

# S100



## THE UNIVERSAL MINIATURE PHOTOELECTRIC SENSOR

- Two threaded front mounting holes
- Two slotted rear mounting holes
- Anti-tampering sensor (no adjustment)
- Standard optic functions
- Transparent object detection
- M8 connector and cable models
- PNP or NPN models with Light/Dark selection by wire
- Plastic housing, IP67 mechanical protection

### APPLICATIONS

- Processing and packaging machines
- Conveyors
- Automatic warehousing
- Intralogistic lines
- Bottling
- Cosmetic and Pharma machinery

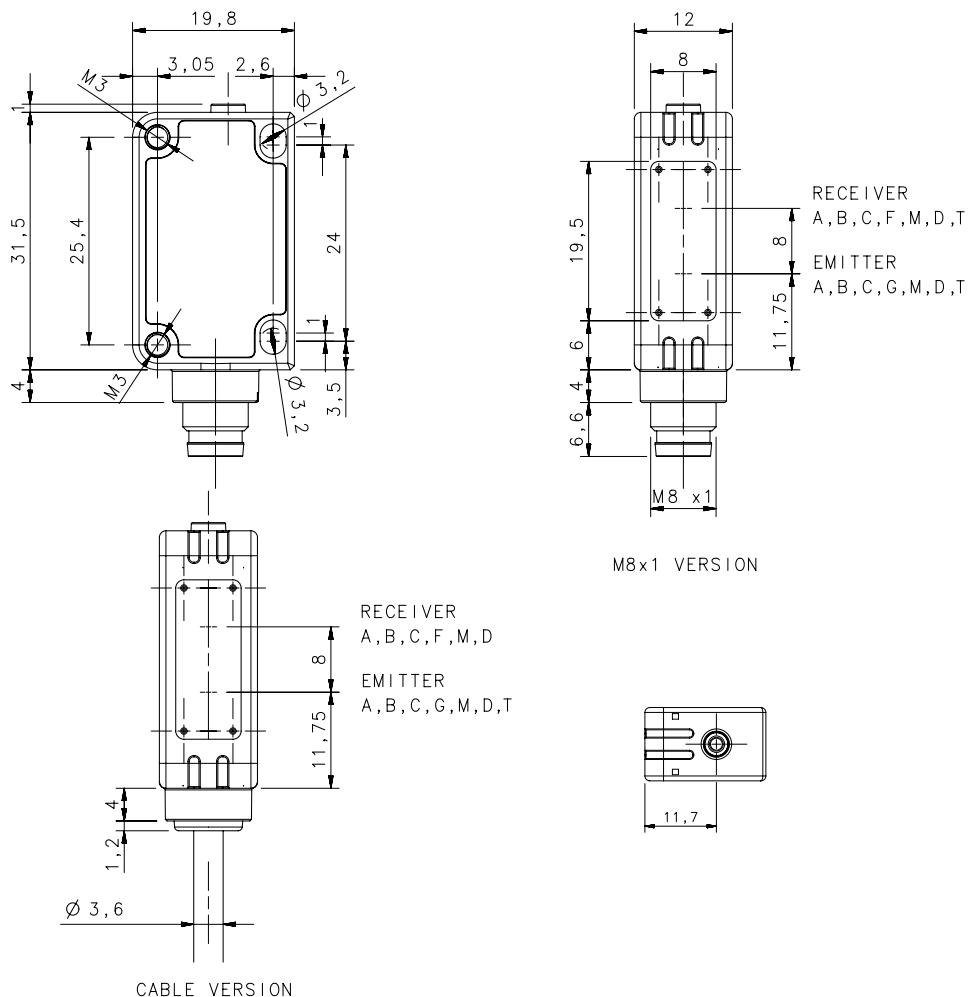


| S100   |           |                    |
|--|-----------|--------------------|
| <b>Through beam</b>                              |           | 12 m               |
| <b>Retroreflective</b>                           |           | 7 m                |
| <b>Polarized Retroreflective (long range)</b>    |           | 5,5 m              |
| <b>Polarized Retroreflective (short range)</b>   |           | 3 m                |
| <b>Transparent Retroreflective (short range)</b> |           | 500 mm             |
| <b>Transparent Retroreflective (long range)</b>  |           | 2 m                |
| <b>Diffused proximity (short range)</b>          |           | 300 mm             |
| <b>Diffused proximity (long range)</b>           |           | 500 mm             |
| <b>Fixed focus</b>                               |           | 70 mm              |
| <b>Background Suppression (short range)</b>      |           | 100 mm             |
| <b>Background Suppression (long range)</b>       |           | 200 mm             |
| <b>Power supply</b>                              | Vdc       | 10...30 Vdc        |
| <b>Output</b>                                    | PNP       | •                  |
|  | NPN       | •                  |
| <b>Connection</b>                                | cable     | 2 m cable, 4 wires |
|  | connector | M8 conn., 4-pole   |
| <b>Approximate dimensions (mm)</b>               |           | 32x20x12           |
| <b>Housing material</b>                          |           | Plastic            |
| <b>Mechanical protection</b>                     |           | IP67               |

