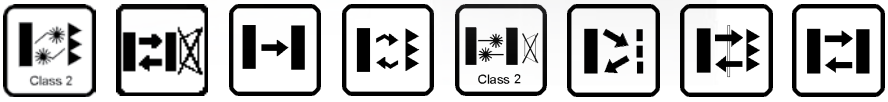
S8 Series

DATALOGIC

SENSORS

The sensor is designed for frequent washdowns with a corrosion-resistant AISI316L stainless steel case IP69K rated, compliant to test environments like indicated by Diversey® and Ecolab®. However, all models are also available with a cost-effective plastic housing. S8 series offers a complete range of solutions for pharmaceutical and food processing and packaging lines, as well as reliable sensors for any object detection application in industrial automation. "Clear detection": a new background suppression model is available for the seamless detection of shiny and transparent objects: shiny packages, metal parts, glass or plastic objects, such as bottles, vials, packaging films can be detected even in presence of reflective background.

Diversey ECOLAB



HIGHLIGHTS

- Compact case (14x42x25 mm)
- LED or LASER background suppression for the detection of transparent and shiny objects
- High resolution contrast sensor up to 10kHz switching frequency
- Extremely focused spot for the LASER versions
- IP69K protection with AISI316L stainless steel case
- Low-cost plastic versions

APPLICATIONS

Food & Pharma

Beverage & Bottling

Processing and Packaging machinery

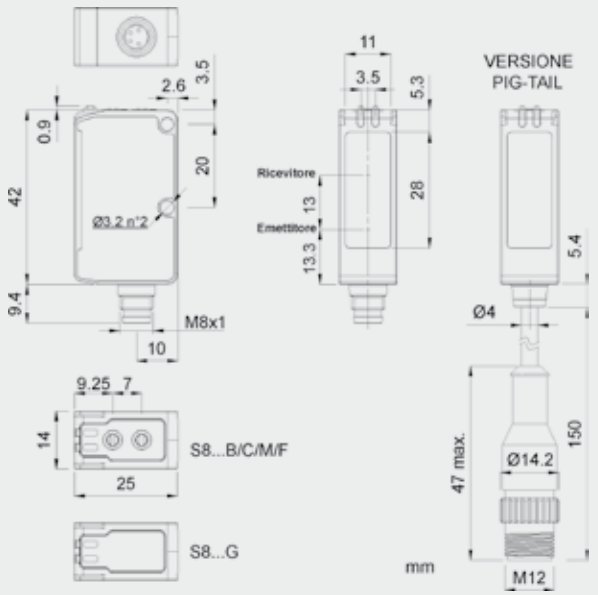
GENERAL DATA

Power supply	12 ... 30 Vdc
Ripple	2 Vpp max.
Consumption (output current excluded)	30 mA; 35 mA (S8-M01); 20 mA (F: receiver), 15 mA (G: emitter) max
Outputs / Alarm output	PNP or NPN N.O.; 30 VDC max. (short-circuit protection)
Output current	100 mA (overload protection)
Output saturation voltage	≤2 V
Operating temperature	-10 ... 55 °C
Storage temperature	-20 ... 70 °C
Dielectric strength	1500 VAC 1 min between electronic parts and housing
Insulating resistance	>20 MΩ 500 VDC between electronic parts and housing
Ambient light rejection	according to EN 60947-5-2
Vibrations	0.5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shocks per every axis (EN60068-2-27)
Housing material	ABS, Stainless Steel AISI346L
Lens material	window in PMMA; lens in PC
Mechanical protection	IP67, IP69K (Stainless Steel vers.)
Connections	M8 4-pole connector / cable with M12 4-pole connector with 150 mm length and Ø 4 mm (pig-tail)
Weight	12 g. max. connector version / 50 g. pig-tail version / 70g. Max. Stainless Steel vers.

