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# 5–OsiSense® XU Photoelectric sensors



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# OsiSense® XU
# Photoelectric sensors
## Single mode or multimode function

| Format | | | Design ø18 | | | |
|---|---|---|---|---|---|---|
| | | | Metal | | Plastic | |
| | | |  | |  | |
| **Single mode function** | | | **Type** | **Sensing distance, m (ft)** | **Type** | **Sensing distance, m (ft)** |
| **Sensing distance, m (ft) related to system** | Diffuse with adjustable sensitivity | | XUB5B | 0.6 (1.97) | XUB5A | 0.6 (1.97) |
| | Diffuse | | XUB4B | 0.1 (0.33) | XUB4A | 0.1 (0.33) |
| | Polarized retroreflective | | XUB9B | 2 (6.56) | XUB9A | 2 (6.56) |
| | Retroreflective | | XUB1B | 4 (13.12) | XUB1A | 4 (13.12) |
| | Thru-beam | | XUB2B | 15 (49.21) | XUB2A | 15 (49.21) |
| **Catalog Number** | | | **XUB●B** *(1)* | | **XUB●A** *(1)* | |
| **Pages** | | | 32 | | 30 | |
| **Multimode function** | | | **Type** | **Sensing distance , m (ft)** | **Type** | **Sensing distance, m (ft)** |
| **Sensing distance, m (ft) related to system** | Diffuse with background suppression | | XUB0B | 0.12 (0.39) | XUB0A | 0.12 (0.39) |
| | Diffuse | | | 0.30 (0.98) | | 0.30 (0.98) |
| | Polarized retroreflective | | | 2 (6.56) | | 2 (6.56) |
| | Thru-beam | | | 15 (49.21) | | 15 (49.21) |
| **Catalog Number** | | | **XUB0B** *(1)* | | **XUB0A** *(1)* | |
| **Pages** | | | 28 | | 28 | |
| **High performance diffuse with adjustable background suppression** | | | **Type** | **Sensing distance, m (ft)** | **Type** | **Sensing distance, m (ft)** |
| | | | – | | – | |
| **Catalog Number** | | | – | | – | |
| **Pages** | | | – | | – | |
| **Specifications** | | | | | | |
| **Dimensions (w x h x d) in mm** | | | Ø 18, threaded M18 x 1.<br>XUB●A/XUB●B: length 46 (62 for XUB5 and connector version)<br>XUB0A/XUB0B: length 62 (pre-cabled version) or length 78 (connector version) | | | |
| **Case** | Materials | Plastic, PBT | – | | ● | |
| | | Nickel plated brass | ● | | – | |
| | | Stainless steel | ● (XUB0S: see page 38) | | – | |
| **Degree of protection** | | IEC 60529<br>DIN 40050 | IP 65, IP 67 cable versions<br>IP 69K connector versions | | | |
| **Supply** | ⎓ 3-wire (PNP/NPN) | | ● | | ● | |
| | ∿ 5-wire, relay output | | (2-wire XU●M18, see page 50) | | – | |
| **Function** | NO | | ● | | ● | |
| | NC | | ● | | ● | |
| | NO/NC | | – | | – | |
| | NO +NC | | – | | – | |
| **Connection** | Pre-cabled (L = 2 m) *(2)* | | ● | | ● | |
| | Connector | M8 (4-pin) ⎓ 3-wire | – | | – | |
| | | M12 | ● | | ● | |
| | Screw terminals | | – | | – | |
| | Remote connector | | M8 and M12 remote connectors available: consult the Sensor Competency Center. | | | |

*(1) Sensors also available with line of sight 90° to case axis.*
*(2) Cable lengths of 5 and 10 m also available, depending on model.*

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# OsiSense® XU
# Photoelectric sensors
Single mode or multimode function

| | *Miniature design* | *Compact design, 50 x 50* | *Compact design, 92 x 71* |
|---|---|---|---|
| | **Plastic** | **Plastic** | **Plastic** |
| |  |  |  |
| | **Type** / **Sensing distance, m (ft)** | **Type** / **Sensing distance, m (ft)** | **Type** / **Sensing distance, m (ft)** |
| | XUM5A / 1 (with adjustable sensitivity) | XUK5A / 1 (3.28) (with adjustable sensitivity) | XUX5A / 2 (6.56) (with adjustable sensitivity) |
| | – | – | – |
| | XUM9A / 5 (with adjustable sensitivity) | XUK9A / 5 (16.40) | XUX9A / 11 (36.09) (with adjustable sensitivity) |
| | – | XUK1A / 7 (22.97) | XUX1A / 14 (45.93) (with adjustable sensitivity) |
| | XUM2A / 15 (with adjustable sensitivity) | XUK2A / 30 (98.42) | XUX2A / 40 (131.23) (with adjustable sensitivity) |
| | **XUM●A** | **XUK●A** | **XUX●A** |
| | 56 | 68 | 88 |
| | **Type** / **Sensing distance, m (ft)** | **Type** / **Sensing distance, m (ft)** | **Type** / **Sensing distance, m (ft)** |
| | XUM0A / 0.10 (0.33) | XUK0A / 0.28 (0.92) | XUX0A / 1.3 (4.27) |
| | 0.4 (1.31) | 0.8 (2.62) | 2 (6.56) |
| | 3 (9.84) | 4 (13.12) | 11 (36.09) |
| | 10 (32.81) | 30 (98.42) | 40 (131.23) |
| | **XUM0A** | **XUK0A** | **XUX0A** |
| | 56 | 66 | 86 |
| | **Type** / **Sensing distance, m (ft)** | **Type** / **Sensing distance, m (ft)** | **Type** / **Sensing distance, m (ft)** |
| | – | XUK8 / 1 (3.28) | XUX8 / 2 (6.56) |
| | – | **XUK8** | **XUX8** |
| | – | 70 | 90 |
| | XUM● A: 11 x 34 x 20 (pre-cabled) or 11 x 43 x 20 (M8)<br>XUM0A: 12 x 34 x 20 (pre-cabled) or 12 x 45 x 20 (M8) | 18 x 50 x 50 | 31 x 92 x 77 |
| | ● | ● | ● |
| | – | – | – |
| | – | – | – |
| | IP 65, IP 67 | IP 65 | IP 65, IP 67 |
| | ● | ● | ● |
| | – | ● | ● |
| | – | ● | ● |
| | – | ● | ● |
| | ● configurable using switch and by programming (XUM0A) | ● by programming (XUK0A and XUK8) | ● by programming (XUX0A and XUX8) |
| | – | ● relay output | ● relay output |
| | ● | ● | – |
| | ● | – | – |
| | – | ● | ● |
| | – | – | ● |

M8 and M12 remote connectors available: consult the Sensor Competency Center.

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# OsiSense® XU
# Photoelectric sensors
## Application
## Fork and frame form

| Recommended applications | | Detection of objects on small conveyors | Detection of labels on strip. Detection of sheet feed on printing machine | Detection on vibrating rail. Detection of transparent objects |
|---|---|---|---|---|
| | |  |  |  |
| **Format** | | Optical fork | Optical fork | Laser optical fork |
| **Dimensions (w x h x d) in mm** | | Passageway: 30 to 180<br>Depth: 30, 60, 95 | Passageway: 2 to 120<br>Depth: 42, 59, 95 | |
| **Case** | | Metal | Metal | Metal |
| **Sensing distance, mm (in.) related to system** | Diffuse with background suppression | – | – | – |
| | Diffuse | – | – | – |
| | Polarized retroreflective | – | – | – |
| | Retroreflective | – | – | – |
| | Thru-beam | 2–180 (0.08–7.09)*(2)* | 2–120 (0.08–4.72) *(1) (2)* | 2–120 (0.08–4.72) *(1) (2)* |
| **Degree of protection** | | IP 65, IP 67 | IP 65 | IP 65 |
| **Supply** | ⎓ | ● | ● | ● |
| | ~ | – | – | – |
| | ≂ | – | – | – |
| **Output** | | PNP/NPN<br>NO/NC | PNP/NPN *(3)*<br>NO/NC *(4)* | PNP/NPN *(3)*<br>NO/NC *(4)* |
| **Connection** | Pre-cabled | ● | – | – |
| | Connector | ● | ● | ● |
| | Screw terminals | – | – | – |
| **Catalog Number** | | **XUVR●<br>XUVA●** | **XUYFNEP●<br>XUYFANEP●** | **XUYFLNEP●<br>XUYFALNEP●** |
| **Pages** | | 135 | 137 | 139 |

*(1) With or without teach mode, depending on model*
*(2) Depending on model*
*(3) Depending on wiring*
*(4) By programming*

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# OsiSense® XU Photoelectric sensors

## Application

Fork and frame form

| | Detection of opaque labels | Detection of opaque labels, of different colors | Detection of transparent labels | Detection of flags in lifts and transtockers. Integrated amplifier | Material handling: detection and counting of objects being fed to or exiting a machine |
|---|---|---|---|---|---|
| |  |  |  |  |  |
| | Optical fork | Optical fork | Ultrasonic fork | Optical fork | Frame design |
| | 12 x 37.5 x 80 | 20 x 90 x 26 | 16 x 47.3 x 90.5 | 14 x 58 x 68 | 15 x 50 x 108<br>15 x 86 x 131<br>25 x 230 x 205/265/335 |
| | Metal | Metal | Metal | Plastic | Metal |
| | – | – | – | – | – |
| | – | – | – | – | – |
| | – | – | – | – | – |
| | – | – | – | – | – |
| | 3 or 5 (0.12 or 0.20) *(2)* | 2 (0.08) | 3 (0.12) | 3 (0.12) | 3, 6, 12,18, 25<br>(0.12, 0.24, 0.47, 0.71, 0.98)<br>*(2)* |
| | IP 65 | IP 65 | IP 65 | IP 54 | IP 65 |
| | ● | ● | ● | ● | ● |
| | – | – | – | – | – |
| | – | – | – | – | – |
| | PNP and NPN<br>NO/NC *(4)* | PNP and NPN<br>NO/NC *(4)* | PNP and NPN<br>NO/NC *(4)* | Solid-state (PNP or NPN<br>NO | PNP and NPN<br>NO/NC *(3)* |
| | – | – | – | ● | – |
| | ● | ● | ● | – | ● |
| | – | – | – | – | – |
| | **XUYFA98●** | **XUVK** | **XUVU06** | **XUVH**<br>**XUVJ** | **XUVF** |
| | 141 | 143 | 145 | 147 | 149 |

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# OsiSense® XU
# Photoelectric sensors
## Application

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| Recommended applications | Packaging | | | | |
|---|---|---|---|---|---|
| | **Color mark readers**<br>Detection of reference marks, contrasting colors and markings on packaging, printing, labelling machines, etc. | **Color mark readers**<br>Detection of reference marks on packaging paper, tubes | **Color mark readers**<br>Detection of reference marks, contrasting colors and markings on packaging, printing, labelling machines, etc. | **Luminescence sensors**<br>Detection of invisible reference marks, markings, adhesives, varnishes, etc. Sensitive to the bluing agents generally present in inks, adhesives, varnishes, etc. | **Illumination sensors**<br>Verifying operation of indicator lights |
| |  |  |  |  |  |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Format** | | Compact design | Fiber design | Compact design | Design ø18 | Fiber design |
| **Dimensions (w x h x d) in mm** | | 50 x 50 x 15 | 13 x 72 x 30 | 31 x 81 x 58 | Ø 18, threaded, M18 x 1<br>L: 82 | 13 x 76.7 x 30 |
| **Case** | | Plastic | Plastic | Metal | | Plastic |
| **Sensing distance, m (ft) related to system** | Diffuse with background suppression | – | – | – | – | Sensing distance depending on fiber used |
| | Diffuse | 0.019 (0.06) | ● | 0.009 (0.03) | 0.02 (0.07) | |
| | Polarized retroreflective | – | – | – | – | |
| | Retroreflective | – | – | – | – | |
| | Thru-beam | – | – | – | – | |
| **Degree of protection** | IEC 60529<br>DIN 40050 | IP 65 | IP 65 | IP 67 | IP 67 | IP 65 |
| **Supply** | ⎓ | ● | ● | ● | ● | ● |
| | ∼ | – | – | – | – | – |
| | ≂ | – | – | – | – | – |
| **Output** | | Solid-state (PNP or NPN) | | | Solid-state (PNP) | PNP/NPN NO/NC programmable |
| **Connection** | Pre-cabled | – | – | – | – | – |
| | Connector | ● | ● | ● | ● | ● |
| | Screw terminals | – | – | – | – | – |
| **Catalog Number** | | **XUKR** | **XUYDCF ●●966S** | **XURK** | **XU5M** | **XUYAFL ●●966S** |
| **Pages** | | 74 | 114 | 78 | 34 | 112 |

# OsiSense® XU Photoelectric sensors
## Application

| | Packaging | | | | | Food and beverage processing | |
|---|---|---|---|---|---|---|---|
| | **Detection of any transparent object**<br>Bottle, flask, containers, film, etc. | | **For detection of colors, sorting**<br>Recognizes colors for sorting or checking parts | | **Detection of water and aqueous liquids**<br>Level in opaque flasks etc. | **STAINLESS STEEL cylindrical sensor (grade 304 CU)**<br>For use in vicinity of food or beverage processing machines | |
| |  |  |  |  |  |  | |
| | Design ø18 | Compact design, 50 x 50 | Compact design | Compact design or fiber design | Compact design | Design ø18 | Design ø18 |
| | Ø 18, threaded, M18 x 1<br>L: 64, 78 or 92 | 18 x 50 x 50 | 50 x 50 x 25 | 30 x 80 x 57<br>25 x 92 x 54 | 13 x 47 x 23 | Ø 18, threaded, M18 x 1<br>L: 64–92 | Ø 18, threaded, M18 x 1<br>L: 62–88 |
| | Plastic or stainless steel *(2)* | Plastic | Plastic | Metal | Plastic | Stainless steel | Stainless steel |
| | – | – | – | – | – | 0.12 (0.39) | – |
| | – | – | 0.02 (0.07) | 0.040–0.060 (0.13–0.20)<br>0.04–0.25 (0.13–0.82) *(1)* | – | 0.3 (0.98) | 0.10 (0.33) |
| | 0–10.4 (0–34.12) (with reflector) | – | – | – | – | 2 (6.56) | 2 (6.56) |
| | – | 1.5 (4.92) | – | | – | – | 4 (13.12) |
| | – | – | – | – | 50 (164.04) | 15 (49.21) | 15 (49.21) |
| | IP 65, IP 67 cable IP 69K connector | IP 65 | IP 65 | IP 65, IP 67 *(2)* | IP 65 | IP 69K | IP 67 |
| | ● | ● | ● | ● | ● | ● | ● |
| | – | – | – | – | – | – | – |
| | – | – | – | – | – | – | – |
| | Solid-state (PNP or NPN) | | | | Solid-state (PNP or NPN) | Solid-state (PNP and NPN) | Solid-state (PNP and NPN) |
| | ● | ● | – | ● | ● | ● | ● |
| | ● | ● | ● | – | – | ● | ● |
| | – | – | – | – | – | – | – |
| | **XUBT** | **XUKT** | **XUKC** | **XURC** | **XUMW** | **XUB0S●** | **XU●N18** |
| | 36 | 72 | 76 | 80 | 108 | 38 | 40 |