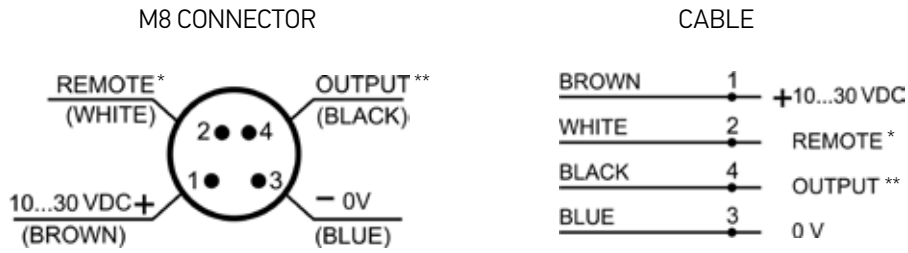
# TECHNICAL DATA

|  |  |
|--|--|
| <b>Power supply</b>                          | 10 ... 30 Vdc  |
| <b>Ripple</b>                                | 10% max.   |
| <b>Consumption (output current excluded)</b> | 20 mA max.   |
| <b>Light emission</b>                        | red LED 632 nm (mod. S100...B/C/D/M01)<br>IR LED 860 nm (mod. S100...A/G/Txx/M10)        |
| <b>Setting</b>                               | remote teach-in (mod. S100...Mxx/Txx)  |
| <b>Operating mode</b>                        | LIGHT/DARK selectable by wire (mod. S100...A/B/C/D/F)                                    |
| <b>Indicators</b>                            | yellow OUTPUT LED (excl. mod. G)<br>green POWER LED (mod. S100...G)                      |
| <b>Output</b>                                | PNP or NPN   |
| <b>Output current</b>                        | 100 mA   |
| <b>Saturation voltage</b>                    | 2 V max.   |
| <b>Response time</b>                         | 2 ms (mod. S100...FG)<br>1 ms (mod. S100...A/Bxx/C/D/Mxx/Txx)<br>250 Hz (mod. S100...FG) |
| <b>Switching frequency</b>                   | 500 Hz (mod. S100...A/Bxx/C/D/Mxx/Txx)   |
| <b>Connection</b>                            | 2 m cable 3,5 mm, M8 4-pole connector  |
| <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>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>                      | ABS body, PMMA indicators cover  |
| <b>Lens material</b>                         | PC lens, PMMA window   |
| <b>Operating temperature</b>                 | -25... 55 °C   |
| <b>Storage temperature</b>                   | -40 ... 70 °C  |
| <b>Weight</b>                                | 50 g max. cable vers., 10 g max. connector vers.   |

# DIMENSIONS

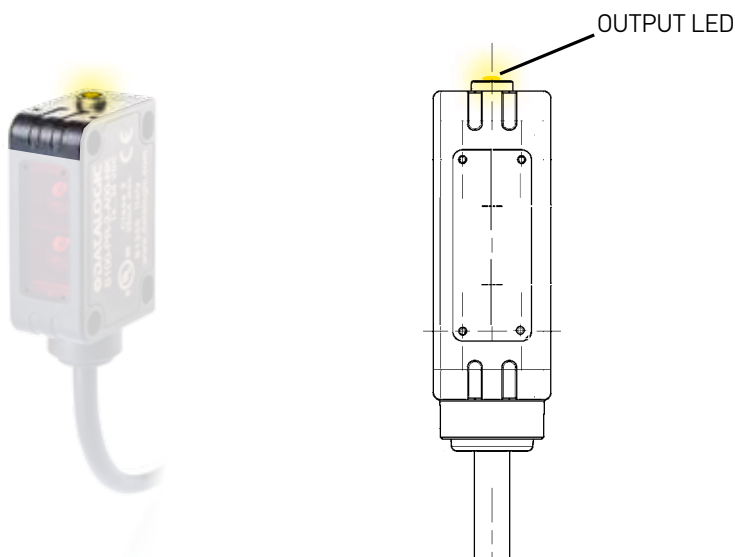


# CONNECTIONS



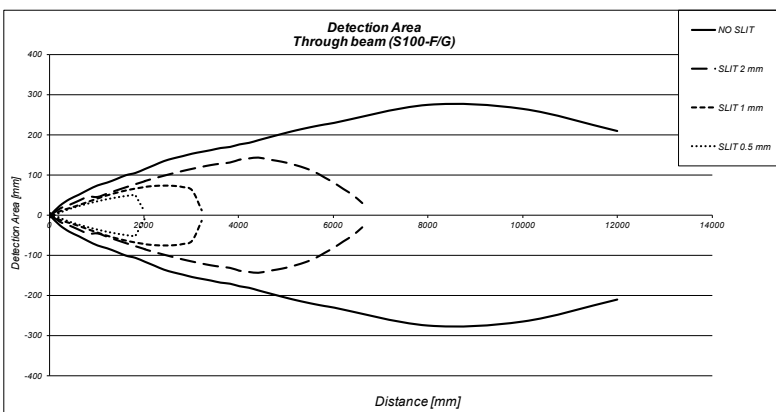
\*REMOTE: Light/Dark selection (S100-...-A-B-C-D-F), External Teach-in (S100-...-Mxx/Txx)  
 \*\*OUTPUT: PNP or NPN depends on the model

# INDICATORS AND SETTINGS



# DETECTION DIAGRAMS

## THROUGH BEAM

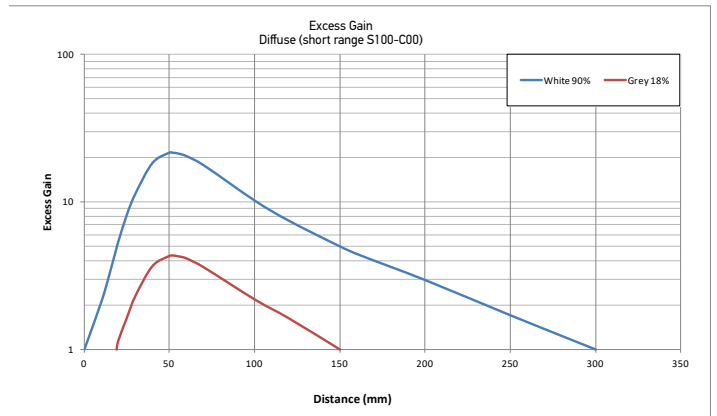
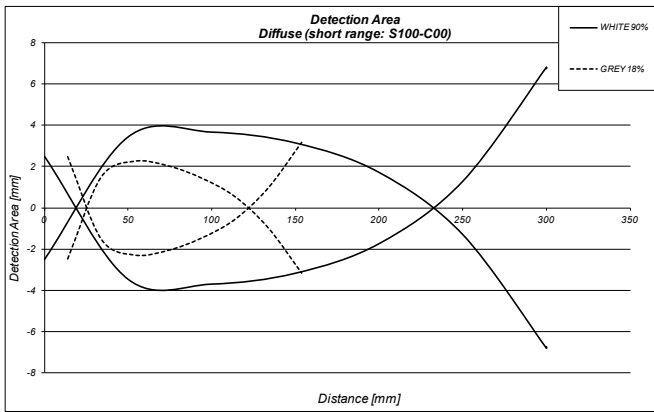


