Data sheet


# WTM12F-34161120A00ZDZZZZZZZZZ1

W12

PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.

Illustration may differ

## Ordering information

| Type | part no. |
|---|---|
| WTM12F-34161120A00ZDZZZZZZZZZ1 | 1152367 |

Other models and accessories ➜ www.sick.com/W12

## Detailed technical data

### Features

| | |
|---|---|
| **Functional principle** | Photoelectric proximity sensor |
| **Functional principle detail** | Background suppression, Foreground suppression, MultiMode, distance value |
| **MultiMode** | 1 Background suppression<br>2 Foreground suppression<br>3 Two Value Teach-in<br>4 Two independent switching points<br>5 Window Mode<br>6 ApplicationSelect<br>M manual / measurement |
| **Sensing range** | |
| Sensing range min. | 10 mm (mode 1, 3, 4, 5) |
| | 0 mm (mode 2) |
| | 10 mm (Mode 1, 3, 4, 5 combined with 6) |
| | 0 mm (Mode 2 and 6 combined) |
| Sensing range max. | 1,100 mm (mode 1, 3, 4, 5) |
| | 650 mm (mode 2) |
| | 1,400 mm (Mode 1, 3, 4, 5 combined with 6) |
| | 1,000 mm (Mode 2 and 6 combined) |

[1] 90% remission factor.
[2] Equivalent to 3 σ.
[3] See repeatability characteristic lines.
[4] See accuracy curve.

| | |
|---|---|
| Adjustable switching threshold for background suppression | 40 mm ... 1,100 mm (mode 1, 3, 4, 5) |
| | 40 mm ... 1,400 mm (Mode 1, 3, 4, 5 combined with 6) |
| Adjustable switching threshold for foreground suppression | 40 mm ... 650 mm (mode 2) |
| | 40 mm ... 1,000 mm (Mode 2 and 6 combined) |
| Reference object | Object with 90% remission factor (complies with standard white according to DIN 5033) |
| Minimum distance between set sensing range and background (black 6% / white 90%) | 9 mm, at a distance of 400 mm (mode 1, 3, 4, 5) |
| | 3 mm, at a distance of 400 mm (Mode 1, 3, 4, 5 combined with 6) |
| Minimum object height at set sensing range in front of black background (6% remission factor) | 9 mm, at a distance of 400 mm (mode 2) |
| | 3 mm, at a distance of 400 mm (Mode 2 and 6 combined) |
| Recommended sensing range for the best performance | 50 mm ... 550 mm |
| **Distance value** | |
| Measuring range | 40 mm ... 1,000 mm |
| Resolution | 1 mm |
| Repeatability | 0,2 mm ... 9 mm [1) 2) 3)] |
| Accuracy | Typ. 12 mm at a distance of 40 ... 600 mm [1) 4)] |
| Distance value output | Via IO-Link |
| Update rate of the distance value | 8 ms |
| **Emitted beam** | |
| Light source | PinPoint Pro LED |
| Type of light | Visible red light |
| Shape of light spot | Rectangular |
| Light spot size (distance) | 14 mm x 11 mm (400 mm) |
| Maximum dispersion of the emitted beam around the standardized transmission axis (squint angle) | < +/- 1.0° (at $T_U$ = +23 °C) |
| **Focus position** | 600 mm |
| **Key LED figures** | |
| Normative reference | EN 62471:2008-09 \| IEC 62471:2006, modified |
| LED risk group marking | Free group |
| Wave length | 635 nm |
| Average service life | 100,000 h at $T_a$ = +25 °C |
| **Smallest detectable object (MDO) typ.** | |
| | 0.3 mm, at a distance of 200 mm, mode 1, 3, 4, 5 |
| | 0.3 mm, at a distance of 200 mm, mode 2 |
| | 0.3 mm, at a distance of 200 mm, Mode 1, 3, 4, 5 combined with 6 |
| | 0.3 mm, at a distance of 200 mm, Mode 2 and 6 combined |

[1)] 90% remission factor.
[2)] Equivalent to 3 σ.
[3)] See repeatability characteristic lines.
[4)] See accuracy curve.

| | |
|---|---|
| | Object with 90% remission factor (complies with standard white according to DIN 5033) |
| **Adjustment** | |
| Teach-Turn adjustment | BluePilot<br>For adjusting the sensing range with mode selection |
| IO-Link | For configuring the sensor parameters and Smart Task functions |
| **Display** | |
| LED blue | BluePilot: Display of mode, display of output states $Q_{L1}$ (LED 3 permanently on) and $Q_{L2}$ (LED 5 permanently on) |
| LED green | Operating indicator<br>Static on: power on<br>Flashing: IO-Link mode |
| LED yellow | Status of received light beam<br>Static on: object present<br>Static off: object not present |
| **Special features** | MultiMode |

[1] 90% remission factor.
[2] Equivalent to 3 σ.
[3] See repeatability characteristic lines.
[4] See accuracy curve.

## Safety-related parameters

| | |
|---|---|
| **$MTTF_D$** | 1,208 years |
| **$DC_{avg}$** | 0 % |
| **$T_M$ (mission time)** | 20 years |

## Communication interface

| | |
|---|---|
| **IO-Link** | ✓ , IO-Link V1.1 |
| Data transmission rate | COM2 (38,4 kBaud) |
| Cycle time | 2.3 ms |
| Process data length | 16 Bit |
| Process data structure A | Bit 0 = switching signal $Q_{L1}$ |
| | Bit 1 = switching signal $Q_{L2}$ |
| | Bit 2 ... 15 = Current receiver level (live) |
| Process data structure B | Bit 0 ... 15 = Distance value 0.1 mm (live) |
| VendorID | 26 |
| DeviceID HEX | 0x8003A4 |
| DeviceID DEC | 8389540 |
| Compatible master port type | A |
| SIO mode support | Yes |

## Electronics

| | |
|---|---|
| **Supply voltage $U_B$** | 10 V DC ... 30 V DC [1] |
| **Ripple** | ≤ 5 V |
| **Usage category** | DC-12 (According to EN 60947-5-2)<br>DC-13 (According to EN 60947-5-2) |
| **Current consumption** | ≤ 40 mA, without load. At $U_B$ = 24 V |
| **Protection class** | III |
| **Digital output** | |
| Number | 2 (Complementary) |
| Type | Push-pull: PNP/NPN |
| Switching mode | Light/dark switching |
| Signal voltage PNP HIGH/LOW | Approx. $U_B$-2.5 V / 0 V |
| Signal voltage NPN HIGH/LOW | Approx. $U_B$ / < 2.5 V |
| Output current $I_{max.}$ | ≤ 100 mA |
| Circuit protection outputs | Reverse polarity protected |
| | Overcurrent protected |
| | Short-circuit protected |
| Response time | ≤ 330 µs [2] [3] |
| | ≤ 1,000 µs [2] [4] |
| | ≤ 15 ms [2] [5] |
| | ≤ 30 ms [2] [6] |
| Repeatability (response time) | 100 µs (mode 1, 2, 3) [2] |
| | 350 µs (mode 4, 5) [2] |
| | 5 ms (Mode 1, 2, 3 combined with 6) [2] |
| | 10 ms (Mode 4, 5 combined with 6) [2] |
| Switching frequency | 1,500 Hz (mode 1, 2, 3) [7] |
| | 500 Hz (mode 4, 5) [7] |
| | 30 Hz (Mode 1, 2, 3 combined with 6) [7] |
| | 15 Hz (Mode 4, 5 combined with 6) [7] |
| **Pin/Wire assignment** | |
| Function of pin 4/black (BK) | Digital output, light switching, object present → output QL1 HIGH (Mode 1, 3, 4, 5, 6) [8] |
| | Digital output, dark switching, object present → output $\bar{Q}$L1 HIGH (Mode 2) [8] |
| | IO-Link communication C |
| Function of pin 4/black (BK) – detail | The pin 4 function of the sensor can be configured |

