



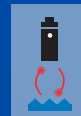
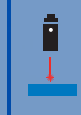
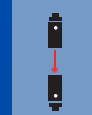
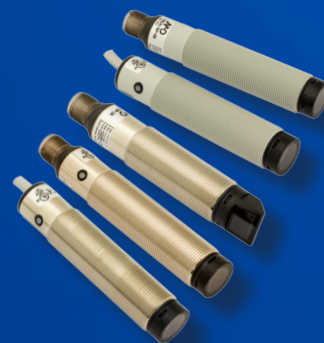
# FA LASER series

M18 photoelectric sensors  
DC LASER emission



## features

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



Cylindrical  
M18 DC LASER

## web contents



- Application notes
- Photos
- Catalogue / Manuals



## code description

FA L N / B P - 0 A

series	FA	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
emitter	H	Emitter
	D	Receiver with sensitivity adjustment
	0	LO/DO selectable output, 4 wires - Emitter
output	X	Emitter with check
	B	4 wires output Complementary NO + NC
housing	0	Emitter
	P	PNP output
	N	NPN output
cable / plug output	0	Plastic housing axial optic
	1	Metal housing axial optic
	2	Plastic housing radial optic
	3	Metal housing radial optic
	A	Axial cable output
	E	Axial M12 plastic connector output

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




## available models

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model	distance	housing	4 wires NPN NO + NC		4 wires PNP NO + NC	
			cable	plug	cable	plug
direct diffuse	300 mm	axial plastic	FAL4/BN-0A	FAL4/BN-0E	FAL4/BP-0A	FAL4/BP-0E
		axial metal	FAL4/BN-1A	FAL4/BN-1E	FAL4/BP-1A	FAL4/BP-1E
	200 mm	90° plastic	FAL4/BN-2A	FAL4/BN-2E	FAL4/BP-2A	FAL4/BP-2E
		90° metal	FAL4/BN-3A	FAL4/BN-3E	FAL4/BP-3A	FAL4/BP-3E
polarized	20 m (RL 110)	axial plastic	FALN/BN-0A	FALN/BN-0E	FALN/BP-0A	FALN/BP-0E
		axial metal	FALN/BN-1A	FALN/BN-1E	FALN/BP-1A	FALN/BP-1E
	30 m (RL 201)	90° plastic	FALN/BN-2A	FALN/BN-2E	FALN/BP-2A	FALN/BP-2E
		90° metal	FALN/BN-3A	FALN/BN-3E	FALN/BP-3A	FALN/BP-3E
emitter	50 m	axial plastic	-	FALH/X0-0E	-	-
		axial metal	-	FALH/X0-1E	FALH/X0-1A	-
		90° plastic	-	FALH/X0-2E	FALH/X0-2A	-
		90° metal	-	FALH/X0-3E	FALH/X0-3A	FALH/X0-3E
receiver	50 m	axial plastic	FALD/BN-1A	FALD/BN-0E	FALD/BP-0A	FALD/BP-0E
		axial metal	FALD/BN-2A	FALD/BN-1E	FALD/BP-1A	FALD/BP-1E
		90° plastic	FALD/BN-3A	FALD/BN-2E	FALD/BP-2A	FALD/BP-2E
		90° metal	FALD/BN-4A	FALD/BN-3E	FALD/BP-3A	FALD/BP-3E



FAL4/**-**	
	
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 or LO/DO selectable
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	PBT (plastic) / nicked plated brass (metallic) / PC (cable exit)
optic material	PC / glass
tightening torque	1 Nm (plastic), 25 Nm (metallic)
weight (approximate)	plastic version: 30 g connector / 50 g cable metallic version: 100 g connector / 130 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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FALN/**-**	
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 or LO/DO selectable
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	PBT (plastic) / nicked plated brass (metallic) / PC (cable exit)
optic material	PC / glass
tightening torque	1 Nm (plastic), 25 Nm (metallic)
weight (approximate)	plastic version: 30 g connector / 50 g cable metallic version: 100 g connector / 130 g cable

