



# FG series

Compact photoelectric switch sensors with high performances and high detection distances

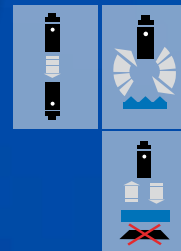


## features

- Cable output or with revolving connector, NPN or PNP output (DC models) and SPDT voltage free relay output (AC models)
- Selectable LO/DO output status
- Totally protected against electrical damages
- Background suppressions models: 310 mm, 600 mm
- Reflex polarized sensitivity adjustment 12 m
- Emitter and Receiver with max detecting range of 50 m
- Double Multifunction LED indicator: output state and using the pointing
- Sensitive adjustment models

## web content

- Application notes
- Photos
- Catalogue / Manuals



Cubic  
DC - AC compact



## code description

FG R W / O P - O A


series	<b>FG</b>	Compact cubic photoelectric switch
emission	<b>R</b>	Visible red emission LED
	<b>W</b>	Adjut. dist. background suppression 600 mm
type	<b>S</b>	Adjut. dist background suppression 310 mm
	<b>N</b>	Reflex polarized sensitivity adjustment 12 m
	<b>H</b>	Emitter 50 m
	<b>D</b>	Receiver with sensitivity adjustment 50 m
supply voltage	<b>HD</b>	Emitter + Receiver with sensitivity adjustment
	<b>O</b>	Supply voltage 10...30 Vdc
logic output	<b>D</b>	Supply voltage 24...240 Vdc / 24...240 Vac
	<b>P</b>	PNP logic output
	<b>N</b>	NPN logic output
cable / plug output	<b>O</b>	Emitter
	<b>T</b>	SPDT voltage free relay output
	<b>O</b>	Plastic housing
	<b>A</b>	Cable exit 2 m
	<b>E</b>	M12 plug cable exit

## available models

model	distance	adjustment	cable		plug M12		models AC
			NPN	PNP	NPN	PNP	
background suppression	310 mm	●	FGRS/0N-0A	FGRS/0P-0A	FGRS/0N-0E	FGRS/0P-0E	FGRS/DT-0A
	600 mm		FGRW/0N-0A	FGRW/0P-0A	FGRW/0N-0E	FGRW/0P-0E	FGRW/DT-0A
polarized	12 m		FGRN/0N-0A	FGRN/0P-0A	FGRN/0N-0E	FGRN/0P-0E	FGRN/DT-0A
emitter + receiver	50 m		FGRHD/0N-0A	FGRHD/0P-0A	FGRHD/0N-0E	FGRHD/0P-0E	FGRHD/DT-0A

## technical specification


reflex polarized models <sup>(1)</sup>

	FGRN/0*-0*	FGRN/DT-0A
		
nominal sensing distance	12 m	
blind zone mm	0.01 m	
scanning distance adjusting	potentiometer 2 turns with position indicator	
emission	red visible LED light	
spot diameter	approx. 260 mm @ 8 m	
rotary switch	control wire	light on
supply voltage	10...30 Vcc (limit value)	24...240 Vac <sup>(2)</sup> / 24...240 Vcc
ripple	5 Vpp	-
no-load supply current	35 mA	≤ 2 VA
load current (maximum)	100 mA	-
output voltage drop	1,8 V max @100 mA	-
maximum switching current	-	3 A...240 Vac <sup>(2)</sup> 3 A...30 Vcc <sup>(2)</sup>
output type	PNP o NPN open collector	relay SPDT electrically isolated
switching frequency	1.000 Hz max	33 Hz max
response time	0,15 ms	15 ms
operation temperature range	- 25°C...+ 55°C	
power supply protections	overvoltage pulses and polarity reversal	
output electrical protection	short circuit, overcurrent, overvoltage	-
protection degree	IP67 (EN60529) <sup>(3)</sup>	
ambient light immunity	3,000 lux (incandescent lamp), 10,000 lux (sunlight)	
housing material	PBT corpo; PMMA ottica	
cable PVC 2 m	4 x 0.18 mm <sup>2</sup> ø 3.8 mm	5 x 0.76 mm <sup>2</sup> ø 6.3 mm
weight (approximate)	150 g cable 40 g plug	160 g

