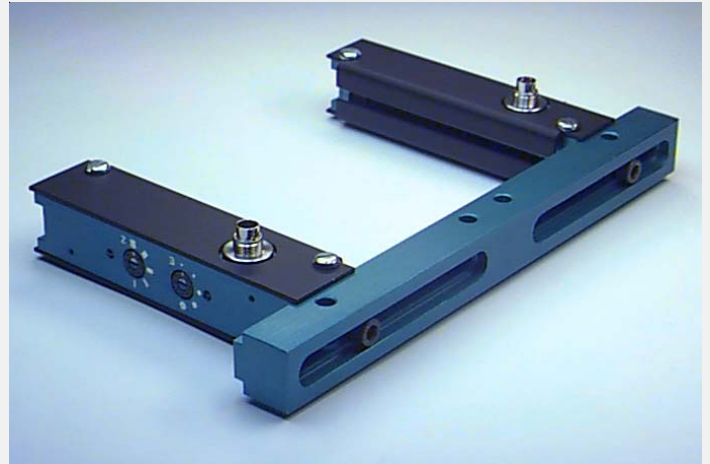


# FLB Series

## ► FLB-F2-...-HS (High Speed)

- High switching frequency (10kHz)
- Integrated electronics
- High sensitivity (adjustable via 5-step switch)
- Pulse length adjustable via 5-step switch
- Dynamic and static output
- Analog output optional (0V ... +10V)
- Switching state indication by means of a red/green LED
- Dirt accumulation indication by means of a yellow LED
- Transmitter/receiver distance variable by means of crosshead
- Mechanical protection of optics, sturdy aluminum housing

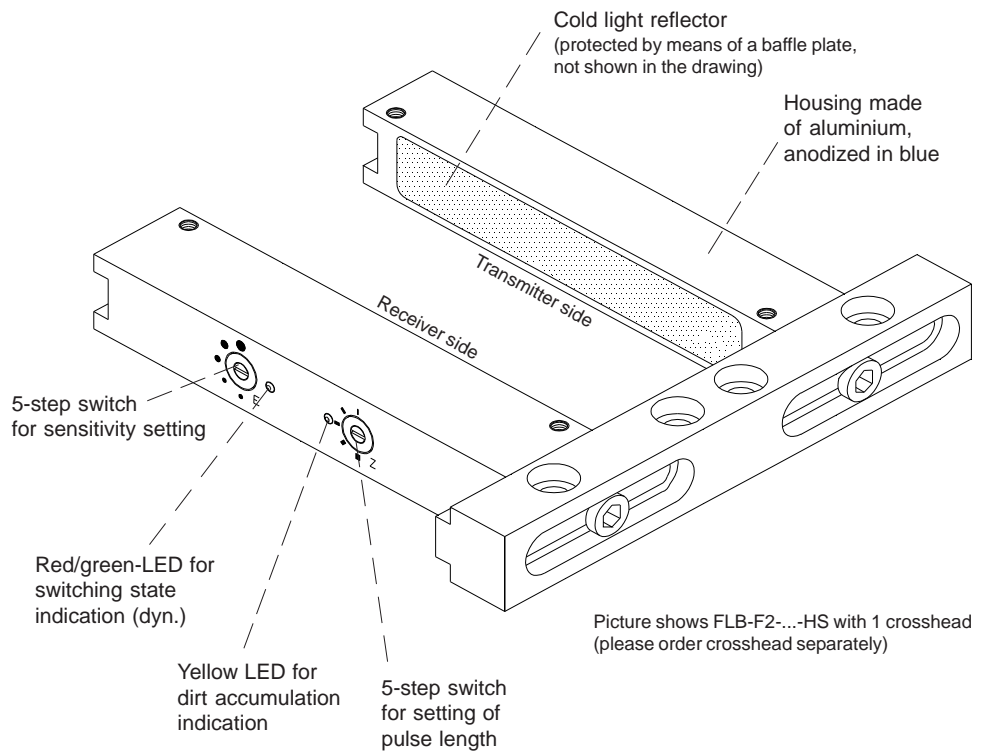


## Design

### Product name:

- FLB-F2-(size)\*-Q-HS
- FLB-F2-(size)\*-Qinv-HS
- FLB-F2-(size)\*-Q-ANA-HS

- Q = Switching output:  
PNP bright-switching (PNP n.c.)  
NPN dark-switching (NPN n.o.)
- Qinv = Switching output:  
PNP dark-switching (PNP n.o.)  
NPN bright-switching (NPN n.c.)
- ANA = Additional analog output  
(0V ... +10V)



\*Available sizes:  
(dimensions cf. page 3)

**A = 60 / 80 / 100 / 160 / 200 / 300 mm (A = width of cold light reflector)**

**Product name crossheads:**  
(dimensions cf. page 3 and 8-11)

- FLB-TRA-60** = max. 60 mm distance transmitter/receiver (total length of crosshead = 105 mm)
- FLB-TRA-80** = max. 80 mm distance transmitter/receiver (total length of crosshead = 125 mm)
- FLB-TRA-100** = max. 100 mm distance transmitter/receiver (total length of crosshead = 145 mm)
- FLB-TRA-155** = max. 155 mm distance transmitter/receiver (total length of crosshead = 205 mm)
- FLB-TRA-355** = max. 355 mm distance transmitter/receiver (total length of crosshead = 400 mm)
- FLB-TRA-555** = max. 555 mm distance transmitter/receiver (total length of crosshead = 600 mm)
- FLB-TRA-755** = max. 755 mm distance transmitter/receiver (total length of crosshead = 800 mm)