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



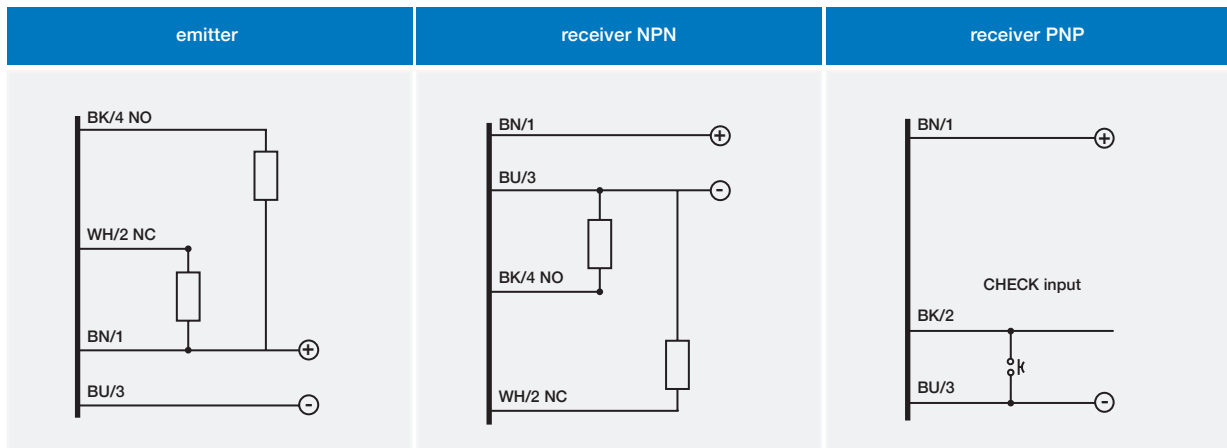
	emitter	receiver
	FALH/X0-**	FALD/**-**
nominal sensing distance	50 m	
emission	red laser diode (650 nm)	
emitter	class 1 Laser (IEC 60825-1)	
minimum detectable object	10 mm	
spot dimension	see diagram	
hysteresis	≤ 10 %	
repeatability	5 %	
operating voltage	10...30 Vdc	
ripple	≤ 10 %	
no-load supply current	≤ 25 mA	
load current		100 mA
leakage current		≤ 10 µA @ 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	PBT (plastic) / nicked plated brass (metallic) / PC (cable exit)	
optic material	PC / glass	
tightening torque	1 Nm (plastic), 25 Nm (metallic)	
weight (approximate)	plastic version: 30 g connector / 50 g cable metallic version: 100 g connector / 130 g cable	

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



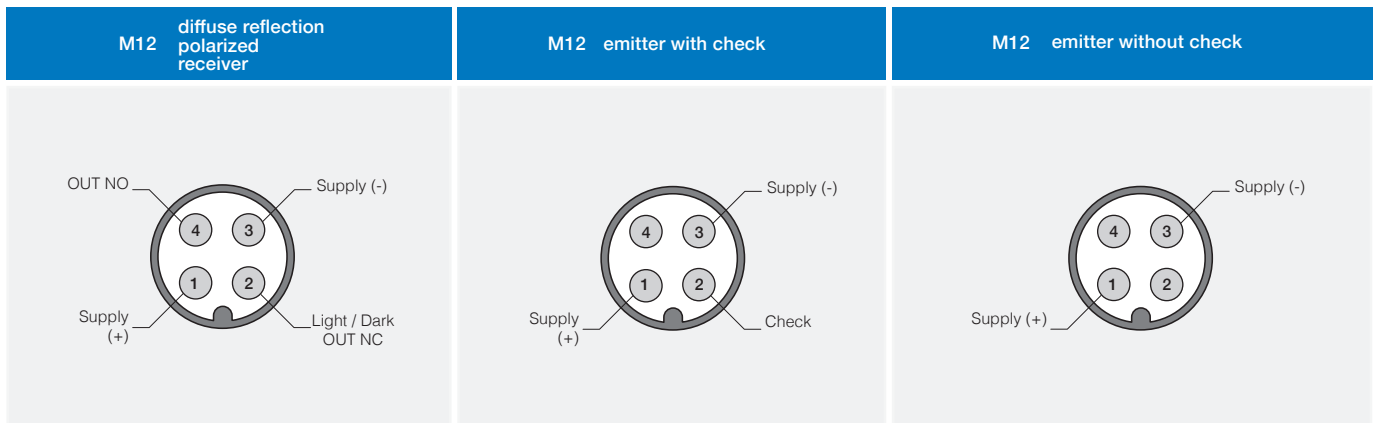
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# electrical diagrams of the connections



