DATALOGIC

S50/S51

Extended range of standard "One for All" photoelectric tubular M18 sensors

- All optic functions and LASER models
- M18 flat plastic with universal mounting
- Available in M18 metal housing
- Axial or radial optics, cable or connector
- Standard 4-wire NO-NC NPN or PNP output

SENSORS

APPLICATIONS

-Processing and Packaging machinery
-Conveyor lines, material handling
-Ceramics intralogistics
-Automated warehousing

(*) Axial models.
ATEX II 3DG

S50/S51		
Through beam		0...20 m 0...60 m (class 1 LASER) (S50)
Retroreflective (on R2 reflector)		0,1...4 m
Polarized retroreflective		0,1...4 m (S50) 0,1...3 m (S51) 0,1...16 m (class 1 LASER) (S50)
Retroreflective for transparent (on R2 reflector)		0,1...1,3 m (S50)
Diffuse proximity		short distance 0...100 mm medium distance 0...400 mm (S50) 0...450 mm (S51) long distance 0...700 mm long distance LASER 0...350 mm
Fixed focus		100 mm (S50)
Background suppression		50...100 mm (S50)
Through beam with fiber optic		0...100 mm (S50)
Diffuse proximity with fiber optic		0...30 mm (S50)
Contrast sensor		10 ±2 mm
Luminescence sensor		0...20 mm
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	
Connection	cable	▪
	connector	▪
	pig-tail	
Approximate dimensions (mm)		M18x 55/68
Housing material		PBT, nickel plated brass
Mechanical protection		IP67

Tubular Sensors - S50/S51

DATALOGIC

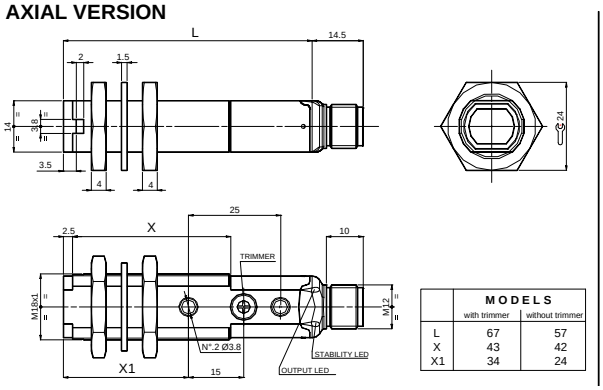
TECHNICAL DATA	
Power supply	10 ... 30 Vdc (limit values)
Ripple	2 Vpp max.
Consumption (output current excluded)	35 mA max. (mod. S50...A00/B01/C01/C10/C21/D00/E01/T01) 30 mA max. (mod. S50...F01/M03, S51...A00/B01/C01/C10/C20/F00) 25 mA max. (mod. S50...W03/U03)
Light emission	red LED 630 nm (mod. S50...D00/E01, S50-PA/MA...M03) red LED 660 nm (mod. S50...B01/T01, S51...B01) red LED 670 nm (mod. S50-PS/MS...M03) IR LED 880 nm (mod. S50/51...A00/C01/C10/C20/C21/G00) white LED 400-700 nm (mod. S50...W03) UV LED 370 nm (mod. S50...U03) red Laser 650 nm (mod. S50...G00/F01/B01/C01)
Setting	sensivity trimmer (mod. B01/C01/C21/E01/F01/T01) teach-in push-button (mod. M03/W03/U03)
Operating mode	LIGHT mode on N.O. output / DARK mode on N.C. output (mod.S50...C01/C10/C21/D00/M03/U03) DARK mode on N.O. output / LIGHT mode on N.C. output (mod.S50...A00/B01/E01/F01/T01/W03) white wire or pin 2 connected to +10...30V LIGHT mode/ to 0V DARK mode (mod. S51) white wire or pin 2 not connected LIGHT mode (mod. S51...C01/C10/C20)/ DARK mode (mod. S51...A00/B01/F00)
Indicators	yellow OUTPUT LED (S50, S51, excl. mod. G00) green STABILITY LED (mod. S50...B01/C01/C21/E01/F01), POWER LED (mod. S50...G00, S51) green/red READY/ERROR LED (mod. S50...M03/W03/U03)
Output	PNP or NPN; NO; NC (mod. S50)
Output current	100 mA max.
Saturation voltage	2 V max.
Response time	0,5 ms (mod. S50...A00/B01/T01/C10/C21/C01/D00/E01/U03) 2 ms (mod. S50...F01/G00) 1 ms (mod. S50...M03, S51...A00/B01/C01/C10/G00) 4 ms (mod. S51...F00) 100 µs (mod. S50...W03) 333 µs (Laser mod. S50)
Switching frequency	1 kHz (mod. S50...A00/B01/T01/C10/C21/C01/D00/E01/U03) 250 Hz (mod. S50...F01/G00) 500 Hz (mod. S50...M03, S51...A00/B01/C01/C10/G00) 120 Hz (mod. S51...F00) 5 kHz (mod. S50...W03) 1,5 kHz (Laser mod. S50)
Connection	2 m cable Ø 4 mm, M12 4-pole connector
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class 2
Mechanical protection	IP67
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 shock for every axis (EN60068-2-27)
Housing material	Plastic version PBT Metal version nickel plated brass
Lens material	PMMA
Operating temperature	-25 ... 55 °C (Laser mod.) -10 ... 50 °C
Storage temperature	-25 ... 70 °C
Weight	Plastic version 75 g max. cable vers. (90 g max. mod. M03), 25 g max. conn. vers. (40 g max. mod. M03) Metal version 110 g max. cable vers. (125 g max. mod. M03), 60 g max. conn. vers. (75 g max. mod. M03)

S50

DIMENSIONS

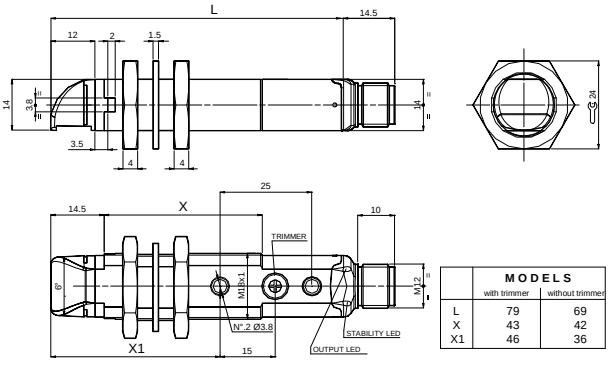
PLASTIC

AXIAL VERSION



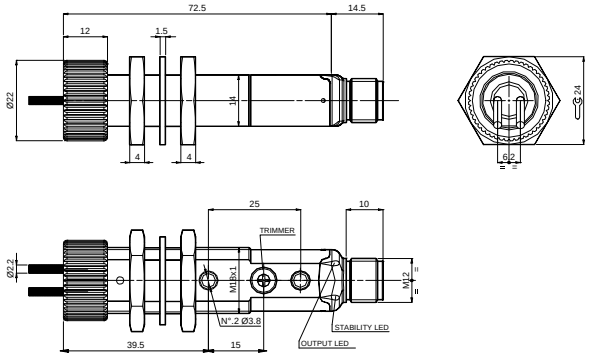
MODELS	with trimmer	without trimmer
L	67	57
X	43	42
X1	34	24

