



# FB LASER series

M18 photoelectric sensors  
DC LASER emission

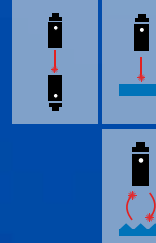


## features

- Complete range of M18 sensors with 10...30 Vdc power supply
- New axial and radial optic with flat surface
- Visible red laser emission models
- IP67 protection degree
- Metallic housing
- Sensitivity adjustment available for all models
- Total protection against any type of electric damages
- Approvals: CE and cULus listed

## web contents

- Application notes
- Photos
- Catalogue / Manuals



Cylindrical  
M18 DC LASER



## code description

**FB L N / B P - 1 A**

series	<b>FB</b>	M18 sensor with 3/4 DC wires
emission	<b>L</b>	Red laser diode emission
type	<b>4</b>	300 mm direct reflection with adjustment
	<b>N</b>	Polarized with adjustment
emitter	<b>H</b>	Emitter
	<b>D</b>	Receiver with sensitivity adjustment
	<b>0</b>	Emitter
output	<b>X</b>	Emitter with check
	<b>B</b>	4 wires output Complementary NO + NC
housing	<b>0</b>	Emitter
	<b>P</b>	PNP output
	<b>N</b>	NPN output
cable / plug output	<b>1</b>	Metal housing axial optic
	<b>3</b>	Metal housing radial optic
cable / plug output	<b>A</b>	Axial cable output
	<b>E</b>	Axial M12 plastic connector output


(\*) ATEX models available, contact our Sales Dept. for further information.



## available models

model	distance	housing	4 wires NPN NO + NC		4 wires PNP NO + NC	
			cable	plug	cable	plug
direct diffuse	300 mm	axial metal	FBL4/BN-0A	FBL4/BN-1E	FBL4/BP-1A	FBL4/BP-1E
	200 mm	90° metal	FBL4/BN-3A	FBL4/BN-3E	FBL4/BP-3A	FBL4/BP-3E
polarized	20 m (RL 110) 30 m (RL 201)	axial metal	FBLN/BN-1A	FBLN/BN-1E	FBLN/BP-1A	FBLN/BP-1E
		90° metal	FBLN/BN-3A	FBLN/BN-3E	FBLN/BP-3A	FBLN/BP-3E
emitter	50 m	axial metal	-	FBLH/X0-1E	FBLH/X0-1A	-
		90° metal	-	FBLH/X0-3E	FBLH/X0-3A	FBLH/X0-3E
receiver	50 m	axial metal	FBLD/BN-1A	FBLD/BN-1E	FBLD/BP-1A	FBLD/BP-1E
		90° metal	FBLD/BN-3A	FBLD/BN-3E	FBLD/BP-3A	FBLD/BP-3E



FBL4/**-**	
	
nominal sensing distance	300 mm (axial optic focused 100 mm) <sup>(1)</sup> 200 mm (radial optic focused 100 mm) <sup>(1)</sup>
emission	red laser diode (650 nm) class 1 laser (IEC60825-1)
minimum detectable object	0.1 mm
hysteresis	≤ 10 %
repeatability	5 %
operating voltage	10...30 Vdc
ripple	≤ 10 %
no-load supply current	≤ 30 mA
load current	100 mA
leakage current	≤ 10 µA a V max
output voltage drop	2 V max. IL = 100 mA
output type	NPN or PNP; NO + NC
switching frequency	800 Hz
power on delay	200 ms
power supply protections	polarity reversal, transient
output protection	short circuit (autoreset) Overvoltage
sensitivity adjustment	yes / Teach-In function
operating temperature range	- 15°C...+ 55°C (without freeze)
temperature drift	10 % Sr
protection degree	IP67 (EN60529) <sup>(2)</sup>
EMC	in conformity with the EMC Directive according to EN 60947-5-2
external light interference	3,000 lux (incandescent lamp) 10,000 lux (sunlight)
LEDs	green power supply / yellow (ON-Light state EG ≥ 2) / yellow (Flashing-Light state 1 < EG < 2) / yellow (OFF-Dark state)
housing material	nickel plated brass and PA12
optic material	ABS / glass
tightening torque	25 Nm
weight (approximate)	40 g connector / 110 g cable