|             | max. operating distance |
|-------------|-------------------------|
| NO SLIT     | 12 m                    |
| 2 mm SLIT   | 6,7 m                   |
| 1 mm SLIT   | 3,2 m                   |
| 0,5 mm SLIT | 2 m                     |

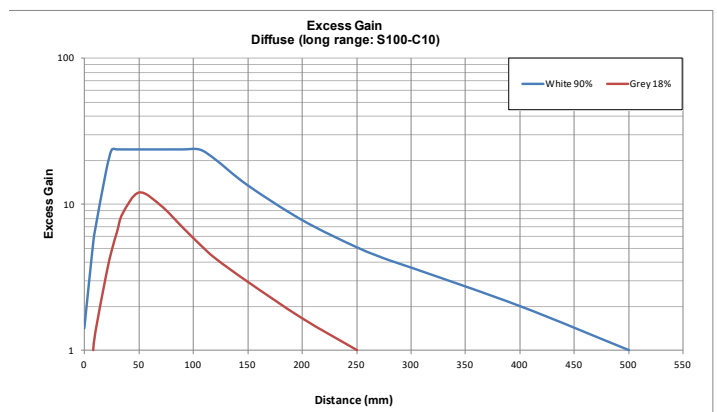
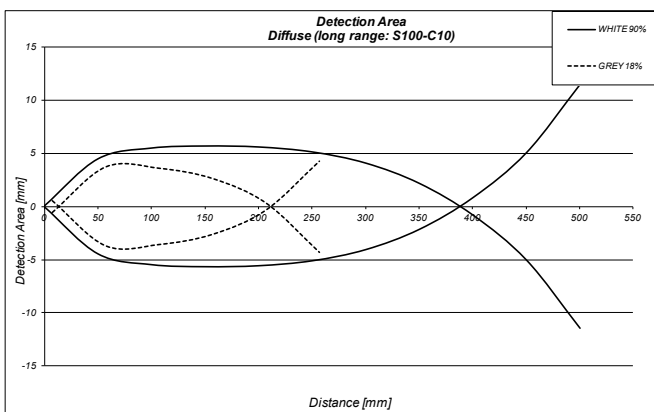
## DIFFUSE PROXIMITY

|   | SHORT RANGE<br>(S100-...-C0) | LONG RANGE<br>(S100-...-C1) |
|---|------------------------------|-----------------------------|
| Recommended operating distance<br>(on White 90% target) | 10...240 mm                  | 2...400 mm                  |
| Maximum operating distance<br>(White 90% target)        | 1...300 mm                   | 0...500 mm                  |
| Maximum operating distance<br>(Grey 18% target)         | 20...150 mm                  | 10...280 mm                 |
| Maximum operating distance<br>(Black 6% target)         | 30...80 mm                   | 20...160 mm                 |
| Difference White-Grey                                   | 50%                          | 50%                         |
| Difference White-Black                                  | 75%                          | 75%                         |
| Hysteresis  | 20%                          | 20%                         |

### DIFFUSE (SHORT RANGE: S100-C00)



### DIFFUSE (LONG RANGE: S100-C10)



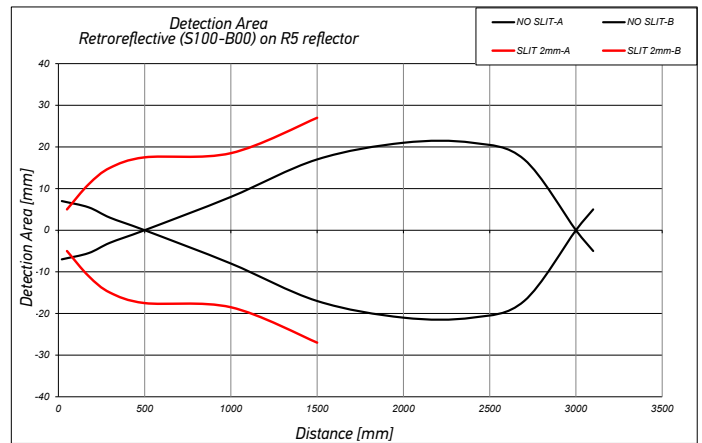
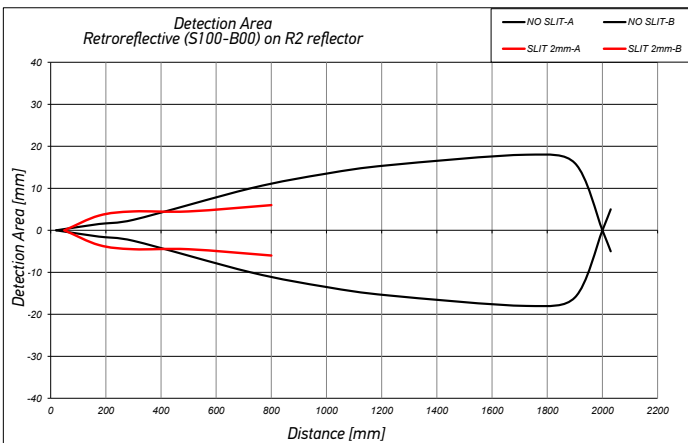
## POLARIZED RETROREFLECTIVE