[1] Limit values.
[2] Signal transit time with resistive load in switching mode.
[3] Mode 1, 2, 3.
[4] Mode 4, 5.
[5] Mode 1, 2, 3 combined with 6.
[6] Mode 4, 5 combined with 6.
[7] With light/dark ratio 1:1.
[8] This switching output must not be connected to another output.

| | |
|---|---|
| | Additional possible settings via IO-Link |
| Function of pin 2/white (WH) | Digital output, dark switching, object present → output $\bar{Q}$L1 LOW (Mode 1, 3, 5, 6) [8] |
| | Digital output, light switching, object present → output QL1 LOW (Mode 2) [8] |
| | Digital output, light switching, object present → output QL2 HIGH (Mode 4) [8] |
| Function of pin 2/white (WH) – detail | The pin 2 function of the sensor can be configured |
| | Additional possible settings via IO-Link |

[1] Limit values.
[2] Signal transit time with resistive load in switching mode.
[3] Mode 1, 2, 3.
[4] Mode 4, 5.
[5] Mode 1, 2, 3 combined with 6.
[6] Mode 4, 5 combined with 6.
[7] With light/dark ratio 1:1.
[8] This switching output must not be connected to another output.

## Mechanics

| | |
|---|---|
| **Housing** | Rectangular |
| **Dimensions (W x H x D)** | 15.6 mm x 49.5 mm x 43.1 mm |
| **Connection** | Cable with M12 male connector, 4-pin, 318 mm |
| **Connection detail** | |
| Deep-freeze property | Do not bend below 0 °C |
| Conductor size | 0.14 mm² |
| Cable diameter | Ø 3.4 mm |
| Length of cable (L) | 270 mm |
| Length of male connector | 48 mm |
| Bending radius | For flexible use > 12 x cable diameter |
| Bending cycles | 1,000,000 |
| **Material** | |
| Housing | Metal, zinc diecast |
| Front screen | Plastic, PMMA |
| Cable | Plastic, PVC |
| Male connector | Plastic, VISTAL® |
| **Weight** | Approx. 94 g |
| **Maximum tightening torque of the fixing screws** | 1.4 Nm |

## Ambient data

| | |
|---|---|
| **Enclosure rating** | IP66 (EN 60529)<br>IP67 (EN 60529)<br>IP69 (EN 60529) |
| **Ambient operating temperature** | –40 °C ... +60 °C |
| **Ambient temperature, storage** | –40 °C ... +75 °C |
| **Typ. Ambient light immunity** | Artificial light: ≤ 50,000 lx<br>Sunlight: ≤ 50,000 lx |
| **Shock resistance** | 50 g, 11 ms (25 positive and 25 negative shocks along X, Y, Z axes, 150 total shocks (EN60068-2-27)) |

| | |
|---|---|
| **Vibration resistance** | 10 Hz ... 2,000 Hz (Amplitude 0.5 mm / 10 g, 20 sweeps per axis, for X, Y, Z axes, 1 octave/min, (EN60068-2-6)) |
| **Air humidity** | 35 % ... 95 %, relative humidity (no condensation) |
| **Electromagnetic compatibility (EMC)** | EN 60947-5-2 |
| **Resistance to cleaning agent** | ECOLAB |
| **UL File No.** | NRKH.E181493 & NRKH7.E181493 |

## Smart Task

| | |
|---|---|
| **Smart Task name** | Base logics |
| **Logic function** | Direct<br>AND<br>OR |
| **Timer function** | Deactivated<br>Switch-on delay<br>Off delay<br>ON and OFF delay<br>Impulse (one shot) |
| **Inverter** | Yes |
| **Switching frequency** | SIO Logic: 1300 Hz (mode 1, 2, 3) [1]<br>SIO Logic: 450 Hz (mode 4, 5) [1]<br>SIO Logic: 30 Hz (Mode 1, 2, 3 combined with 6) [1]<br>SIO Logic: 15 Hz (Mode 4, 5 combined with 6) [1]<br>IOL: 1200 Hz (mode 1, 2, 3) [2]<br>IOL: 450 Hz (mode 4, 5) [2]<br>IOL: 30 Hz (Mode 1, 2, 3 combined with 6) [2]<br>IOL: 15 Hz (Mode 4, 5 combined with 6) [2] |
| **Response time** | SIO Logic: 390 µs (mode 1, 2, 3) [1]<br>SIO Logic: 1000 µs (mode 4, 5) [1]<br>SIO Logic: 15 ms (Mode 1, 2, 3 combined with 6) [1]<br>SIO Logic: 30 ms (Mode 4, 5 combined with 6) [1]<br>IOL: 420 µs (mode 1, 2, 3) [2]<br>IOL: 1000 µs (mode 4, 5) [2]<br>IOL: 15 ms (Mode 1, 2, 3 combined with 6) [2]<br>IOL: 30 ms (Mode 4, 5 combined with 6) [2] |
| **Repeatability** | SIO Logic: 140 µs (mode 1, 2, 3) [1]<br>SIO Logic: 400 µs (mode 4, 5) [1]<br>SIO Logic: 5 ms (Mode 1, 2, 3 combined with 6) [1]<br>SIO Logic: 10 ms (Mode 4, 5 combined with 6) [1]<br>IOL: 170 µs (mode 1, 2, 3) [2]<br>IOL: 450 µs (mode 4, 5) [2]<br>IOL: 5 ms (Mode 1, 2, 3 combined with 6) [2]<br>IOL: 10 ms (Mode 4, 5 combined with 6) [2] |
| **Switching signal** | |
| Switching signal $Q_{L1}$ | Switching output |
| Switching signal $\bar{Q}_{L1}$ | Switching output |

[1] Use of Smart Task functions without IO-Link communication (SIO mode).
[2] Use of Smart Task functions with IO-Link communication function.