RADIAL VERSION



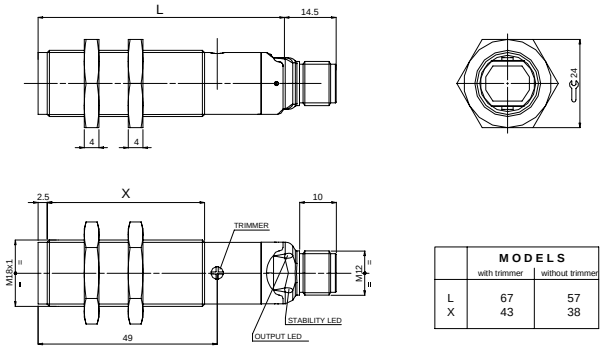
MODELS	with trimmer	without trimmer
L	79	69
X	43	42
X1	46	36

FIBRE OPTIC VERSION



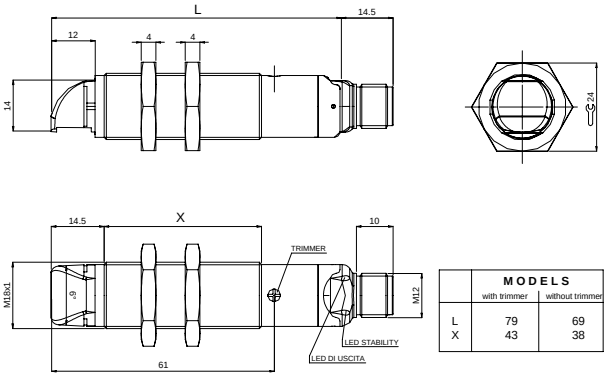
METAL

AXIAL VERSION



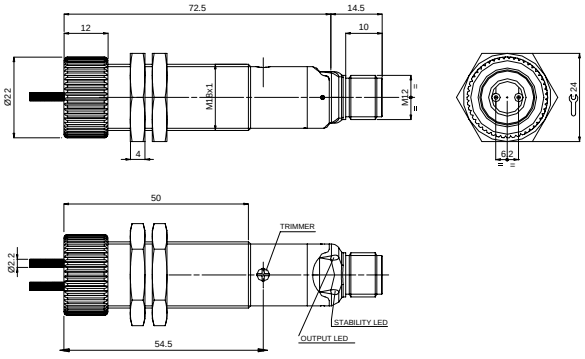
MODELS	with trimmer	without trimmer
L	67	57
X	43	38

RADIAL VERSION



MODELS	with trimmer	without trimmer
L	79	69
X	43	38

FIBRE OPTIC VERSION

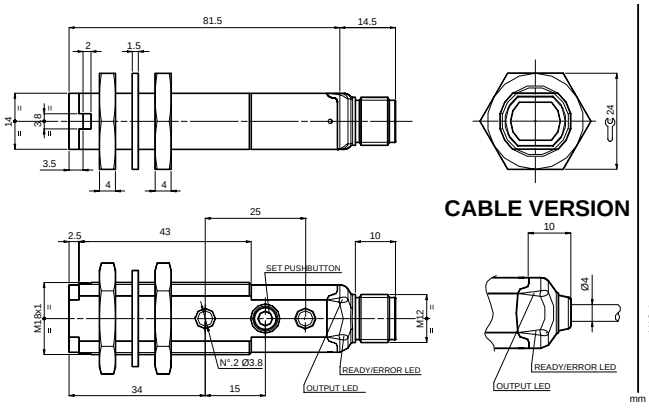


Tubular Sensors - S50/S51

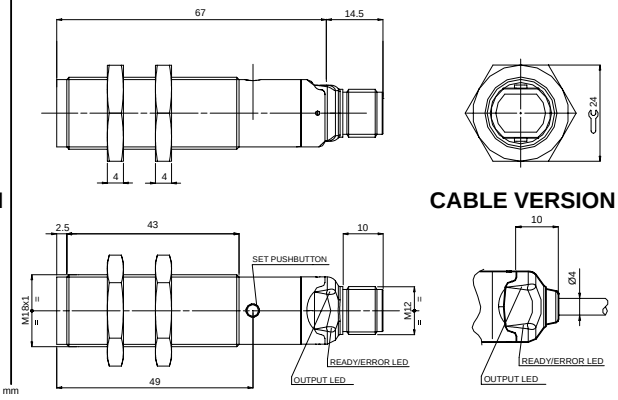
DATALOGIC

BACKGROUND SUPPRESSION AXIAL VERSION

PLASTIC



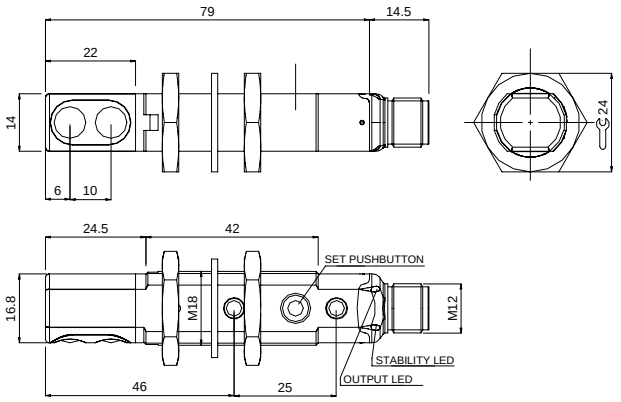
METAL



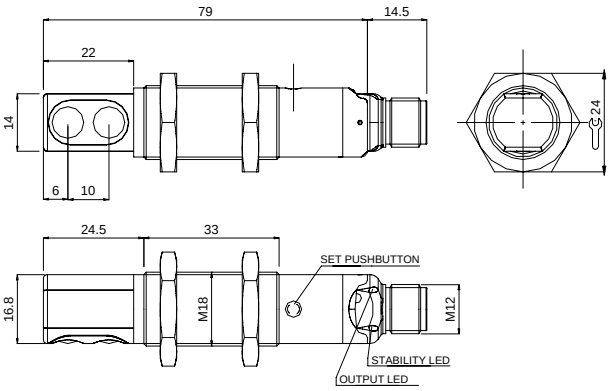
mm

BACKGROUND SUPPRESSION RADIAL VERSION

PLASTIC

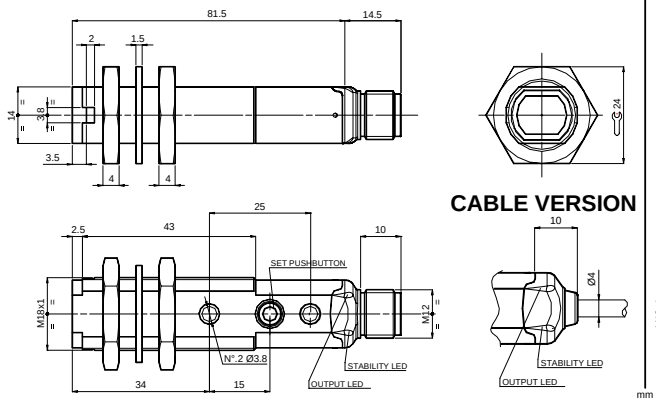


METAL

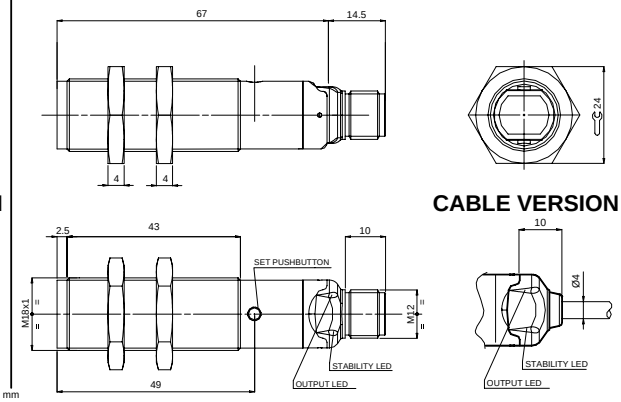


LUMINESCENCE AND CONTRAST

PLASTIC



METAL



mm

CONNECTIONS

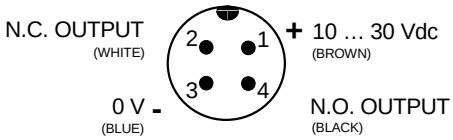
CABLE

Through beam emitter

BROWN	1	+	10 … 30 Vdc
WHITE	2		N.C. OUTPUT
BLACK	4		N.O. OUTPUT
BLUE	3	–	0 V

BROWN	1	+	10 … 30 Vdc
WHITE	2		TEST +
BLACK	4		TEST / NOT USED (Laser version)
BLUE	3	–	0 V