| REFLECTOR | TYPE                          | SHORT RANGE (S100-...-B00) | LONG RANGE (S100-...-B10) |
|-----------|-------------------------------|----------------------------|---------------------------|
| R1        | circular (23 mm)              | 0,2..0,8 m                 | 0,02..2 m                 |
| R2        | circular (48 mm)              | 0,03..2 m                  | 0,01..4,5 m               |
| R3        | rectangular (18x54 mm)        | 0,03..1,5 m                | 0,01..3 m                 |
| R4        | rectangular (47x47 mm)        | 0,03..2,5 m                | 0,01..4,5 m               |
| R5        | circular (75 mm)              | 0,01..3 m                  | 0,01..5,5 m               |
| R6        | rectangular (36x55 mm)        | 0,03..1,8 m                | 0,01..4 m                 |
| RT3970    | self-adhesive tape (60x40 mm) | 0,2..0,8 m                 | 0,05..1,8 m               |

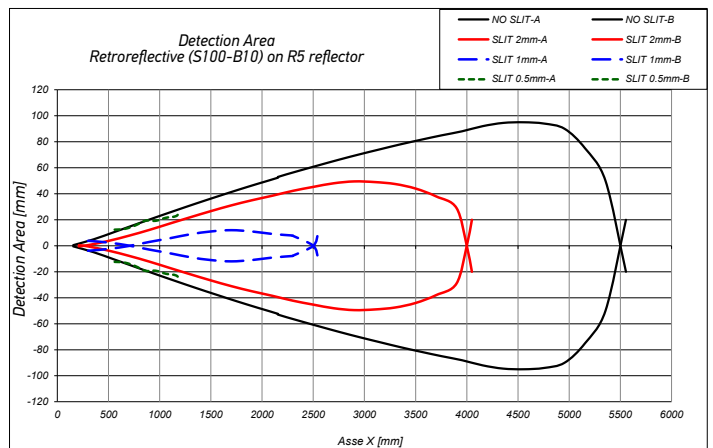
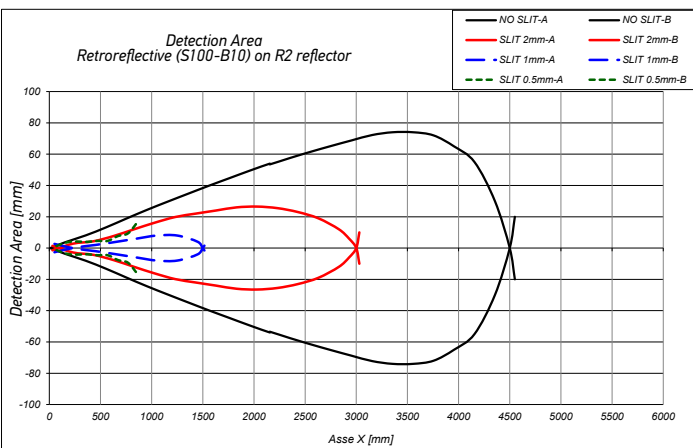


|                    | max. operating distance    |                   |                           |                   |
|--------------------|----------------------------|-------------------|---------------------------|-------------------|
|                    | SHORT RANGE (S100-...-B00) |                   | LONG RANGE (S100-...-B10) |                   |
|                    | with R5 reflector          | with R2 reflector | with R5 reflector         | with R2 reflector |
| <b>NO SLIT</b>     | 0,02 ... 3 m               | 0,02 ... 2 m      | 0,1...5,5 m               | 0,01...4,5 m      |
| <b>2 mm SLIT</b>   | 0,05 ... 1,5 m             | 0,05 ... 0,8 m    | 0,2...4 m                 | 0,03...3 m        |
| <b>1 mm SLIT</b>   | -                          | -                 | 0,3...2,5 m               | 0,05...1,5 m      |
| <b>0,5 mm SLIT</b> | -                          | -                 | 0,5...1,2 m               | 0,07...0,7 m      |

### POLARIZED RETROREFLECTIVE (SHORT RANGE: S100-B00)



### POLARIZED RETROREFLECTIVE (LONG RANGE: S100-B10)

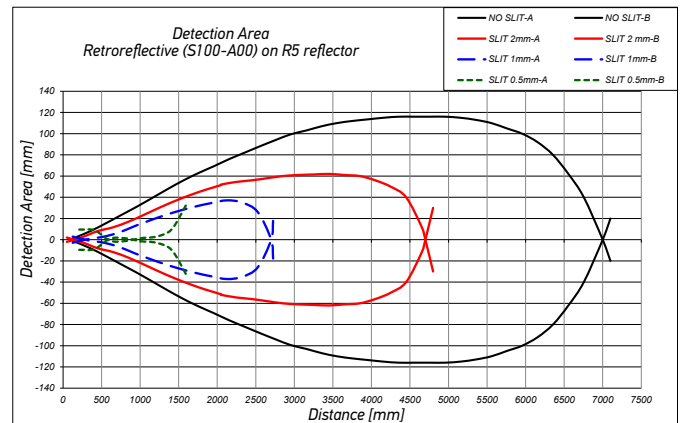
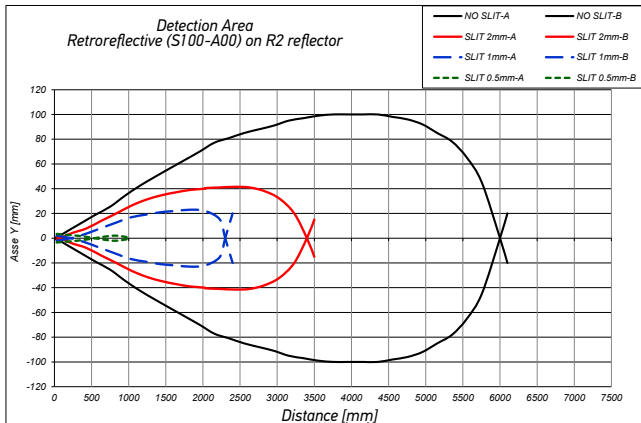