## Diagnosis

| | |
|---|---|
| **Device temperature** | |
| Measuring range | Very cold, cold, moderate, warm, hot |

| | |
|---|---|
| **Device status** | Yes |
| **Detailed device status** | Yes |
| **Operating hour counter** | Yes |
| **Operating hours counter with reset function** | Yes |
| **Quality of teach** | Yes |
| **Quality of run** | Yes, Contamination display |

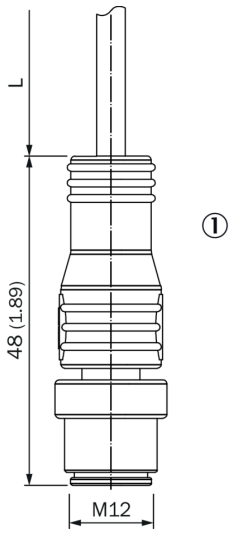
## Classifications

| | |
|---|---|
| **ECLASS 5.0** | 27270904 |
| **ECLASS 5.1.4** | 27270904 |
| **ECLASS 6.0** | 27270904 |
| **ECLASS 6.2** | 27270904 |
| **ECLASS 7.0** | 27270904 |
| **ECLASS 8.0** | 27270904 |
| **ECLASS 8.1** | 27270904 |
| **ECLASS 9.0** | 27270904 |
| **ECLASS 10.0** | 27270904 |
| **ECLASS 11.0** | 27270904 |
| **ECLASS 12.0** | 27270903 |
| **ETIM 5.0** | EC002719 |
| **ETIM 6.0** | EC002719 |
| **ETIM 7.0** | EC002719 |
| **ETIM 8.0** | EC002719 |
| **UNSPSC 16.0901** | 39121528 |

## Certificates

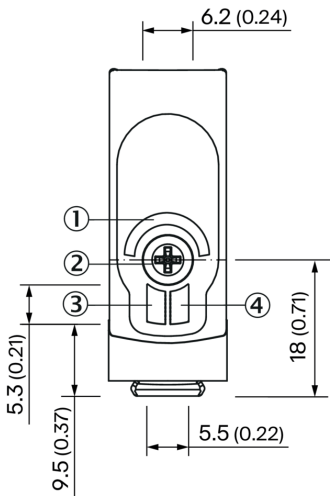
| | |
|---|---|
| **EU declaration of conformity** | ✓ |
| **UK declaration of conformity** | ✓ |
| **ACMA declaration of conformity** | ✓ |
| **Moroccan declaration of conformity** | ✓ |
| **China RoHS** | ✓ |
| **ECOLAB certificate** | ✓ |
| **cULus certificate** | ✓ |
| **IO-Link certificate** | ✓ |
| **Photobiological safety (IEC EN 62471)** | ✓ |
| **Information according to Art. 3 of Data Act (Regulation EU 2023/2854)** | ✓ |

## Dimensional drawing, connection



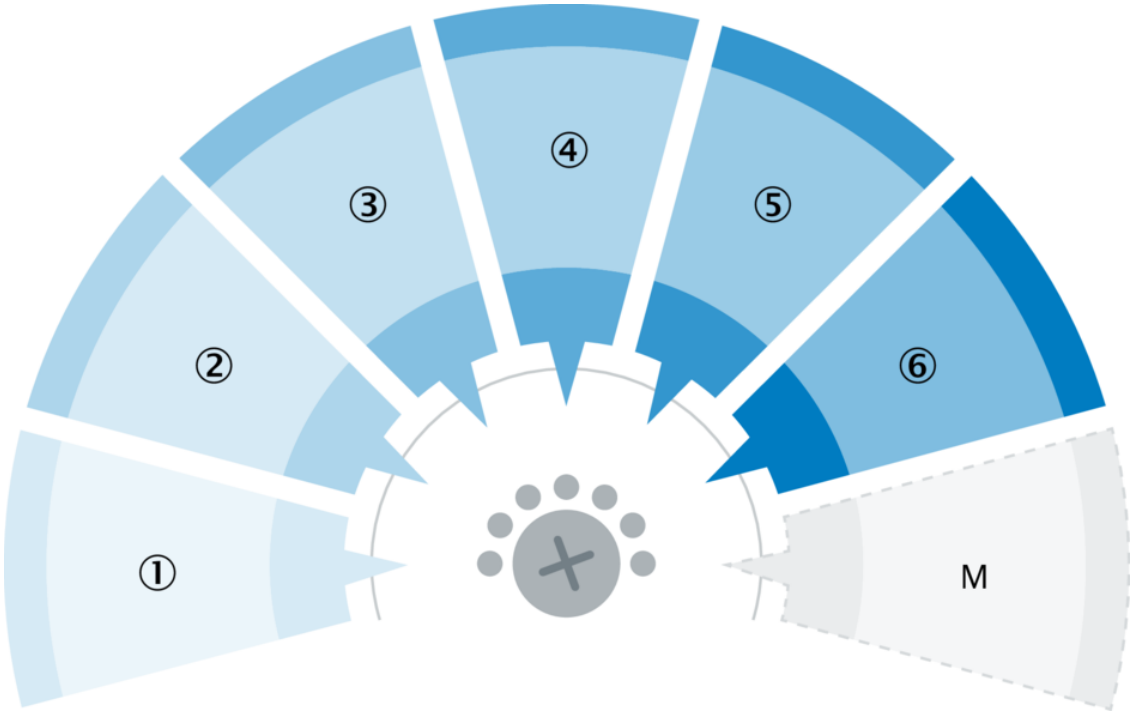

Dimensions in mm (inch)
For length of cable (L), see technical data
① Cable with M12 male connector

## display and adjustment elements



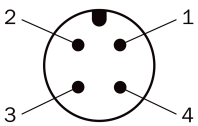

① LED blue
② Teach-Turn adjustment
③ LED green
④ LED yellow

## Display and setting detail

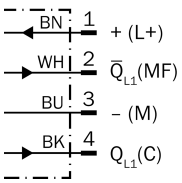



| MultiMode settings | |
|---|---|
| 1 | Background suppression |
| 2 | Foreground suppression |
| 3 | Two Value Teach-in |
| 4 | Two independent switching points |
| 5 | Window Mode |
| 6 | ApplicationSelect |
| M | Manual / measurement |

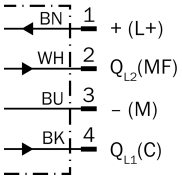
## Connection type M12 male connector, 4-pin



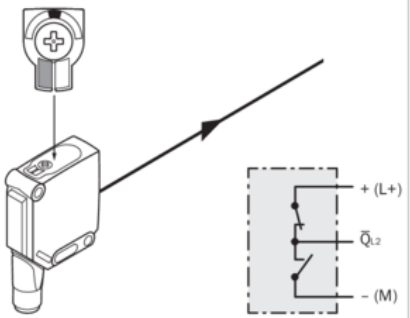
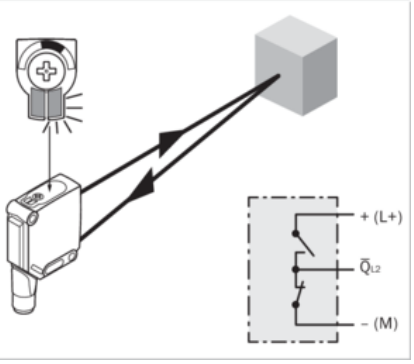

