

# SM-ALL



## COMPLETE LINE OF AMPLIFIED SUBMINIATURE PHOTOELECTRIC SENSORS

- 15mm, 20mm, 30mm and 50mm fixed focus proximity
- 1,5m retroreflective and 1m polarized retroreflective
- 2m through beam models
- Amplified NPN or PNP output with NO-NC output

### APPLICATIONS

- Processing and Packaging machinery
- Electronics assembling
- Beverage & Bottling
- Vending machines

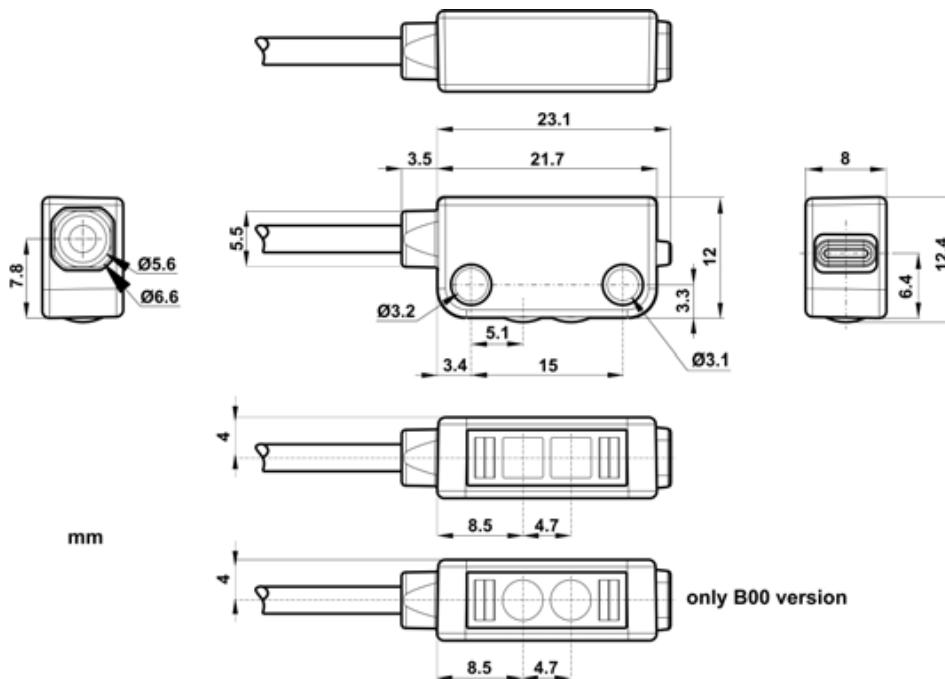


SM-ALL		
<b>Through beam</b>	0...2 m	
<b>Retroreflective (on R2 reflector)</b>	0,05...1,5 m	
<b>Polarized retroreflective</b>	0,1...1 m	
<b>Fixed focus</b>	3...15 mm	
	3...20 mm	
	3...30 mm	
	3...50 mm	
<b>Power supply</b>	Vdc	10...30 V
	Vac	
	Vac/dc	
<b>Output</b>	PNP	•
	NPN	•
	NPN/PNP	
	relay	
	other	
<b>Connection</b>	cable	•
	connector	
	pig-tail	
<b>Approximate dimensions (mm)</b>	8x23x12	
<b>Housing material</b>	Polycarbonate	
<b>Mechanical protection</b>	IP67	

# TECHNICAL DATA

<b>Power supply</b>	10 ... 30 Vdc (limit values)
<b>Ripple</b>	10% max.
<b>Consumption (output current excluded)</b>	20 mA max.
<b>Light emission</b>	red LED 640 nm
<b>Operating mode</b>	LIGHT mode on N.O. output/DARK mode on N.C. output yellow OUTPUT LED excl. mod. G00
<b>Indicators</b>	green POWER LED
<b>Output</b>	PNP or NPN; NO; NC
<b>Output current</b>	50 mA max.
<b>Saturation voltage</b>	1,25 V max. (NPN), 1,45 V max. (PNP)
<b>Response time</b>	850 µs 1,3 ms (mod. SM...F00/G00)
<b>Switching frequency</b>	590 Hz 385 Hz (mod. SM...F00/G00)
<b>Connection</b>	2 m cable -2,5 mm
<b>Dielectric strength</b>	500 Vac, 1 min between electronics and housing
<b>Insulating resistance</b>	>20 MΩ, 500 Vdc between electronics and housing
<b>Electrical protection</b>	class 2
<b>Mechanical protection</b>	IP67
<b>Ambient light rejection</b>	according to EN 60947-5-2
<b>Vibrations</b>	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
<b>Shock resistance</b>	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
<b>Housing material</b>	Polycarbonate
<b>Lens material</b>	PMMA, glass (mod. B00)
<b>Operating temperature</b>	-20 ... 55 °C
<b>Storage temperature</b>	-30 ... 75 °C
<b>Weight</b>	22 g

