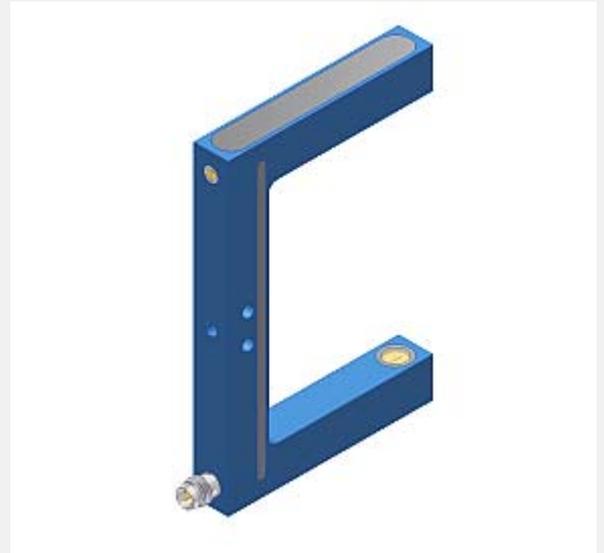


# F-LAS Series

## ► F-LAS-DC-...-HS High Speed

- Collimated, visible red laser beam
- Laser class 1 (<0.39 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 M8-connector, scratch-resistant optics, sturdy metal housing, IP67



### Design

#### Product name:

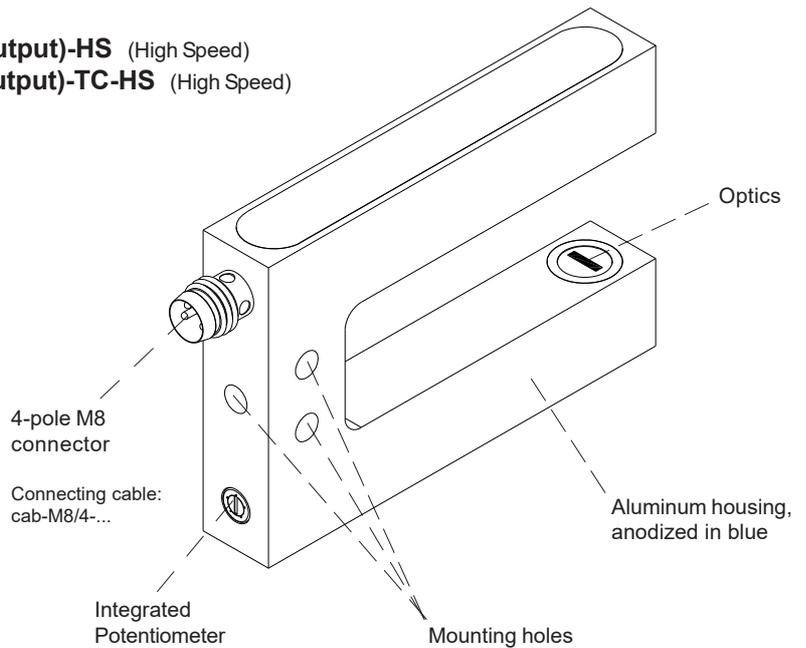
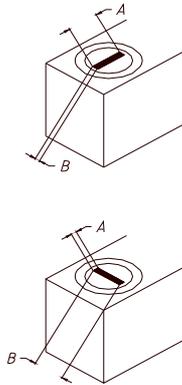
**F-LAS-DC-(fork size)-(aperture)-(potentiometer)-(output)-HS** (High Speed)

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

#### Available apertures:

<b>d0.2</b>	(round Ø 0.2 mm)	<b>d0.7</b>	(round Ø 0.7 mm)
<b>d0.3</b>	(round Ø 0.3 mm)	<b>d1.0</b>	(round Ø 1.0 mm)
<b>d0.5</b>	(round Ø 0.5 mm)	<b>d2.0</b>	(round Ø 2.0 mm)