## Connection diagram Cd-598 (Mode 1, 2, 3, 5, 6)



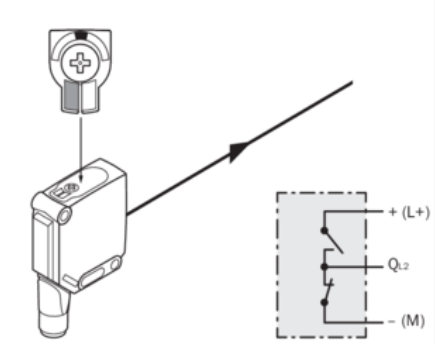
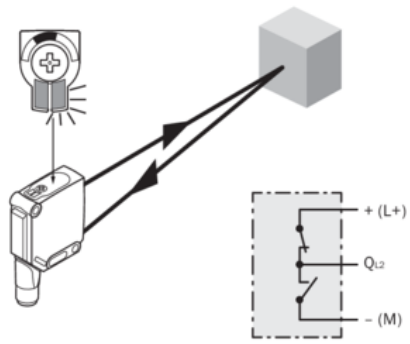
## Connection diagram Cd-597 (Mode 4)



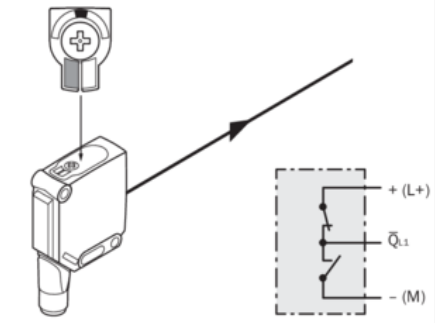
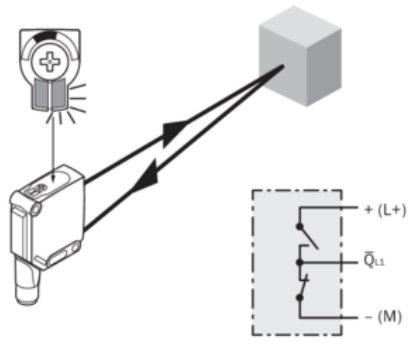

## Truth table Push-pull: PNP/NPN – dark switching $\bar{Q}$L2 (MultiMode 4)

| | Dark switching $\bar{Q}_{L2}$ (normally closed (upper switch), normally open (lower switch)) | |
|---|---|---|
| | Object not present ➜ Output HIGH | Object present ➜ Output LOW |
| Light receive | ⊗ | ✓ |
| Light receive indicator | ⊗ | ☀ |
| Load resistance to L+ | ⊗ | ⚠ |
| Load resistance to M | ⚠ | ⊗ |
| |  |  |

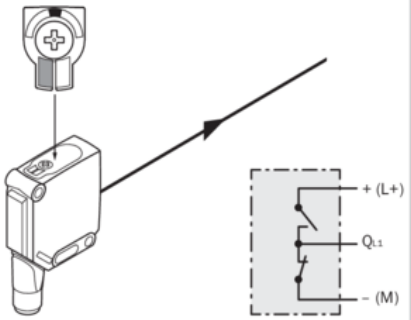
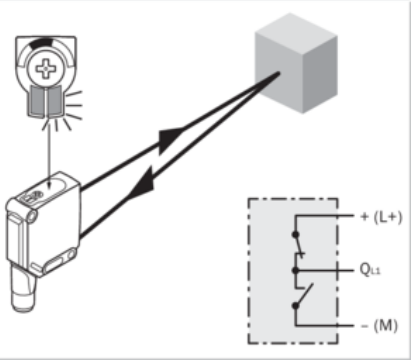
## Truth table Push-pull: PNP/NPN – light switching QL2 (MultiMode 4)

| | Light switching $Q_{L2}$ (normally open (upper switch), normally closed (lower switch)) | |
|---|---|---|
| | Object not present ➜ Output LOW | Object present ➜ Output HIGH |
| Light receive | ⊗ | ✓ |
| Light receive indicator | ⊗ | ☀ |
| Load resistance to L+ | ⚠ | ⊗ |
| Load resistance to M | ⊗ | ⚠ |
| |  |  |

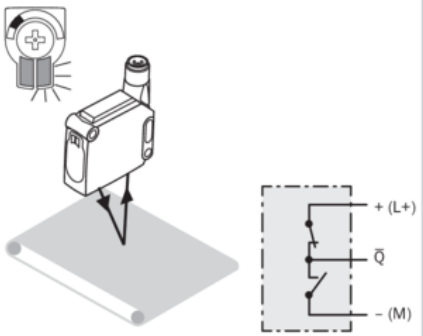
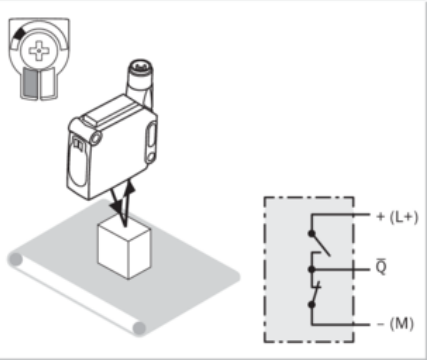
## Truth table Push-pull: PNP/NPN – dark switching $\bar{Q}$L1 (MultiMode 4)

| | Dark switching $\bar{Q}_{L1}$ (normally closed (upper switch), normally open (lower switch)) | |
|---|---|---|
| | Object not present ➜ Output HIGH | Object present ➜ Output LOW |
| Light receive | ⊗ | ✓ |
| Light receive indicator | ⊗ | ☀ |
| Load resistance to L+ | ⊗ | ⚠ |
| Load resistance to M | ⚠ | ⊗ |
| |  |  |

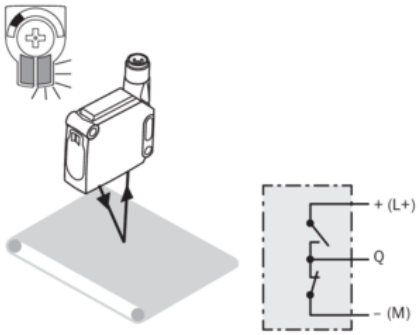
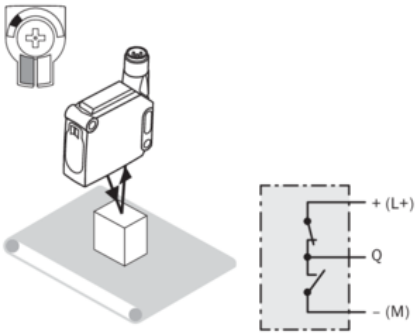
## Truth table Push-pull: PNP/NPN – light switching QL1 (MultiMode 4)

| | Light switching $Q_{L1}$ (normally open (upper switch), normally closed (lower switch)) | |
|---|---|---|
| | Object not present ➜ Output LOW | Object present ➜ Output HIGH |
| Light receive | ⊗ | ✓ |
| Light receive indicator | ⊗ | ☀ |
| Load resistance to L+ | ⚠ | ⊗ |
| Load resistance to M | ⊗ | ⚠ |
| |   |   |