M12 CONNECTOR

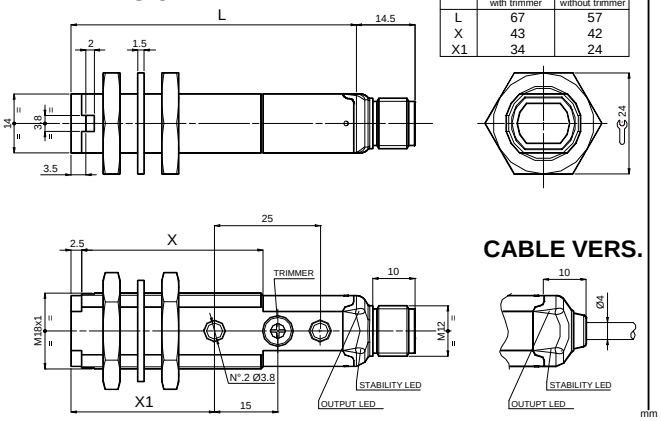


S51

DIMENSIONS

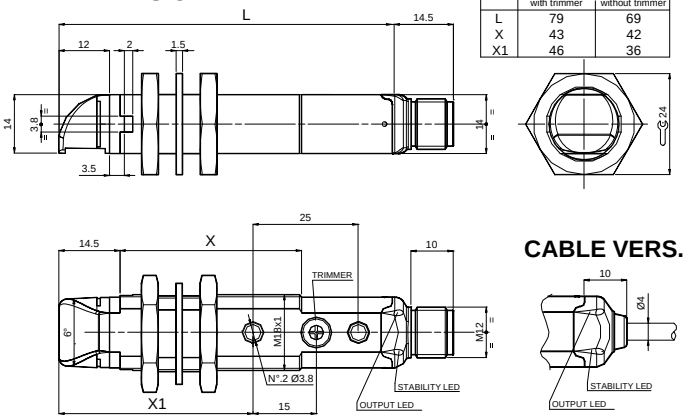
PLASTIC

AXIAL VERSION



	MODELS with trimmer	MODELS without trimmer
L	67	57
X	43	42
X1	34	24

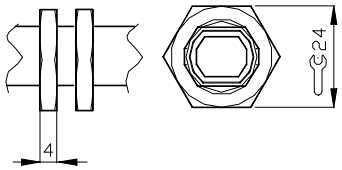
RADIAL VERSION



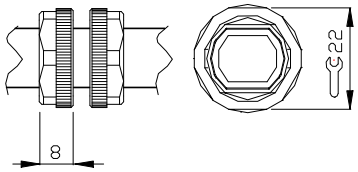
	MODELS with trimmer	MODELS without trimmer
L	79	69
X	43	42
X1	46	36

mm

CH.24 PLASTIC NUTS

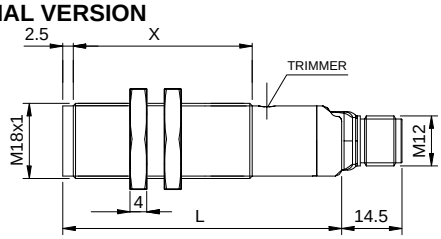


CH.22 PLASTIC NUTS



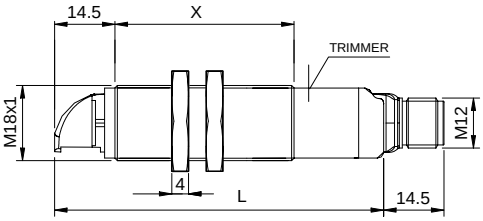
METAL

AXIAL VERSION



	MODELS B01/C01/F00	MODELS A00/C10/G00
L	67	57
X	43	38

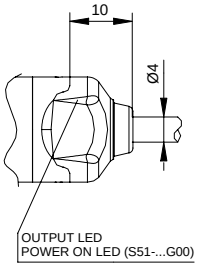
RADIAL VERSION



	MODELS B01/C01/F00	MODELS A00/C10/G00
L	79	69
X	43	38

mm

CABLE VERSION



CONNECTIONS

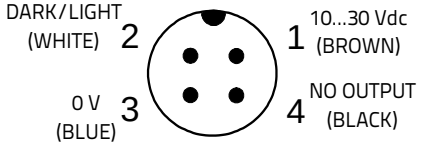
CABLE

BROWN	1	+	10 ... 30 Vdc
WHITE	2		DARK- / LIGHT+
BLACK	4		N.O. OUTPUT
BLUE	3	–	0 V

Through beam emitter

BROWN	1	+	10 ... 30 Vdc
WHITE	2		TEST +
BLACK	4		TEST -
BLUE	3	–	0 V

M12 CONNECTOR

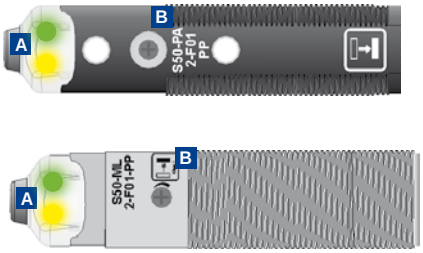


S50/S51

INDICATORS AND SETTINGS

S50-XX...A00/B01/C01/C21/E01/F01/T01

S51-XX...B01/C01

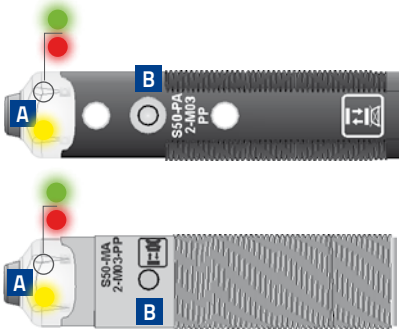


A OUTPUT status LED Yellow
STABILITY LED Green (Only Receiver)
POWER ON LED Green (Only Emitter)

B Adjustment trimmer (receiver)

Single-turn trimmer for sensitivity adjustment. Rotate in a clockwise direction to increase the operating distance.

S50-XX-M03/W03/U03



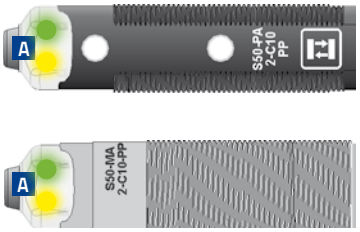
A OUTPUT status LED Yellow
READY LED Green
ERROR LED Red

B Teach-in push-button

Teach-in button for setting.
EASYtouch™ provides two setting modes: standard or fine, both obtained by pressing the push-button only once.
Please refer to instructions manual for operating details.