<sup>(1)</sup> White target kodak 90% reflection 100 x 100 mm

<sup>(2)</sup> Protection guaranteed only with plug cable well mounted



# technical specification

## polarized models

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FBLN/**-**	
	
nominal sensing distance	20 m with RL 110 30 m with RL 201; 5 m with RL 100D
emission	red laser diode (650 nm)
emitter	class 1 Laser (IEC 825-1)
minimum detectable object	0.7 mm - 1 m 24 mm - 25 m
spot dimension	see diagram
hysteresis	≤ 10 %
repeatability	5 %
operating voltage	10...30 Vdc
ripple	≤ 10 %
no-load supply current	≤ 30 mA
load current	100 mA
leakage current	≤ 10 µA a V max
output voltage drop	2 V max. I <sub>L</sub> = 100 mA
output type	NPN or PNP; NO + NC
switching frequency	800 Hz
power on delay	200 ms
power supply protections	polarity reversal, transient
output protection	short circuit (autoreset) overvoltage
sensitivity adjustment	Yes / Teach-In function
operating temperature range	- 15°C...+ 55°C (without freeze)
temperature drift	10 % Sr
protection degree	IP67 (EN60529) <sup>(1)</sup>
EMC	in conformity with the EMC Directive according to EN 60947-5-2
external light interference	3,000 lux (incandescent lamp) 10,000 lux (sunlight)
LEDs	green power supply / yellow (EG ≥ 2) / yellow (Flashing-Light state 1 < EG < 2) / yellow (OFF-Dark state)
housing material	nickel plated brass and PA12
optic material	ABS / glass
tightening torque	25 Nm
weight (approximate)	40 g connector / 110 g cable

<sup>(1)</sup> Protection guaranteed only with plug cable well mounted

# technical specification

through beam models



Cylindrical  
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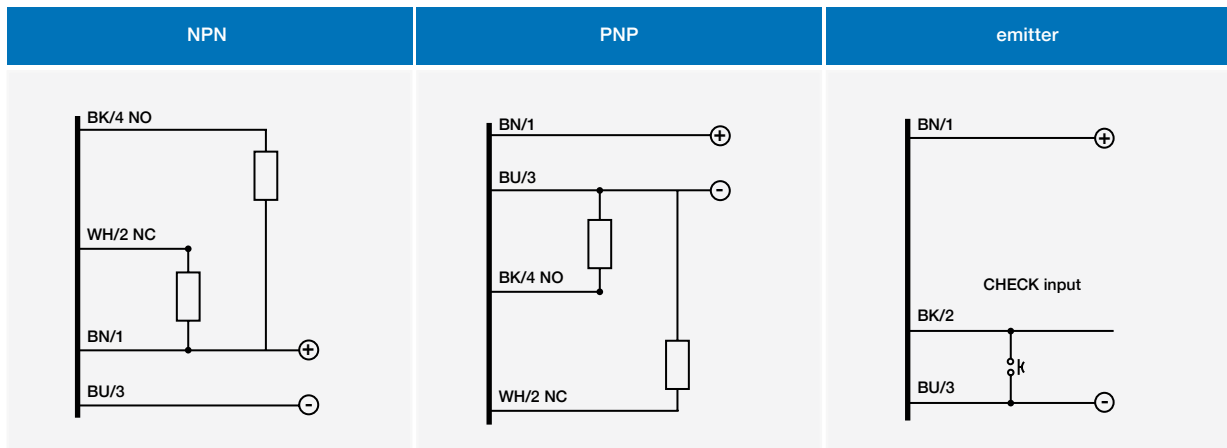
	emitter	receiver
	FBLH/X0-**	FBLD/**-**
nominal sensing distance	50 m	
emission	red laser diode (650 nm)	
emitter	class 1 Laser (IEC 60825-1)	
minimum detectable object	10 mm	
spot dimension	see diagram	
hysteresis	≤ 10 %	
repeatability	5 %	
operating voltage	10...30 Vdc	
ripple	≤ 10 %	
no-load supply current	≤ 25 mA	
load current		100 mA
leakage current		≤ 10 µA a Vmax
output voltage drop		2 V max. IL = 100 mA
output type		NPN or PNP
switching frequency		1 kHz
power on delay		200 ms
power supply protections	polarity reversal, transient	
output protection		short circuit (autoreset) overvoltage
sensitivity adjustment		trimmer
operating temperature range	- 15°C...+ 55°C (without freeze)	
temperature drift	10 % Sr	
check input	BK/2 connected to 0 switches off the emission	-
EMC	in conformity with the EMC Directive according to EN 60947-5-2	
protection degree	IP67 (EN60529) <sup>(1)</sup>	
external light interference	-	
LEDs	green (power supply) yellow (on) yellow (off)	green (power supply) yellow (light status or output status in the special LO/DO version)
housing material	nickel plated brass and PA12	
optic material	ABS / glass	
tightening torque	25 Nm	
weight (approximate)	80 g connector / 220 g cable	

