



FB LASER series

M18 photoelectric sensors
DC LASER emission

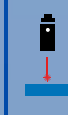


features

- 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	FB	M18 sensor with 3/4 DC wires
emission	L	Red laser diode emission
type	4	300 mm direct reflection with adjustment
	N	Polarized with adjustment
	H	Emitter
emitter	D	Receiver with sensitivity adjustment
	0	Emitter
	X	Emitter with check
output	B	4 wires output Complementary NO + NC
	0	Emitter
	P	PNP output
housing	N	NPN output
	1	Metal housing axial optic
	3	Metal housing radial optic
cable / plug output	A	Axial cable output
	E	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)	axial metal	FBLN/BN-1A	FBLN/BN-1E	FBLN/BP-1A	FBLN/BP-1E
	30 m (RL 201)	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) ⁽¹⁾ 200 mm (radial optic focused 100 mm) ⁽¹⁾
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) ⁽²⁾
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

⁽¹⁾ White target kodak 90% reflection 100 x 100 mm

⁽²⁾ Protection guaranteed only with plug cable well mounted



technical specification

polarized models

Cylindrical
M18 DC LASER

	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. 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) ⁽¹⁾
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

⁽¹⁾ Protection guaranteed only with plug cable well mounted

	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) ⁽¹⁾	
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	

⁽¹⁾ Protection guaranteed only with plug cable well mounted

electrical diagrams of the connections

NPN	PNP	emitter

BN

brown

BU

blue

BK

black

WH

white

PK

pink

GY

gray

plug

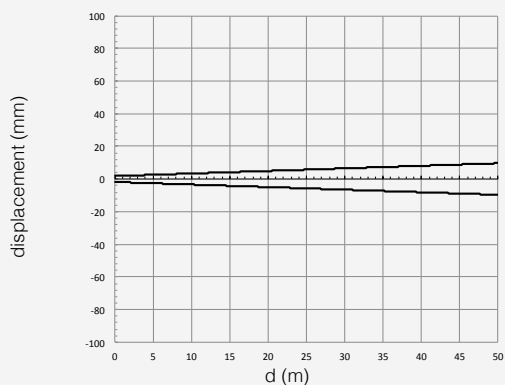
M12 diffuse reflection polarized receiver	M12 emitter with check	M12 emitter without check

response diagram

through beam models

FBLH/**-0*, FBLD/**- 0* excess gain	FBLH/**- 0*, FBLD/**- 0* spot dimension

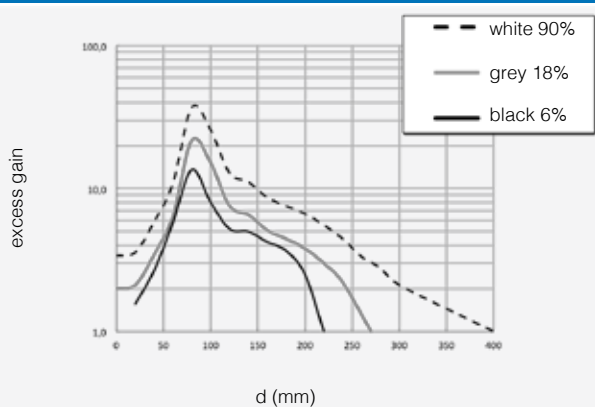
FBLH/**- 0*, FBLD/**- 0* parallel displacement