S50-XX-C10

S51-XX-A00/C10/C20/F00/G00



A00/C10/C20/F00

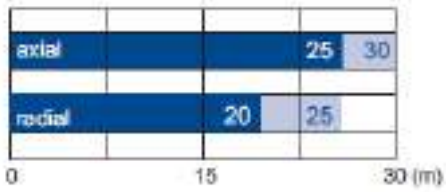
A OUTPUT status LED Yellow
STABILITY LED green

G00

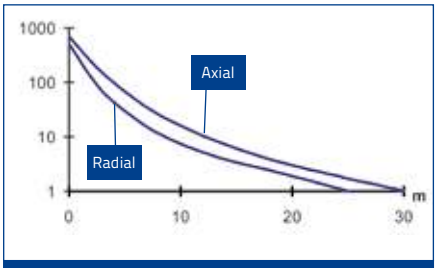
OUTPUT status LED yellow (Only Emitter G00)

S50 DETECTION DIAGRAMS

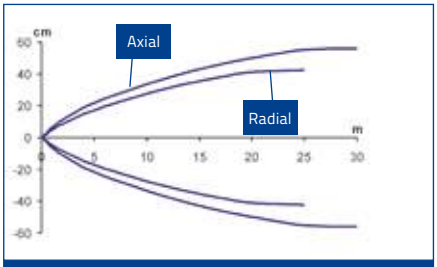
G/F INFRARED EMISSION



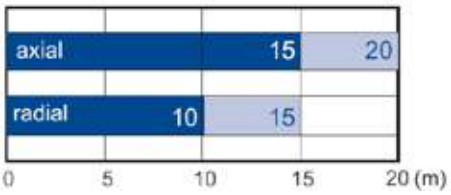
Recommended operating distance
Maximum operating distance



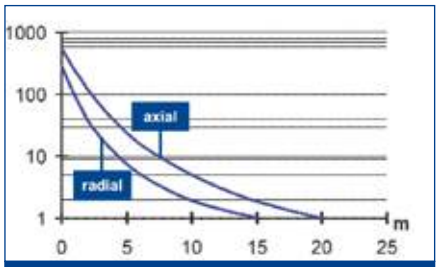
Excess gain



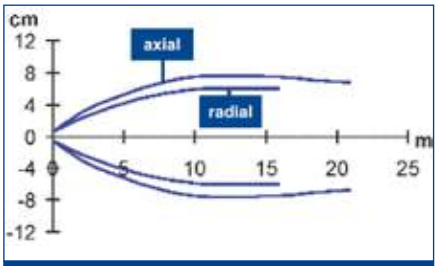
Detection area



Recommended operating distance
Maximum operating distance

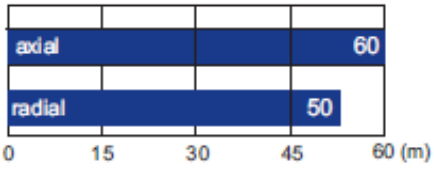


Excess gain

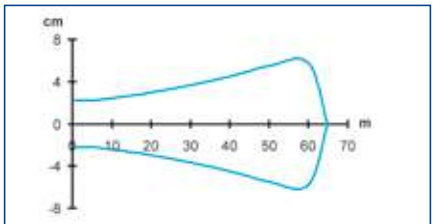


Detection area

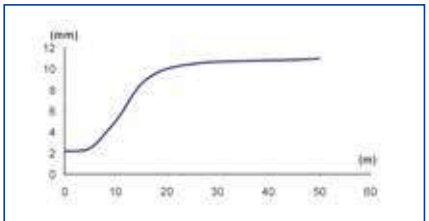
G/F LASER RED EMISSION



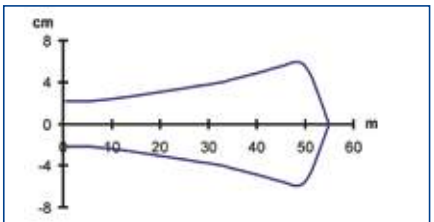
Operating distance



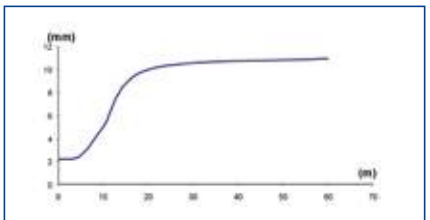
Detection area - axial



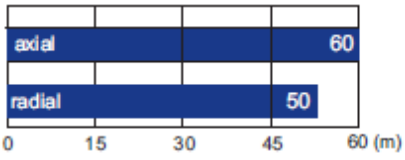
Resolution - axial



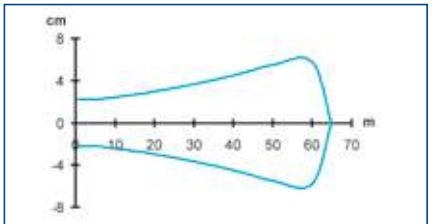
Detection area - radial



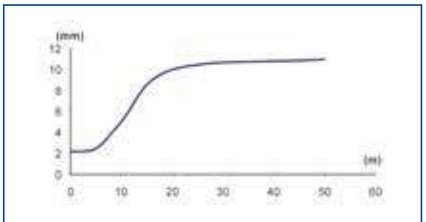
Resolution - radial



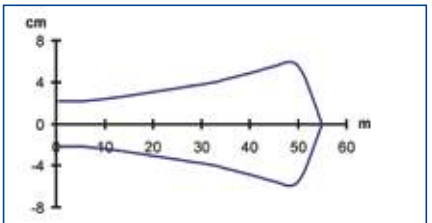
Operating distance



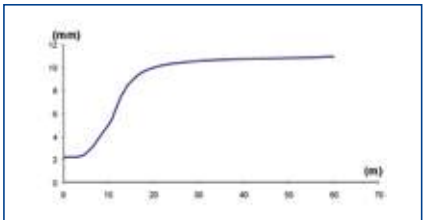
Detection area - axial



Resolution - axial



Detection area - radial



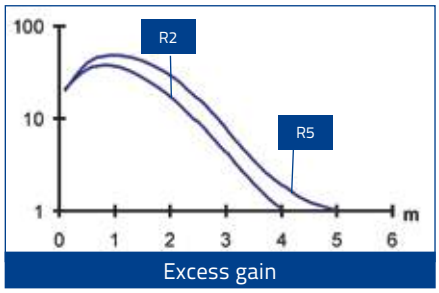
Resolution - radial

Tubular Sensors - S50/S51

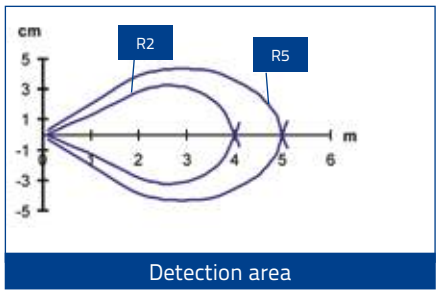
DATALOGIC

A INFRARED EMISSION

Operating distance



Excess gain

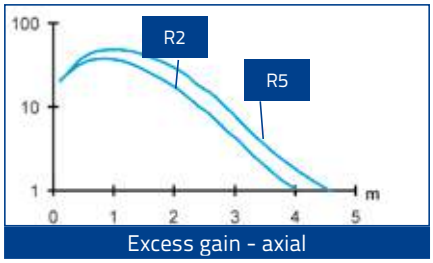


Detection area

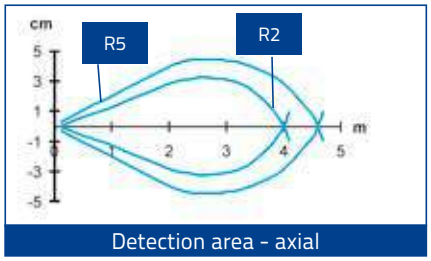
B RED EMISSION

Recommended operating distance
Maximum operating distance

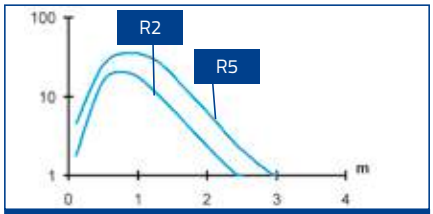
High efficiency reflectors can be used to obtain larger operating distances.
Refer to **Reflectors** (A.01).