<sup>(1)</sup> Protection guaranteed only with plug cable well mounted



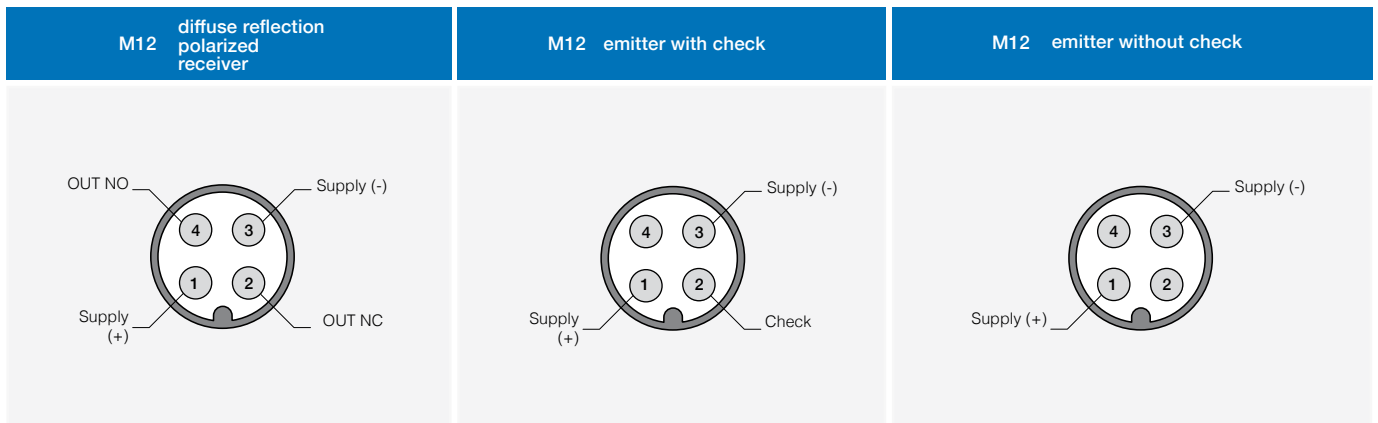
Cylindrical  
M18 DC LASER

# electrical diagrams of the connections



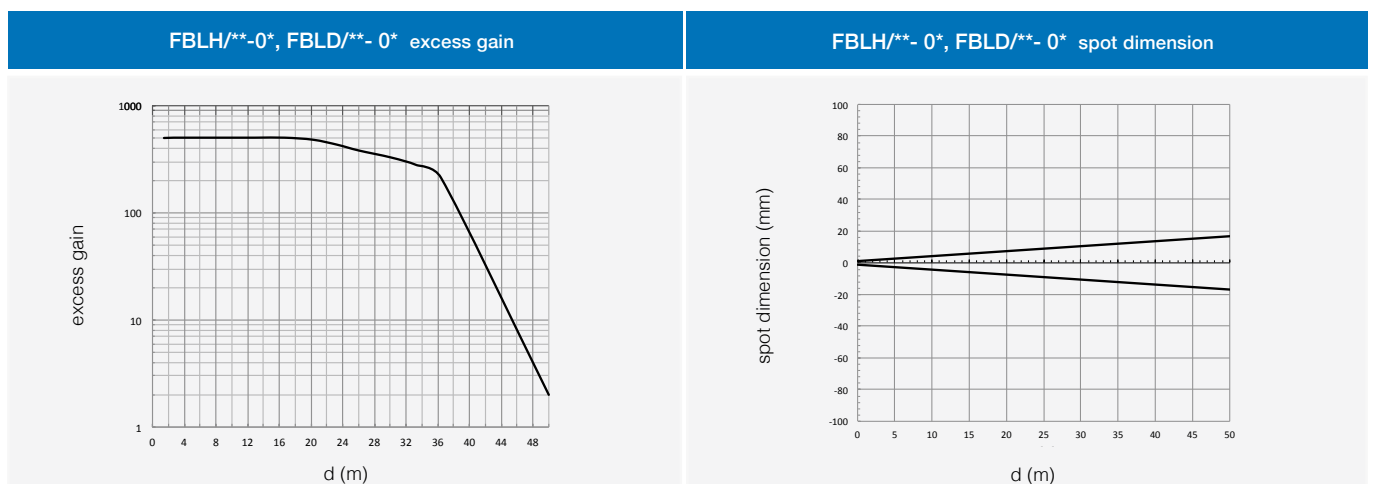
- BN** brown
- BU** blue