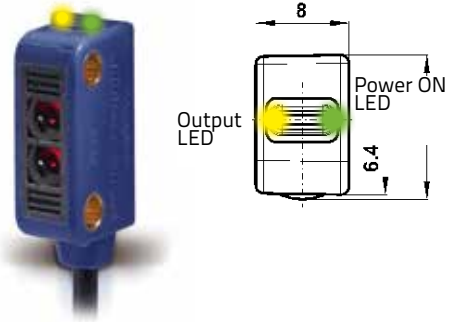
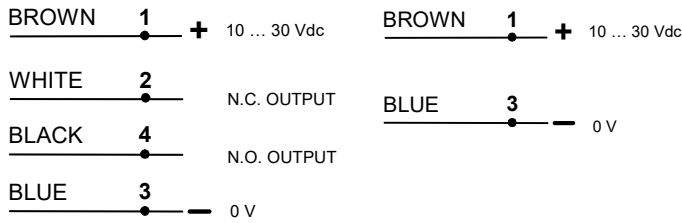
# DIMENSIONS



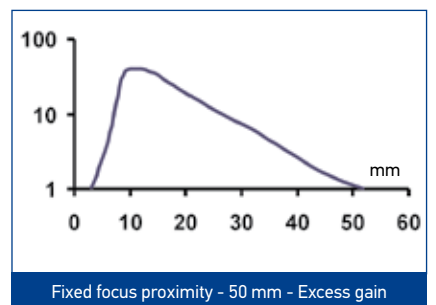
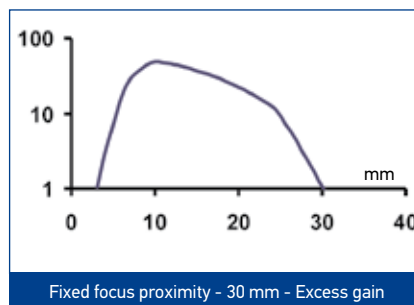
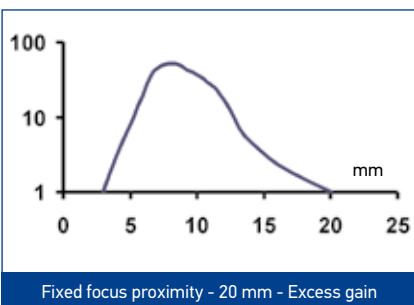
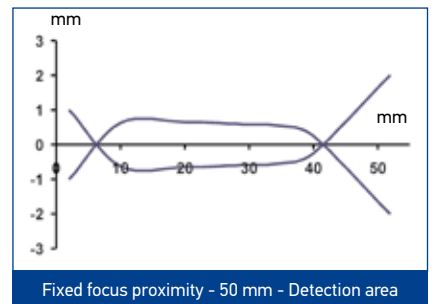
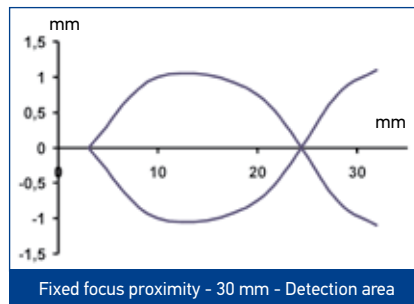
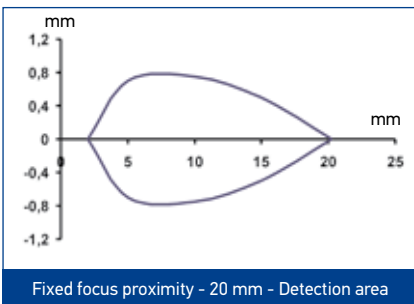
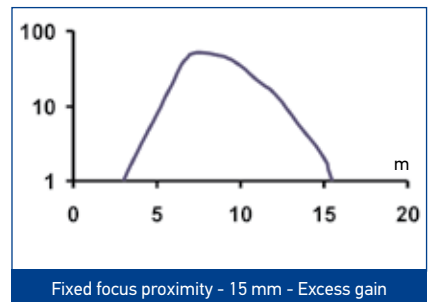
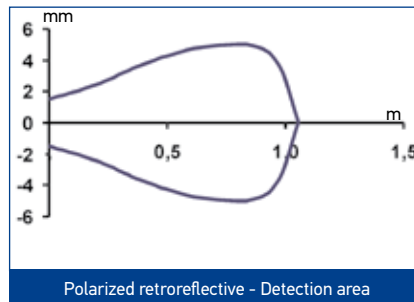
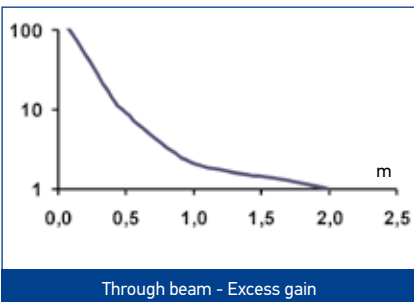
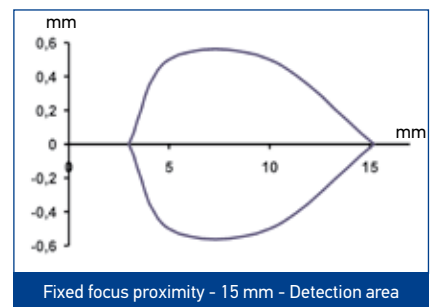
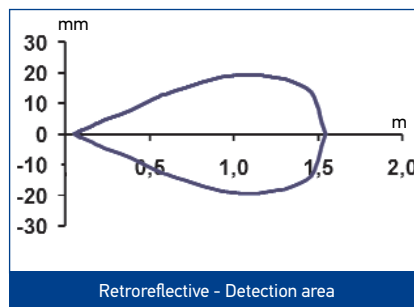
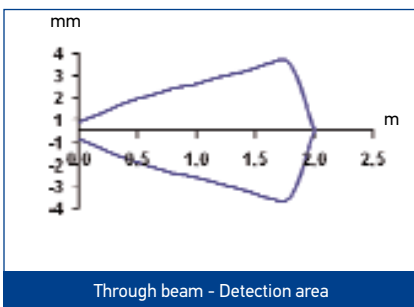
# CONNECTIONS