<b>0.3x1</b>	(0.3 mm x 1 mm)
<b>0.3x1.5</b>	(0.3 mm x 1.5 mm)
<b>0.3x3</b>	(0.3 mm x 3 mm)
<b>0.5x1</b>	(0.5 mm x 1 mm)
<b>0.75x2</b>	(0.75 mm x 2 mm)
<b>0.75x3</b>	(0.75 mm x 3 mm)
<b>1x0.3</b>	(1 mm x 0.3 mm)
<b>1x0.5</b>	(1 mm x 0.5 mm)
<b>1x2</b>	(1 mm x 2 mm)
<b>1x3</b>	(1 mm x 3 mm)
<b>1.5x0.3</b>	(1.5 mm x 0.3 mm)
<b>2x0.75</b>	(2 mm x 0.75 mm)
<b>2x1</b>	(2 mm x 1 mm)
<b>3x0.3</b>	(3 mm x 0.3 mm)
<b>3x0.75</b>	(3 mm x 0.75 mm)
<b>3x1</b>	(3 mm x 1 mm)



#### Available fork sizes:

<b>10/50</b>	(fork width A=10 mm, fork depth B=50 mm)	cf. p. 3
<b>20/50</b>	(fork width A=20 mm, fork depth B=50 mm)	cf. p. 3
<b>30/50</b>	(fork width A=30 mm, fork depth B=50 mm)	cf. p. 3
<b>40/50</b>	(fork width A=40 mm, fork depth B=50 mm)	cf. p. 3
<b>50/50</b>	(fork width A=50 mm, fork depth B=50 mm)	cf. p. 3
<b>80/50</b>	(fork width A=80 mm, fork depth B=50 mm)	cf. p. 3
<b>80/80</b>	(fork width A=80 mm, fork depth B=80 mm)	cf. p. 3
<b>100/50</b>	(fork width A=100 mm, fork depth B=50 mm)	cf. p. 3
<b>100/100</b>	(fork width A=100 mm, fork depth B=100 mm)	cf. p. 4
<b>110/50</b>	(fork width A=110 mm, fork depth B=50 mm)	cf. p. 3
<b>150/80</b>	(fork width A=150 mm, fork depth B=80 mm)	cf. p. 5
<b>200/50</b>	(fork width A=200 mm, fork depth B=50 mm)	cf. p. 5

#### 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.)

#### Optional:

- TC** (threshold correction)



Technical Data

Type	F-LAS-DC-...-HS	F-LAS-DC-...-TC-HS
Laser	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.	
Available aperture sizes	Round apertures: Ø 0.2 mm to Ø 2 mm Rectangular apertures: 0.3 mm x 1 mm to 1 mm x 3 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 (npn n.o.) or Qinv = pnp dark-switching (pnp n.o.) / npn bright-switching (npn 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. page 4 and 5	
Type of connector	4-pole M8-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 	



Laser Information

The laser transmitters of F-LAS-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.

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



**Class 1 Laser Product**  
IEC 60825-1: 2014  
P<0.39 mW; λ=670 nm

COMPLIES WITH 21 CFR 1040.10 AND 1040.11  
EXCEPT FOR CONFORMANCE WITH IEC 60825-1  
ED. 3, AS DESCRIBED IN  
LASER NOTICE NO. 56, DATED MAY 8, 2019.

