

F-LAS Series

In Proud Partnership with Sensor Instruments

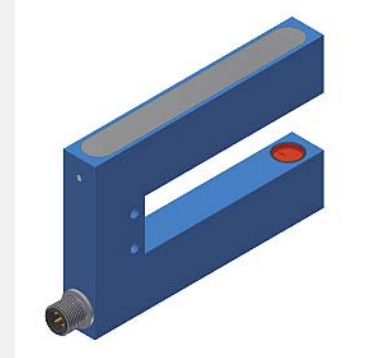
PAQUIN
SENSORS

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► F-LAS-16-DC-...-HS (High Speed)

- 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)
- DC operation
- **High switching frequency (typ. 200 kHz)**
- Various fork sizes and aperture sizes available
- Potentiometer either for gain setting or for adjustment of comparator threshold
- Threshold correction optionally (TC)
- Analog output (0 ... +10V)
- 4-pole M12-conn., scratch-resistant optics, sturdy aluminum housing, IP67



Design

Product name:

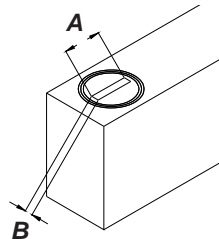
F-LAS-16-DC-(fork size)-(aperture)-(potentiometer)-(output)-HS (High Speed)

F-LAS-16-DC-(fork size)-(aperture)-(potentiometer)-(output)-TC-HS (High Speed)

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

Potentiometer:

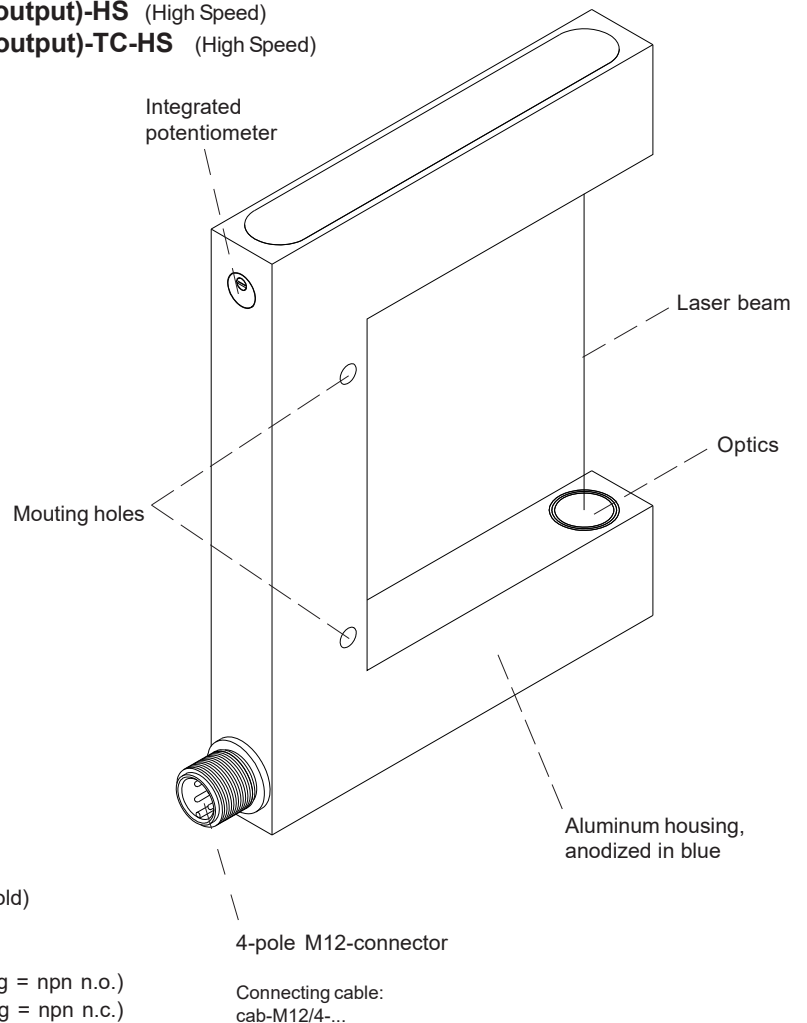
- A** (Potentiometer for adjustment of gain)
- T** (Potentiometer for adjustment of comparator threshold)

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.)