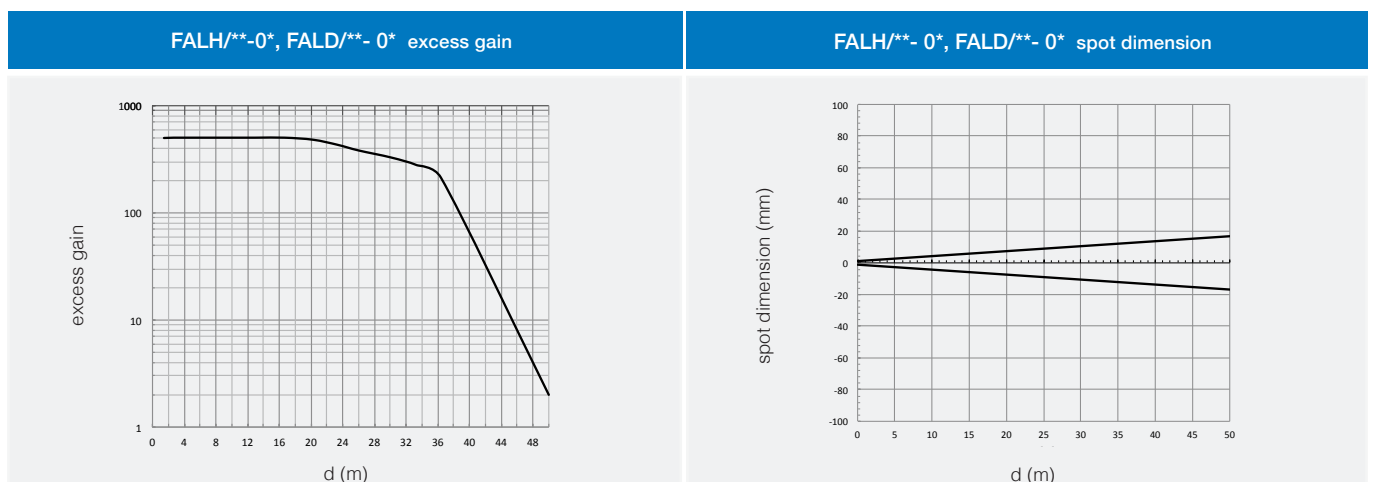
- BN brown
- BU blue
- BK black
- WH white
- PK pink
- GY gray

# plug



# response diagram

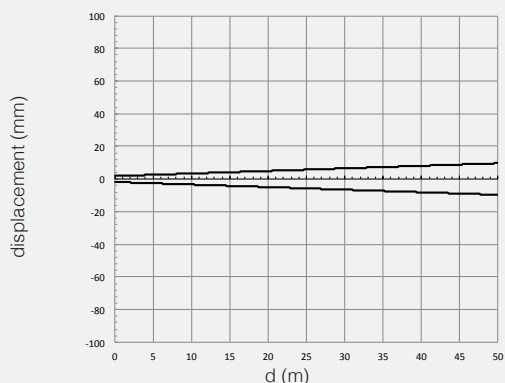
through beam models



FA LASER



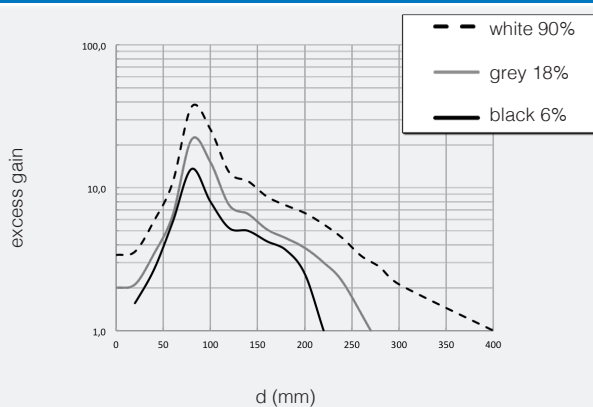
FALH/\*\*- 0\*, FALD/\*\*- 0\* parallel displacement