# INDICATORS AND SETTINGS

## CABLE



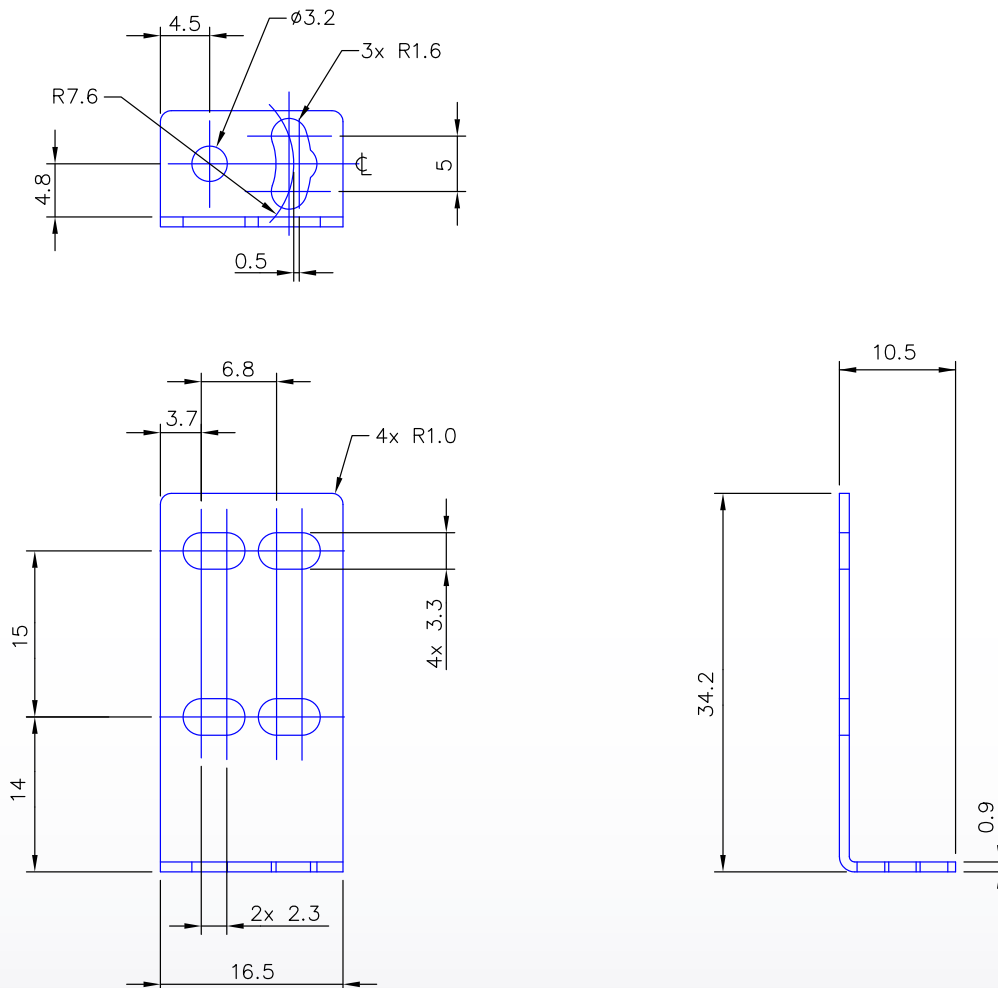
# DETECTIONS DIAGRAMS



# MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	OPERATING DISTANCE	CONNECTION	OUTPUT	MODEL	ORDER NO.	
Retroreflective	0,05...1,5 m	2m Cable	PNP	SM-PR-2-A00-PP	95B000060	
			NPN	SM-PR-2-A00-NN	95B000070	
Polarized retroreflective	0,1...1 m	2m Cable	PNP	SM-PR-2-B00-PP	95B000080	
			NPN	SM-PR-2-B00-NN	95B000090	
Fixed focus (short distance)	15 mm	2m Cable	PNP	SM-PR-2-D00-PP	95B000020	
			NPN	SM-PR-2-D00-NN	95B000030	
Fixed focus (normal distance)	20 mm		PNP	SM-PR-2-D10-PP	95B000140	
			NPN	SM-PR-2-D10-NN	95B000150	
Fixed focus (medium distance)	30 mm		PNP	SM-PR-2-D20-PP	95B000040	
			NPN	SM-PR-2-D20-NN	95B000050	
Fixed focus (long distance)	50 mm		PNP	SM-PR-2-D30-PP	95B000000	
			NPN	SM-PR-2-D30-NN	95B000010	
Through beam receiver	0...2 m		2m Cable	PNP	SM-PR-2-F00-PP	95B000120
				NPN	SM-PR-2-F00-NN	95B000130
		-		SM-PR-2-G00-XG	95B000160	

## ACCESSORIES



MODEL	DESCRIPTION	ORDER NO.
ST-5049	right angle bracket	95ACC6650

#### CONTROLLI

##### LED Giallo (Luce ricevuta)

Il LED acceso indica lo stato ON dell'uscita sul pin 4 (filo nero).