Optionally:

- TC** (threshold correction)





Technical Data

| Type | F-LAS-16-DC-...-HS | F-LAS-16-DC-...-TC-HS |
|-----------------------------|---|-----------------------|
| 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> 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 style="color: red;">With aperture size 1.5x5, 1.5x9.5, 2.5x9.5, 5x1.5, 9.5x1.5, 9.5x2.5:</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. | |
| 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 | Analog typ. 2% of aperture size, digital typ. 1% of aperture size | |
| Reproducibility | Analog typ. 2% of aperture size, digital typ. 1% of aperture size, with threshold correction "TC": typ. 0.1% of aperture size | |
| Voltage supply | +12VDC ... +32VDC, reverse-polarity protected, overcurrent protected | |
| Ambient light | up to 1000 Lux | |
| Operation mode | DC operation | |
| 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) | |
| Threshold correction | --- | with type -TC |
| Switching frequency | typ. 200 kHz | |
| Operating temperature range | -20°C ... +50 °C | |
| Storage temperature range | -20°C ... +85°C | |
| Housing material | Aluminum, anodized in blue | |
| Housing dimensions | cf. pages 4 and 5 | |
| Type of connector | 4-pole M12-connector | |
| Current output | Max. output current with pnp-output: 2mA Max. output current with npn-output: 10mA Min. resistance to 0V (GND): 10kOhm (with pnp-output) Min. resistance to + : 2kOhm (with npn-output) | |
| Enclosure rating | IP67 | |
| EMC test acc. to | DIN EN 60947-5-2 | CE |



Laser Warning

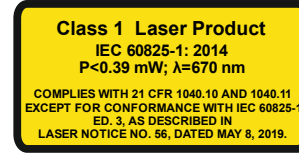
Laser class 1

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-DC 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-DC series series are supplied with an information label „CLASS 1 Laser Product“.



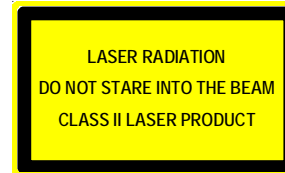
Laser class 2

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-DC 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-DC Series are supplied with a laser warning label.