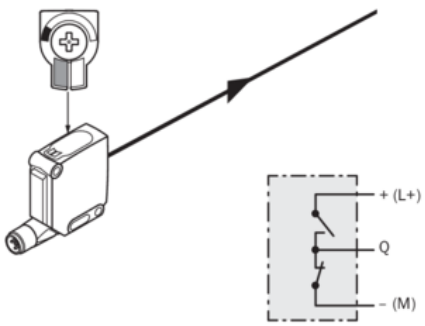
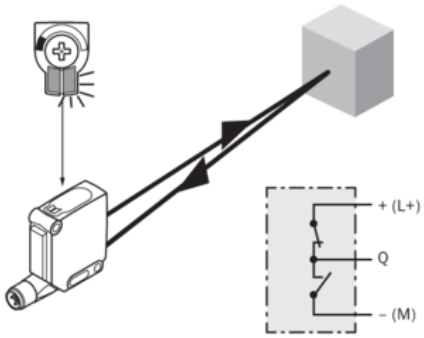
## Truth table Push-pull: PNP/NPN – dark switching $\bar{Q}$ (MultiMode 2)

| | Dark switching $\bar{Q}$ (normally closed (upper switch), normally open (lower switch)) | |
|---|---|---|
| | Object not present ➜ Output HIGH | Object present ➜ Output LOW |
| Light receive | ⊗ | ✓ |
| Light receive indicator | ⊗ | ☀ |
| Load resistance to L+ | ⊗ | ⚠ |
| Load resistance to M | ⚠ | ⊗ |
| |   |   |

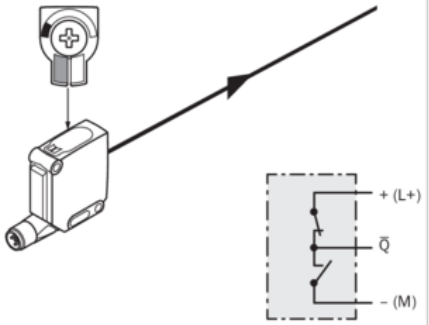
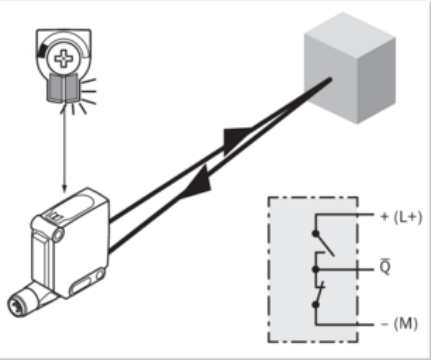
## Truth table Push-pull: PNP/NPN – light switching Q (MultiMode 2)

| | Light switching Q (normally open (upper switch), normally closed (lower switch)) | |
|---|---|---|
| | Object not present ➜ Output LOW | Object present ➜ Output HIGH |
| Light receive | ⊗ | ✓ |
| Light receive indicator | ⊗ | ☀ |
| Load resistance to L+ | ⚠ | ⊗ |
| Load resistance to M | ⊗ | ⚠ |
| |  |  |

## Truth table Push-pull: PNP/NPN – light switching Q (MultiMode 1, 3, 5, 6)

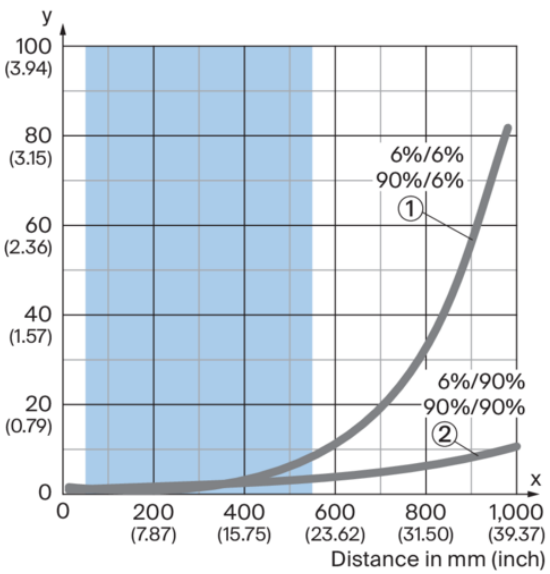
| | Light switching Q (normally open (upper switch), normally closed (lower switch)) | |
|---|---|---|
| | Object not present ➜ Output LOW | Object present ➜ Output HIGH |
| Light receive | ⊗ | ✓ |
| Light receive indicator | ⊗ | ☀ |
| Load resistance to L+ | ⚠ | ⊗ |
| Load resistance to M | ⊗ | ⚠ |
| |  |  |

## Truth table Push-pull: PNP/NPN – dark switching $\bar{Q}$ (MultiMode 1, 3, 5, 6)

| | Dark switching $\bar{Q}$ (normally closed (upper switch), normally open (lower switch)) | |
|---|---|---|
| | Object not present ➜ Output HIGH | Object present ➜ Output LOW |
| Light receive | ⊗ | ✓ |
| Light receive indicator | ⊗ | ☀ |
| Load resistance to L+ | ⊗ | ⚠ |
| Load resistance to M | ⚠ | ⊗ |
| |  |  |

## Characteristic curve Mode 2 and 6 combined (HighPrecision/LongRange mode)

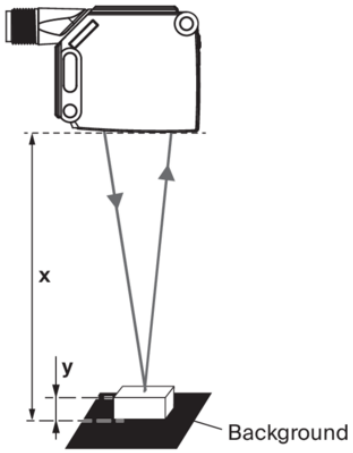
Minimum object height in mm (inch)




Recommended sensing range for the best performance

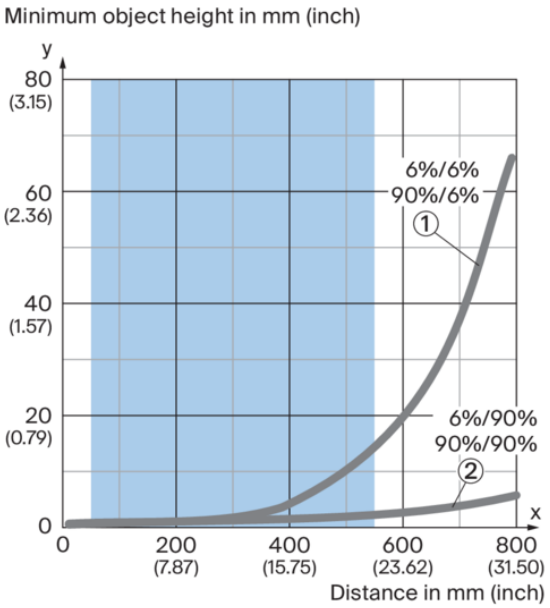
① Black background, 6% remission factor
② White background, 90% remission factor

Example:
Reliable detection of the object



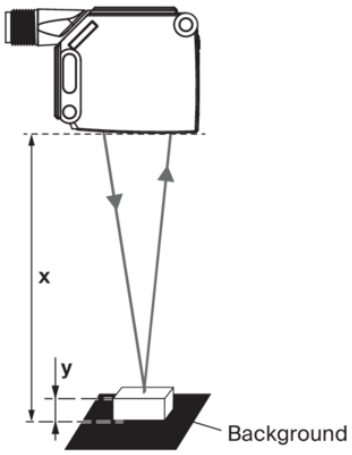

Black background (6 % remission factor)
Distance of sensor to background x = 400 mm
Required minimum object height y = 3 mm
For all objects regardless of their colors

