 mm

(further dimensions see next page)

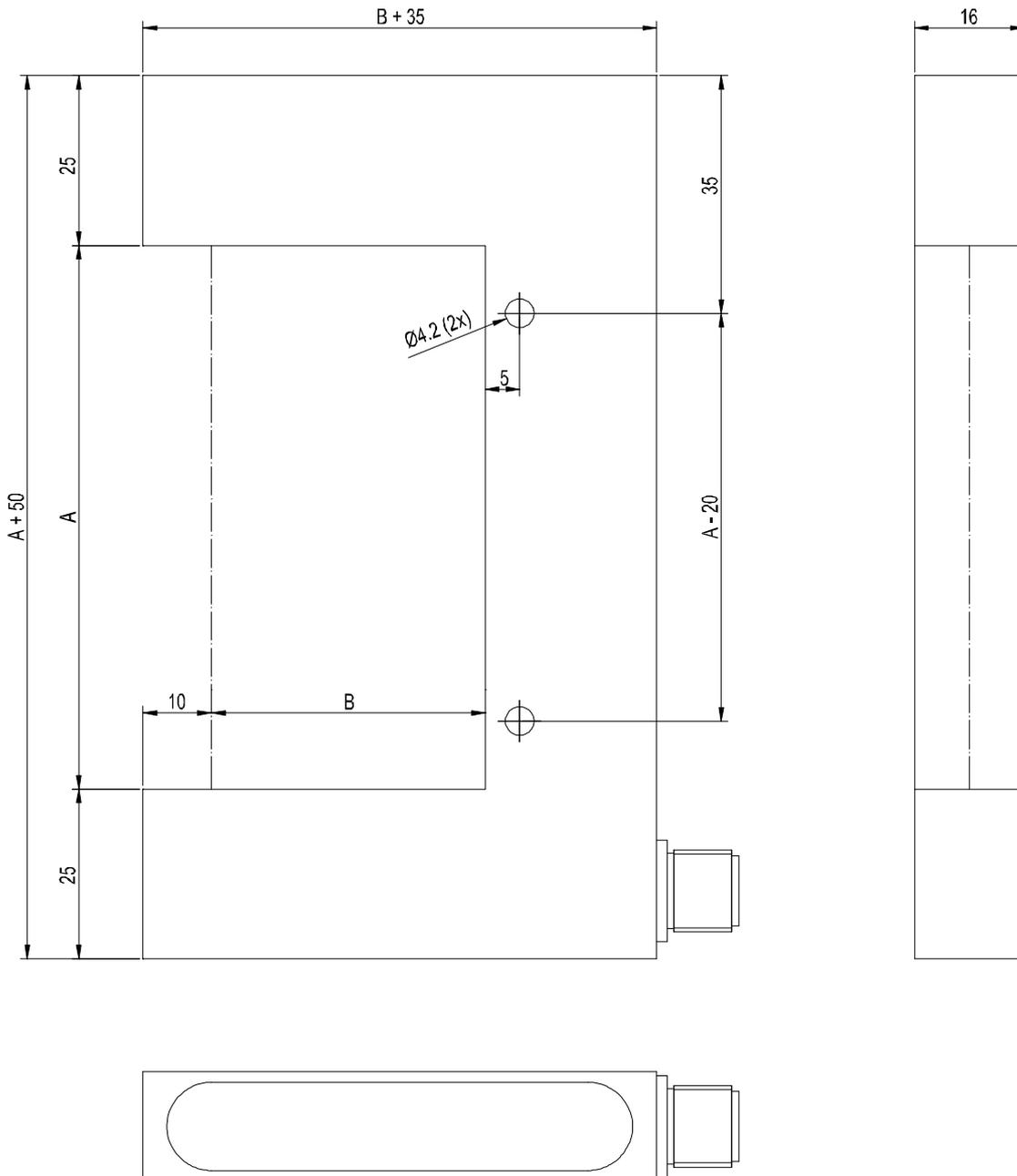


(All dimensions in mm)



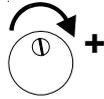
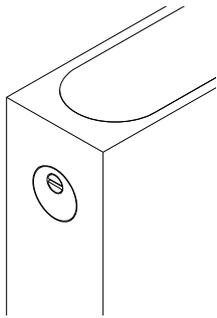
Dimensions

Type	Fork width (Dim. A)	Fork depth (Dim. B)
F-LAS-16-AC-80/40-...	80 mm	40 mm
F-LAS-16-AC-80/65-...	80 mm	65 mm
F-LAS-16-AC-80/80-...	80 mm	80 mm
F-LAS-16-AC-150/80-...	150 mm	80 mm



(All dimensions in mm)

Setting



Setting of potentiometers A respectively T:

Potentiometer for adjustment of gain (A)
Rotation clockwise: Increase of analog voltage

Potentiometer for adjustment of comparator threshold (T)
Rotation clockwise: Increase of threshold

Connector Assignment

F-LAS-16-AC-...-Q
(4-pole M12-connector):

Pin:	Color:	Assignment:
1	brown	+Ub (+12VDC ... +32VDC)
2	white	ANALOG (0 ... +10V)
3	blue	0V (GND)
4	black	Output Q (pnp bright-switching = pnp n.c. / nnp dark-switching = npn n.o.)

F-LAS-16-AC-...-Qinv
(4-pole M12-connector):

Pin:	Color:	Assignment:
1	brown	+Ub (+12VDC ... +32VDC)
2	white	ANALOG (0 ... +10V)
3	blue	0V (GND)
4	black	Output Qinv (pnp dark-switching = pnp n.o. / nnp bright-switching = npn n.c.)

Connecting Cables

Available connecting cables:

- cab-M12/4-g-2 (l=2m, outer jacket PUR)
- cab-M12/4-g-5 (l=5m, outer jacket PUR)
- cab-M12/4-w-2 (angle type 90°, l=2m, outer jacket PUR)
- cab-M12/4-w-5 (angle type 90°, l=5m, outer jacket PUR)
- cab-M12/4-g-2-shd (l=2m, shielded, outer jacket PUR)
- cab-M12/4-g-5-shd (l=5m, shielded, outer jacket PUR)
- cab-M12/4-w-2-shd (angle type 90°, l=2m, shielded, outer jacket PUR)
- cab-M12/4-w-5-shd (angle type 90°, l=5m, shielded, outer jacket PUR)