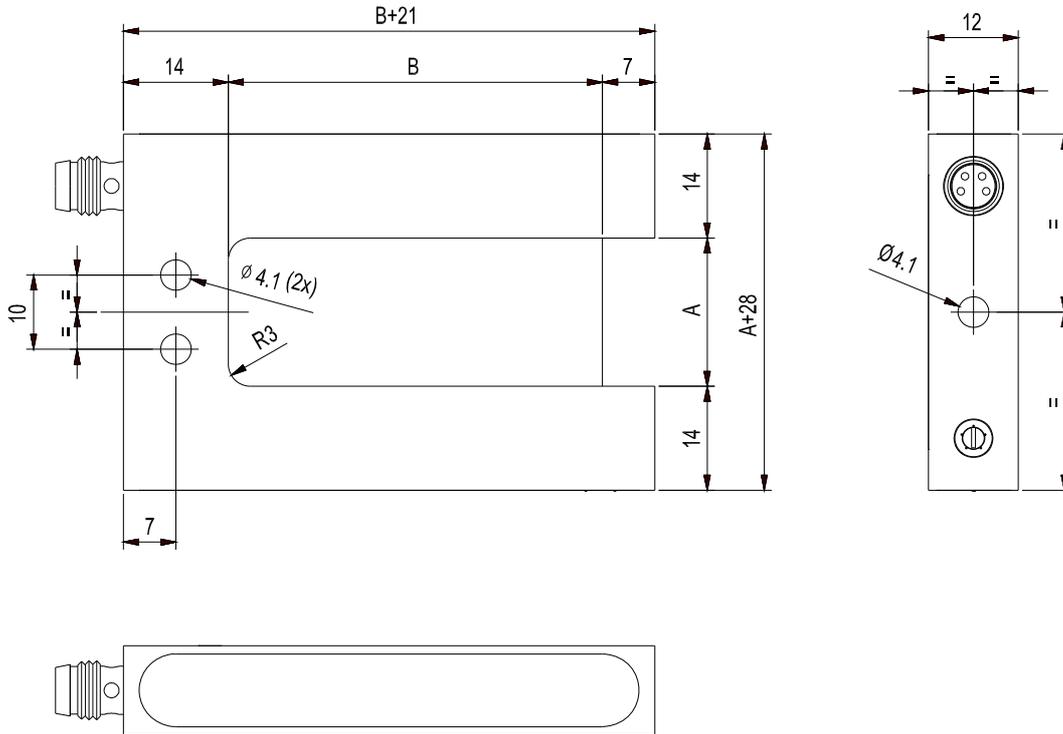
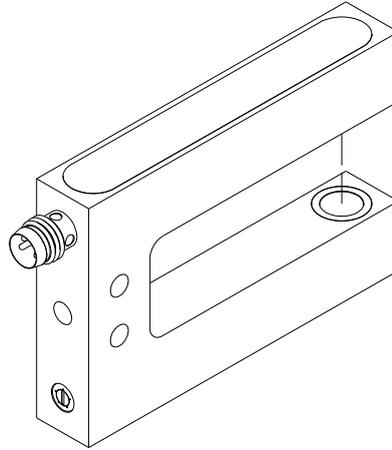


Dimensions

F-LAS-DC-(fork size)-...-HS  
with fork width A < 150 mm  
and fork depth B < 100 mm

Fork size	Dim. A	Dim. B
10/50	10 mm	50 mm
20/50	20 mm	50 mm
30/50	30 mm	50 mm
40/50	40 mm	50 mm
50/50	50 mm	50 mm
80/50	80 mm	50 mm
80/80	80 mm	80 mm
100/50	100 mm	50 mm
110/50	110 mm	50 mm

100/100 100 mm 100 mm ==> cf. page 4  
150/80 150 mm 80 mm ==> cf. page 5  
200/50 200 mm 50 mm ==> cf. page 5