**Technical Data**

Model	FLB-F2-...-HS
Max. transmitter/ receiver distance	800 mm
Min. detectable object	typ. 0.6 mm
Optical filter	Cold-light reflector
Light type	Infrared
Voltage supply	+12VDC ... +32VDC, protected against polarity reversal, overload protected
Pulsating light operation	approx. 5 kHz
Ambient light	up to 5000 Lux
Type of protection	IP67
Current consumption	200 mA
EMC test acc. to	IEC - 801...
Connector type	Transmitter side: 5-pin connector, Binder Series 712, receiver side: 8-pin connector, Binder Series 712 Connection to PLC: 7-pin connector, Binder Series 680
Operating temperature range	-20°C ... +60°C
Storage temperature range	-20°C ... +85°C
Housing	Aluminum, anodized in blue
Max. switching current	200 mA, short-circuit-proof
Switching frequency	typ. 10 kHz
Output digital	Q: PNP bright-switching (PNP normally closed), NPN dark-switching (NPN normally open) Qinv: PNP dark-switching (PNP normally open), NPN bright-switching (NPN normally closed)
Analog output	with option -ANA: 0V ... +10V
Sensitivity setting	in 5 steps by means of step switch
Pulse lengthening	in 5 steps by means of step switch (20 ms ... 300 ms)
Dirt accumulation display	By means of yellow LED and digital DIRT ACCUMULATION output
Switching state display	By means of bi-color LED: RED (object passes light curtain) / GREEN (light curtain free, or no change)
Intensity setting	in 5 steps by means of step switch

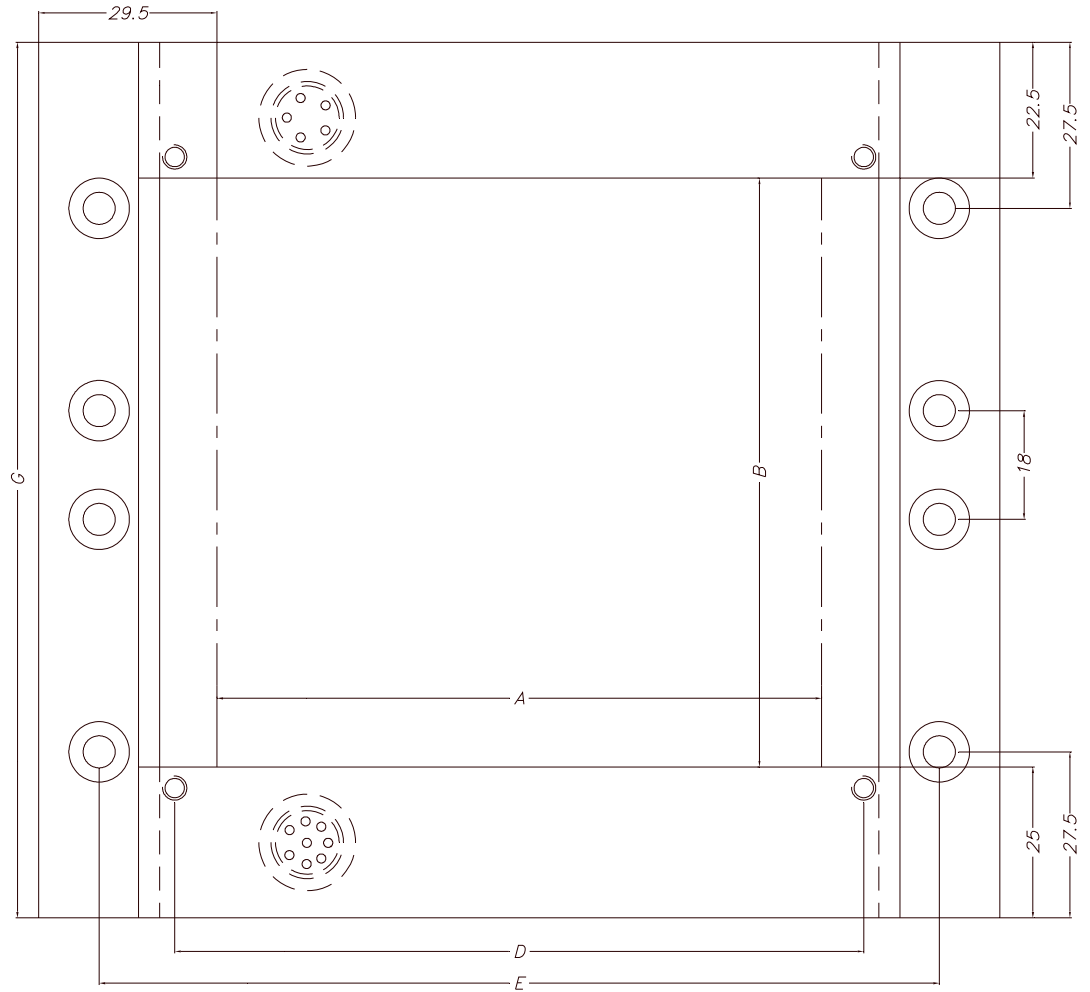
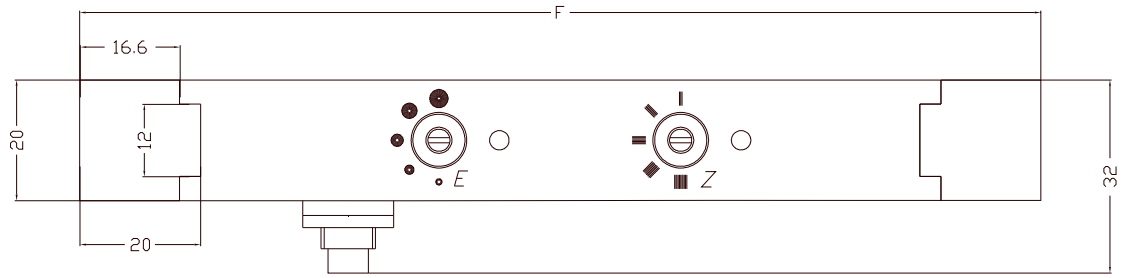