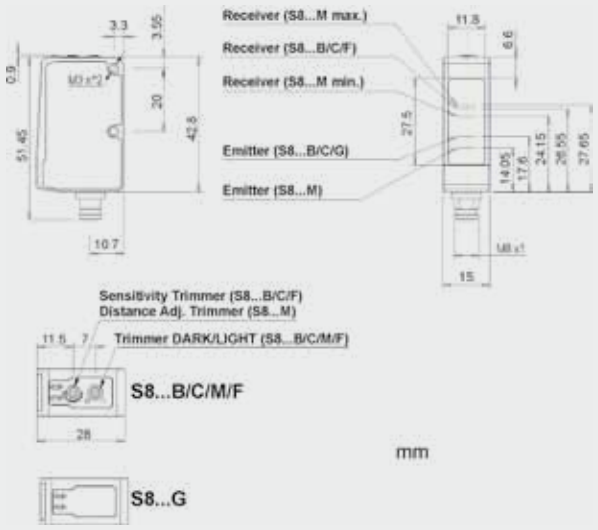
II3DG
The S8 metal versions are ATEX certified

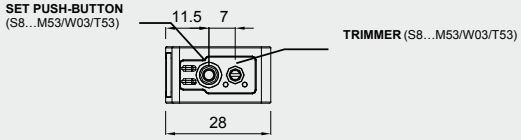
DIMENSIONS

PLASTIC



METAL





CLEAR DETECTION

M53 model

The Clear Detection sensors are developed for the detection of shiny and transparent objects through the background suppression technique.

This patented technology allows to suppress very reflective backgrounds and, at the same time, to detect objects with similar reflective characteristics.

The LED emission version is recommended with moving backgrounds, whereas the Laser version is suitable for the highest precision detection degrees, even of small objects, with a fixed and reflective background.

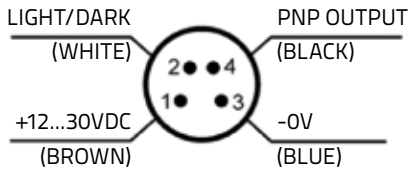
In comparison with the previous systems based on polarized retro-reflex photoelectric sensors, this technology offers some additional benefits:

- No prismatic reflector: there is no need to have the clear object passing between sensor and reflector so reducing installation time and cost.
- Less mechanical constraints: the detection can be made from either the side or from the top without modifying any part of the machine.
- Higher depth of field: the clear object can move or float between its background and the sensor without adjusting the threshold settings.

TECHNICAL DATA

	LASER	LED
Response time	1 ms	2 ms
Switching frequency	500 Hz	250 Hz
Emission type	RED LASER (λ = 645...665nm) Class 2 EN 60825-1, Class II CDRH 21 CFR PART 1040.10	RED LED (660nm)
Operating distance (typical values)	50...150 mm	100...300 mm
Difference (90% White/4% Black)	<5%	20%
Setting	8-turn distance adjustment trimmer, teach-in push button	
LIGHT/DARK selection	Remote: White wire	
Indicators	OUTPUT/ALARM LED (YELLOW) and POWER ON LED (GREEN)	

CONNECTION



Thanks to the Teach-in push button and the background distance adjustment trimmer, it is possible to set the proper operating distance.
4 adjustable hysteresis levels allow to obtain optimal results.
The tables below show the best hysteresis levels for LED and LASER versions in different background and objects properties.

LED HYSTERESIS LEVELS

OUT LED BLINKING	HYSTERESIS	BACKGROUND AND OBJECT FEATURES
Slow	Low	Stable background and optimum clear and shiny objects reading
Middle slow	Middle low	Little variable background and good clear and shiny objects reading
Middle fast	Middle high	Moving background and good clear and shiny objects reading
Fast	High	Moving and color variable background and reading of almost all clear and shiny objects

LASER HYSTERESIS LEVELS

OUT LED BLINKING	HYSTERESIS	BACKGROUND AND OBJECT FEATURES
Slow	Low	Stable background and optimum shiny objects reading
Middle slow	Middle low	Little variable background and good shiny objects reading
Middle fast	Middle high	Moving background and good shiny objects reading
Fast	High	Moving and color variable background and reading of almost all shiny objects

MODEL SELECTION AND ORDER INFORMATION

HOUSING	LIGHT EMISSION	CONNECTION	OUTPUT	DESCRIPTION	Order No.
METAL Stainless Steel (INOX AISI346L)	LASER	M8 connector	PNP	S8-MH-5-M53-PP	950801451
	LED			S8-MR-5-M53-PP	950801600
PLASTIC ABS	LASER			S8-PH-5-M53-PP	950801381
	LED			S8-PR-5-M53-PP	950801590