## RETROREFLECTIVE (INFRARED)

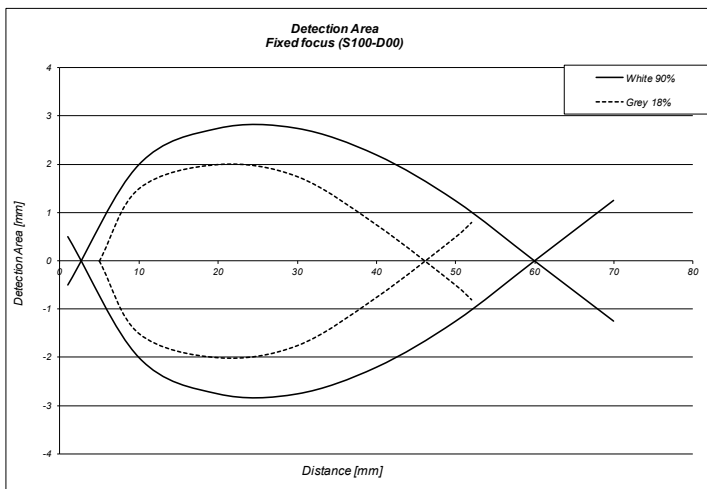
| REFLECTOR | TYPE                          | (S100-...-A00) |
|-----------|-------------------------------|----------------|
| R1        | circular (23 mm)              | 0.03.3 m       |
| R2        | circular (48 mm)              | 0.01.6 m       |
| R3        | rectangular (18x54 mm)        | 0.01.3.5 m     |
| R4        | rectangular (47x47 mm)        | 0.01.5 m       |
| R5        | circular (75 mm)              | 0.01.7 m       |
| R6        | rectangular (36x55 mm)        | 0.01.6 m       |
| RT3970    | self-adhesive tape (60x40 mm) | 0.05.2 m       |



|             | max. operating distance |                   |
|-------------|-------------------------|-------------------|
|             | with R5 reflector       | with R2 reflector |
| NO SLIT     | 7 m                     | 6 m               |
| 2 mm SLIT   | 4,7 m                   | 3,4 m             |
| 1 mm SLIT   | 2,7 m                   | 2,3 m             |
| 0,5 mm SLIT | 1,5 m                   | 1 m               |



## FIXED FOCUS



|  |       |
|--|-------|
| Focus point                            | 70 mm |
| Maximum operating distance (White 90%) | 70 mm |
| Maximum operating distance (Grey 18%)  | 55 mm |
| Difference White/Black                 | 25%   |

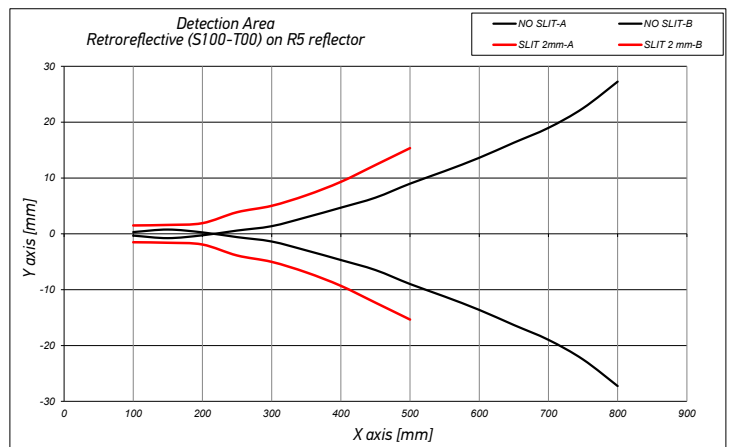
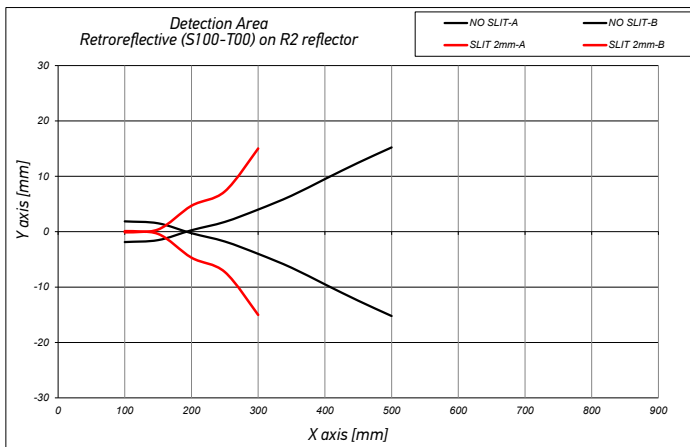
## RETROREFLECTIVE FOR TRANSPARENT (INFRARED)

| REFLECTOR | TYPE                          | SHORT RANGE (S100-...-T00) | LONG RANGE (S100-...-T10) |
|-----------|-------------------------------|----------------------------|---------------------------|
| R1        | circular (23 mm)              | 0.1...0.3 m                | 0.4...1 m                 |
| R2        | circular (48 mm)              | 0.1...0.5 m                | 0.8...2 m                 |
| R3        | rectangular (18x54 mm)        | 0.1...0.3 m                | 0.4...1 m                 |
| R4        | rectangular (47x47 mm)        | 0.1...0.5 m                | 0.8...2 m                 |
| R5        | circular (75 mm)              | 0.1...0.8 m                | 0.8...2.5 m               |
| R6        | rectangular (36x55 mm)        | 0.1...0.5 m                | 0.8...2m                  |
| RT3970    | self-adhesive tape (60x40 mm) | 0.15...0.3 m               | 0.1...0.8 m               |