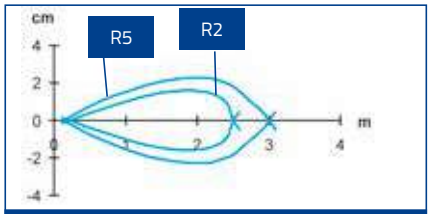
Excess gain - axial



Detection area - axial

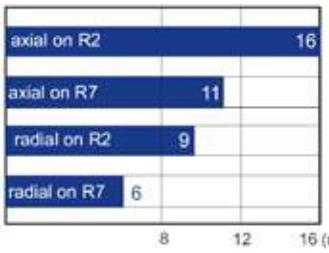


Excess gain - radial



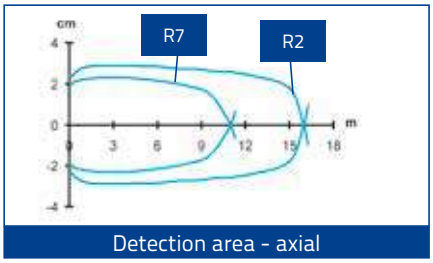
Detection area - radial

B LASER RED EMISSION

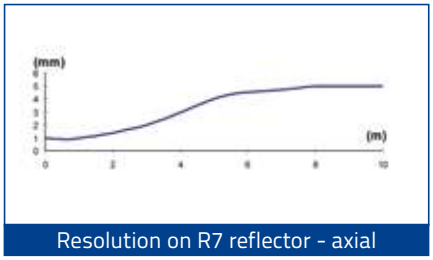


Operating distance

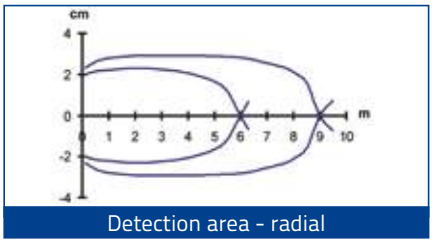
High efficiency reflectors can be used to obtain larger operating distances.
Refer to **Reflectors** (A.01).



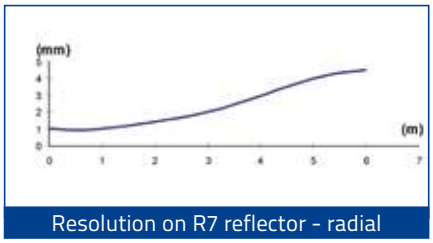
Detection area - axial



Resolution on R7 reflector - axial

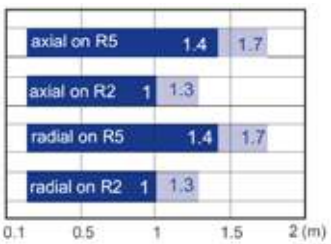


Detection area - radial

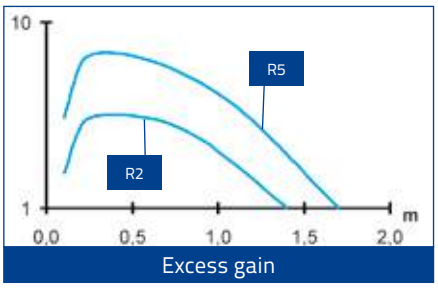


Resolution on R7 reflector - radial

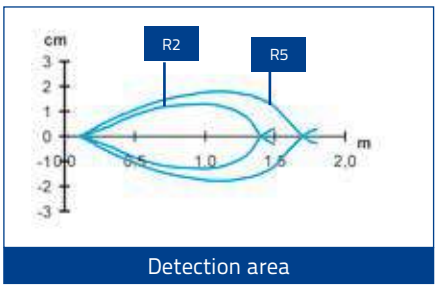
T RED EMISSION



Recommended operating distance
Maximum operating distance



Excess gain



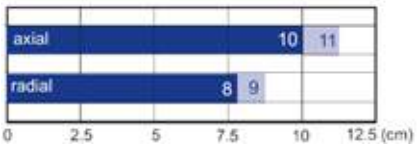
Detection area

High efficiency reflectors can be used to obtain larger operating distances.Refer to **Reflectors**.

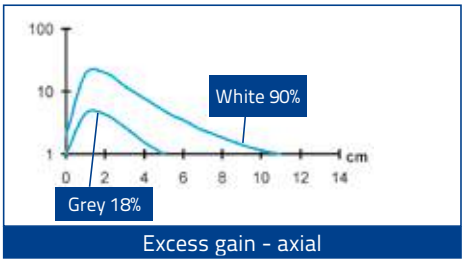
Tubular Sensors - S50/S51

DATALOGIC

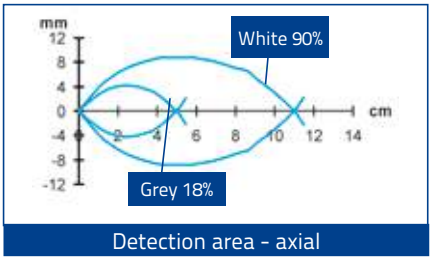
C SHORT INFRARED EMISSION



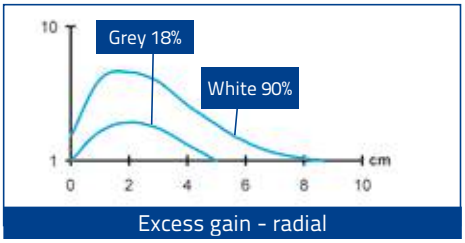
Recommended operating distance
Maximum operating distance