##### LED Verde

- Il LED acceso stabilmente indica che il sensore è alimentato.
- Il LED lampeggiante indica la presenza di un corto circuito sull'uscita.

#### INSTALLAZIONE

L'installazione del sensore può essere effettuata grazie ai 2 fori passanti del corpo, tramite due viti (M3x16 o di maggiore lunghezza) con rondelle e dadi di serraggio.

#### CONNESSIONI

Le connessioni sono configurate in conformità con la norma EN 60947-5-2.

##### SM-PR-2-Dx0

MARRONE 1 + 10 ... 30 Vcc

BIANCO 2 USCITA N.C.

NERO 4 USCITA N.A.

BLU 3 0 V

##### SM-PR-2-A00/B00/F00

MARRONE 1 + 10 ... 30 Vcc

BIANCO 2 USCITA N.A.

NERO 4 USCITA N.C.

BLU 3 0 V

##### SM-PR-2-G00-xx

MARRONE 1 + 10 ... 30 Vcc

BLU 3 0 V

I sensori NON sono dispositivi di sicurezza, quindi NON devono essere utilizzati per la gestione di sicurezza delle macchine sulle quali sono installati.

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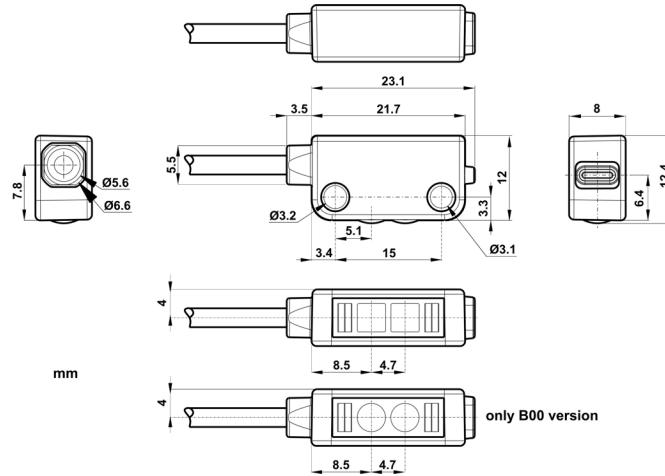
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#### DIMENSIONI D'INGOMBRO / DIMENSIONS