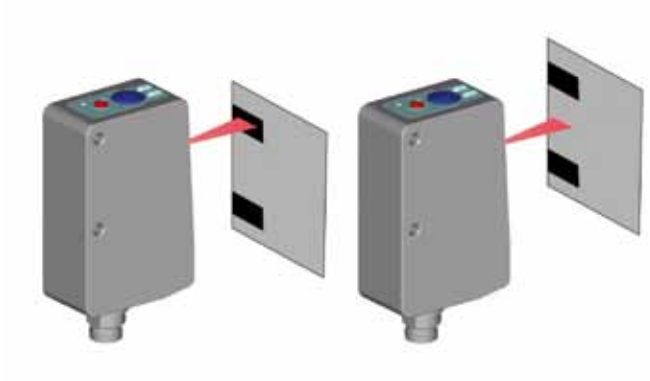
CONTRAST

W model

- Discriminates fine contrast differences with RGB emission (automatically selects red, green or blue emission to give maximum discrimination)
- High speed detection at 50 µs response time
- Coaxial optical system design provides stable detection of moving objects to eliminate false detections

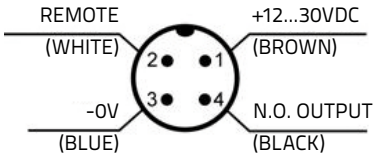
TECHNICAL DATA

	LED
Response time	50 µs
Switching frequency	10 kHz
Emission type	RGB LEDs: BLUE (465 nm)/ GREEN (520 nm)/RED (630nm) with automatic selection
Spot dimension	3x1 mm²
Operating distance (typical values)	9 mm
Depth of field	± 2mm
Setting	SET push button, Mono-turn trimmer (Delay OFF 20ms selection)
LIGHT/DARK selection	Automatic
Indicators	OUTPUT LED (YELLOW) and POWER ON LED (GREEN)

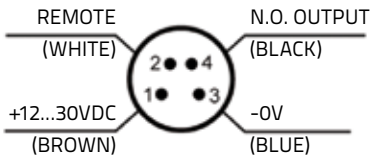


CONNECTION

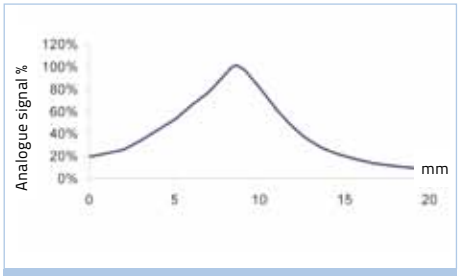
M12 PIGTAIL



M8 CONNECTOR



DETECTION DIAGRAM



Contrast sensor

MODEL SELECTION AND ORDER INFORMATION

HOUSING	LIGHT EMISSION	CONNECTION	OUTPUT	DESCRIPTION	Order No.
METAL Stainless Steel (INOX AISI346L)	LED	M8 connector	NPN	S8-MR-5-W00-NH	950801370
			PNP	S8-MR-5-W00-PH	950801360
			NPN	S8-MR-5-W03-NN	950801350
			PNP	S8-MR-5-W03-PP	950801340
PLASTIC ABS		pig-tail	NPN	S8-PR-3-W03-NN	950801150
			PNP	S8-PR-3-W03-PP	950801140
		M8 connector	NPN	S8-PR-5-W03-NN	950801070
			PNP	S8-PR-5-W03-PP	950801060

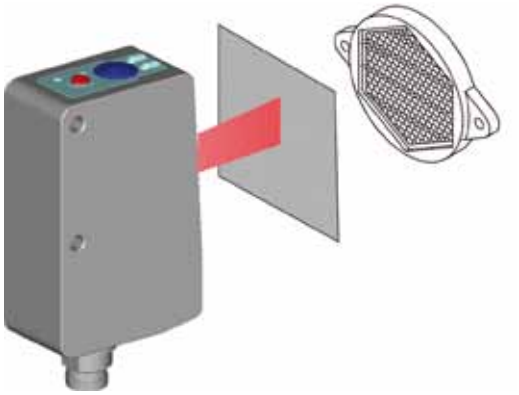
RETROREFLEX FOR TRANSPARENTS

T models

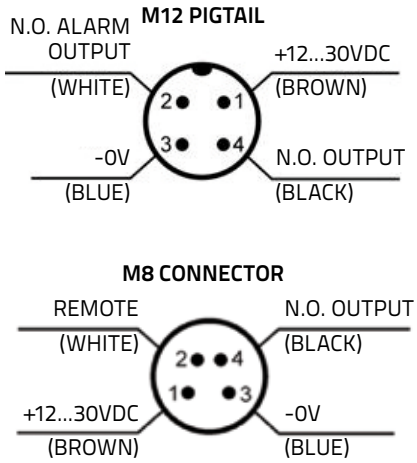
- Detects extremely transparent materials like fine plastic films, glass or PET bottles
- Coaxial optical system design provides stable detection of moving objects to eliminate false detections
- Auto-adaptive function to improve the reliability the detection even when the sensor face or reflector is contaminated (i. e. dust)