- BK** black
- WH** white
- PK** pink
- GY** gray

# plug



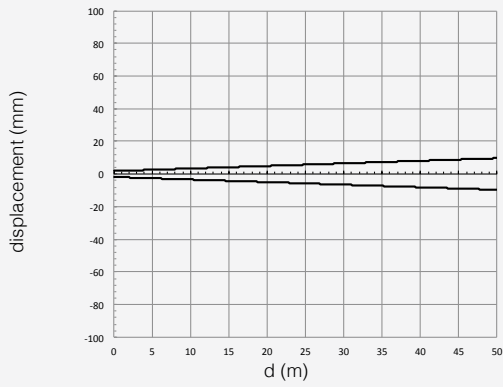
# response diagram

through beam models



FB LASER

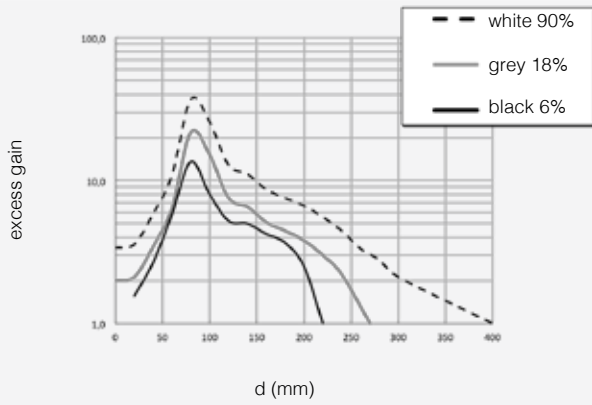
FBLH/\*\*- 0\*, FBLD/\*\*- 0\* parallel displacement