**Dimensions**

**FLB-F2-(size)-...-HS:**

**Size A (mm):**

- 60
- 80
- 100
- 160
- 200
- 300



**FLB-TRA-(width):**

**Width B (mm):**

- 60
- 80
- 100
- 155
- 200
- 355
- 555
- 755

A	B	C	D	E	F	G
60	B (FLB-TRA-B)	27.5	A + 14	B + 20	A + 59	B + 47.5
80						
100						
160						
200						
355						
555						
755						

(All dimensions in mm)

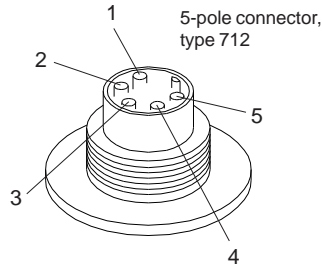


**Connector Assignment**

**Connector assignment for FLB-F2-...-HS:**

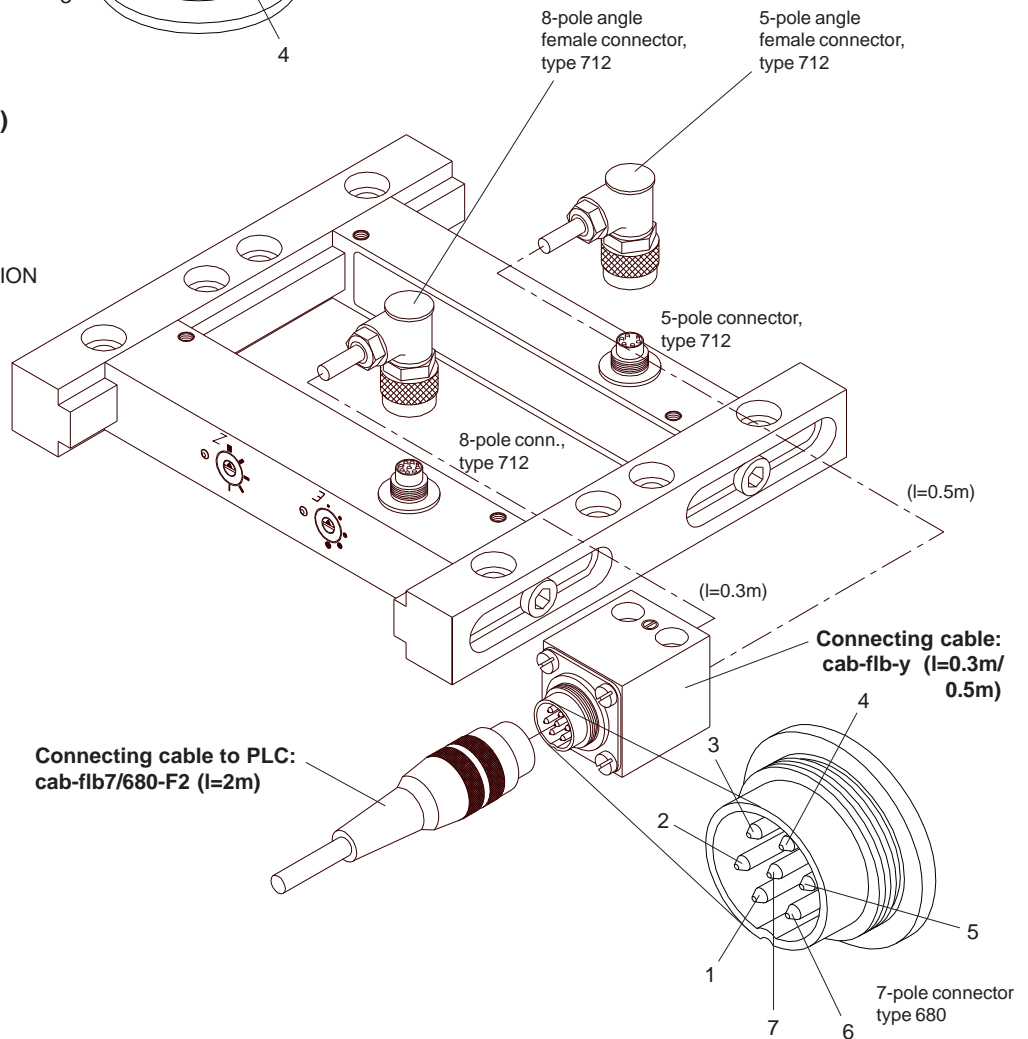
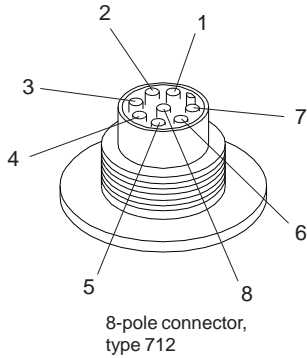
**5-pole connector type 712 (transmitter side)**