TECHNICAL DATA

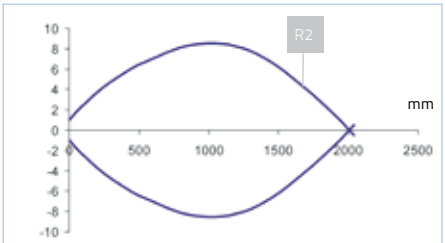
	LED
Response time	250 µs
Switching frequency	2 kHz
Emission type	RED LED (660nm)
Operating distance (typical values)	2 m (EG2) on R2 reflector (S8-T53)
Setting	SET push button (S8-T53)
LIGHT/DARK selection	Automatic, Mono-turn trimmer (S8-T53)
Indicators	OUTPUT LED (YELLOW) and POWER ON LED (GREEN)



CONNECTION



DETECTION DIAGRAM



Coaxial polarized retroreflex for transparents

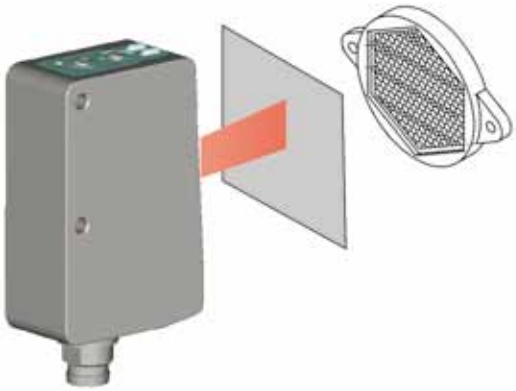
MODEL SELECTION AND ORDER INFORMATION

HOUSING	LIGHT EMISSION	CONNECTION	OUTPUT	DESCRIPTION	Order No.
METAL Stainless Steel (INOX AISI346L)	LED	M8 connector	NPN	S8-MR-5-T50-NH	950801330
			PNP	S8-MR-5-T50-PH	950801320
			NPN	S8-MR-5-T53-NN	950801310
			PNP	S8-MR-5-T53-PP	950801300
PLASTIC ABS		pig-tail	NPN	S8-PR-3-T51-NN	950801130
			PNP	S8-PR-3-T51-PP	950801120
		M8 connector	NPN	S8-PR-5-T51-NN	950801050
			PNP	S8-PR-5-T51-PP	950801040
			NPN	S8-PR-5-T53-NN	950801290
			PNP	S8-PR-5-T53-PP	950801280

POLARISED RETROFLEX

B models

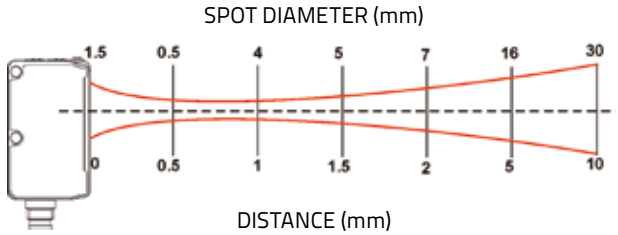
- Laser version for high resolution detection
- Alarm output for wrong functionality



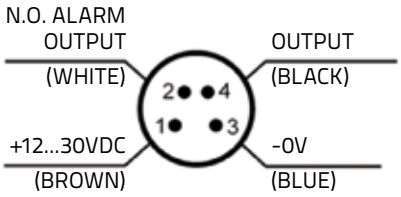
TECHNICAL DATA

	LASER	LED
Response time	50 µs	500 µs
Switching frequency	10 kHz	1 kHz
Emission type	RED LASER (λ = 645...665nm) Class 2 EN 60825-1, Class II CDRH 21 CFR PART 1040.10	RED LED (660nm)
Pulsed emission	pot. max ≤ 1,5mW pulse duration = 3µs frequency = 40KHz	--
Focus point	500 mm	--
Spot dimension	< 0.5 mm (a 500 mm)	refer to the detection diagram
Operating distance (typical values)	0...10 m on R2 reflector	5 m on R2 reflector
Minimum object detectable	0.5 mm at 500 mm (minimum spot)	refer to the detection diagram
Setting	Mono-turn sensitivity adjustment trimmer	
LIGHT/DARK selection	Mono-turn trimmer	
Indicators	OUTPUT LED(YELLOW) and POWER ON LED (GREEN)	