*(1) Depending on fibers used*
*(2) Depending on model*

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# OsiSense® XU
# Photoelectric sensors
## Application

| Recommended applications | | Material Handling | | | | |
|---|---|---|---|---|---|---|
| | | **Laser** | **Diffuse with analog output**<br>Measurement, servo control, position control, eccentricity monitoring, concentricity monitoring, etc | **Thru-beam with high excess gain**<br>Detection of objects in difficult environments (smoke, dust, mist, etc.). Measuring opacity | **Diffuse with background suppression, laser transmission**<br>High precision, detection of any dark or shiny object, including small sized |
| | |  |  |  |  |
| **Format** | | Design ø18 | Compact design | Design ø18 | Design ø18 | Compact design |
| **Dimensions (w x h x d) in mm** | | Ø 18, threaded M18 x 1 | 27 x 85 x 61 | Ø 18, threaded M18 x 1<br>L: 82 | Ø 18, threaded M18 x 1<br>L: 82 | 18 x 60 x 60 |
| **Case** | | Plastic or brass *(2)* | Plastic | Metal | Metal | Plastic |
| **Sensing distance, m (ft) related to system** | Diffuse with background suppression | – | – | – | – | Adjustable from 50 to 300 mm (1.97 to 11.81 in.) |
| | Diffuse | – | 0.20–0.80 (0.66–2.62) | 0.05–0.4 (0.16–1.31) | – | – |
| | Polarized retroreflective | – | – | – | – | – |
| | Retroreflective | – | – | – | – | – |
| | Thru-beam | 0–100 (0–3.94) with teach mode | – | – | 50 (164.04) | – |
| **Degree of protection** | | IP 67 | IP 67 | IP 67 | IP 67 | IP 65 |
| **Supply** | ⎓ | ● | ● | ● | ● | ● |
| | ∿ | – | – | – | – | – |
| | ⎓ or ∿ | – | – | – | – | – |
| **Output** | | PNP, NPN NO/NC by programming | Analog (PNP) | | Solid-state (PNP) +Analog | PNP and NPN NO/NC depending on wiring |
| **Connection** | Pre-cabled | ● | – | – | – | – |
| | Connector | ● | – | ● | ● | ● |
| | Screw terminals | – | ● | – | – | – |
| **Catalog Number** | | **XUBL** | **XUJ** | **XU5M** | **XU2M** | **XUYPS1●** |
| **Pages** | | 44 | 102 | 46 | 48 | 82 |

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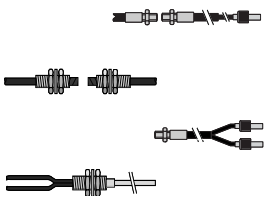
# OsiSense® XU Photoelectric sensors
## Application

| | Amplifier and fiber optics | | | | |
|---|---|---|---|---|---|
| **Diffuse with two channels using triangulation, with background suppression** | **Amplifier, teach mode** | **Plastic fiber optics with end fittings** | **Glass fiber optics with end fittings** | **Ecofiber concept** Bare fiber optics and end fittings supplied separately for customer assembly | **Amplifier, teach mode or potentiometer** |
|  |  |  | |  |  |
| Compact design | Fiber design | – | – | – | Fiber design |
| 18 x 60 x 60 | 10 x 40 x 65 (amplifier) | Length *(1)* :<br>1 m, 2 m or 10 m | Length *(1)* :<br>0.60 m, 1 m, 1.5 m or 2 m | Length *(1)* :<br>1 m, 10 m or 50 m | 13 x 72.2 x 30<br>13 x 76.7 x 30 |
| Plastic | Plastic | Plastic | Glass | Plastic | Plastic |
| Adjustable from 50 to 600 mm<br>(1.97 to 23.62 in.) | – | – | – | Sensing distance:<br>70 mm–<br>4,000 mm<br>(2.76–157.48 in.)<br>*(1)* | Sensing distance depending on fiber used |
| – | 0.006–0.095 (0.02–0.31) *(2)* | 6–95<br>(19.68– 311.68)*(1)* | 80 (262.47) | | |
| – | – | – | – | | |
| – | – | – | – | | |
| – | 0.050–2<br>(0.16–6.56) *(2)* | 30–2500<br>(98.42–8,202.07) *(1)* | 80 or 200<br>(262.47 or 656.17) *(1)* | | |
| IP 65 | IP 65 (amplifier)<br>IP 64 (fibers) | IP 64, IP 641 *(1)*<br>IP 65, IP 651 *(1)* | – | – | IP 65 |
| ● | ● | – | – | – | ● |
| – | – | – | – | – | – |
| – | – | – | – | – | – |
| PNP and NPN<br>NO/NC programmable | Solid-state (PNP or NPN) *(3)*<br>NO or NC<br>(programmable) | – | – | – | PNP/NPN<br>NO/NC *(3)* or programmable *(1)* |
| ● | ● | – | – | – | ● |
| ● | ● | – | – | – | ● |
| – | – | – | – | – | – |
| **XUYPS2●** | **XUDA** | **XUF** | **XUYFV●** | **XUYA●**<br>**XUYFP●** | **XUYAF●966**<br>**AF●946** |
| 84 | 110 | 118 | 124 | 130 | 112 |

*(1) Depending on model*
*(2) Depending on fiber*
*(3) Depending on wiring*

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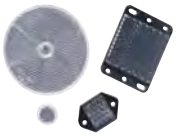
# OsiSense® XU Photoelectric sensors
## Application

| Recommended applications | | Conveying | | | Ø 18 AC/DC |
|---|---|---|---|---|---|
| | | Detection of objects on conveyor and access control | | Conveying | 2-wire AC or DC supply |
| | |  |  |  |  |
| **Format** | | Miniature design | Compact design | – | Design ø18 |
| **Dimensions (w x h x d) in mm** | | 20 x 32 x 13<br>10 x 40 x 13.5 | 18 x 70 x 35 | 29 x 95 x 60 | Ø 18, threaded M18 x 1<br>L: 82–110 |
| **Case** | | Plastic | Plastic | Plastic | Metal |
| **Sensing distance, m (ft) related to system** | Diffuse with background suppression | ● | – | – | 0.12 (0.39) |
| | Diffuse | ● | 0.7 (2.30) | 1.5 or 4 (4.92 or 13.12) *(2)* | 0.4 (1.31) |
| | Polarized retroreflective | ● | 4 (13.12) (with Ø 80 mm reflector) | 6 or 10 (19.68 or 32.81) *(2)* | 2 (6.56) |
| | Retroreflective | – | 6 (19.68) (with Ø 80 mm reflector) | – | – |
| | Thru-beam | ● | 8 (26.25) | ● | 15 (49.21) |
| **Degree of protection** | | IP 65 and IP 67 | IP 67 | IP 65 and IP 67 | IP 67 |
| **Supply** | ⎓ | ● | ● | ● | – |
| | ∿ | – | ● | ● | – |
| | ⎓ ∿ | – | – | – | ● |
| **Output** | | PNP or NPN NO/NC *(1)* | Solid-state PNP or NPN | PNP/NPN Relay NO/NC programmable | Solid-state |
| **Connection** | Pre-cabled | ● | ● | – | ● |
| | Connector | ● | ● | – | ● |
| | Screw terminals | – | – | ● | – |
| **Catalog Number** | | **XUY●●989** | **XUL** | **XUY ● 952/954** | **XU●M18** |
| **Pages** | | 104 | 96 | 106 | 50 |

*(1) Depending on wiring.*
*(2) Depending on model.*

# OsiSense® XU Photoelectric sensors
## Application

| | Assembly | Assembly and machine tools | Other formats | | Accessories |
|---|---|---|---|---|---|
| | **Diameter 8 metal range** | **Miniature, metal** | **Dual Mount** | **With stability LED. With alarm output (for XUC●AK only)** | **Reflectors, mounting clamps, mounting and adjustment accessories, etc.** |
| |  |  |  |  |  |
| | Design 8 | Miniature design | **Dual mount design with ø 18 mm snout** | Compact design | Accessories |
| | Ø 8, threaded, M8 x 1 L: 40 | 16.2 x 41.15 x 29.5 | Ø 18, threaded snout, 18 x 43.8 x 60, | 45 x 95 x 44 | – |
| | Metal | Metal | Plastic | Plastic | – |
| | – | – | ● | 1.2 (3.94) | – |
| | 0.05 (0.16) | ● | ● | – | – |
| | – | ● | 2 (6.56) | 6 (19.68) | – |
| | – | – | – | – | – |
| | 2 (6.56) | 15 (49.21) | 15 (49.21) | 50 (164.04) | – |
| | IP 65 *(2)* IP 67 *(2)* | IP 65 IP 67 IP 69K | IP 67 | IP 67 and NEMA 4X | – |
| | ● | ● | ● | ● | – |
| | – | – | – | – | – |
| | – | – | – | ● | – |
| | Solid-state (PNP or NPN) | PNP or NPN NO/NC | PNP or NPN NO | Solid-state - PNP or NPN (XUC●AK) 1 CO relay (XUC●AR) | – |
| | ● | ● | – | ● | – |
| | ● | – | M12 | ● | – |
| | – | – | – | – | – |
| | **XUA** | **XUM●B** | **XUN●** | **XUC** | **XUZ●** |
| | 52 | 62 | 54 | 92 | 151 |

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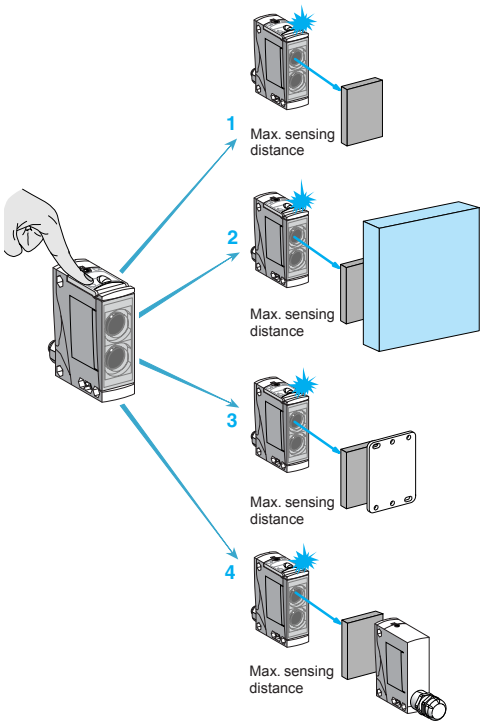
# OsiSense® XU Photoelectric sensors

**Multimode**: Simplicity through innovation



## Principle

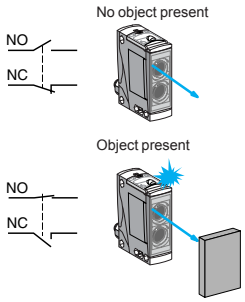



In proposing multimode products, Schneider Electric offers simplicity through innovation.

■ With the multimode function, a single product meets a wide variety of requirements for optical detection.
Effectively, by simply pressing the Teach mode button, the sensor automatically acquires Single mode configuration for the application requirements.
1 Diffuse system detection of object
2 Diffuse system, with background suppression, detection of object
3 Retroreflective system (reflector accessory) detection of object
4 Thru-beam system, on optical receiver (transmitter accessory for thru-beam use), detection of object

■ In addition to this, a multimode sensors also means:
□ improved performance:
maximum sensing distance guaranteed and optimized for each application
□ simplified use:
intuitive setup plus less and easier maintenance
□ lower costs:
the number of catalog numbers is reduced by 90% and, consequently, selection and supply is simplified and storage costs significantly reduced
□ maximum productivity

## Straightforward NO or NC output

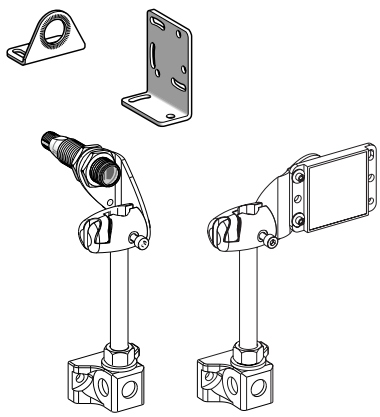



■ Irrespective of the detection mode used (diffuse, retroreflective, thru-beam, etc.), the outputs become either NO or NC *(1)*.

■ A multimode sensor means immediate,intuitive, accessible setup.

*(1) The sensor is supplied in NO configuration. NO or NC selection is performed by simply pressing the Teach mode button.*

## Mounting accessories



A complete range of inexpensive mounting accessories (clamps, traditional or 3D brackets, etc.) that provides solutions for all installation and adjustment problems.