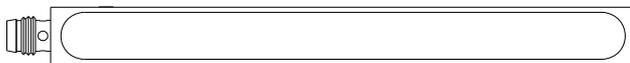
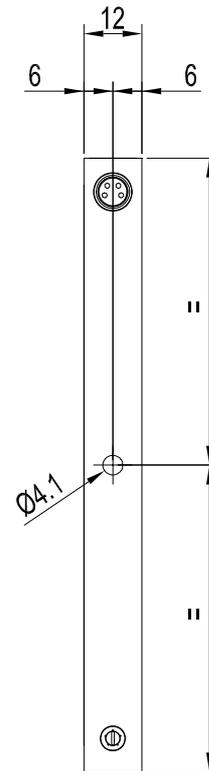
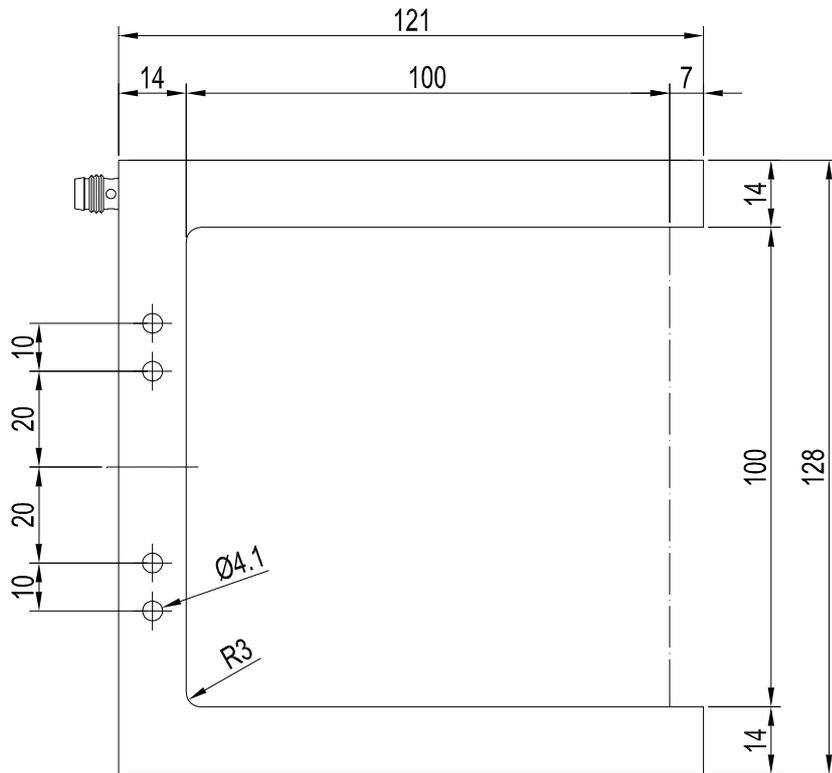
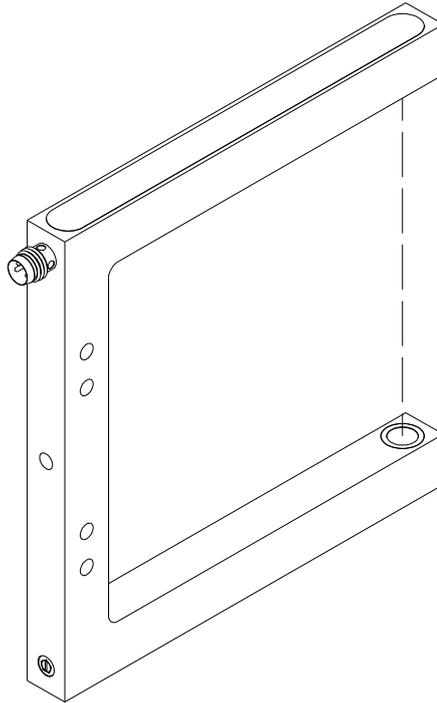


(All dimensions in mm)