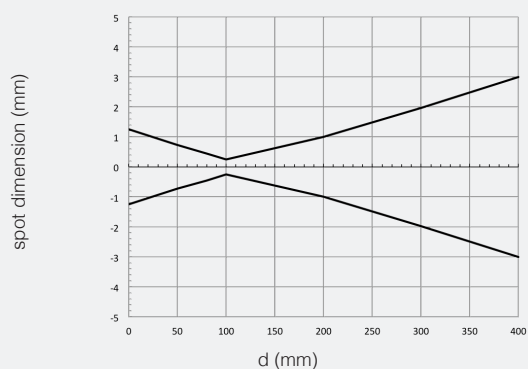
## response diagram

direct diffuse models

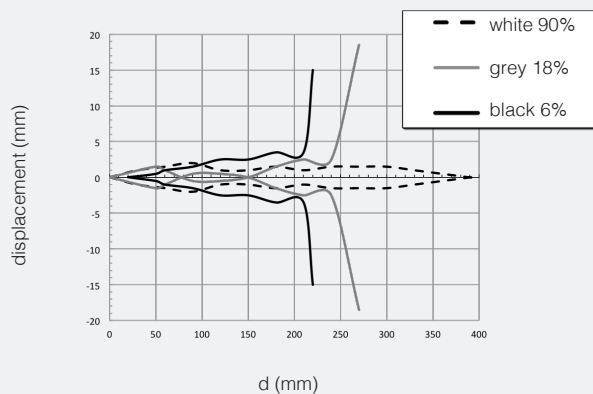
FAL4/B\*-0,1\* excess gain



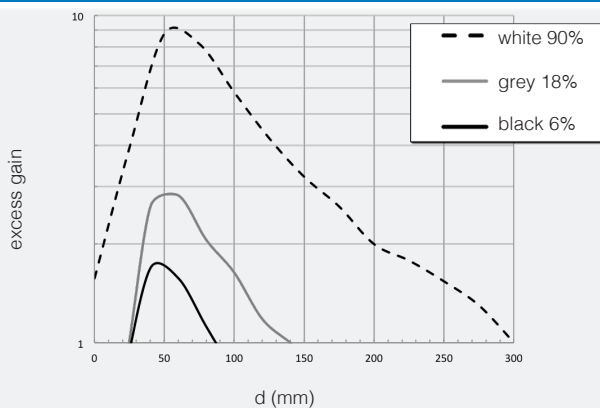
FAL4/B\*-0,1\* spot dimension



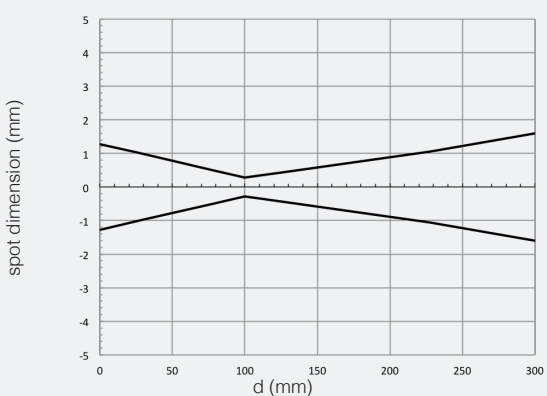
FAL4/B\*-0,1\* parallel displacement



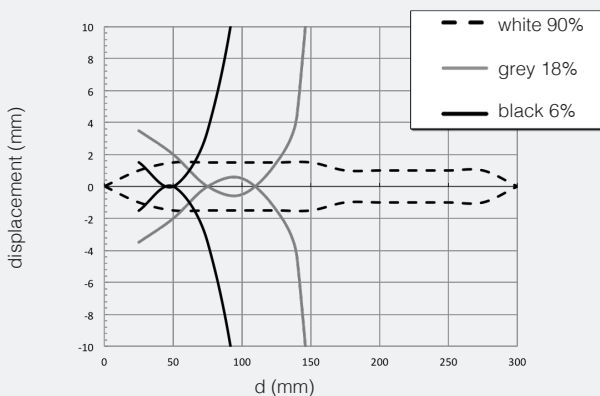