# OsiSense® XU Photoelectric sensors

**Multimode**: Simplicity through innovation

## Design

| | | Cylindrical 18 | Miniature | Compact 50 x 50 | Compact 92 x 77 |
|---|---|---|---|---|---|
| | |  |  |  |  |
| **Dimensions (w x h x d) in mm** | | M18 x 64 | 12 x 34 x 20 | 18 x 50 x 50 | 30 x 92 x 77 |
| **Maximum sensing distance m (ft)** | Without accessory with background suppression | 0.12 (0.39) | 0.10 (0.33) | 0.28 (0.92) | 1.3 (4.27) |
| | Without accessory | 0.4 (1.31) | 0.55 (1.80) | 1.2 (3.94) | 3 (9.84) |
| | With polarized reflector | 3 (9.84) | 4 (13.12) | 5.7 (18.70) | 15 (49.21) |
| | With thru-beam accessory | 20 (65.62) | 14 (45.93) | 35 (114.83) | 60 (196.85) |
| **Supply** | ⎓ Solid-state output | ■ | ■ | ■ | ■ |
| | ≂ Relay output | – | – | ■ | ■ |
| **Connection** | Pre-cabled | ■ | ■ | ■ | – |
| | Connector | ■ | ■ | ■ | ■ |
| | Screw terminals | – | – | – | ■ |
| **Sensor type** | | **XUB0** | **XUM0** | **XUK0** | **XUX0** |
| **Pages** | | | | | |

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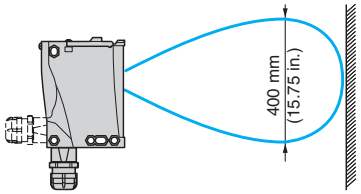
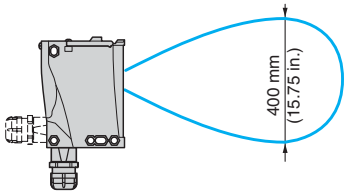
## Sensing distances (see table above)



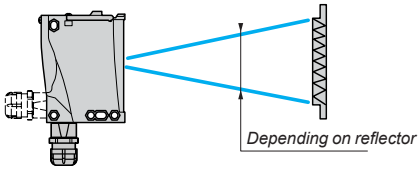

### Sensing distance with background suppression

- The multimode sensor detects objects irrespective of their color or background
- A clean environment is recommended



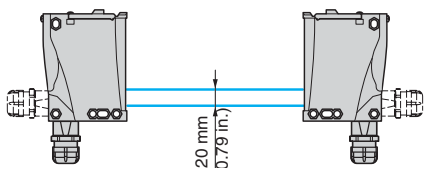

### Sensing distance

- Beyond the sensing distance with background suppression, the same multimode sensor without accessory detects objects but may be influenced by the backgrounds and color of the objects to be detected




### Sensing distance with polarized reflector

- By installing a reflector opposite, the same multimode sensor detects objects irrespective of their shininess and color
- The size of the reflector must be smaller than that of the object to be detected
- The larger the area of the reflector the longer the sensing distance

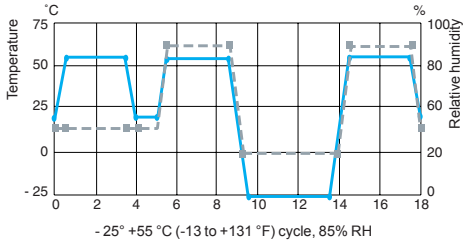



### Sensing distance with thru-beam transmitter accessory

- After setup and connection of a thru-beam transmitter accessory opposite, the same multimode sensor detects objects irrespective of their shininess, color or background
- The detection distance is a maximum
- The sensor and the thru-beam transmitter must be carefully aligned
- Good resistance to accumulation of dirt and dust

# OsiSense® XU
# Photoelectric sensors

## Standards and certifications
## Parameters related to the environment




- 25° +55 °C (-13 to +131 °F) cycle, 85% RH

*Temperature °C*
*Relative humidity %*

### Recommendation

The sensors detailed in this catalog are designed for use in standard industrial applications relating to presence detection.
These sensors do not incorporate the required redundant electrical circuit enabling their usage in safety applications.
For safety applications, refer to the Preventa™ Machine Safety Product's Catalog

### Quality control

**A variety of considerations are taken in order to provide photoelectric sensors suitable for the harsh industrial environments.**

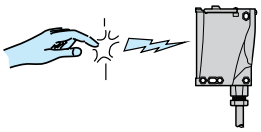
- ■ **Qualification**
- □ The product specifications stated in this catalog are subjected to a **qualification procedure** carried out in our laboratories
- □ In particular, the products are subjected to **climatic cycle** tests for 3,000 hours while powered-up to verify their ability to maintain their specifications over time
- ■ **Production**
- □ The electrical specifications and sensing distances at both ambient temperature and extreme temperatures are 100% checked
- □ Products are randomly selected during the course of production and subjected to **monitoring tests** relating to all their specifications
- ■ **Customer returns**
- □ Products that are returned to us and claimed inoperative are subjected to systematic analysis and may result in corrective actions or continuous improvement

### Immunity to ambient light

- ■ OsiSense® XU photoelectric sensors use the pulsed light principle. This provides a high degree of immunity to spurious light and conforms to standard **IEC 60947-5-2**

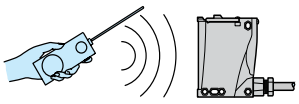
### Resistance to electromagnetic interference

**The Photoelectric sensors are tested in accordance with the recommendations of the standard IEC 60947-5-2**



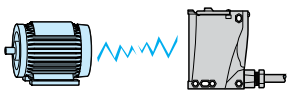
- ■ Electrostatic discharges

**IEC/EN 61000-4-2**
≂ 15 kV version, level 4
⎓ 8 kV version, level 3



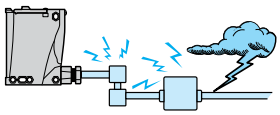
- ■ Radiated electromagnetic fields (electromagnetic waves)

**IEC/EN 61000-4-3**
10 V/meter, level 3



- ■ Fast transients in salvos (motor start/stop interference)

**IEC/EN 61000-4-4**
2 kV, level 4



- ■ Impulse voltages, lightning

**IEC 60947-5-2**
≂ 2.5 kV version
⎓ 1 kV version

### Mechanical shock resistance

The sensors are tested in accordance with standard IEC 60068-2-27, 30 gn, duration 11 ms.

### Vibration resistance

The sensors are tested in accordance with standard IEC 60068-2-6,
7 gn, amplitude ± 1.5 mm, f = 10–55 Hz.

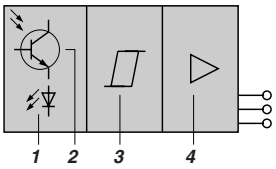
### Resistance to chemicals in the environment

- ■ Due to the very wide range of chemicals encountered in industry, it is very difficult to give general guidelines common to all sensors
- ■ End users should verify that the application does not subject sensors to chemicals that may damage them (refer to the specifications pages for the various sensors)

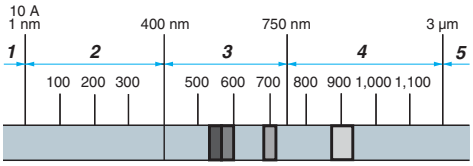
The materials selected (see product specifications) provide satisfactory compatibility in most industrial environments (for further information, consult the Sensor Competency Center).

# OsiSense® XU Photoelectric sensors

## Principle of optical detection




***1*** *Light beam transmitter*
***2*** *Light beam receiver*
***3*** *Signal processing stage*
***4*** *Output stage*




***1*** *X rays,* ***2*** *Ultraviolet,* ***3*** *Visible light,*
***4*** *Near infrared,* ***5*** *Far infrared*

## Composition of a photoelectric sensor

A Photoelectric sensor essentially comprises a light beam transmitter (light-emitting diode) and a light-sensitive receiver (photo-transistor).
A light-emitting diode is an electronic semi-conductor component that emits light when an electric current flows through it. This light can be visible or invisible, depending on the transmission wavelength.

Detection occurs when an object enters the transmitted light beam and, in so doing, affects the intensity of the light at the receiver. As the light intensity at the receiver decreases a point is reached whereby the output of the sensor changes state.

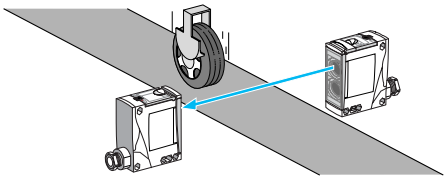
## Light spectrum

Depending on the model and application requirements, the transmission beam is either non-visible infrared (most common case) or ultraviolet (detection of luminescent materials). It may also be visible red or green (color mark reading etc.) and laser red (long sensing distance and short focal length).

## Modulation

The advantage of LEDs is their very fast response. To render the system insensitive to ambient light, the current flowing through the LED is modulated so as to produce a pulsed light transmission.
Only the pulsed signal will be used by the photo-transistor and processed to control the load.

## Detection systems

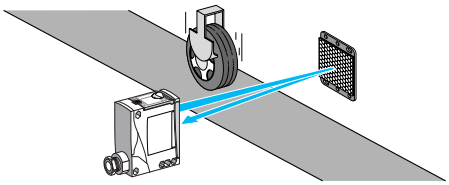


### Thru-beam system or multimode with thru-beam accessory

■ **Advantages**
□ Long sensing distance(up to 60 m)
□ Very precise detection, high repeat accuracy
□ Detection not affected by color of object
□ Good resistance to difficult environments (dust, grime, etc.)
■ **Drawbacks**
□ Two units to be wired
□ The object to be detected must be opaque
□ Precise alignment required, which can be difficult since the sensor transmits in the infrared range (invisible)

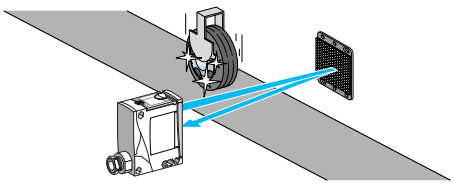
■ **Operating considerations**
□ When several sensors are used, care must be taken to ensure that no sensor is disrupted by another sensor (e.g. alternate mounting of transmitter/receiver etc.)

**Advantages of multimode sensor with thru-beam accessory**
■ Easy alignment
□ The sensor transmits in the visible red range during the alignment phase
□ Three LEDs providing setup assistance.



### Polarized retroreflective system or multimode with reflector accessory

■ **Advantages**
□ Medium sensing distance (up to 15 m)
□ Precise detection
□ Only one unit to be wired
□ Detection not affected by color of object
□ Visible red beam transmission
■ **Drawbacks**
□ Precise alignment required
□ The object to be detected must be opaque and larger than the reflector

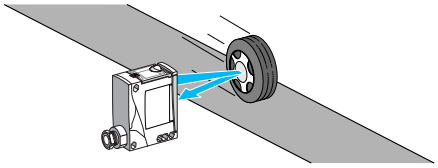


■ **Operating considerationss**
□ When several sensors are used, they must be aligned in such a manner that no sensor is disrupted by another sensor
□ For short distance detection use a reflector with large trihedrons, type XUZC24
□ For long distance detection use a reflector XUZC50 or XUZC80
□ To increase the sensing distance use reflector XUZC100
□ If reflective tape is used, use rolls of tape XUZB1 or XUZB15 which are specially adapted for polarized retroreflective systems

**Advantages of multimode sensor with reflector accessory**
■ Easy alignment
□ Three LEDs providing setup assistance
□ The anti-interference function enables two sensors to be used without specific alignment considerations
■ Semi-transparent objects can be detected by using the teach mode function

# OsiSense® XU Photoelectric sensors

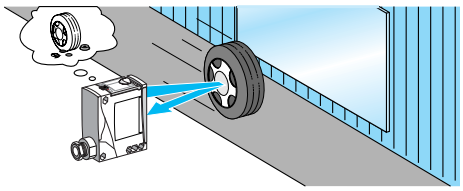
## Detection systems (continued)



### Diffuse system or multimode

■ **Advantage**
□ Only one unit to be wired
■ **Drawbacks**
□ Short sensing distance
□ Sensitivity to differences in object color or background color
□ Object sighting line difficult since the sensor transmits in the infrared range (invisible)
■ **Operating considerations**
□ When several sensors are used, they must be aligned in such a manner that no sensor is disrupted by another sensor
■ **Advantages of a multimode sensor**
□ Easy alignment:
- the sensor transmits in the visible red range during the alignment phase
- three LEDs providing setup assistance
- the anti-interference function enables two sensors to be used without specific alignment considerations

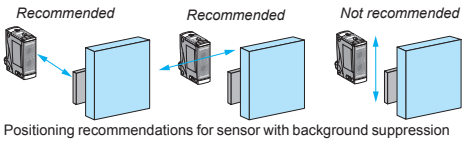
□ Refined detection: the position of the object can be detected using the teach mode



### Diffuse, with or without background suppression, system or multimode

■ **Advantages**
□ Only one unit to be wired
□ Detection not affected by color of object or background
■ **Drawbacks**
□ Short sensing distance
□ Alignment can be challenging because the sensor transmits in the infrared range (invisible)
■ **Operating considerations**
□ Detection can be affected by the object's direction of movement. To overcome this phenomenon (the hat effect), it is recommended that the sensor be mounted so that the object simultaneously breaks the beam of both lenses
□ When several sensors are used, they must be aligned in such a manner that no sensor is disrupted by another sensor
■ **Advantages of a multimode sensor**
□ Easy alignment:
- the sensor transmits in the visible red range during the alignment phase
- three LEDs providing setup assistance
- the anti-interference function enables two sensors to be used without specific alignment considerations
- the hat effect is minimized using the background teach mode

□ Refined detection: the position of the object can be detected using the teach mode

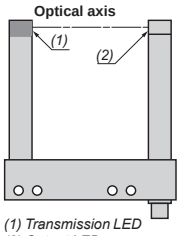



Positioning recommendations for sensor with background suppression

## Specific systems

### Optical forks

■ Constructed from metal, the optical fork is a robust sensor that is particularly suited to conveying and packaging applications and detection of labels
■ Rugged optical detection device **not requiring alignment** in thru-beam mode
■ The beam from the transmitter limb is transmitted to the receiver limb. Due to its construction, **only one connection** is required as opposed to two for a traditional thru-beam function. The transmission sources are LEDs of various technologies:
□ Red for much improved efficiency during adjustment and maintenance
□ Red laser for detection of transparent materials or very small parts
□ Infrared, particularly for optical frames
□ Ultrasonic for detection of transparent labels (clear on clear)
■ The beam is adjustable or fixed depending on the version. Adjustment enables the sensitivity to be altered and, therefore, detection of small parts down to dimensions of less than tenths of millimeters (minimum size of detectable object: 0.05 mm [0.001 in.])
■ The high switching frequency (from 4 kHz up to 25 kHz) is very useful in industrial applications involving high operating rates




*(1) Transmission LED*
*(2) Output LED*

### Fiber optics

■ The fiber acts as a light conductor. Light rays entering the fiber at a certain angle are conveyed to the required location, with minimum loss
■ Separate amplifier
□ Size kept to minimum
□ This system enables detection of very small objects (approximately 1 mm [0.04 in.])
□ Detection is very precise

**Plastic fibers**

The core of the fiber is flexible plastic (PMMA). In general, there is only a single fiber of diameter 0.25 to 1 mm (0.01 to 0.04 in.), depending on the model