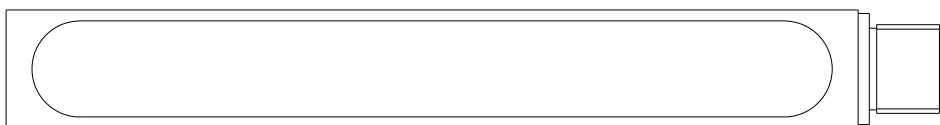
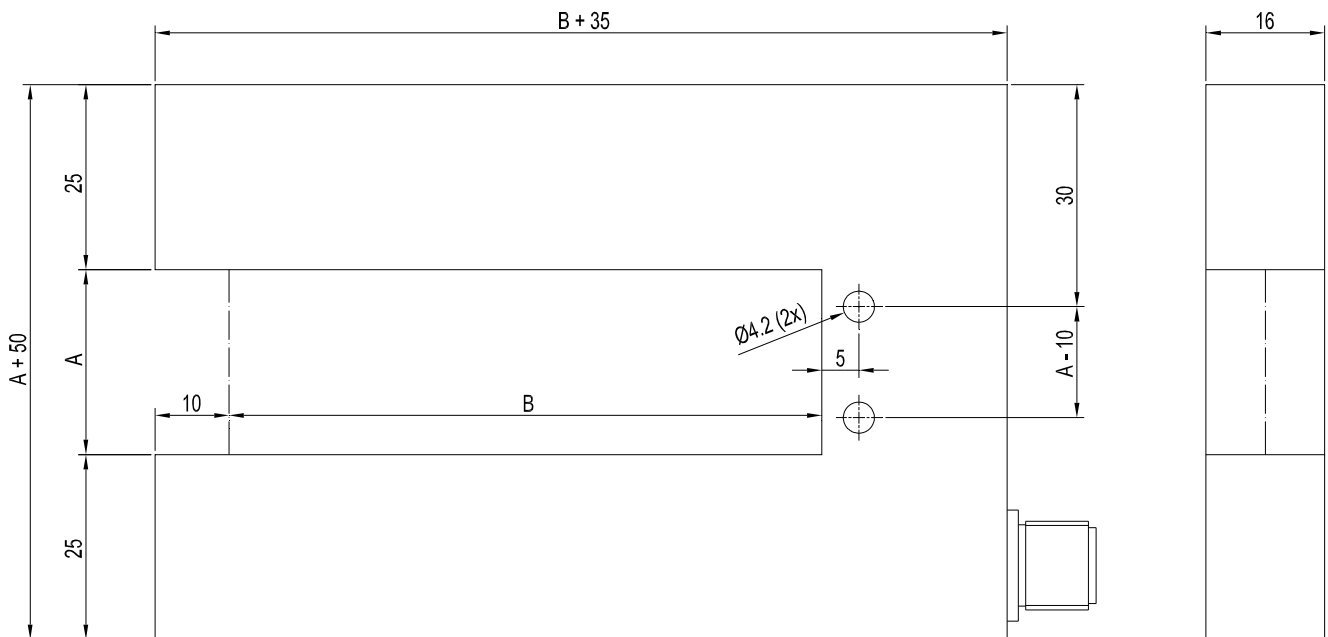
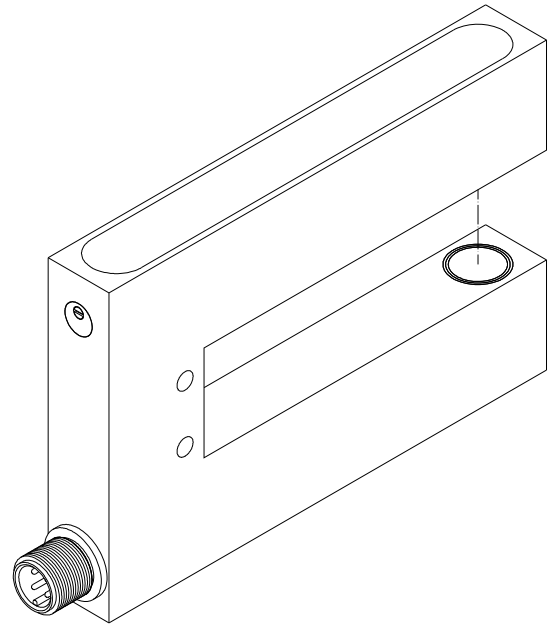




Dimensions

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

(other dimensions see next page)