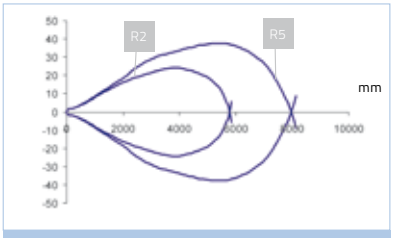
DETECTION DIAGRAM (LASER)



CONNECTION



DETECTION DIAGRAM (LED)



Polarized retroreflex

MODEL SELECTION AND ORDER INFORMATION

HOUSING	LIGHT EMISSION	CONNECTION	OUTPUT	DESCRIPTION	Order No.
METAL Stainless Steel (INOX AISI346L)	LASER	M8 connector	NPN	S8-MH-5-B51-NN	950801490
			PNP	S8-MH-5-B51-PP	950801480
	LED		NPN	S8-MR-5-B01-NN	950801420
			PNP	S8-MR-5-B01-PP	950801410
PLASTIC ABS	LASER	pig-tail	NPN	S8-PH-3-B51-NN	950801090
			PNP	S8-PH-3-B51-PP	950801080
		M8 connector	NPN	S8-PH-5-B51-NN	950801010
			PNP	S8-PH-5-B51-PP	950801000
	LED	pig-tail	NPN	S8-PR-3-B01-NN	950801190
			PNP	S8-PR-3-B01-PP	950801180
		M8 connector	NPN	S8-PR-5-B01-NN	950801170
			PNP	S8-PR-5-B01-PP	950801160

BACKGROUND SUPPRESSION

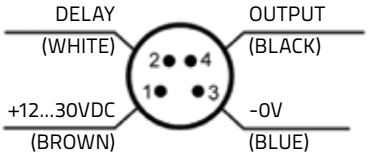
M model
Laser version for high resolution detection

TECHNICAL DATA

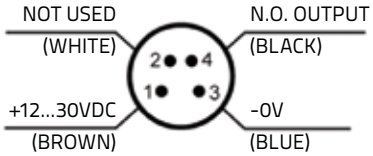
	LASER	LED
Response time	100 µs	1 ms
Switching frequency	5 kHz	500 Hz
Emission type	RED LASER (λ = 645...665nm) Class 2 EN 60825-1, Class II CDRH 21 CFR PART 1040.10	RED LED (660nm)
Pulsed emission	pot. max ≤ 5mW pulse duration = 3µs frequency = 20KHz	--
Focus point	110 mm	refer to the detection diagram
Spot dimension	< 0.2 mm (a 500 mm)	
Operating distance (typical values)	20...200 mm	50...300 mm
Minimum object detectable	0.2 mm at 200 mm (minimum spot)	
Difference (90% White/4% Black)	<5%	20%
Setting	8-turn distance adjustment trimmer	
LIGHT/DARK selection	Mono-turn trimmer	
Indicators	OUTPUT/ALARM LED (YELLOW) and POWER ON LED (GREEN)	

CONNECTION

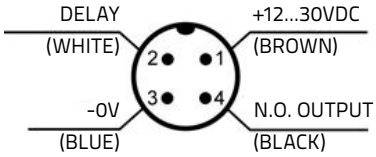
LASER



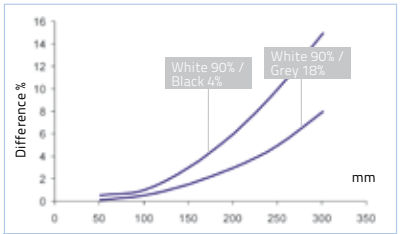
LED



M12 PIGTAIL



DETECTION DIAGRAM (LED)