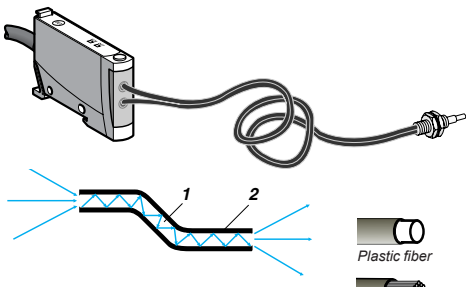
□ Fibers are used with amplifiers transmitting red light
□ Minimum bend radius:
- 10 mm (0.39 in.) for fibers with 0.25 mm (0.01 in.) diameter core
- 25 mm (0.98 in.) for fibers with 1 mm (0.04 in.) diameter core

■ Advantages: fibers can be cut to the required length

**Glass fibers**

□ The core of the fiber is silica. For maximum flexibility, each fiber comprises numerous strands that are approximately 50 µ in diameter
□ Fibers are used with amplifiers transmitting infrared or red light
□ Minimum bend radius:
- 10 mm (0.39 in.) with plastic sheath
- 90 mm (3.54 in.) with stainless steel sheath

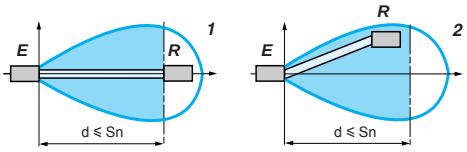
■ **Advantages**
□ Fibers suitable for use at high temperatures (250 °C [482 °F])
□ Fibers with stainless steel sheath provide protection against mechanical impact and crushing

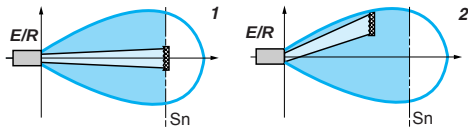


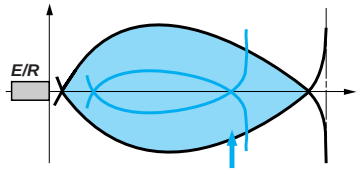

*1 Core*
*2 Sheath*

# OsiSense® XU Photoelectric sensors

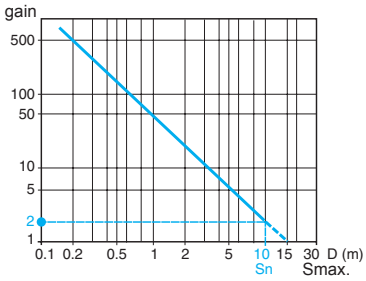
## Operating Curves



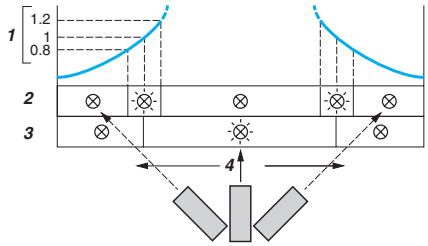




## Excess gain




## Optical alignment aid




## Detection distance using reflector

### Thru-beam system

- The ▭ zone indicates the positioning tolerance of the receiver
- The ▭ zone represents the usable sensing zone of the system. Any opaque object entering this zone breaks the beam and causes the sensor's output to change state

***1*** *Ideal detection*
***2*** *Acceptable detection*
***T*** *= transmitter*
***R*** *= receiver*

### Polarized retroreflective system

- The ▭ zone indicates the positioning tolerance of the reflector
- The ▭ zone represents the usable sensing zone of the system. Any opaque object entering this zone breaks the beam and causes the sensor's output to change state

***1*** *Ideal detection*
***2*** *Acceptable detection*
***T*** *= transmitter*
***R*** *= receiver*

### Diffuse, with or without background suppression, system

- The ▭ zone represents the sensor's sensitivity zone
  All of this zone is usable: any object that is adequately reflective entering this zone, in the direction of the arrow, will cause the sensor's output to change state. The black line corresponds to a light color surface and the blue line to a darker color surface.
- A test using the object to be detected will determine the zone of sensitivity in relation to its reflection coefficient

——— White 90% object
——— Gray 18% object

For specific aspects of diffuse systems see page 18

***T*** *= transmitter*
***R*** *= receiver*

### Operating margin

To ensure correct operation of a sensor in spite of environmental constraints, the sensors feature an operating margin.
This margin can be expressed in terms of excess gain, which is the ratio:
Excess gain = Signal level received/Signal required for switching.

**For all OsiSense® XU sensors**

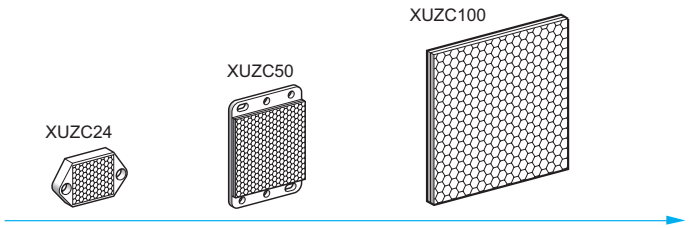
- The **nominal sensing distance Sn** is defined as the sensing distance with an **excess gain of 2**, i.e. the sensing distance for which the sensor receives twice as much light energy as it strictly needs to switch it
- The **maximum sensing distance** is defined as the sensing distance with an **excess gain of 1**. It corresponds to the maximum detection value

The use of the sensor at the nominal sensing distance helps ensure the sensor's correct operation in normal operating conditions.

In extreme conditions, refer to the following setup recommendations:
- clean environment: work at nominal sensing distance Sn,
- slightly polluted environment: work at sensing distance Sn/2,
- moderately polluted environment: work at sensing distance Sn/4,
- heavily polluted environment: preferably use multimode sensors with thru-beam accessory (or the thru-beam system) with a sensing distance Sn/10.

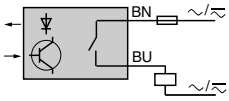
A red LED assists setup by illuminating when Single mode alignment of the sensor is achieved.

***1*** *Signal level*
***2*** *Red LED, on ☼, off ⊗*
***3*** *Green LED, on ☼, off ⊗*
***4*** *Single mode alignment*




Detection distance depending on reflector size.

## Outputs

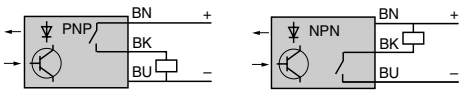



### 2-wire technique ∼ or ⎓

■ **Specific aspects**
These sensors are wired in series with the load to be switched
As a consequence, they are subject to:
□ A residual current in the open state (current flowing through the sensor in the open state),
□ A voltage drop in the closed state (voltage drop across the sensor's terminals in the closed state)

■ **Advantages**
□ Only two wires to be connected. They can be wired in series in the same way as mechanical limit switches
□ For use on 2-wire ⎓, they can be connected to either positive (PNP) or negative (NPN) logic PLC inputs
□ Simple, reversible connections

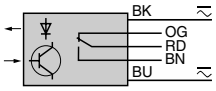
■ **Operating considerations**
□ Check the possible effects of residual current and voltage drop on the actuator or input connected
□ These sensors do not incorporate overload or short-circuit protection and therefore, a 0.4 fast-acting fuse must be connected in series with the load




### 3-wire technique ⎓

■ **Specific aspects**
□ These sensors comprise 2-wires for the DC supply and a 3-wire for the output signal
□ PNP type: switching the positive side to the load
□ NPN type: switching the negative side to the load

■ **Advantages**
□ No residual current, low voltage drop

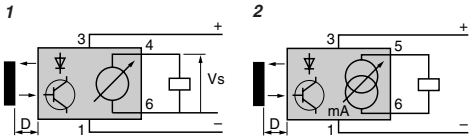



### 5-wire technique ∼ or ⎓, relay output

■ **Specific aspects**
□ Sensors incorporating output relay. The supply and output circuits are electrically separate

■ **Advantages**
□ ∼ or ⎓ supply with a wide voltage range
□ High breaking capacity (approximately 3 A)
□ Direct control of a simple automation system
□ Availability of a NC (normally closed) contact and a NO (normally open) contact
□ The sensor/relay contact galvanic isolation is 1,500 to 2,500 V, depending on the model

■ **Operating considerations**
□ Low switching frequency. Check that it is suitable for the application
□ Limited service life of relay. Check that it is suitable for the application




### Analog technique

■ **Specific aspects**
There are two output configurations:
□ Voltage output: the output voltage varies in proportion to the distance between the sensor and the object to be detected
□ Current output: the output current varies in proportion to the distance between the sensor and the object to be detected

■ **Advantage**
□ Availability of a physical item of data proportional to the distance between the sensor and the object to be detected

■ **Operating considerations**
□ Refer to the detailed descriptions of the sensor to assess the relative influence of the color of the object to be detected

***1*** *Voltage output*
***2*** *Current output*

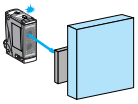
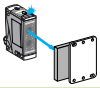
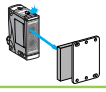
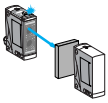
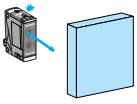
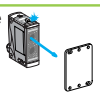
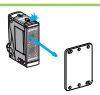
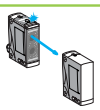
## Outputs *(continued)*

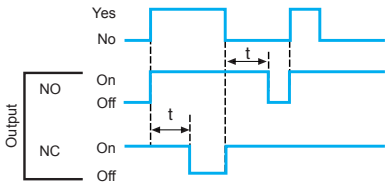
### Output functions

In the past, the output functions of photoelectric sensors were always governed by the light/dark principle, i.e. the output would be activated on light being received for light switching and the output would be activated on light not being received for dark switching.
This called for fastidious programming specific to each detection mode.

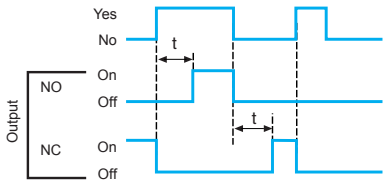
**Now, the output functions of the OsiSense® XU range of photoelectric sensors are in phase with the language of the automation system engineer, i.e. NO (normally open) or NC (normally closed).**

- **Advantages**
  - NO output (or NO programming for multimode sensors): irrespective of the detection mode, the output of the sensor is activated when the object to be detected is present
  - NC output (or NC programming for multimode sensors): irrespective of the detection mode, the output of the sensor is activated when the object to be detected is not present
- **Advantages of multimode sensors**
  By default, the output is NO programmed, i.e. the output of the sensor is activated when the object to be detected is present
  - By pressing the teach button, the output can programmed to NC, i.e. the output of the sensor is activated when the object to be detected is not present

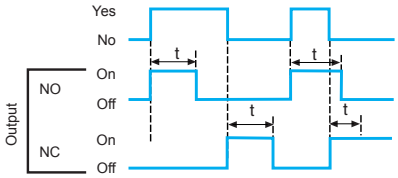
| System | | NO output or NO programming | Yellow LED | NC output or NC programming | Yellow LED |
|---|---|---|---|---|---|
| | ***Object present*** | | | | |
| **Diffuse** |  | Activated | On ☼ | Not activated | Off ⊗ |
| **Diffuse with background suppression** |  | Activated | On ☼ | Not activated | Off ⊗ |
| **Retroreflective** |  | Activated | On ☼ | Not activated | Off ⊗ |
| **Polarized retroreflective** |  | Activated | On ☼ | Not activated | Off ⊗ |
| **Thru-beam** |  | Activated | On ☼ | Not activated | Off ⊗ |
| | ***No object present*** | | | | |
| **Diffuse** |  | Not activated | Off ⊗ | Activated | On ☼ |
| **Diffuse with background suppression** |  | Not activated | Off ⊗ | Activated | On ☼ |
| **Retroreflective** |  | Not activated | Off ⊗ | Activated | On ☼ |
| **Polarized retroreflective** |  | Not activated | Off ⊗ | Activated | On ☼ |
| **Thru-beam** |  | Not activated | Off ⊗ | Activated | On ☼ |




**Time delay on beam break**



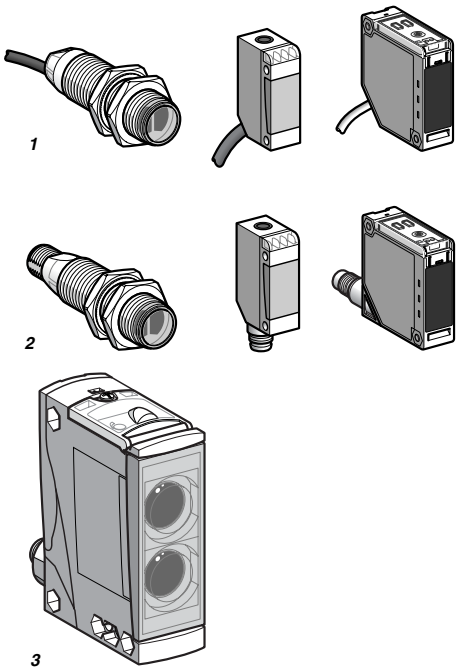

**Monostable**




### Output signal time delay

- Certain sensor models (XUK, XUX and XUD) incorporate a time delay output
- These time delays enable simple automation systems to be established
- There are three types of time delay
  - Time delay on beam make (ON delay)
  - Time delay on beam break (Off delay)
  - Monostable (one shot)

## Connections




All of our sensors are available either in pre-cabled version (except XUX; screw terminal with cable gland version) or connector version.
The connectors used are:

**M12 (4-pin)**


**M8 (4-pin)**


**1/2 20UNF (3-pin)**


■ **Types of connection**

***1*** *Factory-fitted molded cable: good protection against splashing liquids.*
***2*** *Connector: easy installation and maintenance.*
***3*** *Screw terminals: flexibility, cable runs to required length.*

■ **Wiring advice**

□ Length of cable: no limitation up to 200 m or up to a line capacitance of < 0.1 µF (specifications of sensors remain unaffected). In this case, it is important to take into account the voltage drop on the line.

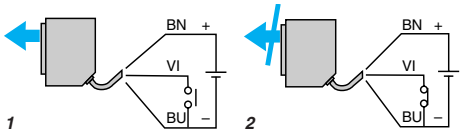
□ Separation of control and power circuit wiring: the sensors are immune to electrical interference encountered in normal industrial conditions. Where extreme conditions of electrical noise could occur (motors etc.), it is advisable to protect against transients in the normal way:

- suppress interference at source and filter the power supply,
- separate power and control wiring from each other,
- ensure the HF equipotentiality of the site,
- limit the length of cable,
- connect the sensor with supply switched off.

□ Dust and damp protection of connections: the level of dust and damp protection depends on how carefully the cable glands or connectors are tightened. To efficiently protect the sensors from dust and damp, select the correct diameter cable for the cable gland used.

| Cable gland | Diameter of cable | |
|---|---|---|
| | Minimum | Maximum |
| **9P** | 6 | 8 |
| **11P** | 8 | 10 |
| **13P** | 10 | 12 |
| **ISO 16** | 7 | 10 |
| **ISO 20** | 10 | 12 |

## Complementary functions




### Diagnostics, beam break test

A test input enables the transmitted beam to be broken in order to verify that the output of the sensor changes state.
Diagnostics regarding correct operation of the sensor can therefore be carried out.