Pin No.:	Assignment:
1	GND (0V)
2	+Ub (+12VDC ... +32VDC)
3	F0
4	/F0
5	Window



**8-pole connector type 712 (receiver side)**

Pin No.:	Assignment:
1	GND (0V)
2	+Ub (+12VDC ... +32VDC)
3	Output DYN
4	Output STAT
5	with "Q": Output DIRT ACCUMULATION with "Qinv": Output INV DYN with "ANA": ANALOG (0V...+10V)
6	F0
7	/F0
8	Window



**Connecting cable cab-flb7/680-F2:**

Pin No.:	Assignment:	Color:
1	Output DYN	white
2	Output STAT	black
3	with "Q": Output DIRT ACCUMULATION with "Qinv": Output INV DYN with "ANA": ANALOG (0V...10V)	grey
4	n.c.	yellow
5	GND (0V)	blue
6	+Ub (+12VDC ... +32VDC)	brown
7	n.c.	green

**7-pole connector type 680 (connecting cable cab-flb-y):**

Pin No.:	Assignment:
1	Output DYN
2	Output STAT
3	with "Q": Output DIRT ACCUMULATION with "Qinv": Output INV DYN with "ANA": ANALOG (0V...10V)
4	n.c.
5	GND (0V)
6	+Ub (+12VDC ... +32VDC)
7	n.c.



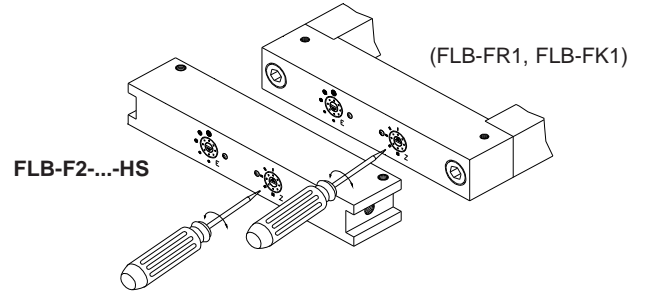
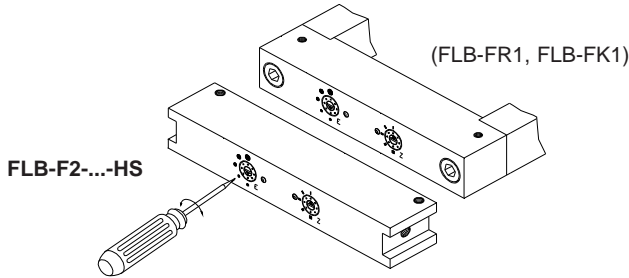
Setting

**Sensitivity setting (step-switch „E“):**

Sensitivity can be adjusted by means of a step-switch. The term 'sensitivity' defines the minimum detectable part size. The sensitivity can be adjusted in 5 steps.

**Adjustment of pulse lengthening (step-switch „Z“):**

The pulse length of the dynamic output can be adjusted by means of a step-switch. 5 pulse lengths are available.



	Step	Part size (dyn.)	Part size (stat.)
	1	>= 0.5 mm	>= 2 mm
	2	>= 0.7 mm	>= 3 mm
	3	>= 1.3 mm	>= 5 mm
	4	>= 1.7 mm	>= 7 mm
	5	>= 2.5 mm	>= 10 mm

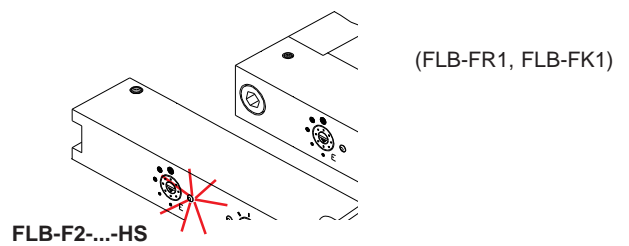
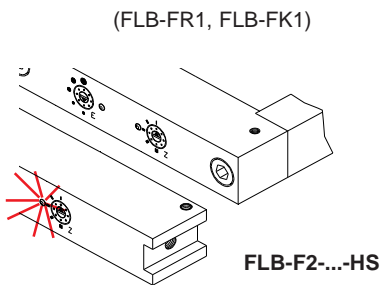
	Step	Pulse length
	1	300 ms
	2	200 ms
	3	100 ms
	4	50 ms
	5	20 ms

**Dirt accumulation display (yellow LED):**

In addition to a digital dirt accumulation output the user is informed about the dirt accumulation status by means of a yellow LED. If this yellow LED lights up, the transmitter or receiver side should be checked for dirtying.