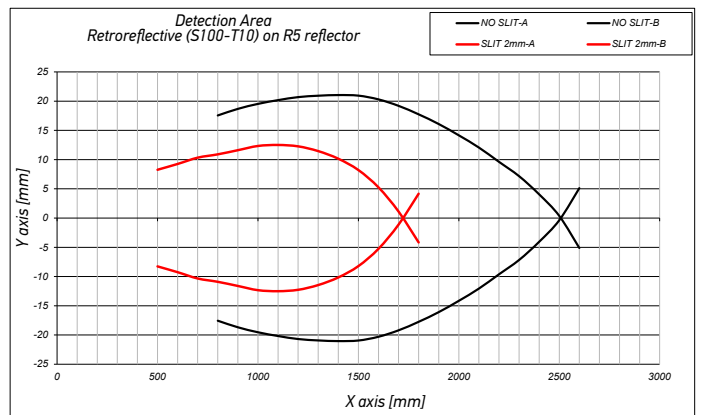
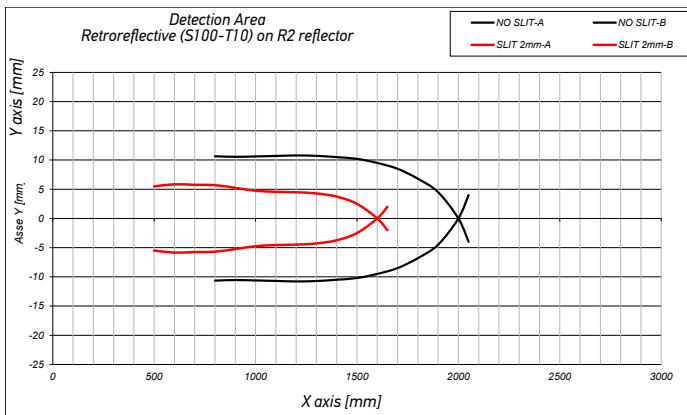


|                    | max. operating distance    |                   |                           |                   |
|--------------------|----------------------------|-------------------|---------------------------|-------------------|
|                    | SHORT RANGE (S100-...-T00) |                   | LONG RANGE (S100-...-T10) |                   |
|                    | with R5 reflector          | with R2 reflector | with R5 reflector         | with R2 reflector |
| <b>NO SLIT</b>     | 0.1...0.8 m                | 0.1...0.5 m       | 0.8...2.5 m               | 0.8...2 m         |
| <b>2 mm SLIT</b>   | 0.1...0.5 m                | 0.1...0.3 m       | 0.5...1.8 m               | 0.5...1.6 m       |
| <b>1 mm SLIT</b>   | -                          | -                 | -                         | -                 |
| <b>0,5 mm SLIT</b> | -                          | -                 | -                         | -                 |

## TRANSPARENT RETROREFLECTIVE (SHORT RANGE: S100-T00)



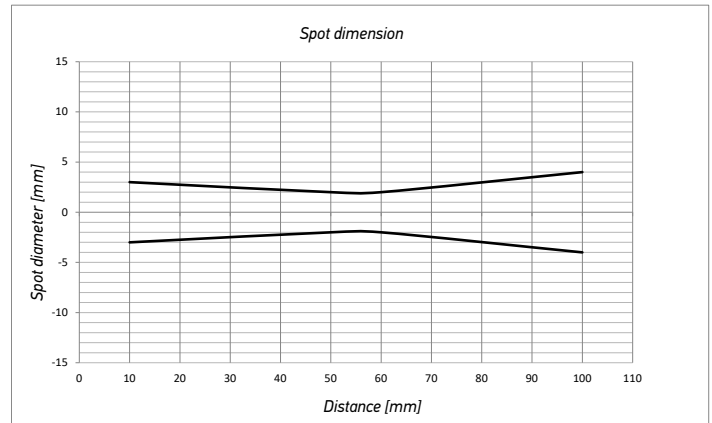
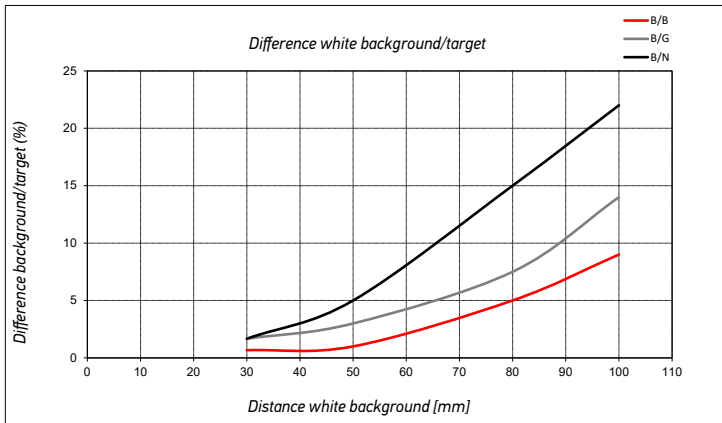
## TRANSPARENT RETROREFLECTIVE (LONG RANGE: S100-T10)