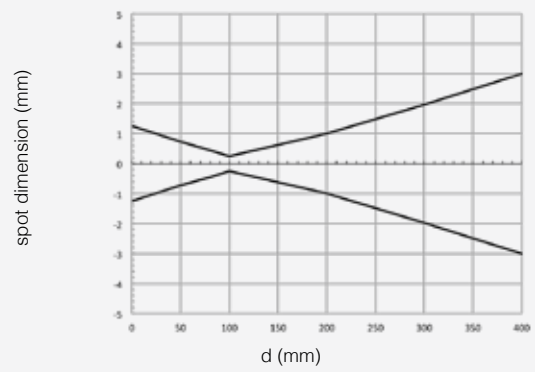
response diagram

direct diffuse models

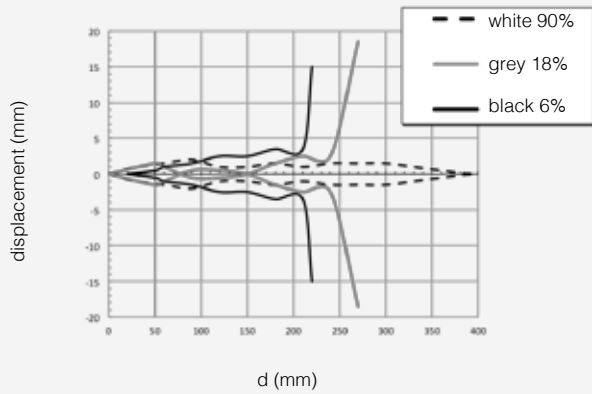
FBL4/B\*-0,1\* excess gain



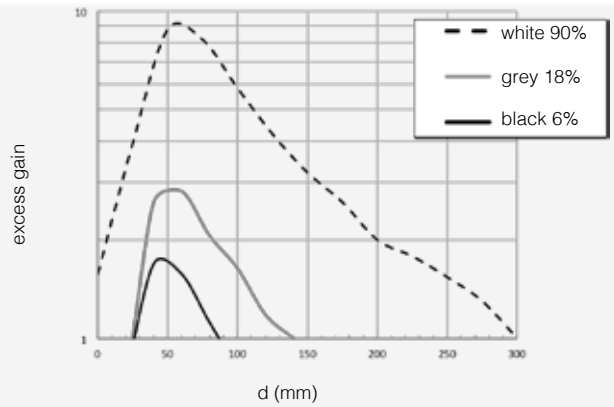
FAL4/B\*-0,1\* spot dimension



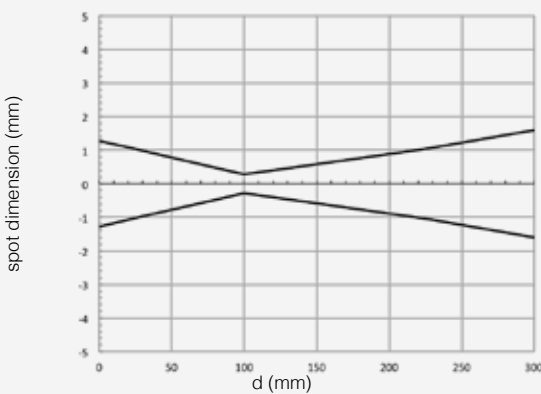
FBL4/B\*-0,1\* parallel displacement



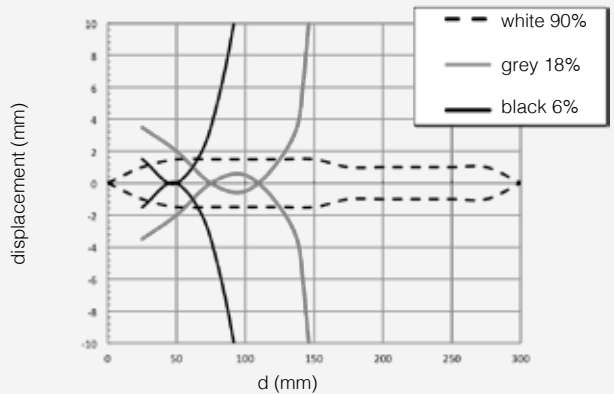