**Switching state display (red/green LED):**

The switching state is indicated by a red/green LED. In case that a measuring object is detected, the LED changes from GREEN to RED. The two-color-LED is coupled to the dynamic output, i.e. after pulse end the LED returns to its starting state = GREEN.

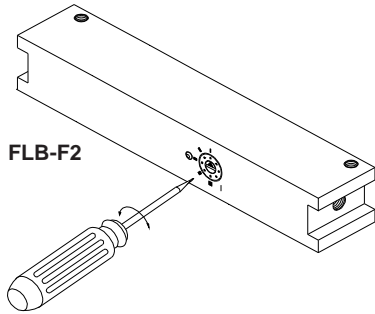




**Setting**

**Adjustment of intensity (step-switch I):**

With the FLB-F2-...HS type the intensity (IR light output) is adjusted to the respective transmitter/receiver distance by means of a 5-step switch.



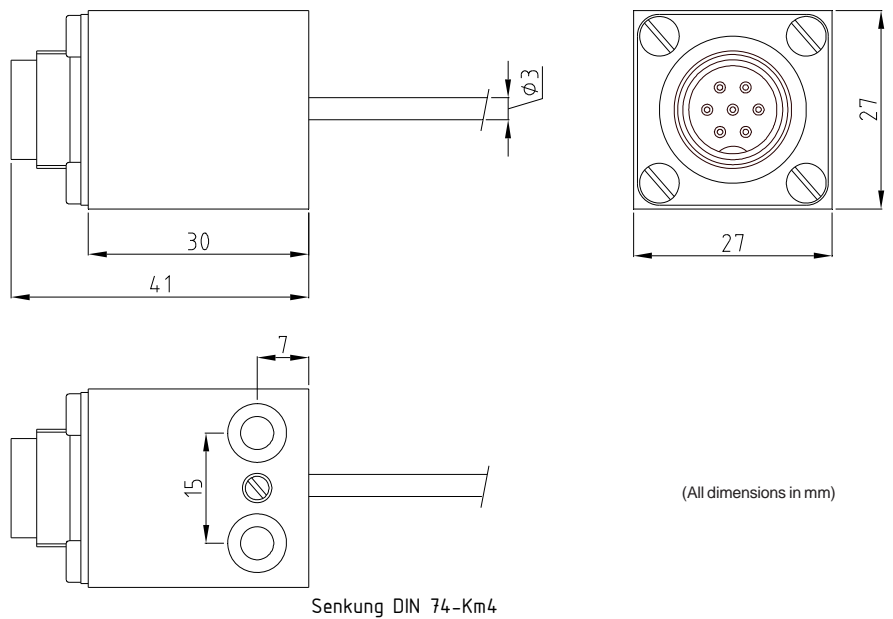
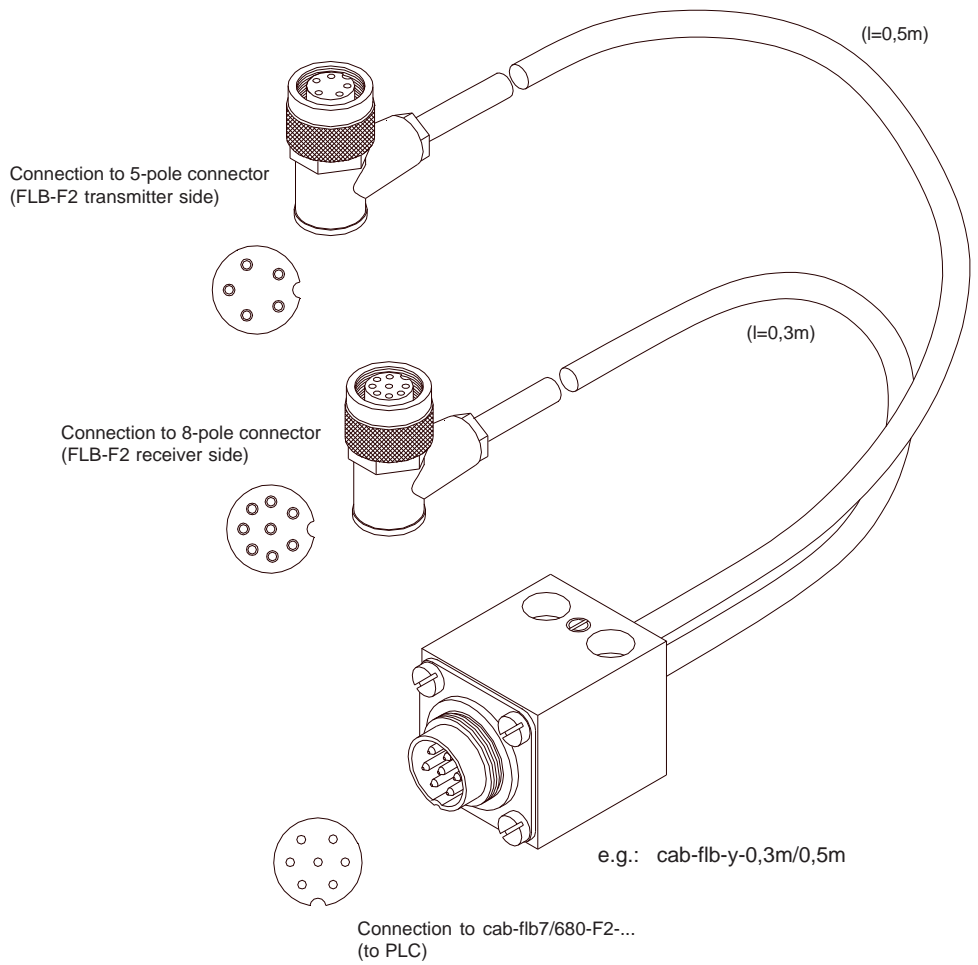
Step	Transmitter/receiver distance
1	<= 15 mm
2	<= 40 mm
3	<= 80 mm
4	<= 150 mm
5	> 150 mm