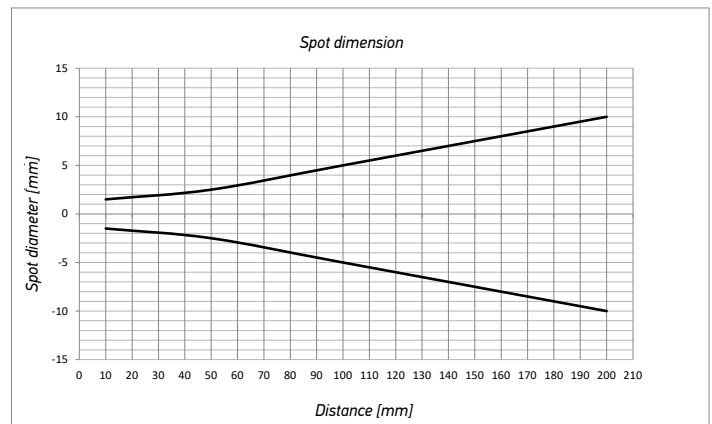
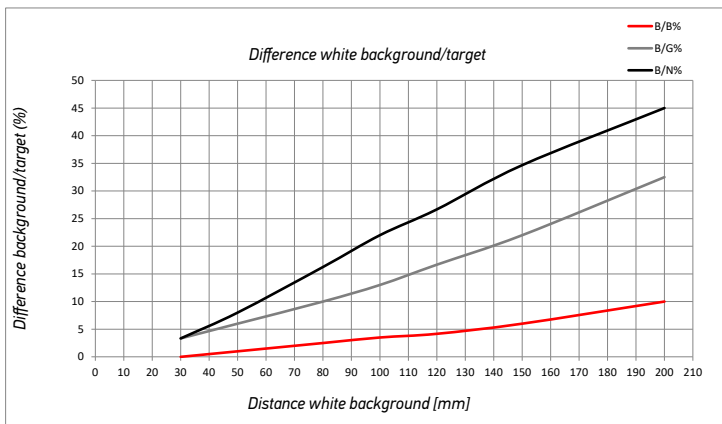
## BACKGROUND SUPPRESSION

| Operating distances (background suppression) | 30...100 mm | 30...200 mm |
|--|-------------|-------------|
|  | S100...M00  | S100...M10  |
| Maximum operating distance (White 90%)       | 0...150 mm  | 10...250 mm |
| Maximum operating distance (Grey 18%)        | 10...110 mm | 10...135 mm |
| Maximum operating distance (Black 6%)        | 10...80 mm  | 10...110 mm |
| Difference White 90%/White 90%               | < 5%        | < 10%       |
| Difference White 90%/Grey 18%                | < 15%       | < 32%       |
| Difference White 90%/Black 6%                | < 25%       | < 45%       |