FAL4/B\*-2,3\* excess gain



FAL4/B\*-2,3\* spot dimension



FAL4/B\*- 2,3\* parallel displacement



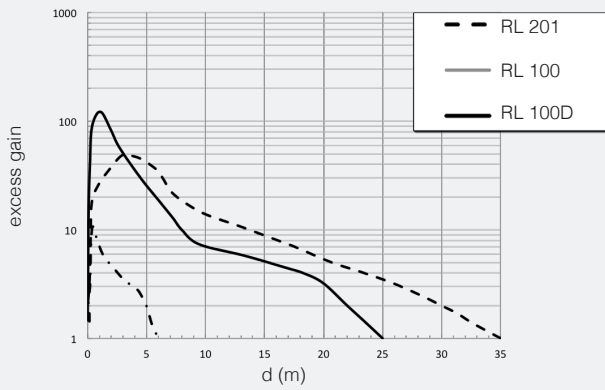


# response diagram

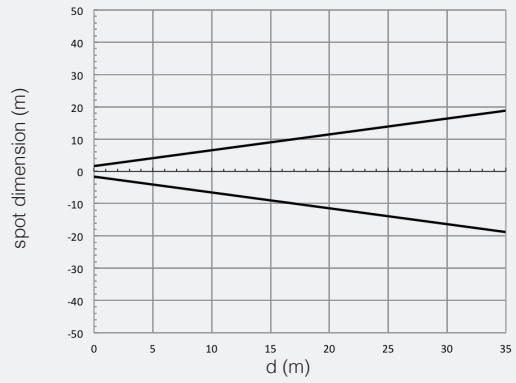
polarized models

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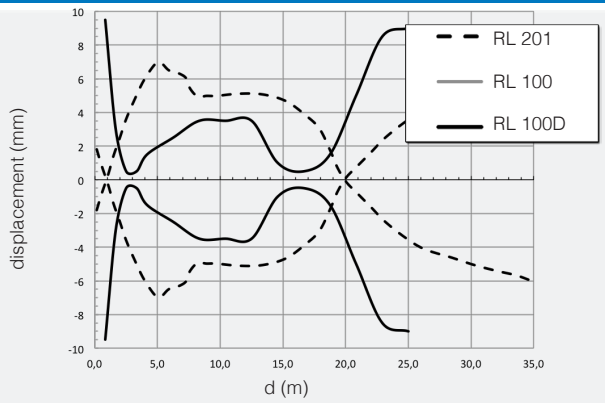
FALN/\*\*\_\*\* excess gain