Connecting Cable

Connecting cable cab-flb-y-...

Available lengths:

- cab-flb-y-0,3m/0,5m (l=0,3m/0,5m)
- cab-flb-y-0,5m (l=0,5m/0,5m)
- cab-flb-y-1m (l=1m/1m)
- cab-flb-y-2m (l=2m/2m)
- cab-flb-y-3m (l=3m/3m)

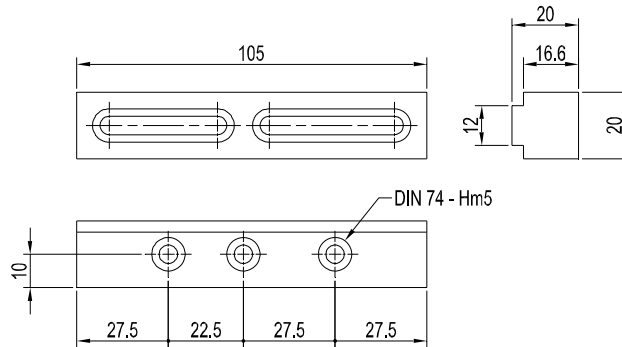
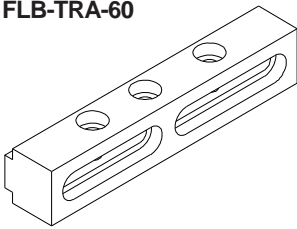


**Crossheads**

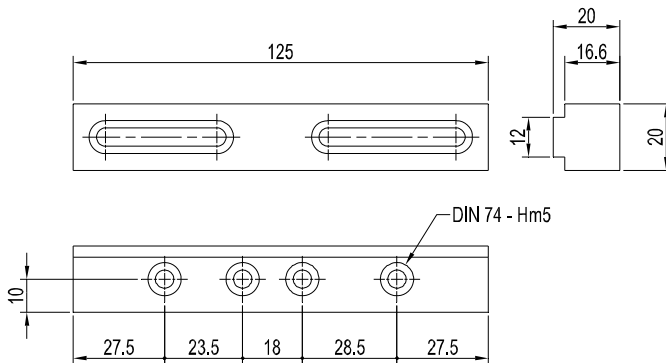
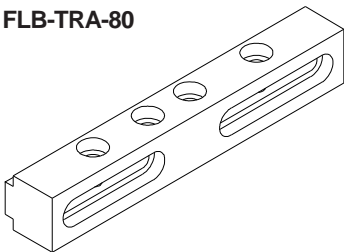
**Available crossheads:**

- FLB-TRA-60** Distance FLB-F2 transmitter/receiver = max. 60 mm (total length crosshead = 105 mm)
- FLB-TRA-80** Distance FLB-F2 transmitter/receiver = max. 80 mm (total length crosshead = 125 mm)
- FLB-TRA-100** Distance FLB-F2 transmitter/receiver = max. 100 mm (total length crosshead = 145 mm)
- FLB-TRA-155** Distance FLB-F2 transmitter/receiver = max. 155 mm (total length crosshead = 205 mm)
- FLB-TRA-355** Distance FLB-F2 transmitter/receiver = max. 355 mm (total length crosshead = 400 mm)
- FLB-TRA-555** Distance FLB-F2 transmitter/receiver = max. 555 mm (total length crosshead = 600 mm)
- FLB-TRA-755** Distance FLB-F2 transmitter/receiver = max. 755 mm (total length crosshead = 800 mm)