***1*** *Beam made*
***2*** *Beam broken*
VI: test input for breaking transmitted beam.

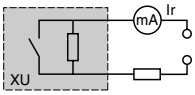
### Verification of correct operation

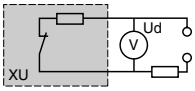
In the event of dirty lenses (reflectors), an excessively polluted atmosphere or a slight disturbance of optical alignment (mechanical impact on support), the level of light energy received by the sensor will decrease until it ceases to operate.
To overcome this problem, all of our products incorporate:

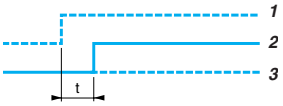
- a red alarm LED,
- an alarm output, for connection in the automation system, to warn the operator that the operation of the sensor is stable but close to its limits (applies to sensors XUK, XUX, XUD).

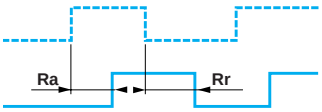
# OsiSense® XU
# Photoelectric sensors

## Specific aspects of electronic sensors




## Terminology

**Residual current (Ir)**
- The residual current (Ir) corresponds to the current flowing through the sensor when in the Open state.
- Specifications of 2-wire type sensors.

**Voltage drop (Ud)**
- The voltage drop (Ud) corresponds to the voltage drop at the sensor's terminals when in the Closed state (value measured at nominal current rating of sensor)
- Characteristic of 2-wire type proximity sensors

**First-up delay**
The first-up delay corresponds to the time (t) between the connection of the power supply to the sensor and its fully operational state.
***1*** *Supply voltage U on*
***2*** *Sensor operational at state 1*
***3*** *Sensor at state 0*

**Response time**
- Response time (Ra): the time delay between the object to be detected entering the sensor's operating zone and the subsequent change of output state. This parameter limits the speed and size of the object
- Recovery time (Rr): the time delay between an object to be detected leaving the sensor's operating zone and the subsequent change of output state. This parameter limits the interval between successive objects

## Power supplies

**Sensors for AC circuits (∿ and ⎓ models )**
Check that the voltage limits of the sensor are compatible with the nominal voltage of the AC supply used.

**Sensors for DC circuits (⎓ models)**
- ■ DC source: check that the voltage limits of the sensor and the acceptable level of ripple are compatible with the supply used
- ■ AC source (comprising transformer, rectifier, smoothing capacitor): the supply voltage must be within the operating limits specified for the sensor
- Where the voltage is derived from a single-phase AC supply, the voltage must be rectified and smoothed to ensure that:

- the peak voltage of the DC supply is lower than the maximum voltage rating of the sensor
Peak voltage = nominal voltage x $\sqrt{2}$
- the minimum voltage of the supply is greater than the minimum voltage rating of the sensor, given that:
$\Delta V = (I \times t)/C$
$\Delta V$ = max. ripple: 10% (V)
I = anticipated load current (mA)
t = period of 1 cycle (10 ms full-wave rectified for a 50 Hz supply frequency)
C = capacitance (µF)

- As a general rule, use a transformer with a lower secondary voltage (Ue) than the required DC voltage (U)

**Example:** ∿ 18 V to obtain ⎓ 24 V, ∿ 36 V to obtain ⎓ 48 V. Fit a smoothing capacitor of 400 µF minimum per sensor, or 2,000 µF minimum per ampere required

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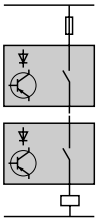
## Setup



### Connection in series

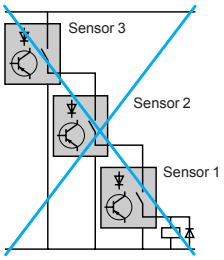
**2-wire type sensors**

- The following points should be taken into account:
  - Series wiring is only possible using sensors with wide voltage limits
    Based on the assumption that each sensor has the same residual current value, each sensor, in the Open state, will share the supply voltage, i.e

$$U\ sensor = \frac{U\ supply}{n\ sensors}$$

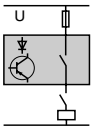
U sensor and U supply must remain within the sensor's voltage limits.

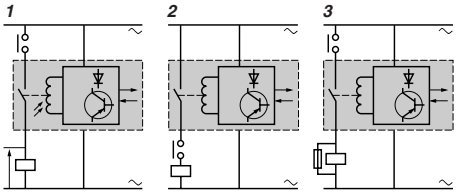
- If only one sensor in the circuit is in the Open state, it will be supplied at a voltage almost equal to the supply voltage
- When in the closed state, a small voltage drop is present across each sensor. The resultant loss of voltage at the load will be the sum of the individual voltage drops and therefore, the load voltage should be selected accordingly




**3-wire type sensors**
**This connection method is not recommended.**

- Correct operation of the sensors cannot be assured and, if this method is used, tests should be made before installation
- The following points should be taken into account:
  - The first sensor carries the load current in addition to the no-load current consumption values of the other sensors connected in series. For certain models, this connection method is not possible unless a current limiting resistor is used
  - When in the closed state, a small voltage drop is present across each sensor. The load should therefore be selected accordingly
  - As sensor 1 closes, sensor 2 does not operate until a certain time (t) has elapsed (corresponding to the first-up delay) and likewise for the following sensors in the sequence
  - The use of flywheel diodes is recommended when an inductive load is being switched

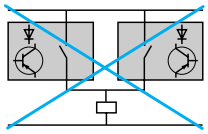



**Wiring sensors to devices with mechanical contact**
**2 and 3-wire type sensors**

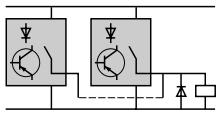
- The following points should be taken into account:
  - When the mechanical contact is open, the sensor is not supplied
  - When the contact closes, the sensor does not operate until a certain time (t) has elapsed (corresponding to the first-up delay)
- In diagram ***1***, as the external contact opens, the voltage transient caused by the breaking of the inductive load will appear inside the sensor and, if greater than the recommended max. insulation voltage, may cause a flashover within the sensor
  - The return path of this voltage will be back to one line of the supply, through the sensor, and should flashover occur anywhere on the printed circuit board, severe damage could occur
  - It is therefore recommended to use diagram ***2*** or ***3***

### Connection in parallel



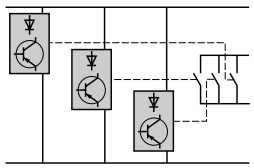
**2-wire type sensors**
**This connection method is not recommended.**

- Should one of the sensors be in the closed state, the sensor in parallel will be shorted-out and no longer supplied. As the first sensor passes into the Open state, the second sensor will become energized and will be subject to its first-up delay
- This configuration is only permissible where the sensors will be working alternately
- This method of connection can lead to irreversible damage of the units



**3-wire type sensors**

- No specific restrictions. The use of flywheel diodes is recommended when an inductive load (relay) is being switched



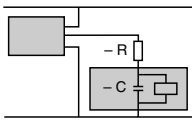
**Wiring sensors to devices with mechanical contact**
**2 and 3-wire type sensors**

- No specific restrictions
  - For these sensors, the supply and output circuits are electrically separate
  - The sensor/relay contact galvanic isolation is 1,500 to 2,500 V, depending on the model
  - The maximum voltage, depending on the model, across each contact is ∼ 250 V

## Setup considerations *(continued)*

### AC supply

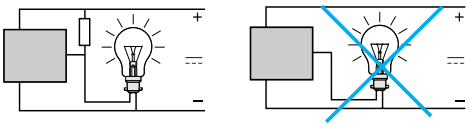
- ■ **2-wire type sensors cannot be connected directly to an AC supply.**
- □ Improper installation can result in injury or sensor damage
- □ An appropriate load (refer to the instruction sheet supplied with the sensor) must always be connected in series with the sensor




### Capacitive load (C > 0.1 µF)

- ■ On power-up, it is necessary to limit (by resistor) the charging current of the capacitive load C.
- □ The voltage drop in the sensor can also be taken into account by subtracting it from the supply voltage for the calculation of R

$$R = \frac{U\ (supply)}{I\ max.\ (sensor)}$$




### Load comprising an incandescent lamp

- ■ If the load comprises an incandescent lamp, the hot state resistance can be 10 times higher than the cold state resistance. This can cause very high current levels on switching. Fit a pre-heat resistor in parallel with the sensor

$R = \frac{U^2}{P} \times 10$, U = supply voltage and P = lamp power

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# OsiSense® XU Photoelectric sensors

## Fast trouble shooting guide

| Problem | Possible causes | Remedy |
|---|---|---|
| **The sensor's output will not change state when an object enters the operating zone** | On multimode sensor: setup error (detection mode programming) | ■ Use the detection mode display option. After a reset, follow the environment teach mode procedure |
| | Inoperative sensor or the short circuit protection has opened | ■ Check that the sensor is compatible with the supply being used<br>■ Check the load current specifications:<br>□ if load current I ≥ maximum switching capacity, an auxiliary relay (type CADN, for example) should be interposed between the sensor and the load<br>□ if I ≤ maximum switching capacity, check or wiring issues (short-circuit)<br>■ In all cases, a 0.4 A fast-acting fuse should be connected in series with the sensor |
| | Wiring error | ■ Check that the wiring conforms to the wiring shown on the sensor label or instruction sheet |
| | Improper power supply | ■ Check that the sensor is compatible with the supply (∼ or ⎓)<br>■ Check that the supply voltage is within the voltage limits of the sensor. Remember that with a rectified, smoothed supply:<br>U peak = U nominal x $\sqrt{2}$ with a ripple voltage of ≤ 10%) |
| | With a retroreflective system: incorrect use or poor state of reflector | ■ The retroreflective system must operate in conjunction with a reflector. Adhere to the operating distances and check the alignment between the sensor and the reflector<br>■ Replace the reflector if it has been damaged<br>■ Clean the reflector and sensor lenses |
| | Influence of ambient light | ■ Make sure that the sensor is not distracted by stray light (neon, sun, oven, etc.)<br>■ Fit a lens hood or turn the sensor |
| **False or erratic operation, with or without the presence of an object in the operating zone** | On multimode sensor: setup error (detection mode programming) | ■ Use the detection mode display option. After a RESET, follow the environment teach mode procedure |
| | Influence of background or surface condition of the object to be detected (stray reflections) | ■ Refer to the instruction sheet supplied with the sensor. For sensors with adjustable sensitivity, reduce or increase the sensing distance |
| | Operating distance too poorly defined for the reflector or object to be detected | ■ Apply the correction coefficients<br>■ Realign the system<br>■ Clean the sensor lenses and reflector, or, if damaged, replace it |
| | Influence of immediate environment | ■ Check the cleanliness of the lenses and reflector<br>■ Fit a lens hood, where required |
| | Influence of transient interference on the supply lines | ■ Ensure that any DC supplies, when derived from rectified AC, are correctly smoothed (C > 400 µF)<br>■ Separate AC power cables from low-level DC cables (⎓ 24 V low level)<br>■ Where very long distances are involved, use suitable cable: shielded and twisted pairs of the correct cross-sectional wire gauge |
| | Equipment prone to emitting electromagnetic interference | ■ Position the sensors as far away as possible from any sources of interference |
| | Response time of the sensor too slow for the particular object being detected | ■ Check the suitability of the sensor for the position or shape of the object to be detected<br>■ If necessary, select a sensor with a higher switching frequency |
| | Influence of high temperature | ■ Eliminate sources of radiated heat or protect the sensor casing with a heat shield<br>■ Realign, having adjusted the temperature around the mounting support |
| | Influence of ambient light | ■ Make sure that the sensor is not disrupted by an intermittent source of light (flashing light, rotating mirror beacon, hinged mirror, reflective door, etc.)<br>■ Fit a lens hood or turn the sensor |

# OsiSense® XU
# Photoelectric sensors

## Fast troubleshooting guide *(continued)*

| Problem | Possible causes | Remedy |
|---|---|---|
| **No detection following a period of service** | Vibration, shock | ■ Realign the system<br>■ Replace the support or protect the sensor |
| | Deterioration of relay contact | ■ On an inductive load, use an RC suppressor connected in parallel with the load<br>■ To eliminate contact contamination, the minimum current recommended is 15 mA<br>■ Relay output models are not recommended for fast counting of objects since their service life is too short. Use models with a solid-state output |
| | Dusty atmosphere | ■ Clean the lenses and reflector with a soft cloth |

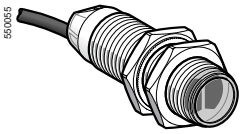
***Note:***

- **Sensors with a test input** enable automatic verification of their correct operation
- **Sensors with an alarm output** enable the operator to be informed, for preventive maintenance purposes, that the operating limits of sensors have been reached (dirty etc.)