## Characteristic curve Mode 2 and 6 combined (Balanced mode)



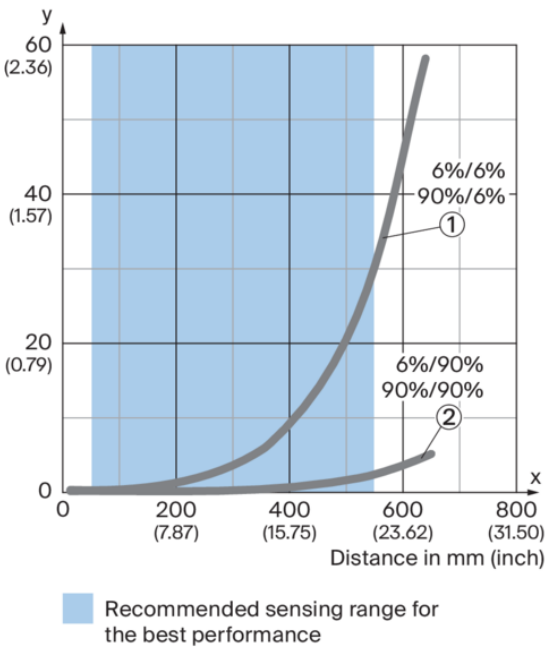

① Black background, 6% remission factor
② White background, 90% remission factor

Example:
Reliable detection of the object



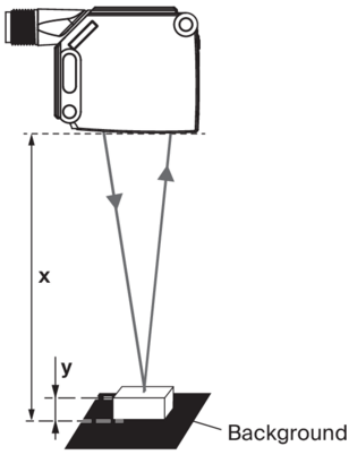

Black background (6 % remission factor)
Distance of sensor to background x = 400 mm
Required minimum object height y = 4 mm
For all objects regardless of their colors

## Characteristic curve Mode 2




① Black background, 6% remission factor
② White background, 90% remission factor

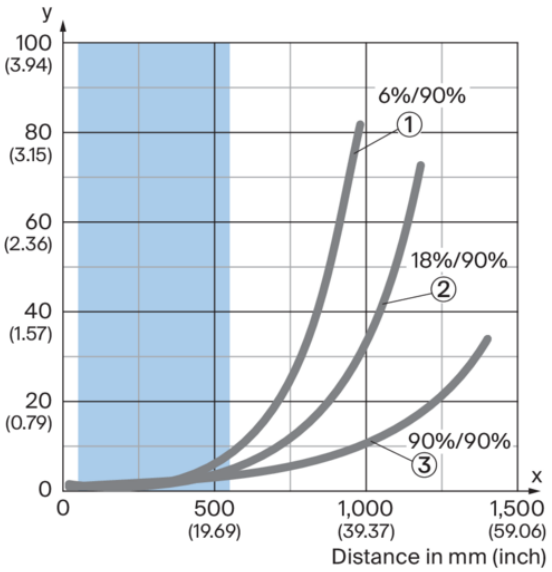
Example:
Reliable detection of the object




Black background (6 % remission factor)
Distance of sensor to background x = 400 mm
Required minimum object height y = 9 mm
For all objects regardless of their colors

## Characteristic curve Mode 1, 3, 4, 5 combined with 6 (HighPrecision/LongRange mode)

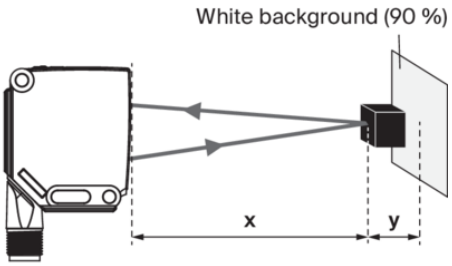
Minimum distance in mm (y) between the set sensing range and white background (90 % remission)




Recommended sensing range for the best performance

① Sensing range on black, 6% remission factor
② Sensing range on gray, 18% remission factor
③ Sensing range on white, 90% remission factor

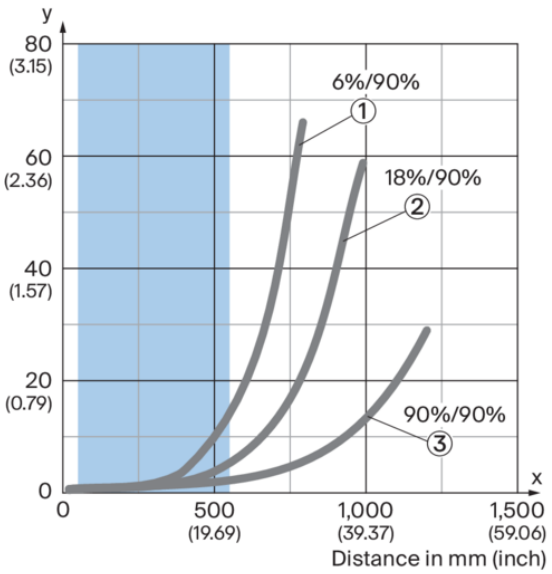
Example:
Safe suppression of the background




Black object (6 % remission)
Set sensing range x = 400 mm
Needed minimum distance to white background y = 3 mm

## Characteristic curve Mode 1, 3, 4, 5 combined with 6 (Balanced mode)

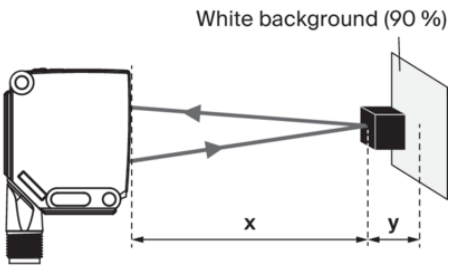
Minimum distance in mm (y) between the set sensing range and white background (90 % remission)




Recommended sensing range for the best performance

① Sensing range on black, 6% remission factor
② Sensing range on gray, 18% remission factor

Example:
Safe suppression of the background

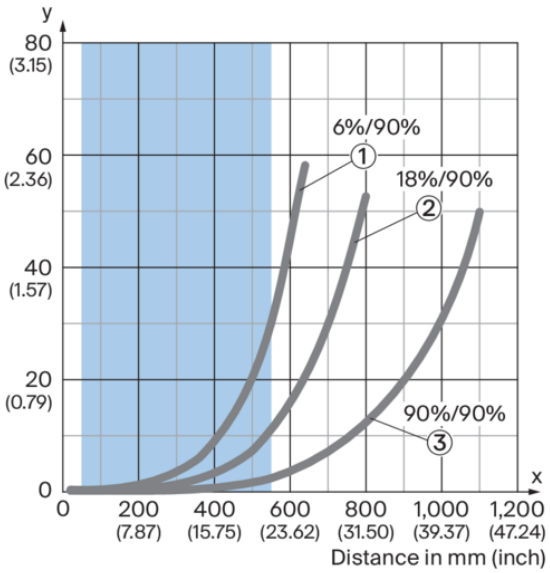



Black object (6 % remission)
Set sensing range x = 400 mm
Needed minimum distance to white background y = 4 mm