FBL4/B\*-2,3\* excess gain



FBL4/B\*-2,3\* spot dimension



FBL4/B\*- 2,3\* parallel displacement



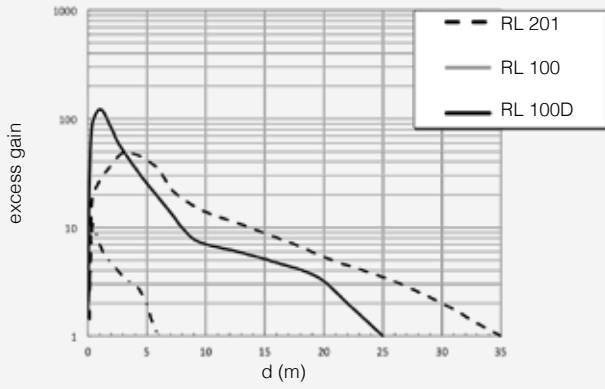


# response diagram

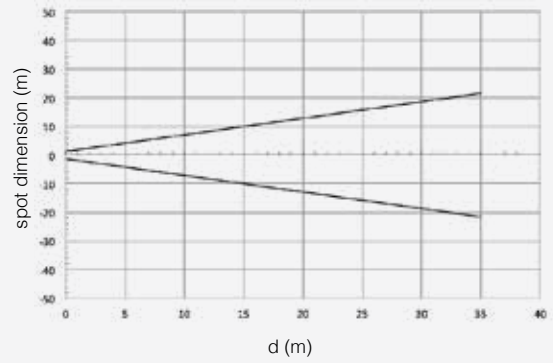
polarized models

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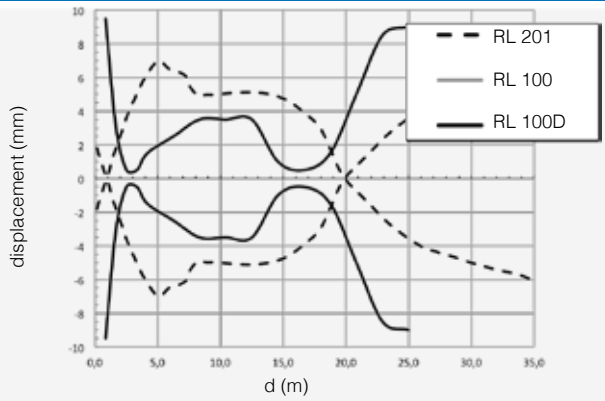
FBLN/\*\*-\*\* excess gain