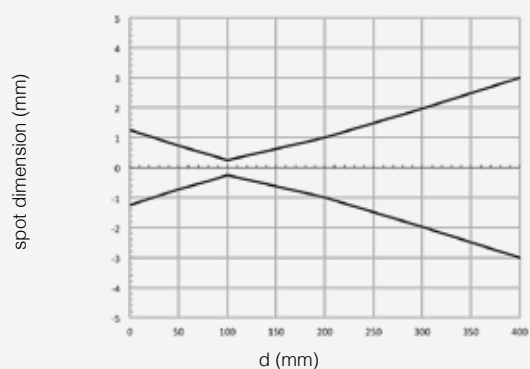
response diagram

direct diffuse models

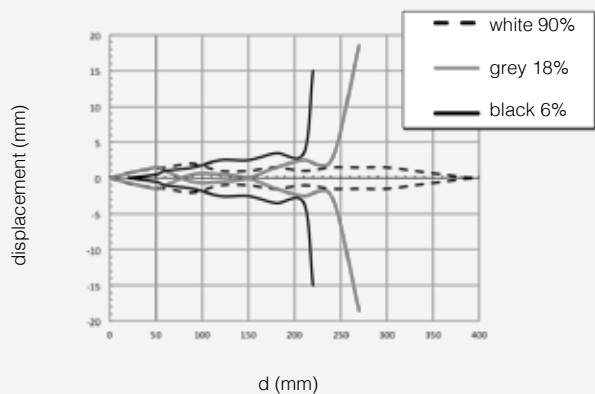
FBL4/B*-0,1* excess gain



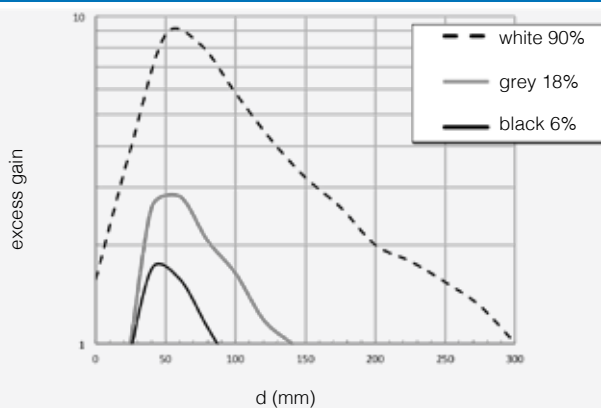
FAL4/B*-0,1* spot dimension



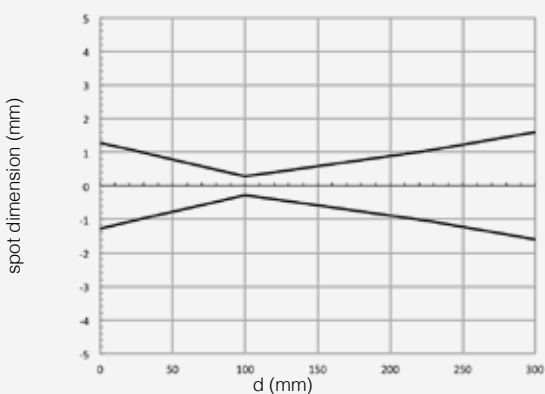
FBL4/B*-0,1* parallel displacement



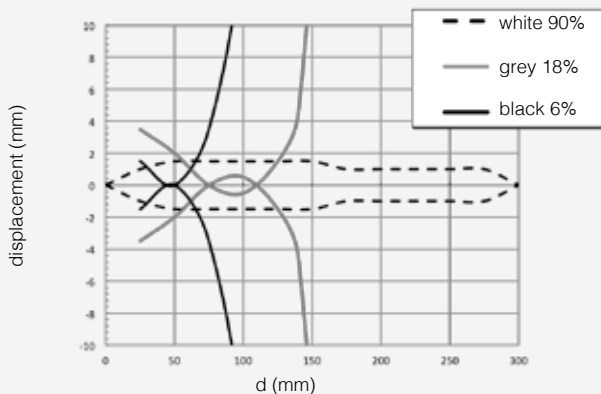
FBL4/B*-2,3* excess gain



FBL4/B*-2,3* spot dimension



FBL4/B*- 2,3* parallel displacement