③ Sensing range on white, 90% remission factor

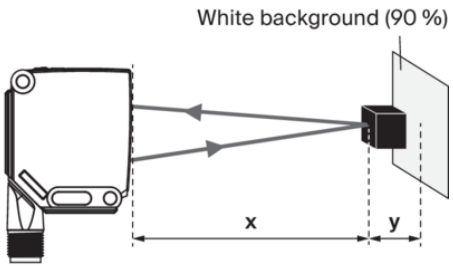
## Characteristic curve Mode 1, 3, 4, 5

Minimum distance in mm (y) between the set sensing range and white background (90 % remission)




Recommended sensing range for the best performance

Example:
Safe suppression of the background

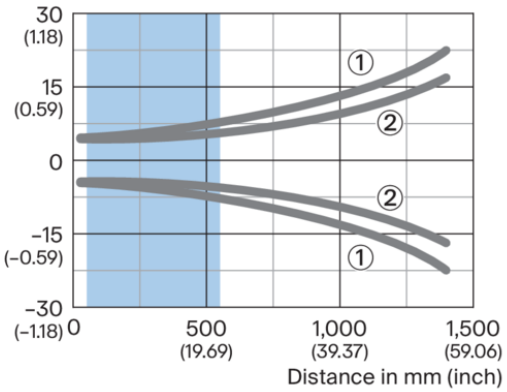



Black object (6 % remission)
Set sensing range x = 400 mm
Needed minimum distance to white background y = 9 mm

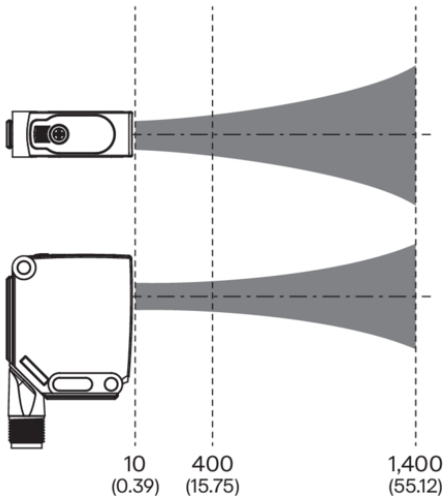
① Sensing range on black, 6% remission factor
② Sensing range on gray, 18% remission factor
③ Sensing range on white, 90% remission factor

## Light spot size

Dimensions in mm (inch)

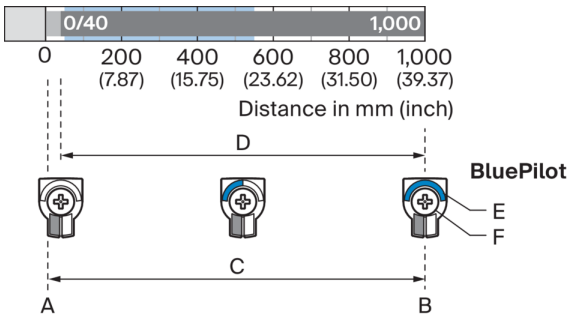



Recommended sensing range for the best performance




① Light spot horizontal
② Light spot vertical

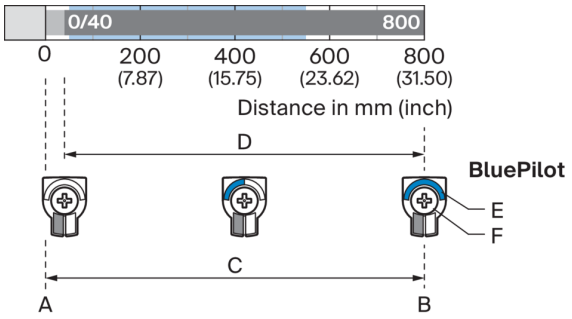
## Sensing range diagram Mode 2 and 6 combined (HighPrecision/LongRange mode)




Recommended sensing range for the best performance

| | |
|---|---|
| A | Sensing range min. in mm |
| B | Sensing range max. in mm |
| C | Field of view |
| D | Adjustable switching threshold for foreground suppression |
| E | Sensing range indicator |
| F | Teach-Turn adjustment |

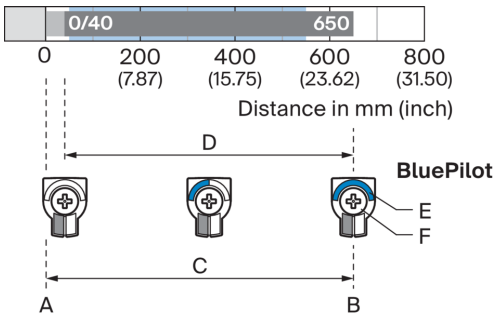
## Sensing range diagram Mode 2 and 6 combined (Balanced mode)




Recommended sensing range for the best performance

| | |
|---|---|
| A | Sensing range min. in mm |
| B | Sensing range max. in mm |
| C | Field of view |
| D | Adjustable switching threshold for foreground suppression |
| E | Sensing range indicator |
| F | Teach-Turn adjustment |

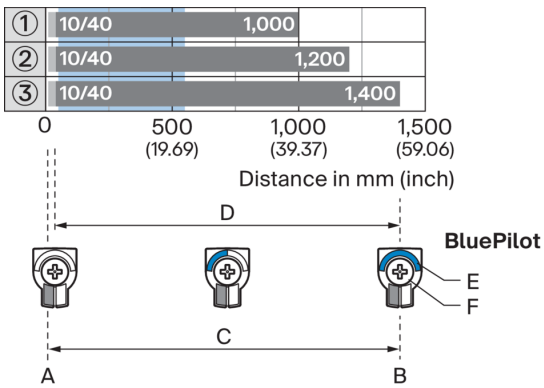
## Sensing range diagram Mode 2




Recommended sensing range for the best performance

| | |
|---|---|
| A | Sensing range min. in mm |
| B | Sensing range max. in mm |
| C | Field of view |
| D | Adjustable switching threshold for foreground suppression |
| E | Sensing range indicator |
| F | Teach-Turn adjustment |