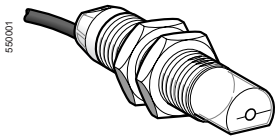
# OsiSense® XU Photoelectric sensors

## Multimode

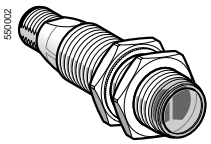
Design ø18, metal or plastic
Three-wire DC, solid-state output



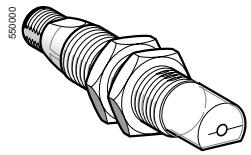

XUB0●●●NL2



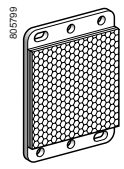

XUB0●●●WL2



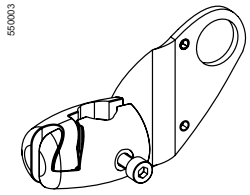

XUB0●●●NM12



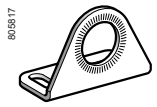

XUB0●●●WM12



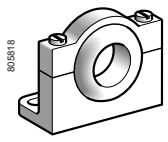

XUZC50



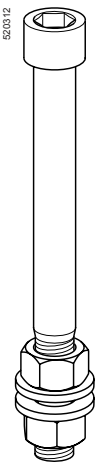

XUZB2003



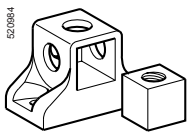

XUZA118




XUZA218




XUZ2001




XUZ2003

## Ø 18 metal

### Pre-cabled *(1)*

| Sensing distance Sn, m (ft) *(2)* | Function | Output | Line of sight | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **0–15 (0–49.21)** depending on which accessories are used | NO or NC, by programming | PNP | Along case axis | **XUB0BPSNL2** | 0.105 | (0.23) |
| | | | 90° to case axis | **XUB0BPSWL2** *(3)* | 0.110 | (0.24) |
| | | NPN | Along case axis | **XUB0BNSNL2** | 0.105 | (0.23) |
| | | | 90° to case axis | **XUB0BNSWL2** *(3)* | 0.110 | (0.24) |

### M12 connector

| | | | | | | |
|---|---|---|---|---|---|---|
| **0–15 (0–49.21)** depending on which accessories are used | NO or NC, by programming | PNP | Along case axis | **XUB0BPSNM12** | 0.055 | (0.12) |
| | | | 90° to case axis | **XUB0BPSWM12** *(3)* | 0.060 | (0.13) |
| | | NPN | Along case axis | **XUB0BNSNM12** | 0.055 | (0.12) |
| | | | 90° to case axis | **XUB0BNSWM12** *(3)* | 0.060 | (0.13) |

### Accessories

| Description | Connection | Line of sight | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|
| **Thru-beam transmitter** | Pre-cabled *(1)* | Along case axis | **XUB0BKSNL2T** | 0.105 | (0.23) |
| | | 90° to case axis | **XUB0BKSWL2T** *(3)* | 0.110 | (0.24) |
| | M12 connector | Along case axis | **XUB0BKSNM12T** | 0.055 | (0.12) |
| | | 90° to case axis | **XUB0BKSWM12T** *(3)* | 0.060 | (0.13) |
| **Reflector** 50 x 50 mm | – | – | **XUZC50** | 0.020 | (0.04) |

## Ø 18 plastic

### Pre-cabled *(1)*

| Sensing distance Sn, m (ft) *(2)* | Function | Output | Line of sight | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **0–15 (0–49.21)** depending on which accessories are used | NO or NC, by programming | PNP | Along case axis | **XUB0APSNL2** | 0.095 | (0.21) |
| | | | 90° to case axis | **XUB0APSWL2** *(3)* | 0.100 | (0.22) |
| | | NPN | Along case axis | **XUB0ANSNL2** | 0.095 | (0.21) |
| | | | 90° to case axis | **XUB0ANSWL2** *(3)* | 0.100 | (0.22) |

### M12 connector

| | | | | | | |
|---|---|---|---|---|---|---|
| **0–15 (0–49.21)** depending on whether accessories are used | NO or NC, by programming | PNP | Along case axis | **XUB0APSNM12** | 0.045 | (0.10) |
| | | | 90° to case axis | **XUB0APSWM12** *(3)* | 0.050 | (0.11) |
| | | NPN | Along case axis | **XUB0ANSNM12** | 0.045 | (0.10) |
| | | | 90° to case axis | **XUB0ANSWM12** *(3)* | 0.050 | (0.11) |

### Accessories

| Description | Connection | Line of sight | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|
| **Thru-beam transmitter** | Pre-cabled *(1)* | Along case axis | **XUB0AKSNL2T** | 0.095 | (0.21) |
| | | 90° to case axis | **XUB0AKSWL2T** *(3)* | 0.100 | (0.22) |
| | M12 connector | Along case axis | **XUB0AKSNM12T** | 0.045 | (0.11) |
| | | 90° to case axis | **XUB0AKSWM12T** *(3)* | 0.050 | (0.21) |
| **Reflector** 50 x 50 mm | – | – | **XUZC50** | 0.020 | (0.04) |

### Mounting accessories *(2)*

| Description | Catalog Number | Weight kg | (lb) |
|---|---|---|---|
| **3D mounting kit (**for use on M12 rod) for XUB or XUZC50 | **XUZB2003** | 0.170 | (0.37) |
| **M12 rod** | **XUZ2001** | 0.050 | (0.11) |
| **Support for M12 rod** | **XUZ2003** | 0.150 | (0.33) |
| **Stainless steel mounting bracket** | **XUZA118** | 0.045 | (0.10) |
| **Plastic mounting bracket** with adjustable ball-joint | **XUZA218** | 0.035 | (0.08) |

*(1) For a 5 m cable, replace L2 with L5.*
*Example: XUB0BPSNL2 becomes **XUB0BPSNL5**.*
*For availability, consult the Sensor Competency Center.*
*(2) For further information, see accessory section*
*(3) For line of sight 90° to case axis versions, see sensing distances on page 29.*

*Specifications, Wiring Diagrams, Operating Curves, Dimensions*

# OsiSense® XU Photoelectric sensors

## Multimode

Design ø18, metal or plastic
Three-wire DC, solid-state output

## Specifications

| Sensor type | | | | XUB0●●●●M12, XUB0●●●●M12T | | XUB0●●●●L2, XUB0●●●●L2T |
|---|---|---|---|---|---|---|
| **Product certifications** | | | | UL, CSA, CE | | |
| **Connection** | Connector | DIN 40050 | | M12 | | – |
| | Pre-cabled | IEC 60529 | | – | | Length: 2 m |
| **Sensing distance:**<br>**nominal Sn** (excess gain = 2)<br>**maximum** (excess gain = 1) | | | | **Line of sight along case axis** | **Line of sight 90° to case axis** | **Accessory** |
| | | | **m (ft)** | 0.12 / 0.12 (0.39 /0.39) | 0.11 / 0.11 (0.36 / 0.39) | Without (diffuse with background suppression) |
| | | | **m (ft)** | 0.3 / 0.4 (0.98 / 1.31) | 0.2 / 0.3 (0.66 / 0.98) | Without (diffuse) |
| | | | **m (ft)** | 2 / 3 (6.56 / 9.84) | 1.5 / 2 (4.92 / 6.56) | With reflector (polarized retroreflective) |
| | | | **m (ft)** | 15 / 20 (49.21 / 65.62) | 7 / 10 (22.97 / 32.81) | With thru-beam transmitter (thru-beam) |
| **Type of transmission** | | | | Infrared, except for polarized retroreflective (red) | | |
| **Degree of protection** | | | | IP 69K, double insulation ⧈ | | IP 65, IP 67, double insulation ⧈ |
| **Storage temperature** | | | **°C** | -40 to +70 (-40 to +158 °F) | | |
| **Operating temperature** | | | **°C** | -25 to +55 (-13 to +122 °F) | | |
| **Materials** | | | | Case: nickel plated brass for XUB0B or PBT for XUB0A; Lens: PMMA; Cable: PvR | | |
| **Vibration resistance** | | IEC 60068-2-6 | | 7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz) | | |
| **Shock resistance** | | IEC 60068-2-27 | | 30 gn, duration 11 ms | | |
| **Indicator lights** | Output state | | | Yellow LED (transmission present for **XUB0●●●●●●T**) | | |
| | Supply on | | | Green LED | | |
| | Optical alignment aid/dirty | | | Red LED (except for **XUB0●●●●●●T**) | | |
| **Rated supply voltage** | | | **V** | ⎓ 12–24 with protection against reverse polarity | | |
| **Voltage limits (including ripple)** | | | **V** | ⎓ 10–36 | | |
| **Current consumption, no-load** | | | **mA** | 35 (20 for **XUB0●●●●●●T**) | | |
| **Switching capacity** | | | **mA** | ≤ 100 with overload and short-circuit protection | | |
| **Voltage drop, closed state** | | | **V** | < 1.5 | | |
| **Maximum switching frequency** | | | **Hz** | 250 (200 for diffuse with background suppression) | | |
| **Delays** | First-up | | **ms** | < 200 | | |
| | Response | | **ms** | < 2 (< 2.5 for diffuse with background suppression) | | |
| | Recovery | | **ms** | < 2 (< 2.5 for diffuse with background suppression) | | |

## Wiring diagrams

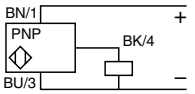
### M12 connector


3 (-)
1 (+)
4 OUT/Output
2 Beam break input *(1)*

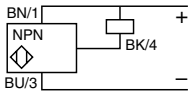
### Pre-cabled

(-) BU (Blue)
(+) BN (Brown)
OUT/Output BK (Black)
Beam break input *(1)*
VI (Violet)

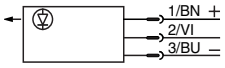
### Receiver, PNP output




### Receiver, NPN output



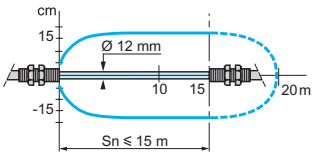

### Thru-beam transmitter



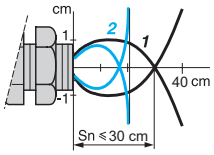

Input 2/VI:
- not connected: *beam made*
- connected to –: *beam broken*

## Operating curves (line of sight along case axis)

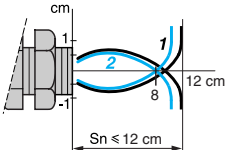
### With thru-beam accessory (thru-beam)



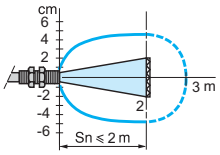

### Without accessory (diffuse)




### Without accessory (diffuse with background suppression)




### With reflector (polarized retroreflective)

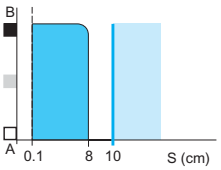



*Object: 10 x 10 cm, **1**: white 90%, **2** : gray 18%*

*With reflector XUZC50*

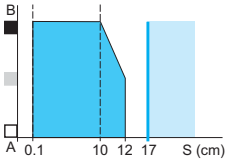
### Variation of usable sensing distance Su (without accessory, with adjustable background suppression)

Teach mode at minimum.



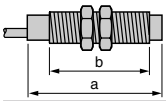

A-B: *object reflection coefficient*
- *Black 6%*
- *Gray 18%*
- *White 90%*
- *Sensing range*
- *Non-sensing zone (matte surfaces)*

Teach mode at maximum.




## Dimensions (mm)

### XUB

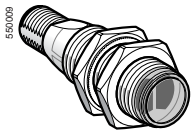



| | Pre-cabled (mm) | | Connector (mm) | |
|---|---|---|---|---|
| | **a** | **b** | **a** | **b** |
| Ø 18, line of sight along case axis | 64 *(2)* | 44 | 78 *(2)* | 44 |
| Ø 18, line of sight 90° to case axis | 78 | 44 | 92 | 44 |

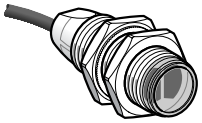
*(1) Beam break input on thru-beam transmitter only.*
*(2) For **XUB0●●●●●●T**, 64 becomes 62 mm and 78 becomes 76 mm.*

5

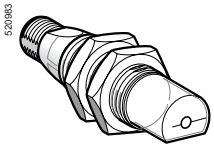
# OsiSense® XU
# Photoelectric sensors
## Single mode function
## Design ø18, plastic
## Three-wire DC, solid-state output



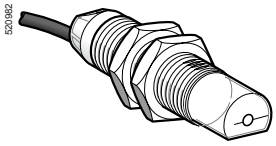

*XUB●A●●NM12*



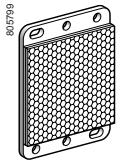
XUB●A●●NL2



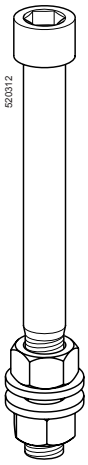

*XUB●A●●WM12*



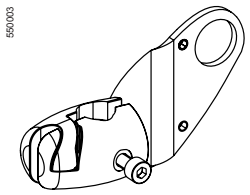

XUB●A●●WL2



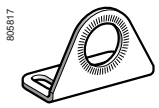

XUZC50



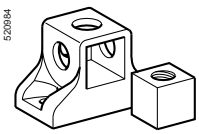

XUZ2001



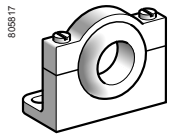

XUZB2003




XUZA118




XUZ2003




XUZA218

## Connector

| Sensing distance Sn, m (ft) | Function | Output | Line of sight | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **Diffuse system** | | | | | | |
| **0.1 (0.33)** | NO | PNP | Along case axis | **XUB4APANM12** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB4APAWM12** | 0.040 | (0.09) |
| | | NPN | Along case axis | **XUB4ANANM12** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB4ANAWM12** | 0.040 | (0.09) |
| | NC | PNP | Along case axis | **XUB4APBNM12** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB4APBWM12** | 0.040 | (0.09) |
| | | NPN | Along case axis | **XUB4ANBNM12** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB4ANBWM12** | 0.040 | (0.09) |
| **Diffuse system with adjustable sensitivity** | | | | | | |
| **0.6 (1.97)** | NO | PNP | Along case axis | **XUB5APANM12** | 0.045 | (0.10) |
| | | | 90° to case axis | **XUB5APAWM12** | 0.050 | (0.11) |
| | | NPN | Along case axis | **XUB5ANANM12** | 0.045 | (0.10) |
| | | | 90° to case axis | **XUB5ANAWM12** | 0.050 | (0.11) |
| | NC | PNP | Along case axis | **XUB5APBNM12** | 0.045 | (0.10) |
| | | | 90° to case axis | **XUB5APBWM12** | 0.050 | (0.11) |
| | | NPN | Along case axis | **XUB5ANBNM12** | 0.045 | (0.10) |
| | | | 90° to case axis | **XUB5ANBWM12** | 0.050 | (0.11) |
| **Polarized retroreflective system** | | | | | | |
| **2 (6.56)** | NO | PNP | Along case axis | **XUB9APANM12** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB9APAWM12** | 0.040 | (0.09) |
| | | NPN | Along case axis | **XUB9ANANM12** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB9ANAWM12** | 0.040 | (0.09) |
| | NC | PNP | Along case axis | **XUB9APBNM12** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB9APBWM12** | 0.040 | (0.09) |
| | | NPN | Along case axis | **XUB9ANBNM12** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB9ANBWM12** | 0.040 | (0.09) |
| **Reflector** 50 x 50 mm | – | – | – | **XUZC50** | 0.020 | (0.04) |
| **Retroreflective system** | | | | | | |
| **4 (13.12)** | NO | PNP | Along case axis | **XUB1APANM12** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB1APAWM12** | 0.040 | (0.09) |
| | | NPN | Along case axis | **XUB1ANANM12** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB1ANAWM12** | 0.040 | (0.09) |
| | NC | PNP | Along case axis | **XUB1APBNM12** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB1APBWM12** | 0.040 | (0.09) |
| | | NPN | Along case axis | **XUB1ANBNM12** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB1ANBWM12** | 0.040 | (0.09) |
| **Reflector** 50 x 50 mm | – | – | – | **XUZC50** | 0.020 | (0.04) |
| **Thru-beam system** | | | | | | |
| **Transmitter 15 (49.21)** | – | – | Along case axis | **XUB2AKSNM12T** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB2AKSWM12T** | 0.040 | (0.09) |
| **Receiver 15 (49.21)** | NO | PNP | Along case axis | **XUB2APANM12R** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB2APAWM12R** | 0.040 | (0.09) |
| | | NPN | Along case axis | **XUB2ANANM12R** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB2ANAWM12R** | 0.040 | (0.09) |
| | NC | PNP | Along case axis | **XUB2APBNM12R** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB2APBWM12R** | 0.040 | (0.09) |
| | | NPN | Along case axis | **XUB2ANBNM12R** | 0.040 | (0.09) |
| | | | 90° to case axis | **XUB2ANBWM12R** | 0.040 | (0.09) |

## Mounting accessories *(1)*

| Description | Catalog Number | Weight kg | (lb) |
|---|---|---|---|
| **3D mounting kit** (for use on M12 rod) for XUB or XUZ C50 | **XUZB2003** | 0.170 | (0.37) |
| **M12 rod** | **XUZ2001** | 0.050 | (0.11) |
| **Support for M12 rod** | **XUZ2003** | 0.150 | (0.33) |
| **Stainless steel mounting bracket** | **XUZA118** | 0.045 | (0.10) |
| **Plastic mounting bracket** with adjustable ball-joint | **XUZA218** | 0.035 | (0.08) |

## Pre-cabled

For a pre-cabled sensor, replace **M12** by **L2** for a 2 m long cable, or by **L5** for a 5 m long cable.
Example: **XUB1APANM12** becomes **XUB1APANL2** for a 2 m long cable and **XUB1APANL5** for a 5 m long cable.
For availability, consult the Sensor Competency Center.