Dimensions

F-LAS-DC-100/100-...-HS  
with fork width A = 100 mm  
and fork depth B = 100 mm

Fork size	Dim. A	Dim. B
100/100	100 mm	100 mm

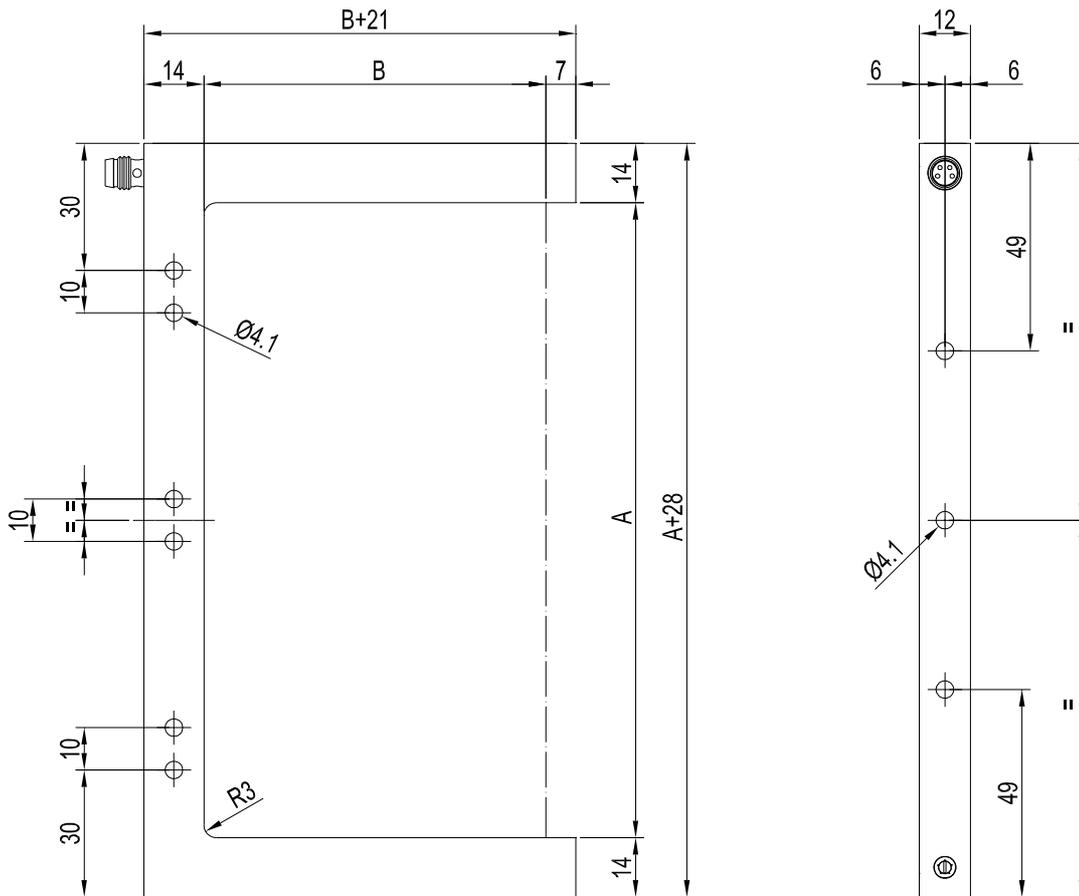
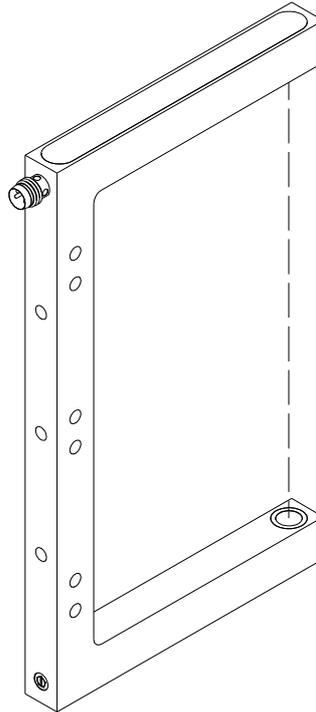


(All dimensions in mm)

Dimensions

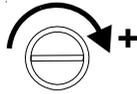
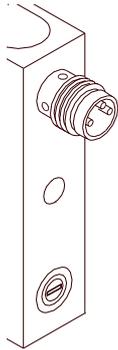
F-LAS-DC-(fork size)-...-HS  
with fork width  $A \geq 150$  mm  
and fork depth  $B < 100$  mm

Fork size	Dim. A	Dim. B
150/80	150 mm	80 mm
200/50	200 mm	50 mm



(All dimensions in mm)

Setting



Adjustment of potentiometer 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-DC-...-Q-HS**  
**F-LAS-DC-...-Q-TC-HS**

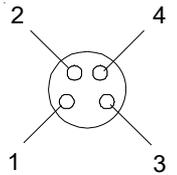
(4-pole M8 connector):

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. / npn dark-switching = npn n.o.)

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

(4-pole M8 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. / npn bright-switching = npn n.c.)



Connecting Cables

Available connecting cables:

- cab-M8/4-g-2 (l=2m, outer jacket PUR)
- cab-M8/4-g-5 (l=5m, outer jacket PUR)
- cab-M8/4-w-2 (angle type 90°, l=2m, outer jacket PUR)
- cab-M8/4-w-5 (angle type 90°, l=5m, outer jacket PUR)