FBLN/\*\*-\*\* spot dimension

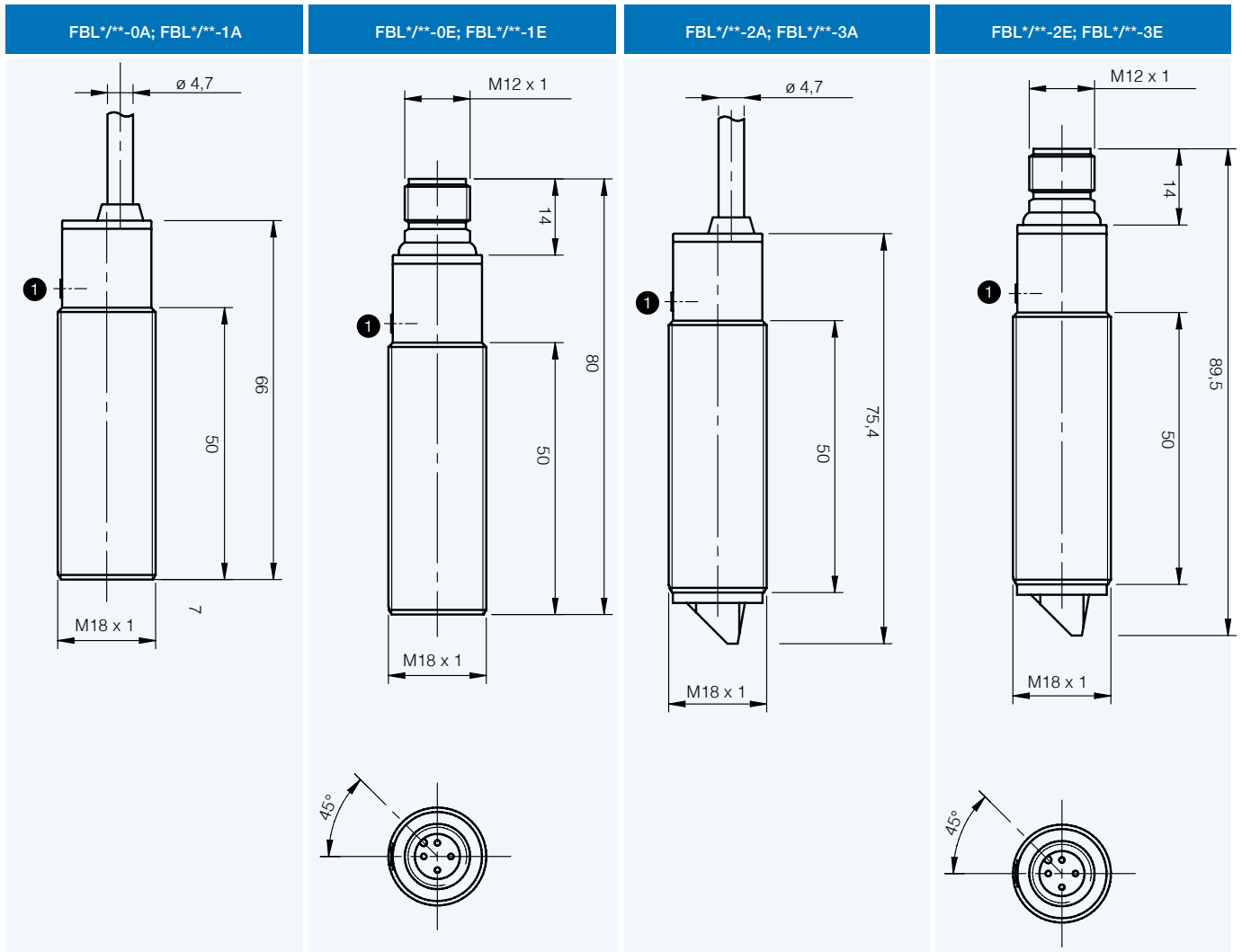


FBLN/\*\*-\*\* parallel displacement





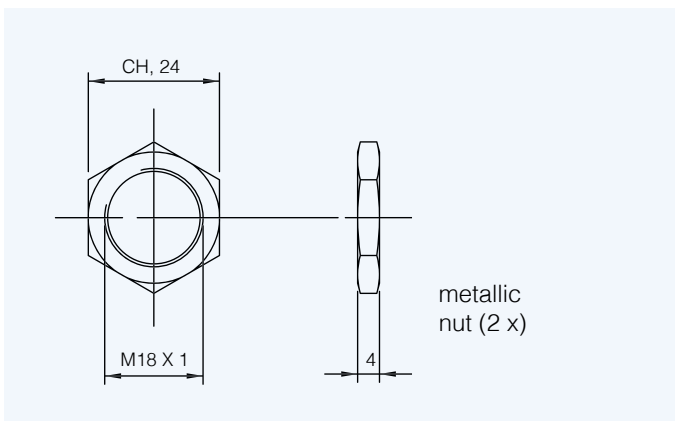
## dimensions (mm)



1 Button for sensitivity adjustment

## dimensions (mm)

accessories included in all metallic models



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