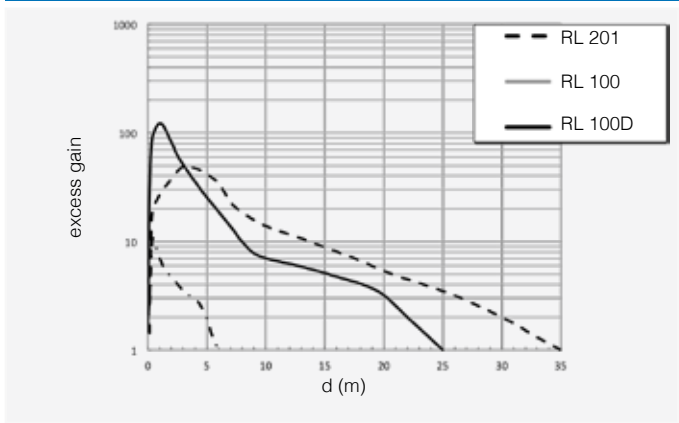




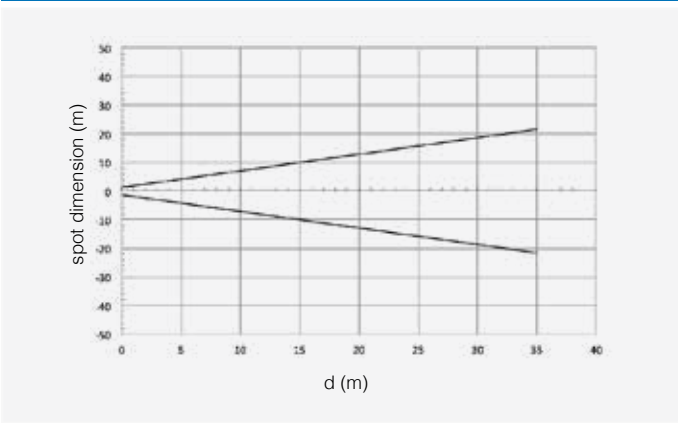
response diagram

polarized models

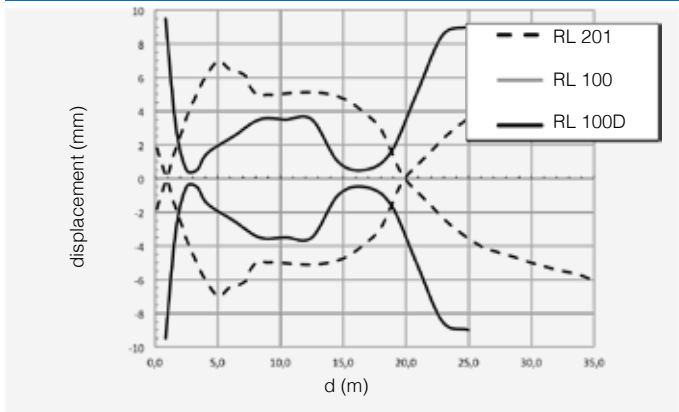
FBLN/**-** excess gain



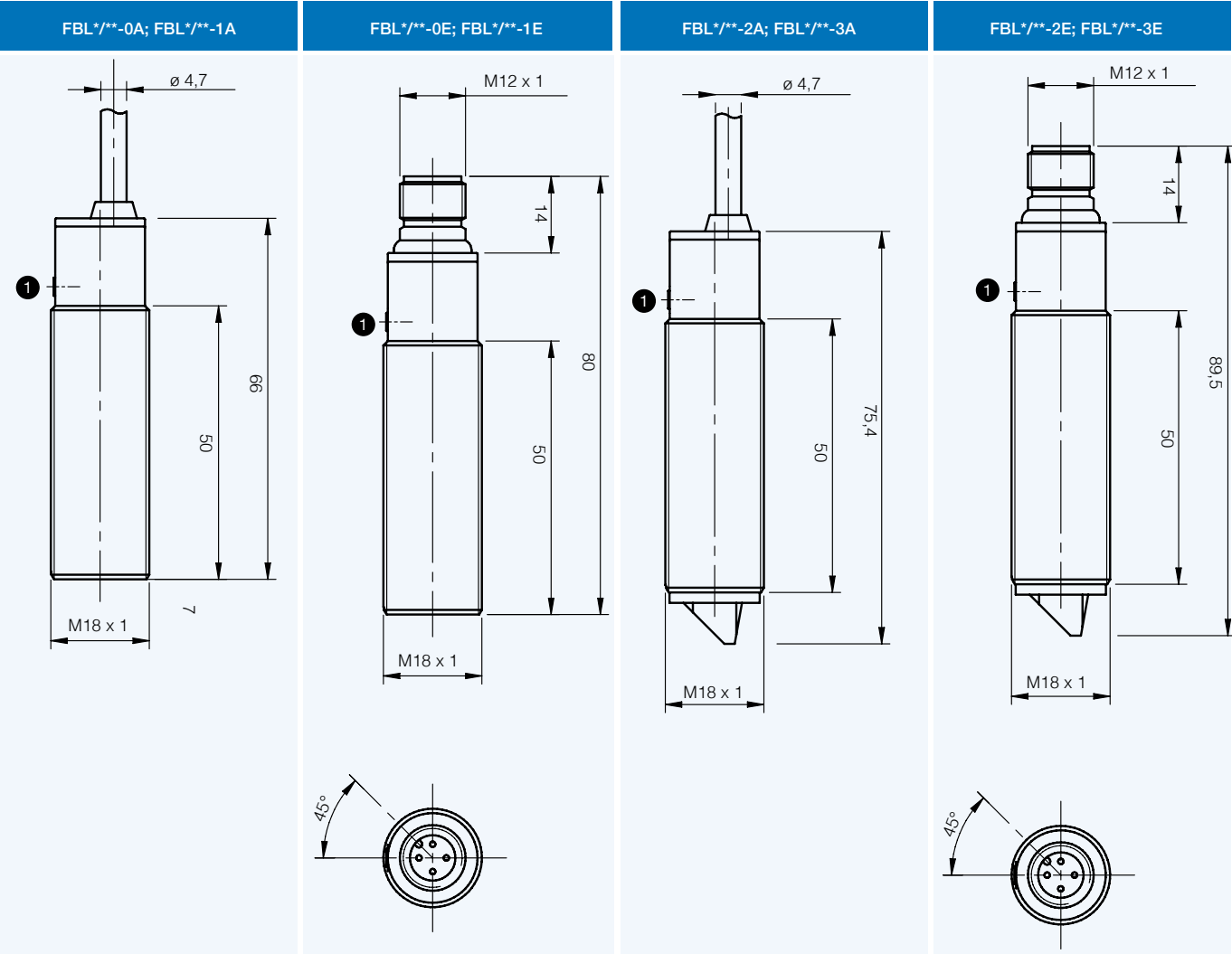
FBLN/**-** spot dimension



FBLN/**-** parallel displacement



dimensions (mm)



1 Button for sensitivity adjustment

dimensions (mm)

accessories included in all metallic models