Background suppression

MODEL SELECTION AND ORDER INFORMATION

HOUSING	LIGHT EMISSION	CONNECTION	OUTPUT	DESCRIPTION	Order No.
METAL Stainless Steel (INOX AISI346L)	LASER	M8 connector	NPN	S8-MH-5-M01-NN	950801470
			PNP	S8-MH-5-M01-PP	950801460
	LED		NPN	S8-MR-5-M01-NN	950801400
			PNP	S8-MR-5-M01-PP	950801390
PLASTIC ABS	LASER	pig-tail	NPN	S8-PH-3-M01-NN	950801110
			PNP	S8-PH-3-M01-PP	950801100
		M8 connector	NPN	S8-PH-5-M01-NN	950801030
			PNP	S8-PH-5-M01-PP	950801020
	LED	pig-tail	NPN	S8-PR-3-M01-NN	950801230
			PNP	S8-PR-3-M01-PP	950801220
		M8 connector	NPN	S8-PR-5-M01-NN	950801210
			PNP	S8-PR-5-M01-PP	950801200

THROUGH BEAM

F/G model

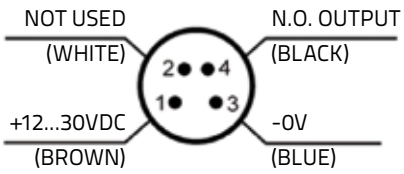
Emitter and receiver units ensure the highest Excess Gain

TECHNICAL DATA

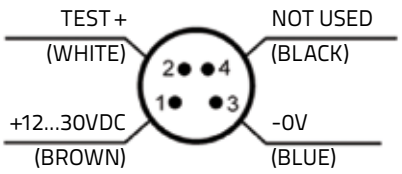
	LED
Response time	500 µs
Switching frequency	1 kHz
Emission type	RED LED (660nm)
Operating distance (typical values)	25 m (30 m max.)
Setting	Mono-turn sensitivity adjustment trimmer
LIGHT/DARK selection	Mono-turn trimmer
Indicators	OUTPUT(YELLOW, F: receiver) and POWER ON LED (GREEN)

CONNECTION

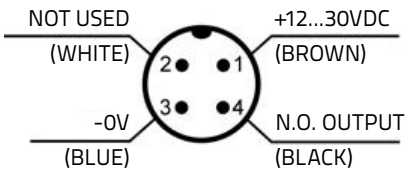
RECEIVER F



EMITTER G



M12 PIGTAIL



MODEL SELECTION AND ORDER INFORMATION

HOUSING	LIGHT EMISSION	CONNECTION	OUTPUT	DESCRIPTION	Order No.
METAL Stainless Steel (INOX AISI346L)	LED	M8 connector	NPN	S8-MR-5-F01-NN	950801570
			PNP	S8-MR-5-F01-PP	950801560
			emitter	S8-MR-5-G00-XG	950801580
PLASTIC ABS		pig-tail	NPN	S8-PR-3-F01-NN	950801530
			PNP	S8-PR-3-F01-PP	950801520
			emitter	S8-PR-3-G00-XG	950801550
		M8 connector	NPN	S8-PR-5-F01-NN	950801510
			PNP	S8-PR-5-F01-PP	950801500
			emitter	S8-PR-5-G00-XG	950801540

DIFFUSE PROXIMITY

C model

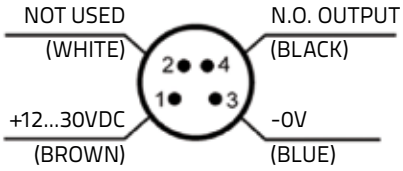
- Direct object detection with a single unit

TECHNICAL DATA

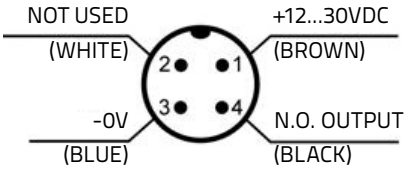
	LED
Response time	500 µs
Switching frequency	1 kHz
Emission type	RED LED (660nm)
Operating distance (typical values)	50 cm on 90% white target (EG2)
Setting	Mono-turn sensitivity adjustment trimmer
LIGHT/DARK selection	Mono-turn trimmer
Indicators	OUTPUT/ALARM LED (YELLOW) and POWER ON LED (GREEN)