#### DATI TECNICI / TECHNICAL DATA

Tensione di alimentazione: <i>Power supply:</i>	10 ... 30 Vcc valori limite (10% max.ripple) 10...30 Vdc limit values (10% max.ripple)
Assorbimento: <i>Current consumption:</i>	20 mA max. (escluso il carico) (output current excluded)
Uscite: <i>Output:</i>	N.A. e N.C.; PNP o NPN (protezione contro il cortocircuito) N.O. and N.C.; PNP or NPN (short-circuit protection)
Modalità di funzionamento: <i>Operating mode:</i>	LUCE LIGHT
Corrente di uscita/Output current:	50 mA max.
Tensione di saturazione dell'uscita: <i>Output saturation voltage:</i>	NPN: 1.25 V a 50 mA / PNP: 1.45 V a 50 mA NPN: 1.25 V at 50 mA / PNP: 1.45 V at 50 mA
Tempo di risposta: <i>Response time:</i>	700 µs (1.3 ms mod.F00/G00)
Frequenza di commutazione: <i>Switching frequency:</i>	715 Hz (385 Hz mod.F00/G00)
Indicatori: <i>Indicators:</i>	LED GIALLO ON stabile = Luce ricevuta LED VERDE ON stabile = Alimentazione attiva / Lampeggiante = Corto circuito sull'uscita Yellow LED steadily ON = light received Green LED steadily ON = power supply / blinking = output short-circuit
Temperatura di funzionamento: <i>Operating temperature:</i>	-20 ... 55 °C
Temperatura di immagazzinamento: <i>Storage temperature:</i>	-30 ... 75 °C
Resistenza d'isolamento: <i>Insulation resistance:</i>	parte elettrica e contenitore: 20MΩ (minimo, con 500Vcc) between electronics and housing: 20MΩ (minimum, with 500Vdc)
Rigidità dielettrica: <i>Dielectric strength:</i>	parte elettrica e contenitore: 500Vca (50Hz), 1 minuto between electronics and housing: 500Vac (50Hz), 1 minute
Distanza operativa (valori tipici): <i>Operating distance (typical values):</i>	A00: 0.05...1.5m su riflettore R2 / 0.05...1.5m on R2 reflector B00: 0.12...1m su riflettore R2 / 0.12...1m on R2 reflector D00: 3...15mm / D10: 3...20mm D20: 3...30mm / D30: 3...50mm F00/G00: 0...2m
Tipo di emissione: <i>Emission type:</i>	Rossa (640 nm) Red (640 nm)
Vibrazioni: <i>Vibration:</i>	ampiezza 0.5 mm, frequenza 10 ... 55 Hz, per ogni asse (EN60068-2-6) 0.5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Resistenza agli urti: <i>Shock resistance:</i>	11 ms (30 G) 6 shock per ogni asse (EN60068-2-27) 11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Materiale contenitore: <i>Housing material:</i>	TPE
Materiale lenti: <i>Lens material:</i>	PMMA / Vetro (mod.B00) PMMA / Glass (mod.B00)
Protezione meccanica: <i>Mechanical protection:</i>	IP67
Collegamenti/Connections:	cavo PVC di lunghezza 2 m Ø 2,5 mm 4 fili / 2 m PVC cable Ø 2,5 mm 4 wires
Peso/Weight:	22 g.

#### CONTROLS

##### Yellow LED (LIGHT received)

The LED ON indicates the status ON of the output on pin 4 (black wire).

##### Green LED

- LED steadily ON indicates sensor powering.
- LED blinking indicates output short-circuit.

#### INSTALLATION

The sensor can be mounted by means of the two housing holes using two screws (M3x16 or longer) with nuts and washers.

#### CONNECTIONS

The connections are compliant to the EN 60947-5-2 Standard.

##### SM-PR-2-Dx0

BROWN 1 + 10 ... 30 Vdc

WHITE 2 N.C. OUTPUT

BLACK 4 N.O. OUTPUT

BLUE 3 0 V

##### SM-PR-2-A00/B00/F00

BROWN 1 + 10 ... 30 Vdc

WHITE 2 N.O. OUTPUT

BLACK 4 N.C. OUTPUT

BLUE 3 0 V

##### SM-PR-2-G00-xx

BROWN 1 + 10 ... 30 Vdc

BLUE 3 0 V

The sensors are NOT safety devices, and so MUST NOT be used in the safety control of the machines where installed.

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