*(1) For further information, see accessory section.*

*Specifications, Wiring Diagrams, Operating Curves, Dimensions*

# OsiSense® XU Photoelectric sensors

## Single mode function
Design ø18, plastic
Three-wire DC, solid-state output

## Specifications

| Sensor type | | | | XUB1, XUB2, XUB4, XUB5, XUB9 | XUB1, XUB2, XUB4, XUB5, XUB9 |
|---|---|---|---|---|---|
| **Product certifications** | | | | UL, CSA, CE | |
| **Connection** | Connector | DIN 40050 | | M12 | – |
| | Pre-cabled | IEC 60529 | | – | Length: 2 m |
| **Sensing distance:** | | | | | |
| **nominal Sn** (excess gain = 2) | | | **m (ft)** | 0.1 / 0.15 (0.33 / 0.49) diffuse | |
| | | | **m (ft)** | 0.6 / 0.8 (1.97 / 2.62) diffuse with adjustable sensitivity | |
| | | | **m (ft)** | 2 / 3 (6.56 / 9.84) polarized retroreflective | |
| maximum (excess gain = 1) | | | **m (ft)** | 4 / 5.5 (13.12 / 18.04) retroreflective | |
| | | | **m (ft)** | 15 / 20 (49.21 / 65.62) thru-beam | |
| **Type of transmission** | | | | Infrared, except polarized retroreflective (red) | |
| **Degree of protection** | | | | IP 69K, double insulation ⧈ | IP 65, IP 67, double insulation ⧈ |
| **Storage temperature** | | | **°C** | -40 to +70 (-40 to +158 °F) | |
| **Operating temperature** | | | **°C** | -25 to +55 (-13 to +122 °F) | |
| **Materials** | Case | | | PBT | |
| | Lens | | | PMMA | |
| | Cable | | | – | PvR |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | | | 7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz) | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | | | 30 gn, duration 11 ms | |
| **Indicator lights** | Output state | | | Yellow LED (except for **XUB2●●●●●●T**) | |
| | Supply on | | | Green LED (only for **XUB2●●●●●●T**) | |
| **Rated supply voltage** | | | **V** | ⎓ 12–24 with protection against reverse polarity | |
| **Voltage limits (including ripple)** | | | **V** | ⎓ 10–36 | |
| **Current consumption, no-load** | | | **mA** | 35 | |
| **Switching capacity** | | | **mA** | ⩽ 100 with overload and short-circuit protection | |
| **Voltage drop, closed state** | | | **V** | 1.5 | |
| **Maximum switching frequency** | | | **Hz** | 500 | |
| **Delays** | First-up | | **ms** | < 15 | |
| | Response | | **ms** | < 1 | |
| | Recovery | | **ms** | < 1 | |

5

## Wiring diagrams

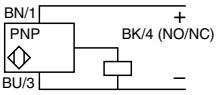
### M12 connector


3 (-)
1 (+)
4 OUT/Output
2 Beam break input *(1)*

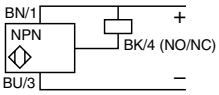
### Pre-cabled

(-) BU (Blue)
(+) BN (Brown)
(OUT/Output) BK (Black)
Beam break input *(1)*
VI (Violet)

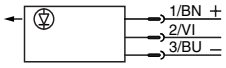
### PNP




### NPN



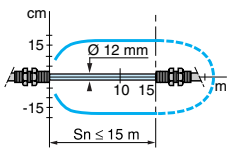

### Transmitter



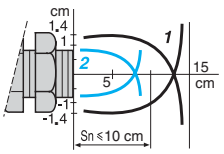

Input 2/VI:
- not connected: *beam made*
- connected to –: *beam broken*

## Operating curves

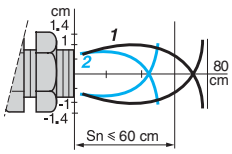
### Thru-beam system



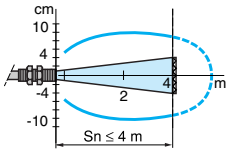

### Diffuse system



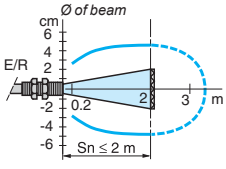

### Diffuse system with adjustable sensitivity




### Retroreflective system




### Polarized retroreflective system



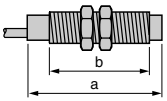

*Object 10 x 10 cm; **1** White 90%; 2 Gray 18%*

*With reflector XUZC50*

*With reflector XUZC50*

## Dimensions (mm)

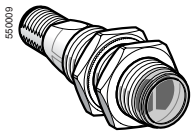
### XUB



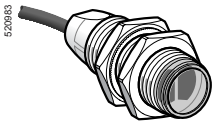

| | Pre-cabled (mm) | | Connector (mm) | |
|---|---|---|---|---|
| | **a** | **b** | **a** | **b** |
| Ø 18, line of sight along case axis | 46 (2) | 28 | 60 *(1)* | 28 |
| Ø 18, line of sight 90° to case axis | 62 | 28 | 76 | 28 |
| Ø 18, line of sight along case axis **XUB5** | 62 | 44 | 76 | 44 |
| Ø 18, line of sight 90° to case axis **XUB5** | 78 | 44 | 92 | 44 |

*(1) Beam break input on thru-beam transmitter only.*
*(2) For **XUB9●●●●●●** (polarized retroreflective) 46 becomes 48 mm and 60 becomes 62 mm.*

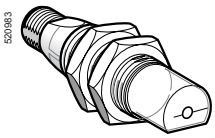
# OsiSense® XU
# Photoelectric sensors
## Single mode function
## Design ø18, metal
## Three-wire DC, solid-state output



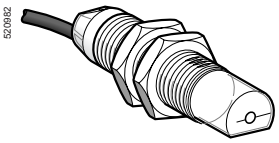

*XUB●B●●NM12*



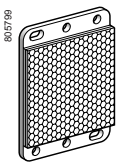

*XUB●B●●NL2*



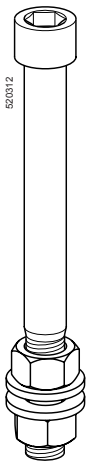

*XUB●B●●WM12*



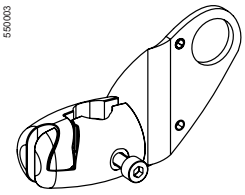

*XUB●B●●WL2*



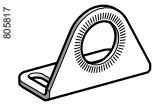

*XUZC50*



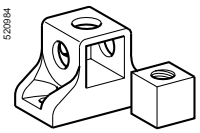

XUZ2001



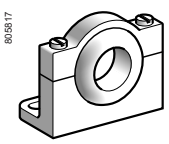

*XUZB2003*




XUZA118




XUZ2003




XUZA218

## Connector

| Sensing distance Sn, m (ft) | Function | Output | Line of sight | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **Diffuse system** | | | | | | |
| **0.1 (0.33)** | NO | PNP | Along case axis | **XUB4BPANM12** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB4BPAWM12** | 0.050 | (0.11) |
| | | NPN | Along case axis | **XUB4BNANM12** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB4BNAWM12** | 0.050 | (0.11) |
| | NC | PNP | Along case axis | **XUB4BPBNM12** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB4BPBWM12** | 0.050 | (0.11) |
| | | NPN | Along case axis | **XUB4BNBNM12** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB4BNBWM12** | 0.050 | (0.11) |
| **Diffuse system with adjustable sensitivity** | | | | | | |
| **0.6 (1.97)** | NO | PNP | Along case axis | **XUB5BPANM12** | 0.055 | (0.12) |
| | | | 90° to case axis | **XUB5BPAWM12** | 0.060 | (0.13) |
| | | NPN | Along case axis | **XUB5BNANM12** | 0.055 | (0.12) |
| | | | 90° to case axis | **XUB5BNAWM12** | 0.060 | (0.13) |
| | NC | PNP | Along case axis | **XUB5BPBNM12** | 0.055 | (0.12) |
| | | | 90° to case axis | **XUB5BPBWM12** | 0.060 | (0.13) |
| | | NPN | Along case axis | **XUB5BNBNM12** | 0.055 | (0.12) |
| | | | 90° to case axis | **XUB5BNBWM12** | 0.060 | (0.13) |
| **Polarized retroreflective system** | | | | | | |
| **2 (6.56)** | NO | PNP | Along case axis | **XUB9BPANM12** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB9BPAWM12** | 0.050 | (0.11) |
| | | NPN | Along case axis | **XUB9BNANM12** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB9BNAWM12** | 0.050 | (0.11) |
| | NC | PNP | Along case axis | **XUB9BPBNM12** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB9BPBWM12** | 0.050 | (0.11) |
| | | NPN | Along case axis | **XUB9BNBNM12** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB9BNBWM12** | 0.050 | (0.11) |
| **Reflector** 50 x 50 mm | – | – | – | **XUZC50** | 0.020 | (0.04) |
| **Retroreflective system** | | | | | | |
| **4 (13.12)** | NO | PNP | Along case axis | **XUB1BPANM12** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB1BPAWM12** | 0.050 | (0.11) |
| | | NPN | Along case axis | **XUB1BNANM12** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB1BNAWM12** | 0.050 | (0.11) |
| | NC | PNP | Along case axis | **XUB1BPBNM12** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB1BPBWM12** | 0.050 | (0.11) |
| | | NPN | Along case axis | **XUB1BNBNM12** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB1BNBWM12** | 0.050 | (0.11) |
| **Reflector** 50 x 50 mm | – | – | – | **XUZC50** | 0.020 | (0.04) |
| **Thru-beam system** | | | | | | |
| **Transmitter 15 (49.21)** | – | – | Along case axis | **XUB2BKSNM12T** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB2BKSWM12T** | 0.050 | (0.11) |
| **Receiver 15 (49.21)** | NO | PNP | Along case axis | **XUB2BPANM12R** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB2BPAWM12R** | 0.050 | (0.11) |
| | | NPN | Along case axis | **XUB2BNANM12R** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB2BNAWM12R** | 0.050 | (0.11) |
| | NC | PNP | Along case axis | **XUB2BPBNM12R** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB2BPBWM12R** | 0.050 | (0.11) |
| | | NPN | Along case axis | **XUB2BNBNM12R** | 0.050 | (0.11) |
| | | | 90° to case axis | **XUB2BNBWM12R** | 0.050 | (0.11) |

## Mounting accessories

| Description | Catalog Number | Weight kg | (lb) |
|---|---|---|---|
| **3D mounting kit** (for use on M12 rod) for XUB or XUZC50 | **XUZB2003** | 0.170 | (0.37) |
| **M12 rod** | **XUZ2001** | 0.050 | (0.11) |
| **Support for M12 rod** | **XUZ2003** | 0.150 | (0.33) |
| **Stainless steel mounting bracket** | **XUZA118** | 0.045 | (0.10) |
| **Plastic mounting bracket** with adjustable ball-joint | **XUZA218** | 0.035 | (0.08) |

## Pre-cabled

For a pre-cabled sensor, replace **M12** by **L2** for a 2 m long cable, or by **L5** for a 5 m long cable.
Example: **XUB1BPANM12** becomes **XUB1BPANL2** for a 2 m long cable and **XUB1BPANL5** for a 5 m long cable.
For availability, consult the Sensor Competency Center.