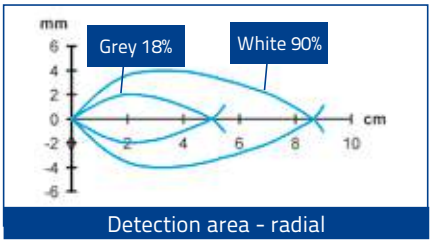
Excess gain - axial



Detection area - axial



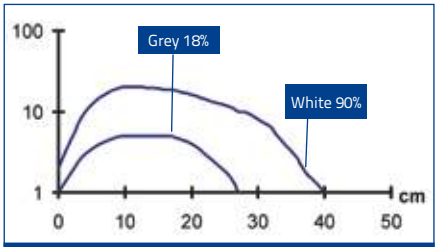
Excess gain - radial



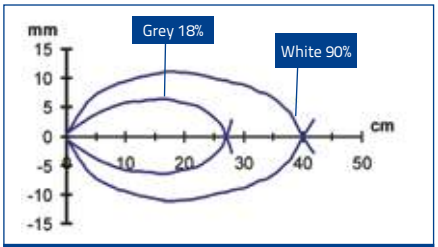
Detection area - radial

C MID INFRARED EMISSION

Recommended operating distance
Maximum operating distance

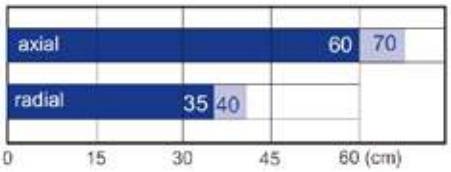


Excess gain

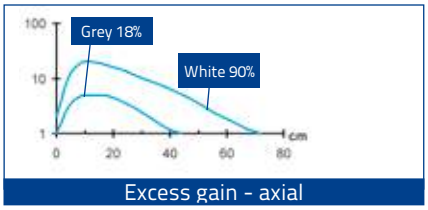


Detection area

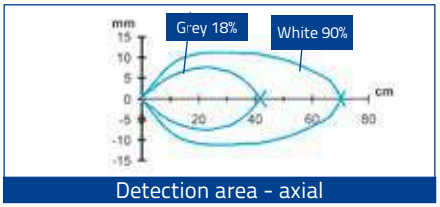
C LONG INFRARED EMISSION



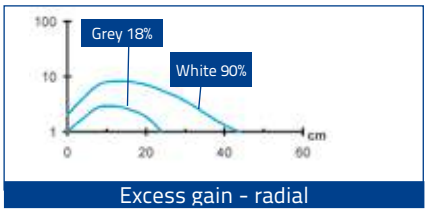
Recommended operating distance
Maximum operating distance