FALN/\*\*\_\*\* spot dimension

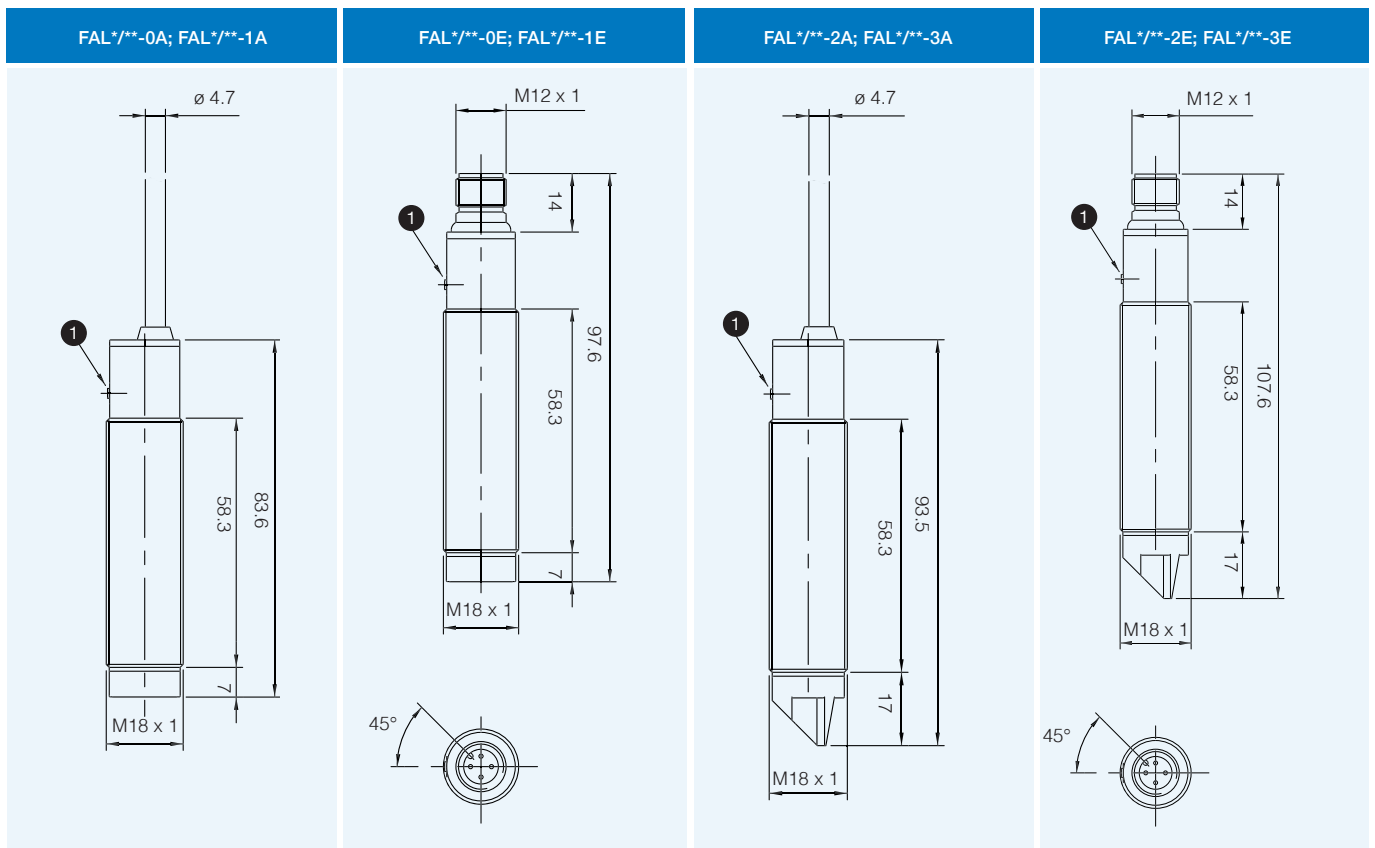


FALN/\*\*\_\*\* parallel displacement





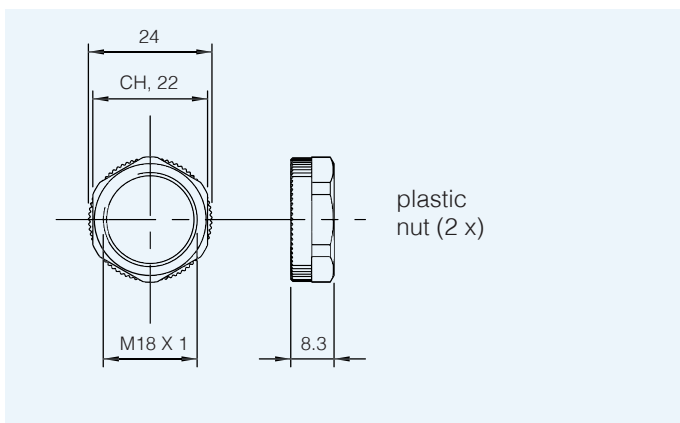
## dimensions (mm)



1 Button for sensitivity adjustment

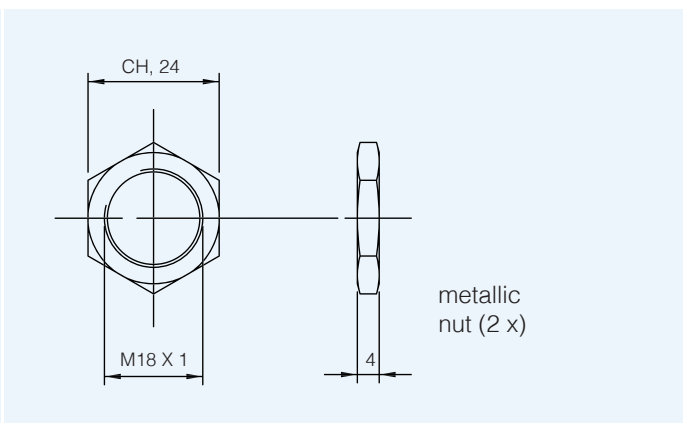
## dimensions (mm)

accessories included in all plastic models



## dimensions (mm)

accessories included in all metallic models



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