<sup>(1)</sup> With RL 123 included reflector <sup>(2)</sup> Ensure spark extinguishing for inductive or capacitive load <sup>(3)</sup> Protection guaranteed only with plug cable well mounted

# technical specification

## background suppression

	FGRS/0*-0*	FGRW/0*-0*	FGRS/DT-0A	FGRW/DT-0A
				
nominal sensing distance	90...310 mm <sup>(2)</sup>	110...600 mm <sup>(2)</sup>	90...310 mm <sup>(2)</sup>	110...600 mm <sup>(2)</sup>
blind zone mm	5...15 mm	10...35 mm	5 ÷ 15 mm	10 ÷ 35 mm
scanning distance adjusting	potentiometer 2 turns with position indicator			
emission	red visible LED light			
spot diameter	30 mm @ 300 mm	30 mm @ 500 mm	30 mm @ 300 mm	30 mm @ 500 mm
rotary switch	control wire		light on	
supply voltage	10...30 Vcc (limit value)		24...240 Vac <sup>(2)</sup> / 24...240 Vcc	
ripple	5 Vpp		-	
no-load supply current	35 mA		≤ 2 VA	
load current (maximum)	100 mA		-	
output voltage drop	1.8 V max @100 mA		-	
maximum switching current	-		3 A...240 Vac <sup>(2)</sup> 3 A...30 Vcc <sup>(2)</sup>	
output type	PNP or NPN open collector		relay SPDT electrically isolated	
switching frequency	160 Hz max		33 Hz massima	
response time	2 ms		15 ms	
output electrical protection	overvoltage pulses and polarity reversal			
power supply protections	short circuit, overcurrent, overvoltage		-	
operation temperature range	- 25 ...+ 55° C			
ambient light immunity	10,000 Lux minimum sunlight 3,000 Lux min HF lamp			
protection degree	IP67 (EN60529) <sup>(3)</sup>			
housing material	Housing: ABS; optic: PMMA			
cable PVC 2 m	4 x 0.18 mm <sup>2</sup> ø 3.8 mm		5 x 0.76 mm <sup>2</sup> ø 6.3 mm	
weight (approximate)	150 g cable 40 g plug		160 g	

<sup>(1)</sup> White target 90% 100x100 mm <sup>(2)</sup> Ensure spark extinguishing for inductive or capacitive load <sup>(3)</sup> Protection guaranteed only with plug cable well mounted



# technical specification

## through-beam models

Cubic  
DC - AC compact

	FGRHD/0*-0*		FGRHD/DT-0A	
	FGRH/0*-0* (emitter)	FGRD/0*-0* (receiver)	FGRH/D0-0A (emitter)	FGRD/DT-0A (receiver)
nominal sensing distance	50 m			
scanning distance adjusting	potentiometer 2 turns with position indicator			
emission	red LED light	-	red LED light	-
spot diameter	600 mm @ 20 m	-	600 mm @ 20 m	-
rotary switch	-	control wire	-	light on
supply voltage	10...30 Vcc (limit value)		24...240 Vac <sup>(2)</sup> / 24...240 Vcc	
ripple	5 Vpp		-	
no-load supply current	≤ 35 mA	≤ 20 mA	≤ 20 mA	≤ 2 mA
load current (maximum)	-	100 mA	-	-
output voltage drop	-	1.8 V max @100 mA	-	
maximum switching current	-		3 A...240 Vac <sup>(1)</sup> 3 A...30 Vcc <sup>(1)</sup>	
output type	-	PNP or NPN open collector	-	relay SPDT electrically isolated
switching frequency	-	1,000 Hz max	-	33 Hz max
response time	-	0.5 ms	-	≤ 15 ms
output electrical protection	overvoltage pulses and polarity reversal			
power supply protections	-	short circuit, overcurrent, overvoltage	-	
operation temperature range	- 25 ...+ 55° C			
ambient light immunity	10,000 Lux minimum sunlight 3,000 Lux min HF lamp			
protection degree	IP67 (EN60529) <sup>(2)</sup>			
housing material	Housing: ABS; optic: PMMA			
cable PVC 2 m	2 x 0.18 mm <sup>2</sup> ø 3.8 mm	4 x 0.18 mm <sup>2</sup> ø 3.8 mm	2 x 0.76 mm <sup>2</sup> ø 6.3 mm	5 x 0.76 mm <sup>2</sup> ø 6.3 mm
weight (approximate)	80 g plug 300 g cable 2m		310 g	