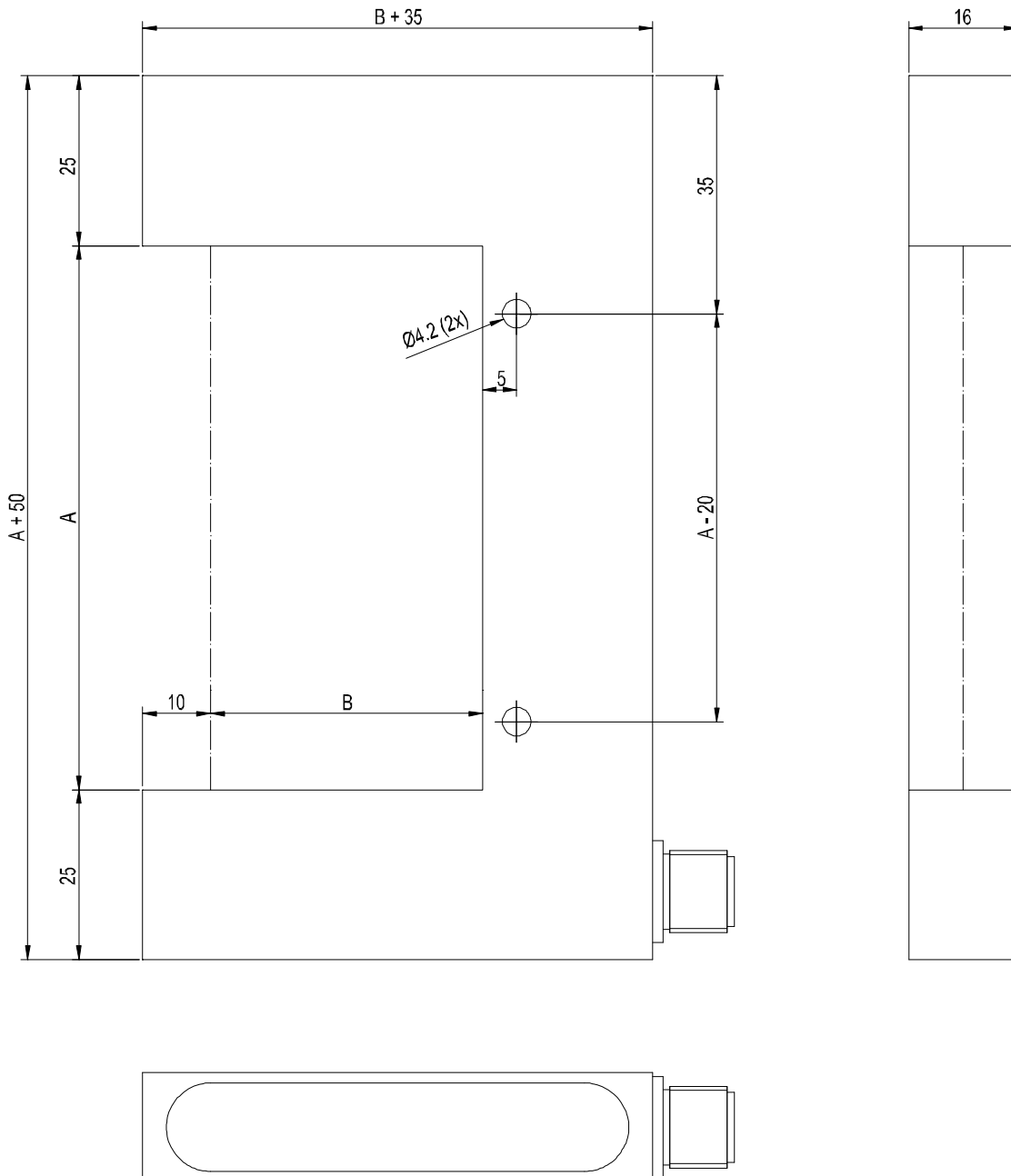


(All dimensions in mm)



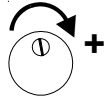
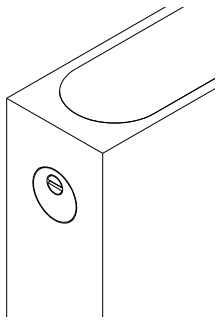
Dimensions

| Type | Fork width (Dim. A) | Fork depth (Dim. B) |
|------------------------|------------------------|------------------------|
| F-LAS-16-DC-80/40-... | 80 mm | 40 mm |
| F-LAS-16-DC-80/65-... | 80 mm | 65 mm |
| F-LAS-16-DC-80/80-... | 80 mm | 80 mm |
| F-LAS-16-DC-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-DC-...-Q-HS
F-LAS-16-DC-...-Q-TC-HS

(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 = nnp n.o.) |

F-LAS-16-DC-...-Qinv-HS
F-LAS-16-DC-...-Qinv-TC-HS

(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 = nnp 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) |