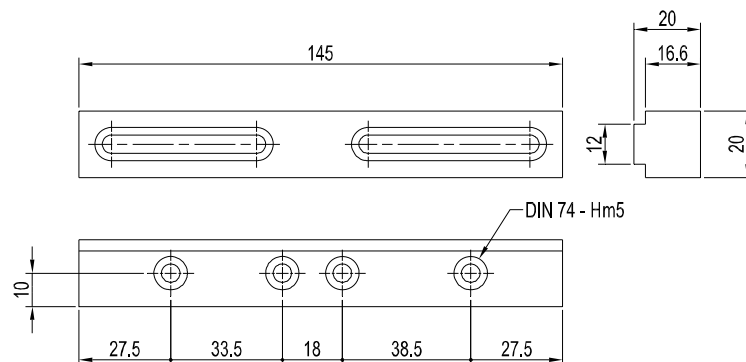
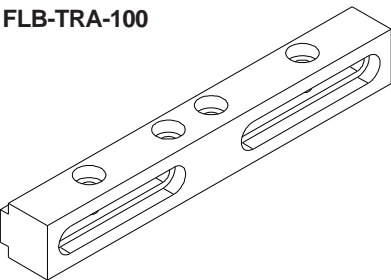
**FLB-TRA-60**



**FLB-TRA-80**



**FLB-TRA-100**

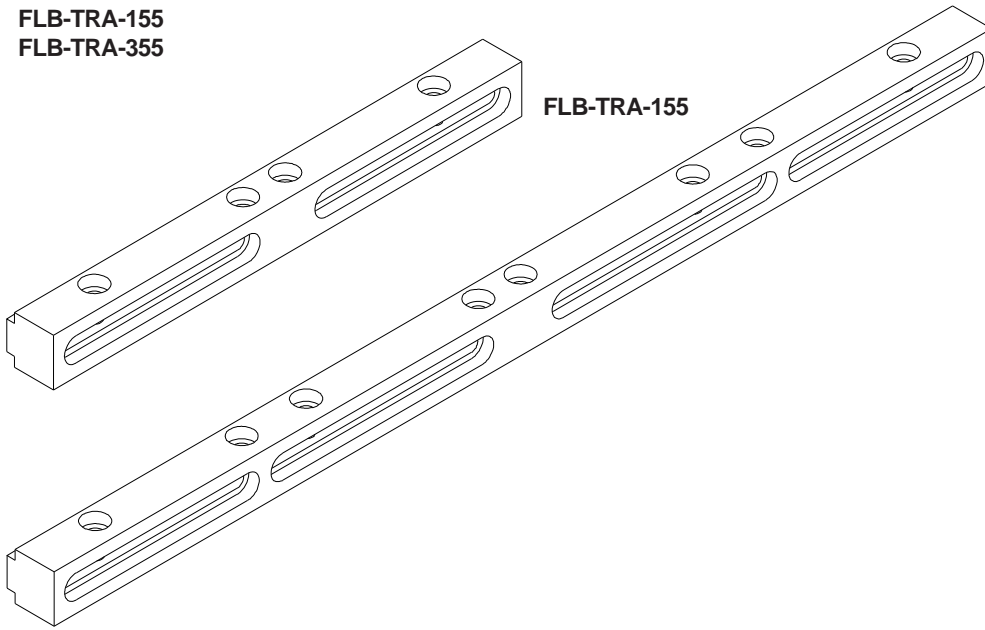


(All dimensions in mm)

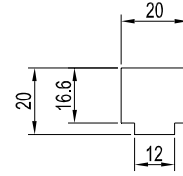


**Crossheads**

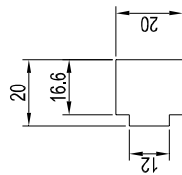
FLB-TRA-155  
FLB-TRA-355



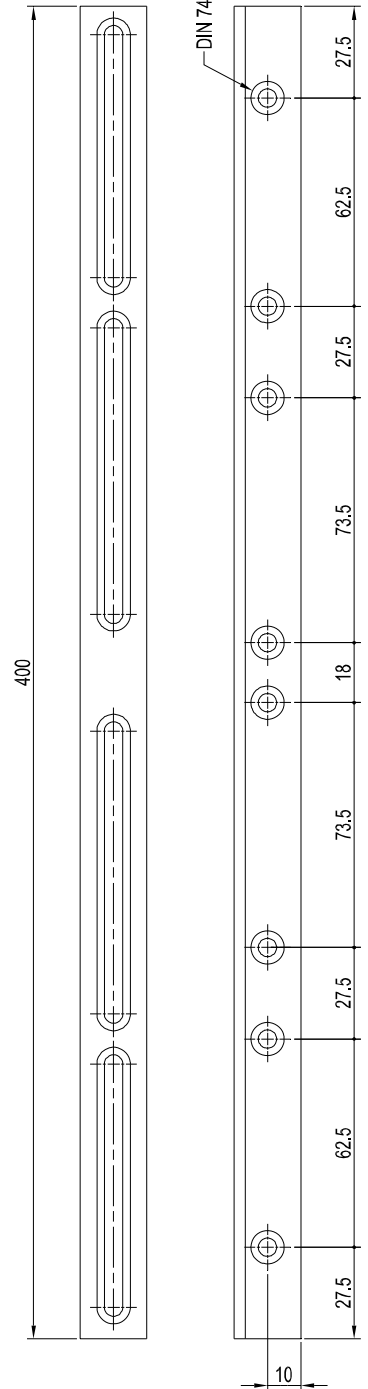
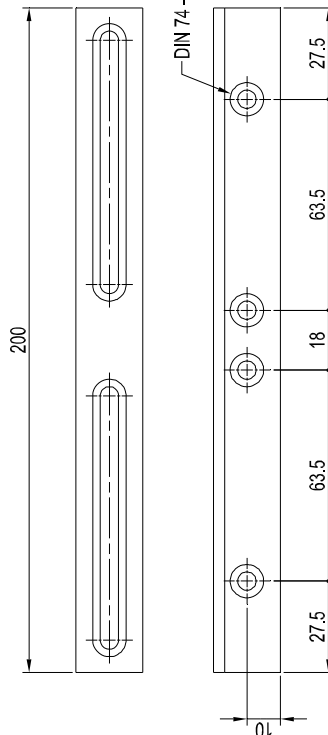
FLB-TRA-355