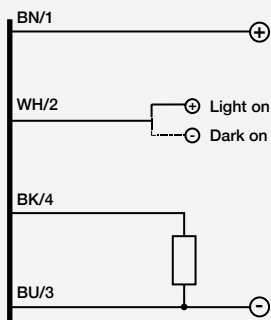
<sup>(1)</sup> Ensure spark extinguishing for inductive or capacitive load <sup>(2)</sup> Protection guaranteed only with plug cable well mounted

# electrical diagrams of the connections

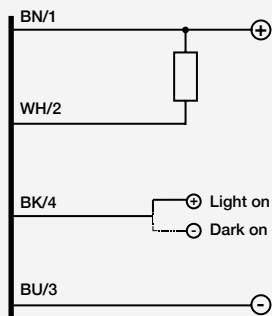


Cubic  
DC - AC compact

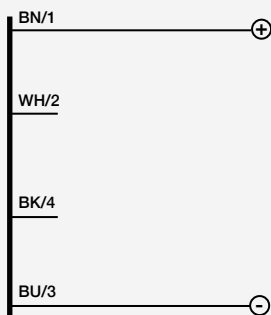
background suppression, polarized, receiver PNP output



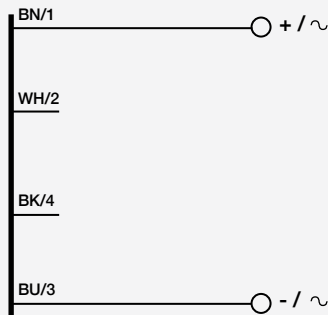
background suppression, polarized, receiver NPN output



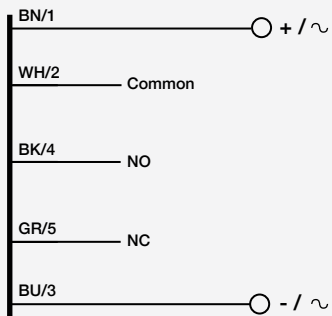
emitter DC



emitter AC/DC



background suppression, reflex with polarizing filter and receiver with relay output

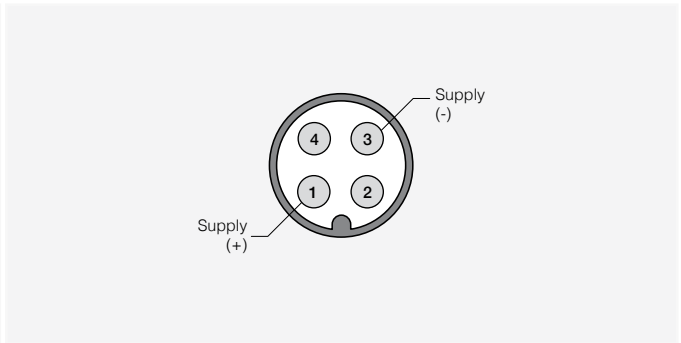
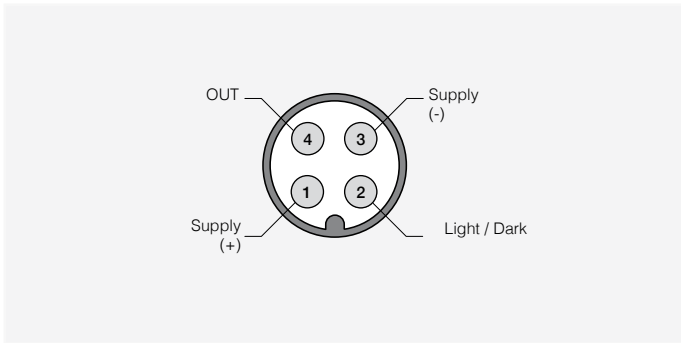