## Sensing range diagram Mode 1, 3, 4, 5 combined with 6 (HighPrecision/LongRange mode)

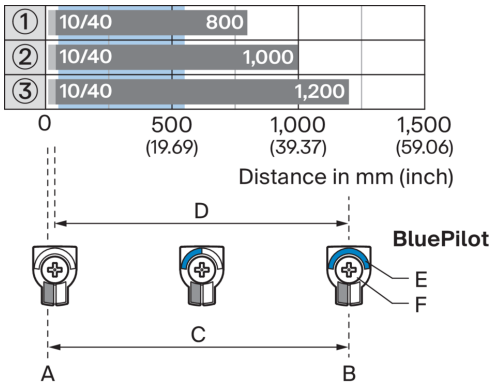



Recommended sensing range for the best performance

| | |
|---|---|
| 1 | Black object, 6% remission factor |
| 2 | Gray object, 18% remission factor |
| 3 | White object, 90% remission factor |
| A | Sensing range min. in mm |
| B | Sensing range max. in mm |
| C | Field of view |
| D | Adjustable switching threshold for background suppression |
| E | Sensing range indicator |

| | |
|---|---|
| F | Teach-Turn adjustment |

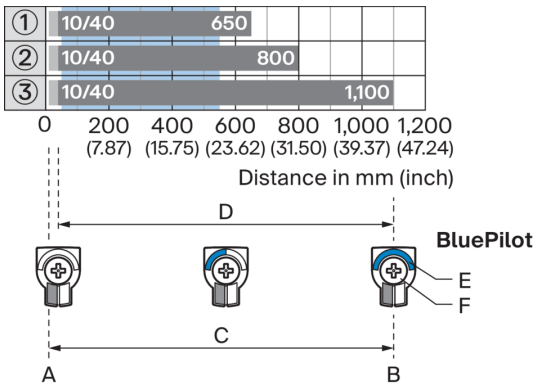
## Sensing range diagram Mode 1, 3, 4, 5 combined with 6 (Balanced mode)




Recommended sensing range for the best performance

| | |
|---|---|
| 1 | Black object, 6% remission factor |
| 2 | Gray object, 18% remission factor |
| 3 | White object, 90% remission factor |
| A | Sensing range min. in mm |
| B | Sensing range max. in mm |
| C | Field of view |
| D | Adjustable switching threshold for background suppression |
| E | Sensing range indicator |
| F | Teach-Turn adjustment |

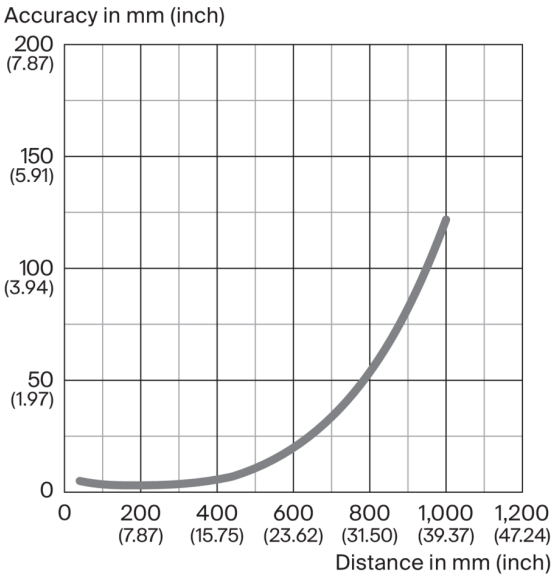
## Sensing range diagram Mode 1, 3, 4, 5



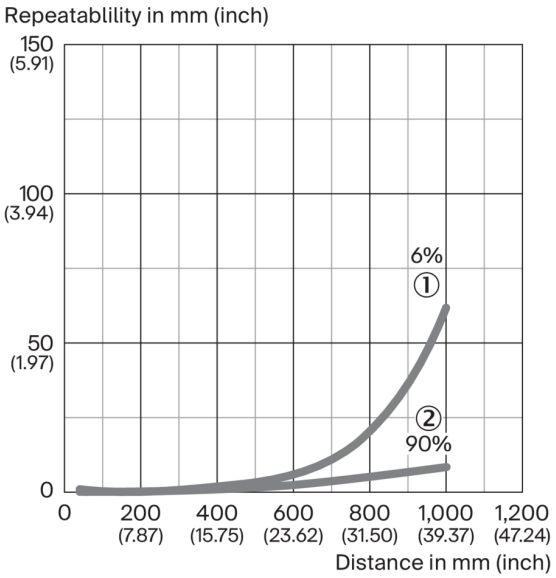

Recommended sensing range for the best performance

| | |
|---|---|
| 1 | Black object, 6% remission factor |
| 2 | Gray object, 18% remission factor |
| 3 | White object, 90% remission factor |
| A | Sensing range min. in mm |
| B | Sensing range max. in mm |
| C | Field of view |
| D | Adjustable switching threshold for background suppression |
| E | Sensing range indicator |
| F | Teach-Turn adjustment |

## accuracy

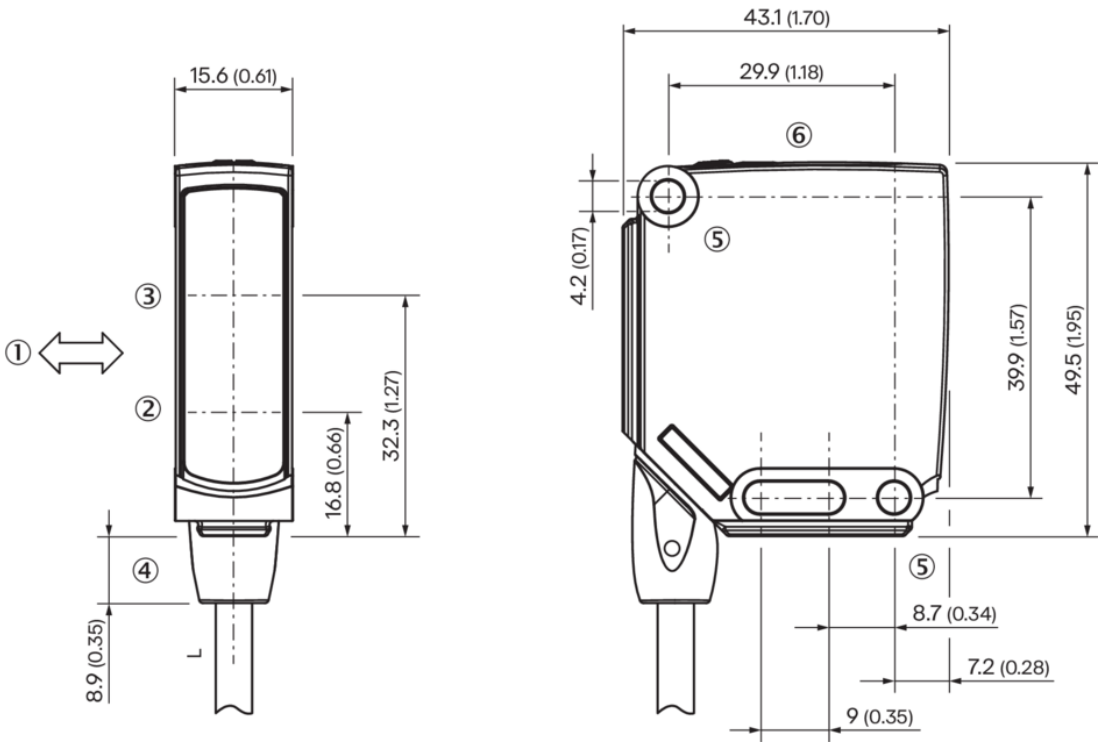


## Repeatability




① 6 % remission, on black
② 90 % remission, on white

## Dimensional drawing, sensor




Dimensions in mm (inch)
① Standard direction of the material being detected
② Center of optical axis, sender
③ Center of optical axis, receiver
④ Connection
⑤ Mounting hole, Ø 4.2 mm

⑥ display and adjustment elements

# SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

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