FLB-TRA-355



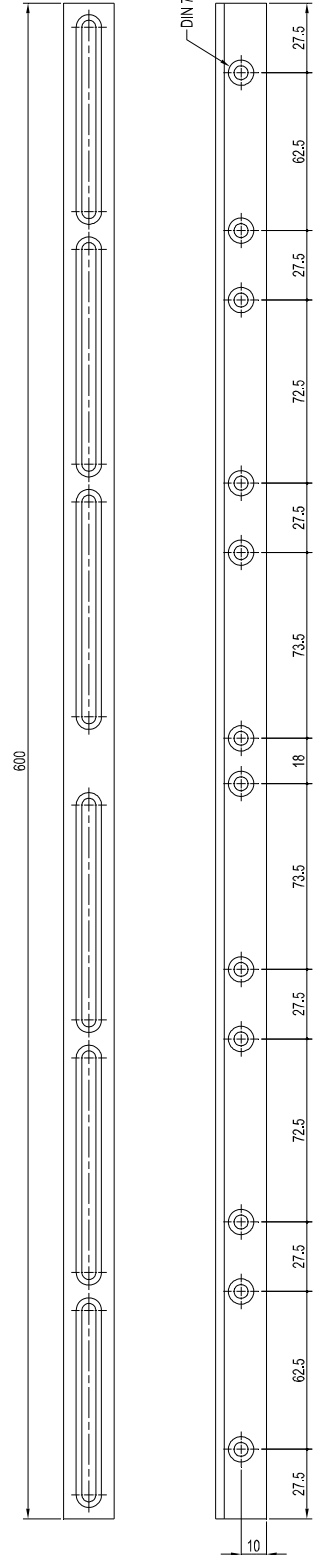
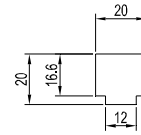
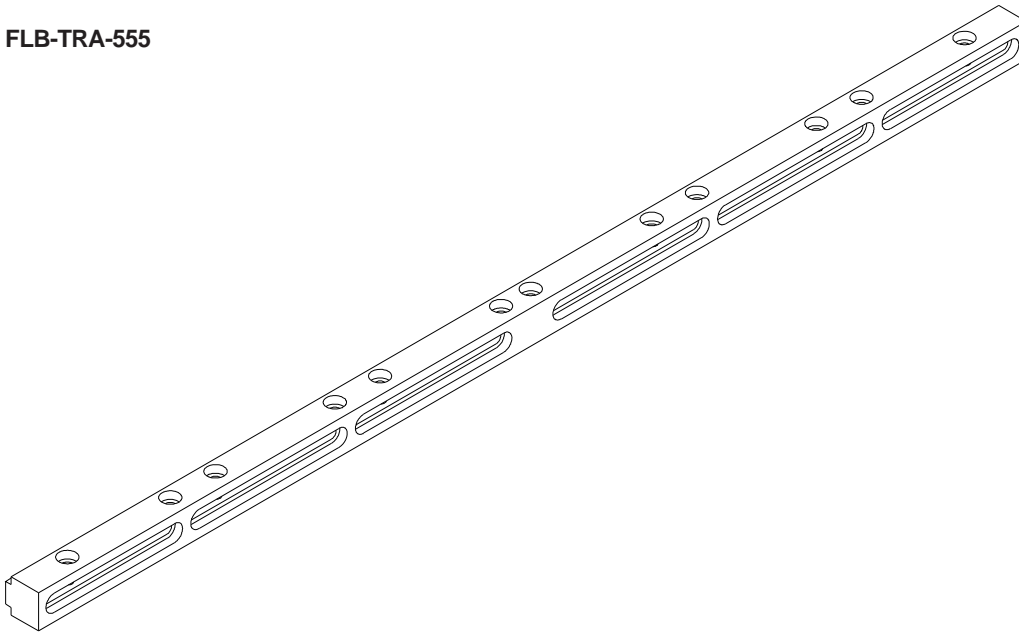
FLB-TRA-155



(All dimensions in mm)

**Crossheads**

FLB-TRA-555



DIN 74 - Hm5

(All dimensions in mm)