- BN** brown
- BU** blue
- BK** black
- WH** white
- PK** pink
- GY** gray



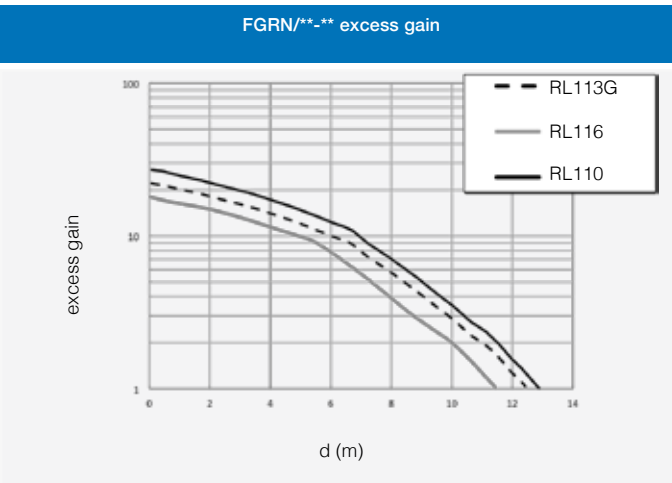
M12 background suppression, polarized, receiver

M12 emitter



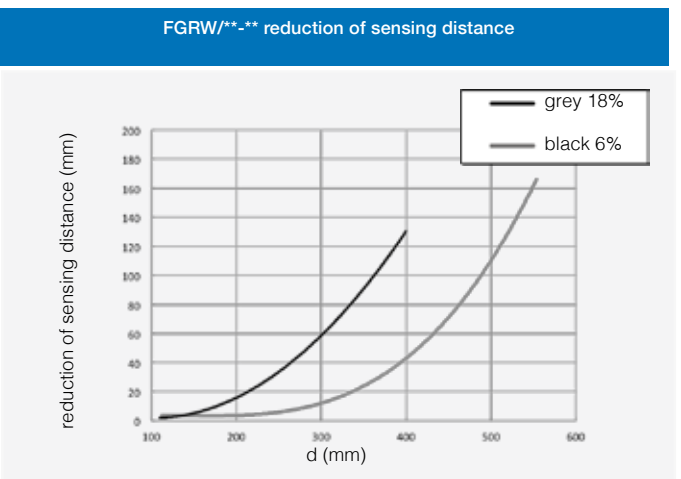
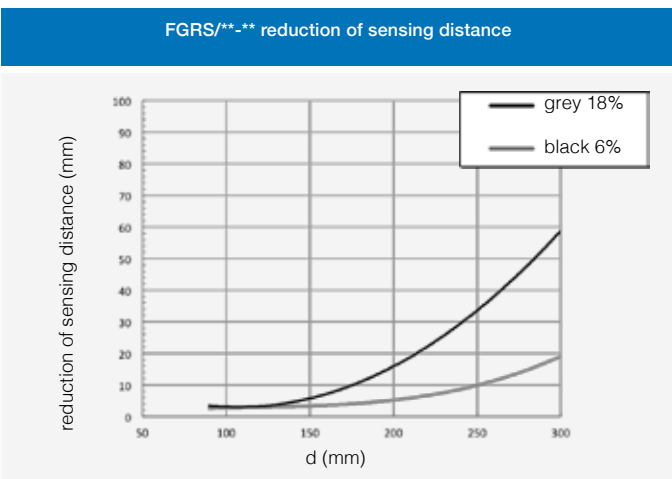
### response diagrams