### BACKGROUND SUPPRESSION (SHORT RANGE: S100-M00)



### BACKGROUND SUPPRESSION (LONG RANGE: S100-M10)



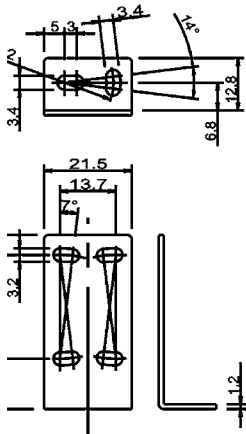


# MODEL SELECTION AND ORDER INFORMATION

| OPTIC FUNCTION                       | EMISSION | OPERATING DISTANCE | CONNECTION   | OUTPUT | MODEL             | ORDER No. |
|--------------------------------------|----------|--------------------|--------------|--------|-------------------|-----------|
| Through beam                         | IR       | 12 m               | 2 m cable    | NPN    | S100-PR-2-FG00-NK | 950811100 |
|                                      |          |                    |              | PNP    | S100-PR-2-FG00-PK | 950811110 |
|                                      |          |                    | M8 connector | NPN    | S100-PR-5-FG00-NK | 950811240 |
|                                      |          |                    |              | PNP    | S100-PR-5-FG00-PK | 950811250 |
| Retroreflective                      | IR       | 7 m                | 2 m cable    | NPN    | S100-PR-2-A00-NK  | 950811000 |
|                                      |          |                    |              | PNP    | S100-PR-2-A00-PK  | 950811010 |
|                                      |          |                    | M8 connector | NPN    | S100-PR-5-A00-NK  | 950811140 |
|                                      |          |                    |              | PNP    | S100-PR-5-A00-PK  | 950811150 |
| Polarized Retroreflective (short)    | RED      | 2 m                | 2 m cable    | NPN    | S100-PR-2-B00-NK  | 950811020 |
|                                      |          |                    |              | PNP    | S100-PR-2-B00-PK  | 950811030 |
|                                      |          |                    | M8 connector | NPN    | S100-PR-5-B00-NK  | 950811160 |
|                                      |          |                    |              | PNP    | S100-PR-5-B00-PK  | 950811170 |
| Polarized Retroreflective (long)     | RED      | 5 m                | 2 m cable    | NPN    | S100-PR-2-B10-NK  | 950811280 |
|                                      |          |                    |              | PNP    | S100-PR-2-B10-PK  | 950811290 |
|                                      |          |                    | M8 connector | NPN    | S100-PR-5-B10-NK  | 950811300 |
|                                      |          |                    |              | PNP    | S100-PR-5-B10-PK  | 950811310 |
| Transparent Retroreflective (short)  | IR       | 500 mm             | 2 m cable    | NPN    | S100-PR-2-T00-NH  | 950811330 |
|                                      |          |                    | 2 m cable    | PNP    | S100-PR-2-T00-PH  | 950811320 |
|                                      |          |                    | M8 connector | NPN    | S100-PR-5-T00-NH  | 950811350 |
|                                      |          |                    | M8 connector | PNP    | S100-PR-5-T00-PH  | 950811340 |
| Transparent Retroreflective (long)   | IR       | 2 m                | 2 m cable    | NPN    | S100-PR-2-T10-NH  | 950811370 |
|                                      |          |                    | 2 m cable    | PNP    | S100-PR-2-T10-PH  | 950811360 |
|                                      |          |                    | M8 connector | NPN    | S100-PR-5-T10-NH  | 950811390 |
|                                      |          |                    | M8 connector | PNP    | S100-PR-5-T10-PH  | 950811380 |
| Diffuse proximity (short)            | RED      | 300 mm             | 2 m cable    | NPN    | S100-PR-2-C00-NK  | 950811040 |
|                                      |          |                    |              | PNP    | S100-PR-2-C00-PK  | 950811050 |
|                                      |          |                    | M8 connector | NPN    | S100-PR-5-C00-NK  | 950811180 |
|                                      |          |                    |              | PNP    | S100-PR-5-C00-PK  | 950811190 |
| Diffuse proximity (long)             | RED      | 500 mm             | 2 m cable    | NPN    | S100-PR-2-C10-NK  | 950811060 |
|                                      |          |                    |              | PNP    | S100-PR-2-C10-PK  | 950811070 |
|                                      |          |                    | M8 connector | NPN    | S100-PR-5-C10-NK  | 950811200 |
|                                      |          |                    |              | PNP    | S100-PR-5-C10-PK  | 950811210 |
| Fixed focus                          | RED      | 70 mm              | 2 m cable    | NPN    | S100-PR-2-D00-NK  | 950811080 |
|                                      |          |                    |              | PNP    | S100-PR-2-D00-PK  | 950811090 |
|                                      |          |                    | M8 connector | NPN    | S100-PR-5-D00-NK  | 950811220 |
|                                      |          |                    |              | PNP    | S100-PR-5-D00-PK  | 950811230 |
| Background suppression (short range) | RED      | 30...100 mm        | 2 m cable    | NPN    | S100-PR-2-M00-NH  | 950811120 |
|                                      |          |                    |              | PNP    | S100-PR-2-M00-PH  | 950811130 |
|                                      |          |                    | M8 connector | NPN    | S100-PR-5-M00-NH  | 950811260 |
|                                      |          |                    |              | PNP    | S100-PR-5-M00-PH  | 950811270 |
| Background suppression (long range)  | IR       | 30...200 mm        | 2 m cable    | NPN    | S100-PR-2-M10-NH  | 950811420 |
|                                      |          |                    |              | PNP    | S100-PR-2-M10-PH  | 950811430 |
|                                      |          |                    | M8 connector | NPN    | S100-PR-5-M10-NH  | 950811400 |
|                                      |          |                    |              | PNP    | S100-PR-5-M10-PH  | 950811410 |

# ACCESSORIES

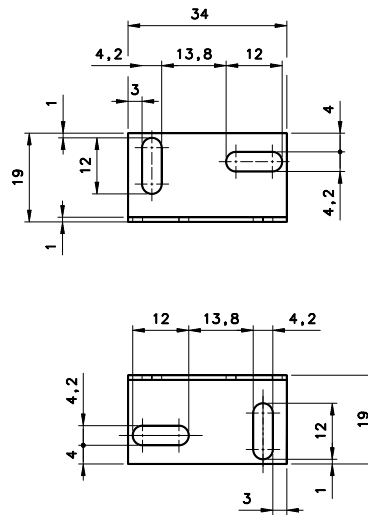
**ST-5039**



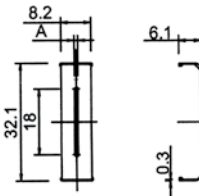
M18 ADAPTER NOSE



**ST-505**



SLIT



| TYPE             | MODEL        | DESCRIPTION               | Order No. |
|------------------|--------------|---------------------------|-----------|
| Mounting bracket | ST-505       | lateral mounting          | 95ACC2800 |
|                  | ST-5039      | L-shaped bracket          | 95ACC2270 |
| Slit             | S100-SLIT-05 | 0,5x19 mm SLIT            | 95ACC3450 |
|                  | S100-SLIT-1  | 1x19 mm SLIT              | 95ACC3460 |
|                  | S100-SLIT-2  | 2x19 mm SLIT              | 95ACC3470 |
| M18 adapter      | ST-S3Z-M18   | M18 THREADED ADAPTER NOSE | 95ACC7850 |

# CABLES

| TYPE                | DESCRIPTION          | LENGTH | MODEL         | ORDER No. |
|---------------------|----------------------|--------|---------------|-----------|
| Axial M8 Connector  | 4-pole, grey, P.V.C. | 3 m    | CS-B1-02-G-03 | 95A251420 |
|                     |                      | 5 m    | CS-B1-02-G-05 | 95A251430 |
|                     |                      | 7 m    | CS-B1-02-G-07 | 95A251440 |
|                     |                      | 10 m   | CS-B1-02-G-10 | 95A251480 |
|                     | 4-pole, P.U.R.       | 2 m    | CS-B1-02-R-02 | 95A251620 |
| Radial M8 Connector | 4-pole, grey, P.V.C. | 5 m    | CS-B1-02-R-05 | 95A251640 |
|                     |                      | 3 m    | CS-B2-02-G-03 | 95A251450 |
|                     |                      | 5 m    | CS-B2-02-G-05 | 95A251460 |
|                     |                      | 7 m    | CS-B2-02-G-07 | 95A251470 |
|                     | 4-pole, P.U.R.       | 10 m   | CS-B2-02-G-10 | 95A251530 |
|                     |                      | 2 m    | CS-B2-02-R-02 | 95A251630 |
|                     |                      | 5 m    | CS-B2-02-R-05 | 95A251650 |

## DATALOGIC PRODUCT OFFERING



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