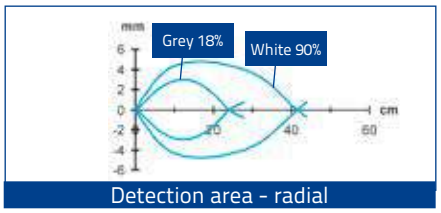
Excess gain - axial



Detection area - axial

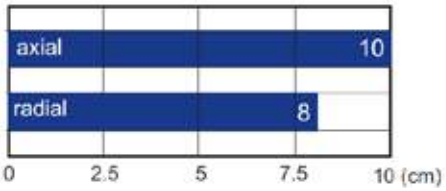


Excess gain - radial

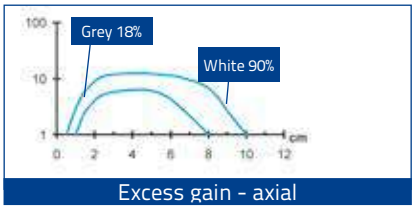


Detection area - radial

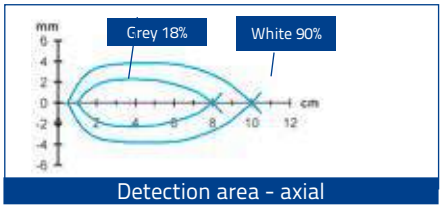
D RED EMISSION



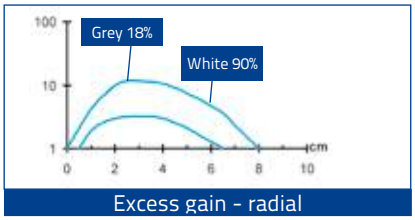
Operating distance



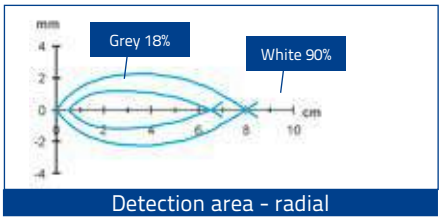
Excess gain - axial



Detection area - axial



Excess gain - radial

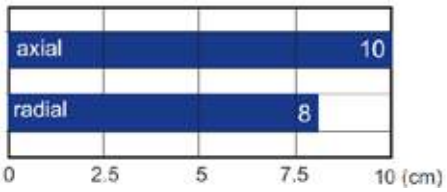


Detection area - radial

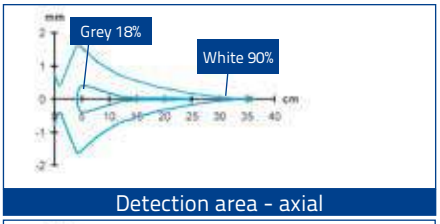
Tubular Sensors - S50/S51

DATALOGIC

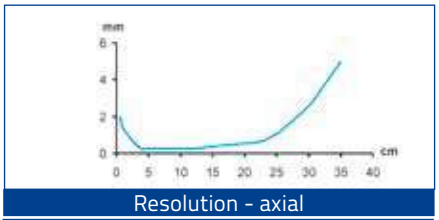
C LASER RED EMISSION



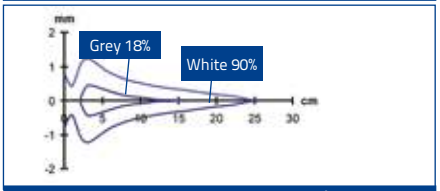
Operating distance



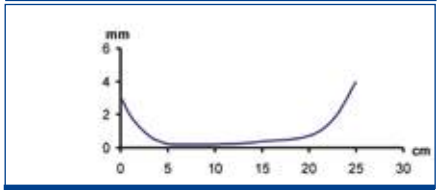
Detection area - axial



Resolution - axial

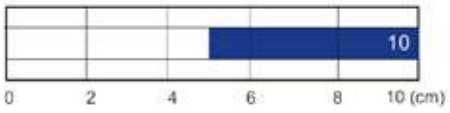


Detection area - radial

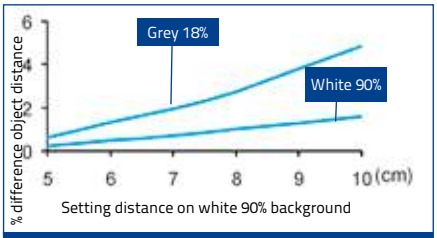


Resolution - radial

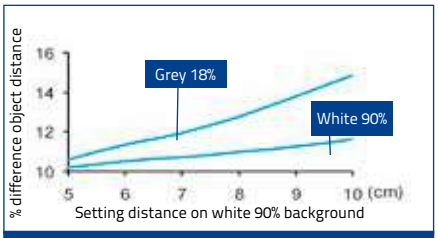
M AXIAL RED EMISSION



Operating distance

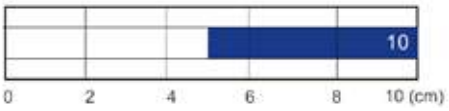


Detection difference with EASYtouch™ acquisition

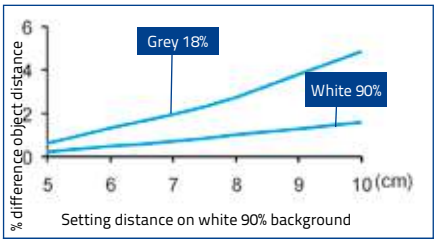


Detection difference with fine acquisition

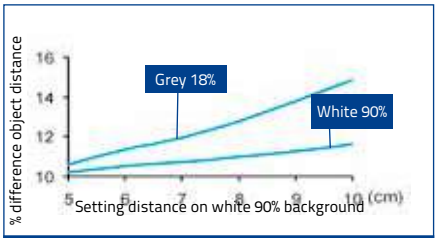
M RADIAL RED EMISSION



Operating distance

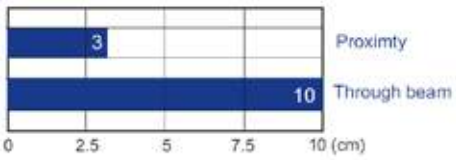


Detection difference with EASYtouch™ acquisition



Detection difference with fine acquisition

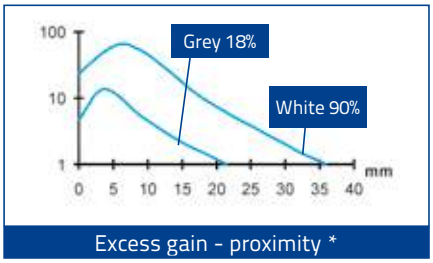
E RED EMISSION



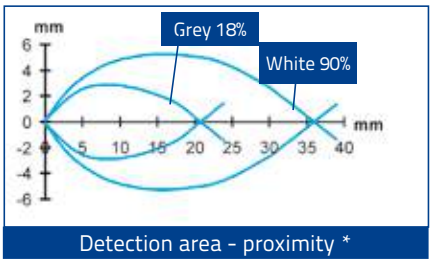
Operating distance with standard fibers

Standard Fiber-optics:
OF-42-ST-20 proximity
OF-43-ST-20 through beam

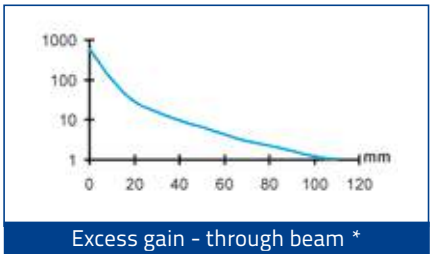
High efficiency fiber-optics or accessory lenses can be used to obtain larger operating distances.



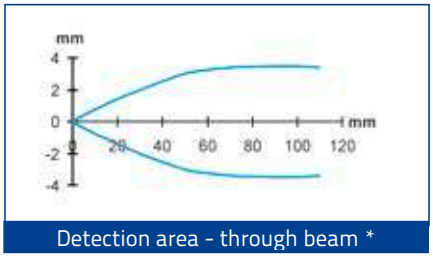
Excess gain - proximity *



Detection area - proximity *



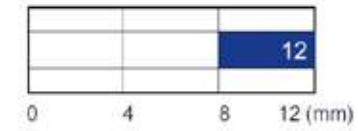
Excess gain - through beam *



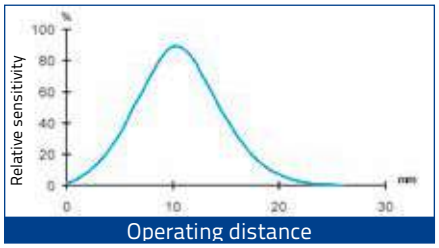
Detection area - through beam *

* standard Fiber-optics

W WHITE EMISSION

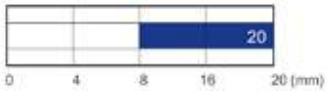


Operating distance

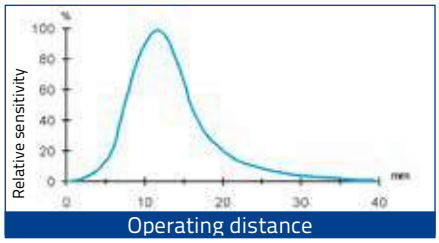


Operating distance

U UV EMISSION



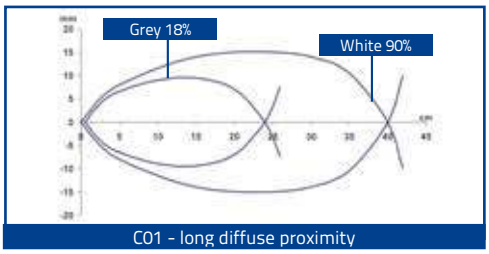
Operating distance



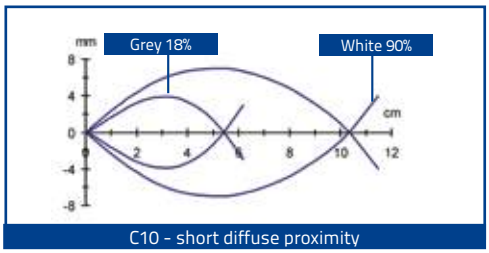
Operating distance

S51 DETECTION DIAGRAMS

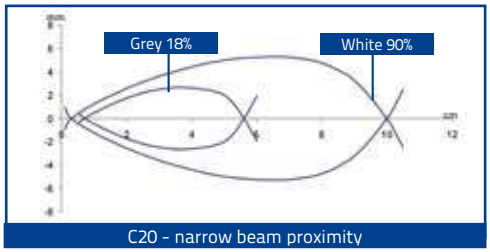
M18 STANDARD



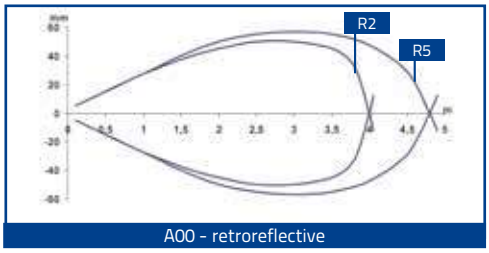
C01 - long diffuse proximity



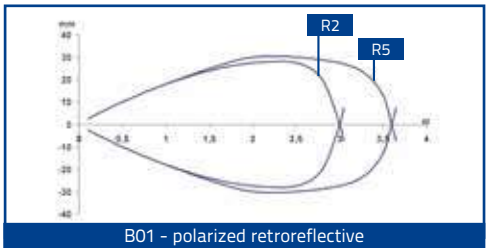
C10 - short diffuse proximity



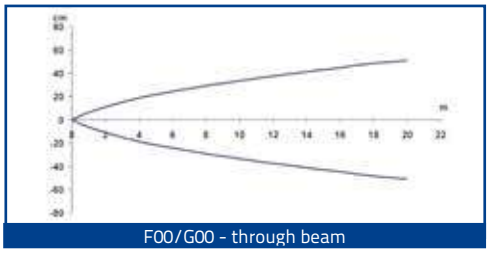
C20 - narrow beam proximity



A00 - retroreflective

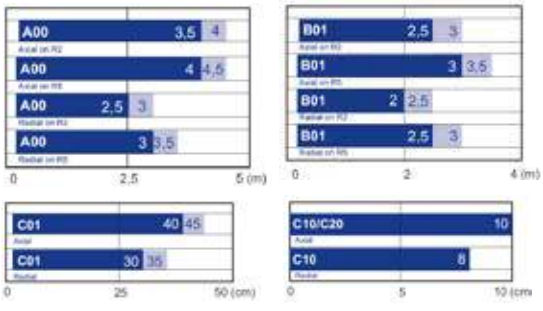


B01 - polarized retroreflective



F00/G00 - through beam

Note: the diagrams indicate the detection area typical of the axial optic versions; the maximum operating distance of the radial optic versions decreases as indicated in the tables given below