CONNECTION

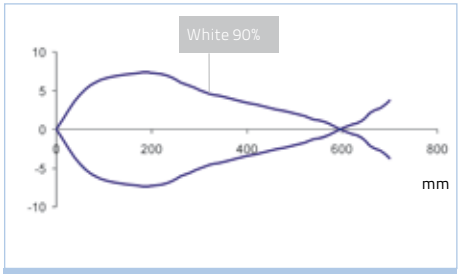
M8 CONNECTOR



M12 PIGTAIL



DETECTION DIAGRAM



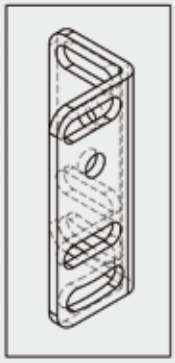
Diffuse proximity

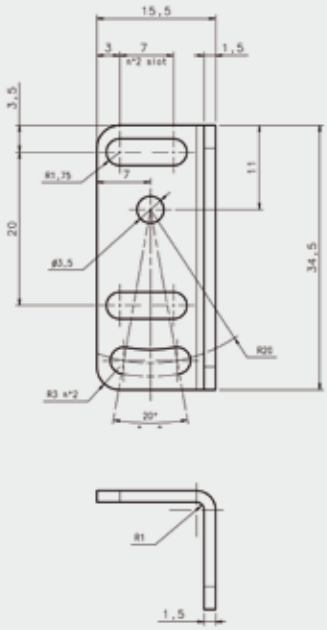
MODEL SELECTION AND ORDER INFORMATION

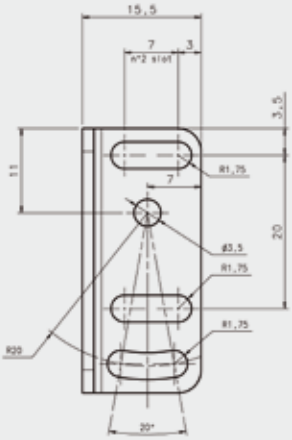
HOUSING	LIGHT EMISSION	CONNECTION	OUTPUT	DESCRIPTION	Order No.
METAL Stainless Steel (INOX AISI346L)	LED	M8 connector	NPN	S8-MR-5-C01-NN	950801440
			PNP	S8-MR-5-C01-PP	950801430
PLASTIC ABS		pig-tail	NPN	S8-PR-3-C01-NN	950801270
			PNP	S8-PR-3-C01-PP	950801250
		M8 connector	NPN	S8-PR-5-C01-NN	950801260
			PNP	S8-PR-5-C01-PP	950801240

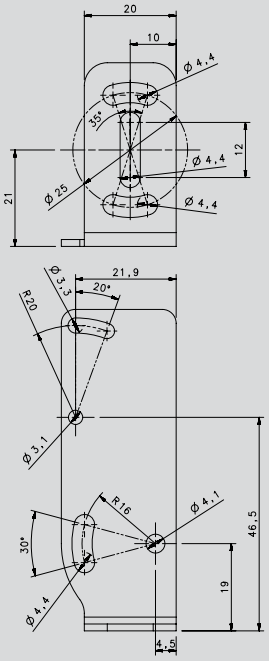
ACCESSORIES

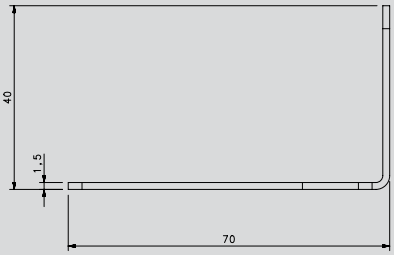
ST-5072



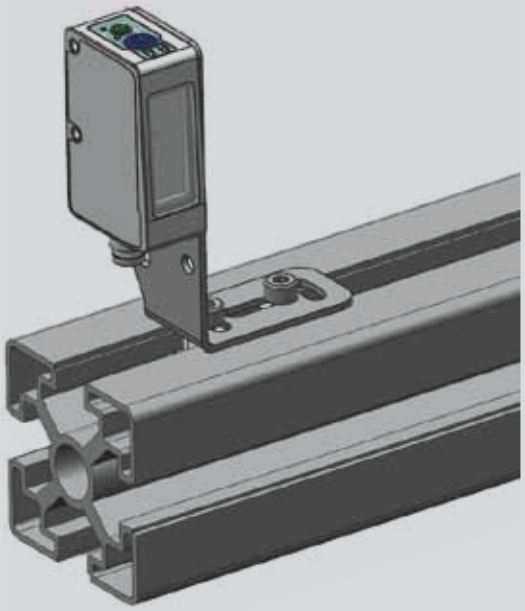








ST-S8-FRM



ACCESSORIES SELECTION AND ORDER INFORMATION

MODEL	FUNCTION	ORDER N°
ST-S8-FRM	fixing bracket for standard frame	95ACC7860
ST-5072	fixing bracket	95ACC1470
R4K	IP69K plastic reflector 51 x 61 mm	95A151220

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