polarized models



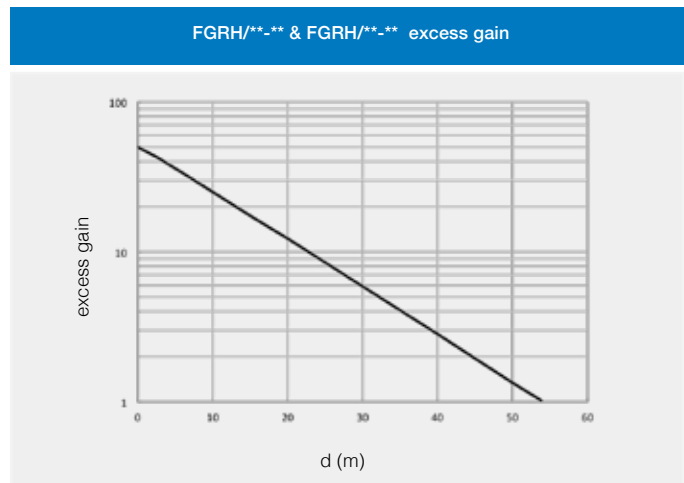
### response diagrams

background suppression models

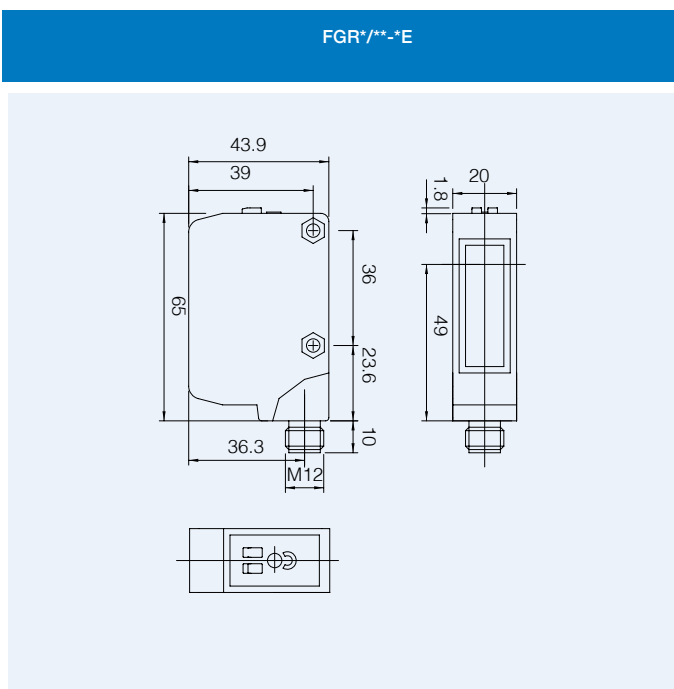
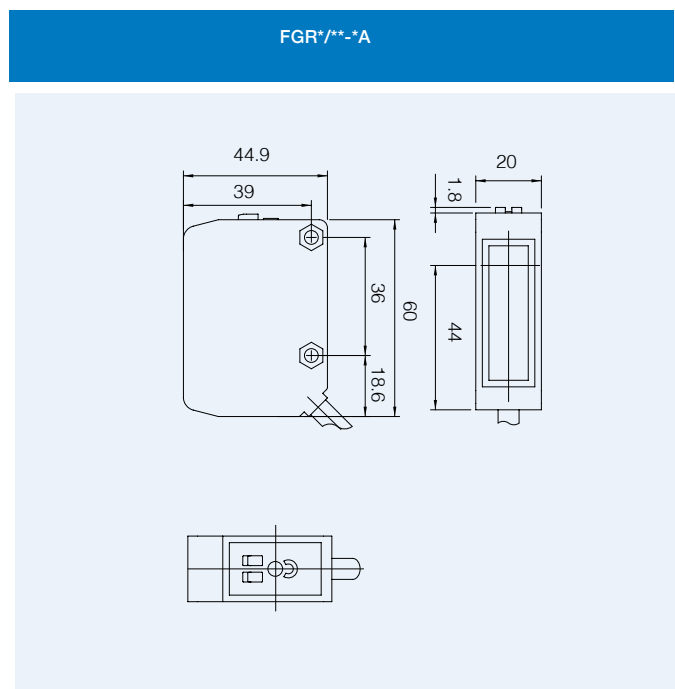


# response diagrams

through-beam models



## dimensions (mm)



## dimensions (mm)

accessories included