Recommended operating distance

Maximum operating distance

MODEL SELECTION AND ORDER INFORMATION

S50 PLASTIC MODELS

OPTIC FUNCTION	EMISSION	CONNECTION	OUTPUT	MODEL	ORDER No.
Retroreflective	LED, Axial optic	2m Cable	NPN	S50-PA-2-A00-NN	952002090
			PNP	S50-PA-2-A00-PP	952002080
		M12 Connector	NPN	S50-PA-5-A00-NN	952002110
			PNP	S50-PA-5-A00-PP	952002100
Polarized retroreflective	LED, Axial optic	2m Cable	NPN	S50-PA-2-B01-NN	952001610
			PNP	S50-PA-2-B01-PP	952001010
		M12 Connector	NPN	S50-PA-5-B01-NN	952001500
			PNP	S50-PA-5-B01-PP	952001020
	LED, Radial optic	2m Cable	NPN	S50-PR-2-B01-NN	952001780
			PNP	S50-PR-2-B01-PP	952001030
		M12 Connector	NPN	S50-PR-5-B01-NN	952001720
			PNP	S50-PR-5-B01-PP	952001040
	LASER, Axial optic	2m Cable	NPN	S50-PL-2-B01-NN	952001870
			PNP	S50-PL-2-B01-PP	952001360
		M12 Connector	NPN	S50-PL-5-B01-NN	952001840
			PNP	S50-PL-5-B01-PP	952001370
	LASER, Radial optic	2m Cable	NPN	S50-PH-2-B01-NN	952001950
			PNP	S50-PH-2-B01-PP	952001940
		M12 Connector	NPN	S50-PH-5-B01-NN	952001970
			PNP	S50-PH-5-B01-PP	952001960
Long Diffuse proximity	LED, Axial optic	2m Cable	NPN	S50-PA-2-C01-NN	952001620
			PNP	S50-PA-2-C01-PP	952001050
		M12 Connector	NPN	S50-PA-5-C01-NN	952001510
			PNP	S50-PA-5-C01-PP	952001060
	LED, Radial optic	2m Cable	NPN	S50-PR-2-C01-NN	952001790
			PNP	S50-PR-2-C01-PP	952001070
		M12 Connector	NPN	S50-PR-5-C01-NN	952001730
			PNP	S50-PR-5-C01-PP	952001080
	LASER, Axial optic	2m Cable	NPN	S50-PL-2-C01-NN	952001880
			PNP	S50-PL-2-C01-PP	952001380
		M12 Connector	NPN	S50-PL-5-C01-NN	952001850
			PNP	S50-PL-5-C01-PP	952001390
	LASER, Radial optic	2m Cable	NPN	S50-PH-2-C01-NN	952001990
			PNP	S50-PH-2-C01-PP	952001980
		M12 Connector	NPN	S50-PH-5-C01-NN	952002010
			PNP	S50-PH-5-C01-PP	952002000
Short Diffuse proximity	LED, Axial optic	2m Cable	NPN	S50-PA-2-C10-NN	952001630
			PNP	S50-PA-2-C10-PP	952001240
		M12 Connector	NPN	S50-PA-5-C10-NN	952001520
			PNP	S50-PA-5-C10-PP	952001250
	LED, Radial optic	2m Cable	NPN	S50-PR-2-C10-NN	952001800
			PNP	S50-PR-2-C10-PP	952001490
		M12 Connector	NPN	S50-PR-5-C10-NN	952001740
			PNP	S50-PR-5-C10-PP	952001480
Medium Diffuse proximity	LED, Axial optic	2m Cable	NPN	S50-PA-2-C21-NN	952002170
			PNP	S50-PA-2-C21-PP	952002160
		M12 Connector	NPN	S50-PA-5-C21-NN	952002190
			PNP	S50-PA-5-C21-PP	952002180
Fixed focus	LED, Axial optic	2m Cable	NPN	S50-PA-2-D00-NN	952001640
			PNP	S50-PA-2-D00-PP	952001090
		M12 Connector	NPN	S50-PA-5-D00-NN	952001530
			PNP	S50-PA-5-D00-PP	952001100
	LED, Radial optic	2m Cable	NPN	S50-PR-2-D00-NN	952001810
			PNP	S50-PR-2-D00-PP	952001110
		M12 Connector	NPN	S50-PR-5-D00-NN	952001750
			PNP	S50-PR-5-D00-PP	952001120
Fiber optic	LED, Axial optic	2m Cable	NPN	S50-PA-2-E01-NN	952001650
			PNP	S50-PA-2-E01-PP	952001130
		M12 Connector	NPN	S50-PA-5-E01-NN	952001540
			PNP	S50-PA-5-E01-PP	952001140

Tubular Sensors - S50/S51

DATALOGIC

OPTIC FUNCTION	EMISSION	CONNECTION	OUTPUT	MODEL	ORDER No.
Through beam receiver	LED, Axial optic	2m Cable	NPN	S50-PA-2-F01-NN	952001660
			PNP	S50-PA-2-F01-PP	952001150
		M12 Connector	NPN	S50-PA-5-F01-NN	952001550
			PNP	S50-PA-5-F01-PP	952001160
	LED, Radial optic	2m Cable	NPN	S50-PR-2-F01-NN	952001820
			PNP	S50-PR-2-F01-PP	952001170
		M12 Connector	NPN	S50-PR-5-F01-NN	952001760
			PNP	S50-PR-5-F01-PP	952001180
	LASER, Axial optic	2m Cable	NPN	S50-PL-2-F01-NN	952001890
			PNP	S50-PL-2-F01-PP	952001400
		M12 Connector	NPN	S50-PL-5-F01-NN	952001860
			PNP	S50-PL-5-F01-PP	952001410
	LASER, Radial optic	2m Cable	NPN	S50-PH-2-F01-NN	952002030
			PNP	S50-PH-2-F01-PP	952002020
		M12 Connector	NPN	S50-PH-5-F01-NN	952002050
			PNP	S50-PH-5-F01-PP	952002040
Through beam emitter	LED, Axial optic	2m Cable	-	S50-PA-2-G00-XG	952001190
		M12 Connector	-	S50-PA-5-G00-XG	952001200
	LED, Radial optic	2m Cable	-	S50-PR-2-G00-XG	952001210
		M12 Connector	-	S50-PR-5-G00-XG	952001220
	LASER, Axial optic	2m Cable	-	S50-PL-2-G00-XG	952001420
		M12 Connector	-	S50-PL-5-G00-XG	952001430
	LASER, Radial optic	2m Cable	-	S50-PH-2-G00-XG	952002060
		M12 Connector	-	S50-PH-5-G00-XG	952002070
Background suppression	LED, Axial optic	2m Cable	NPN	S50-PA-2-M03-NN	952001670
			PNP	S50-PA-2-M03-PP	952001230
		M12 Connector	NPN	S50-PA-5-M03-NN	952001560
			PNP	S50-PA-5-M03-PP	952001000
	LED, Radial optic	2m Cable	NPN	S50-PS-2-M03-NN	952001900
			PNP	S50-PS-2-M03-PP	952001910
		M12 Connector	NPN	S50-PS-5-M03-NN	952001920
			PNP	S50-PS-5-M03-PP	952001930
Retroreflective for transparent	LED, Axial optic	2m Cable	NPN	S50-PA-2-T01-NN	952001690
			PNP	S50-PA-2-T01-PP	952001260
		M12 Connector	NPN	S50-PA-5-T01-NN	952001580
			PNP	S50-PA-5-T01-PP	952001270
	LED, Radial optic	2m Cable	NPN	S50-PR-2-T01-NN	952001830
			PNP	S50-PR-2-T01-PP	952001280
		M12 Connector	NPN	S50-PR-5-T01-NN	952001770
			PNP	S50-PR-5-T01-PP	952001290
Luminescence	LED, Axial optic	2m Cable	NPN	S50-PA-2-U03-NN	952001700
			PNP	S50-PA-2-U03-PP	952001300
		M12 Connector	NPN	S50-PA-5-U03-NN	952001590
			PNP	S50-PA-5-U03-PP	952001310
Contrast	LED, Axial optic	2m Cable	NPN	S50-PA-2-W03-NN	952001710
			PNP	S50-PA-2-W03-PP	952001320
		M12 Connector	NPN	S50-PA-5-W03-NN	952001600
			PNP	S50-PA-5-W03-PP	952001330