*Specifications, Wiring Diagrams, Operating Curves, Dimensions*

# OsiSense® XU Photoelectric sensors

## Single mode function
Design ø18, metal
Three-wire DC, solid-state output

## Specifications

| Sensor type | | | | XUB1, XUB2, XUB4, XUB5, XUB9 | XUB1, XUB2, XUB4, XUB5, XUB9 |
|---|---|---|---|---|---|
| **Product certifications** | | | | UL, CSA, CE | |
| **Connection** | Connector | DIN 40050 | | M12 | – |
| | Pre-cabled | IEC 60529 | | – | Length: 2 m |
| **Sensing distance:** | | | | | |
| **nominal Sn** (excess gain = 2) | | | m (ft) | 0.1 / 0.15 (0.33 / 0.49) diffuse | |
| | | | m (ft) | 0.6 / 0.8 (1.97 / 2.62) diffuse with adjustable sensitivity | |
| maximum (excess gain = 1)) | | | m (ft) | 2 / 3 (6.56 / 9.84) polarized retroreflective | |
| | | | m (ft) | 4 / 5.5 (13.12 / 18.04) retroreflective | |
| | | | m (ft) | 15 / 20 (49.21 / 65.62) thru-beam | |
| **Type of transmission** | | | | Infrared, except polarized retroreflective (red) | |
| **Degree of protection** | | | | IP 69K, double insulation ⧈ | IP 65, IP 67, double insulation ⧈ |
| **Storage temperature** | | | °C | -40 to +70 (-40 to +158 °F) | |
| **Operating temperature** | | | °C | -25 to +55 (-13 to +122 °F) | |
| **Materials** | Case | | | Nickel plated brass | |
| | Lens | | | PMMA | |
| | Cable | | | – | PvR |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | | | 7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz) | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | | | 30 gn, duration 11 ms | |
| **Indicator lights** | Output state | | | Yellow LED (except for **XUB2●●●●●●T**) | |
| | Supply on | | | Green LED (only for **XUB2●●●●●●T**) | |
| **Rated supply voltage** | | | V | ⎓ 12–24 with protection against reverse polarity | |
| **Voltage limits (including ripple)** | | | V | ⎓ 10–36 | |
| **Current consumption, no-load** | | | mA | 35 | |
| **Switching capacity** | | | mA | ≤ 100 with overload and short-circuit protection | |
| **Voltage drop, closed state** | | | V | 1.5 | |
| **Maximum switching frequency** | | | Hz | 500 | |
| **Delays** | First-up | | ms | < 15 | |
| | Response | | ms | < 1 | |
| | Recovery | | ms | < 1 | |

5

## Wiring diagrams

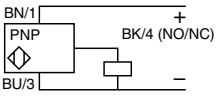
### M12 connector


3 (-)
1 (+)
4 OUT/Output
2 Beam break input *(1)*

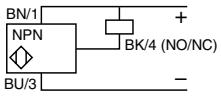
### Pre-cabled

(-) BU (Blue)
(+) BN (Brown)
(OUT/Output) BK (Black)
Beam break input *(1)*
VI (Violet)

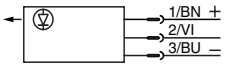
### PNP




### NPN



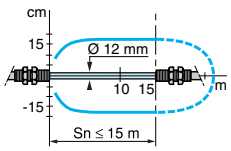

### Transmitter



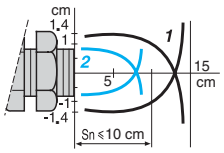

Input 2/VI:
- not connected: *beam made*
- connected to –: *beam broken*

## Operating curves

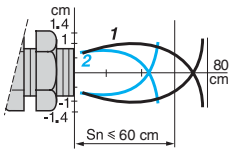
### Thru-beam system



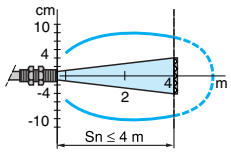

### Diffuse system



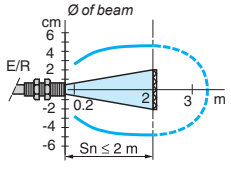

### Diffuse system with adjustable sensitivity




### Retroreflective system




### Polarized retroreflective system



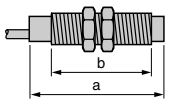

*Object 10 x 10 cm; **1** White 90%; **2** Gray 18%*

*With reflector XUZC50*

*With reflector XUZC50*

## Dimensions (mm)

### XUB



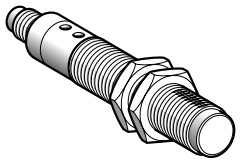

| | Pre-cabled (mm) | | Connector (mm) | |
|---|---|---|---|---|
| | a | b | a | b |
| Ø 18, line of sight along case axis | 46 (2) | 28 | 60 *(1)* | 28 |
| Ø 18, line of sight 90° to case axis | 62 | 28 | 76 | 28 |
| Ø 18, line of sight along case axis **XUB5** | 62 | 44 | 76 | 44 |
| Ø 18, line of sight 90° to case axis **XUB5** | 78 | 44 | 92 | 44 |

*(1) Beam break input on thru-beam transmitter only.*
*(2) For **XUB9●●●●●●** (polarized retroreflective) 46 becomes 48 mm and 60 becomes 62 mm.*

# OsiSense® XU
# Photoelectric sensors

## Application, packaging series
Luminescence sensor *(1)*
DC supply. Solid-state output

**Design ø18**



| | | |
|---|---|---|
| **System** | | **Diffuse** |
| **Type of transmission** | | Ultraviolet (370 nm) |
| **Nominal sensing distance** Sn, mm (in.) | | **20** (0.79) for color mark reading,<br>**0–80** (0–3.15) in diffuse mode |
| **Sensitivity adjustment** | | By potentiometer |
| **Catalog Number** | | |
| **3-wire, PNP** | NO function *(2)* | **XU5M18U1D** |
| **Weight, kg (lb)** | | 0.075 (0.17) |
| **Specifications** | | |
| **Product certifications** | | CE, CSA, UL |
| **Ambient air temperature** | For operation | -25 to +55 °C (-13 to +122 °F) |
| | For storage | -40 to +70 °C (-40 to +158 °F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 7 gn, amplitude ± 0.6 mm (f = 10–55 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 30 gn, duration 11 ms |
| **Degree of protection** | Conforming to IEC 60529 | IP 67 |
| **Connection** | | M12 connector<br>(suitable female connectors, including pre-wired versions) |
| **Materials** | Case | Nickel plated brass |
| | Lenses | PMMA |
| **Spot diameter** | | At 20 mm: Ø 3 x 1 mm |
| **Auxiliary functions** | | External synchronization, locking |
| **Indicator lights** | Output state | Green LED |
| | Teach mode | – |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against reverse polarity |
| **Voltage limits** | | ⎓ 10–30 V (including ripple) |
| **Switching capacity** (sealed) | | ≤ 100 mA<br>with protection against reverse polarity, overload and short-circuit |
| **Voltage drop, closed state** | | ≤ 1.5 V (PNP) |
| **Current consumption, no-load** | | ≤ 20 mA |
| **Maximum switching frequency** | | 1 kHz |
| **Delays** | First-up | ≤ 100 ms |
| | Response | ≤ 500 µs |
| | Recovery | ≤ 500 µs |
| **Time delay** | | Off delay: 20 ms, activated/deactivated by cabling method |

*(1) Applications: detection of invisible reference marks, markings, glues or varnishes containing bluing agents.*
*(2) Output activated when a blued mark on a non-blued background is present.*

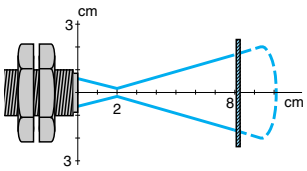
# OsiSense® XU Photoelectric sensors

Application, packaging series
Luminescence sensor *(1)*
DC supply. Solid-state output

## Curves

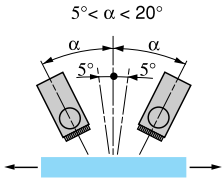
**XU5M18U1D**

**Operating curves**




*Object 5 x 5 cm, white 90%*
*Spot size at 20 mm: oval, Ø 3 x 1 mm*

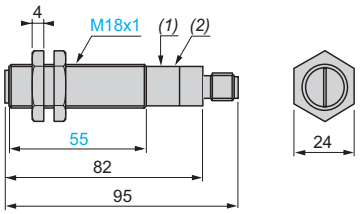
**Vertical inclination**




An angle of 5 to 10° from vertical is recommended for reflective or transparent surfaces
Maximum vertical inclination: 20°

## Dimensions (mm)

**XU5M18U1D**



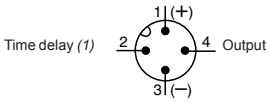

*(1) Potentiometer*
*(2) Green LED*
*Mounting nut tightening torque: 15 N•m. (132.76 lb-in)*

## Wiring diagrams

**XU5M18U1D**

**Connector diagram**

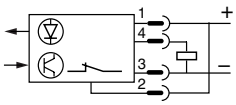
(Sensor connector pin view)



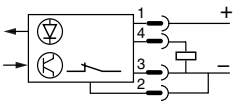

*(1) Off delay of output signal:*
*- no time delay: connect contact 2 to (+)*
*-20 ms time delay: connect contact 2 to (-)*

**Wiring diagram** (3-wire ⎓)

PNP output
Without output signal time delay



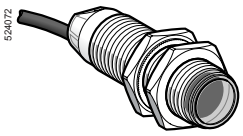

With output signal time delay (20 ms)



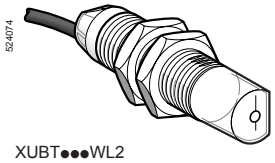

5

# OsiSense® XU
# Photoelectric sensors

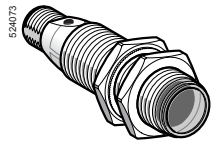
## Application, packaging series
For detection of transparent materials
Design ø18, plastic or stainless steel
Three-wire DC, solid-state output


524072

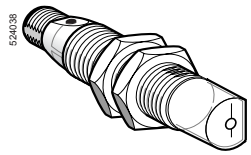
XUBT●●●NL2


524074

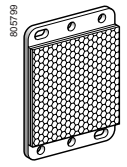
XUBT●●●WL2


524073

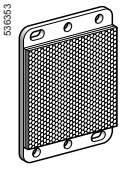
XUBT●●●NM12


524038

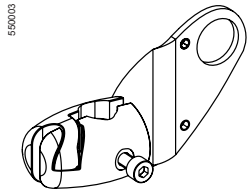
XUBT●●●WM12


805799

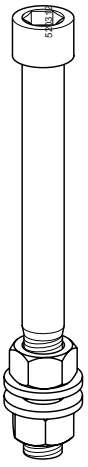
XUZC50


536353

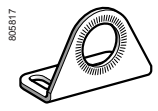
XUZC50HP


550003

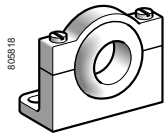
XUZB2003


520983

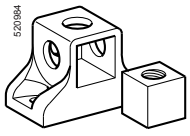
XUZ2001


805817

XUZA118


805818

XUZA218


520984

XUZ2003

5

## Ø 18 plastic, coaxial polarized retroreflective with teach mode

| Sensing distance Sn, m (ft) | Function | Line of sight | Output | Catalog Number | Weight kg | Weight (lb) |
|---|---|---|---|---|---|---|
| **Pre-cabled** *(2)* | | | | | | |
| **0–1.4 (0–4.59)** With reflector XUZC50/C50HP | NO or NC, by programming | Along case axis | PNP | **XUBTAPSNL2** ***(1)*** | 0.110 | (0.24) |
| | | | NPN | **XUBTANSNL2** ***(1)*** | 0.110 | (0.24) |
| **0–0.8 (0–2.62)** With reflector XUZC50/C50HP | NO or NC, by programming | 90° to case axis | PNP | **XUBTAPSWL2** ***(1)*** | 0.113 | (0.25) |
| | | | NPN | **XUBTANSWL2** ***(1)*** | 0.113 | (0.25) |
| **0–0.8 (0–2.62)** With reflector XUZC50/C50HP | NO or NC, by programming | Along case axis | PNP | **XUBT1PSNL2** | 0.110 | (0.24) |
| | | | NPN | **XUBT1NSNL2** | 0.110 | (0.24) |
| **M12 connector** | | | | | | |
| **0–1.4 (0–4.59)** With reflector XUZ C50/C50HP | NO or NC, by programming | Along case axis | PNP | **XUBTAPSNM12** ***(1)*** | 0.045 | (0.10) |
| | | | NPN | **XUBTANSNM12** ***(1)*** | 0.045 | (0.10) |
| **0–0.8 (0–2.62)** With reflector XUZC50/C50HP | NO or NC, by programming | 90° to case axis | PNP | **XUBTAPSWM12** ***(1)*** | 0.048 | (0.11) |
| | | | NPN | **XUBTANSWM12** ***(1)*** | 0.048 | (0.11) |
| **0–0.8 (0–2.62)** With reflector XUZC50/C50HP | NO or NC, by programming | Along case axis | PNP | **XUBT1PSNM12** | 0.110 | (0.24) |
| | | | NPN | **XUBT1NSNM12** | 0.110 | (0.24) |

## Ø 18 stainless steel, coaxial polarized retroreflective with teach mode

| Sensing distance Sn, m (ft) | Function | Line of sight | Output | Catalog Number | Weight kg | Weight (lb) |
|---|---|---|---|---|---|---|
| **Pre-cabled** *(2)* | | | | | | |
| **0–1.4 (0–4.59)** With reflector XUZC50/C50HP | NO or NC, by programming | Along case axis | PNP | **XUBTSPSNL2** ***(1)*** | 0.135 | (0.30) |
| | | | NPN | **XUBTSNSNL2** ***(1)*** | 0.135 | (0.30) |
| **0–0.8 (0–2.62)** With reflector XUZC50/C50HP | NO or NC, by programming | 90° to case axis | PNP | **XUBTSPSWL2** ***(1)*** | 0.138 | (0.30) |
| | | | NPN | **XUBTSNSWL2** ***(1)*** | 0.138 | (0.30) |
| **M12 connector** | | | | | | |
| **0–1.4 (0–4.59)** With reflector XUZ C50/C50HP | NO or NC, by programming | Along case axis | PNP | **XUBTSPSNM12** ***(1)*** | 0.070 | (0.15) |
| | | | NPN | **XUBTSNSNM12** ***(1)*** | 0.070 | (0.15) |
| **0–0.8 (0–2.62)** With reflector XUZC50/C50HP | NO or NC, by programming | 90° to case axis | PNP | **XUBTSPSWM12** ***(1)*** | 0.073 | (0.16) |
| | | | NPN | **XUBTSNSWM12** ***(1)*** | 0.073 | 0.16) |

## Accessories for XUBT●●●●●

| Description | Dimensions | Catalog Number | Weight kg | Weight (lb) |
|---|---|---|---|---|
| **Universal reflector** (without blind zone) | 50 x 50 mm | **XUZC50** | 0.020 | (0.04) |
| **Application reflector** (accuracy, detection sensitivity) | 50 x 50 mm | **XUZC50HP** | 0.020 | (0.04) |

## Mounting accessories

| Description | Catalog Number | Weight kg | Weight (lb) |
|---|---|---|---|
| **3D mounting kit** for use on M12 rod for XUBT or XUZC50/C50HP | **XUZB2003** | 0.170 | (0.17) |
| **M12 rod** | **XUZ2001** | 0.050 | (0.11) |
| **Support for M12 rod** | **XUZ2003** | 0.150 | (0.33) |
| **Stainless steel mounting bracket** | **XUZA118** | 0.045 | (0.10) |
| **Plastic mounting bracket** with adjustable ball-joint | **XUZA218** | 0.035 | (0.08) |

*(1)* ***Application reflector XUZC50HP included with the sensor.***
*(2) For a 5 m cable, replace L2 by* ***L5****.*
*Example: XUBTAPSNL2 becomes* ***XUBTAPSNL5****.*

*Specifications, Wiring Diagrams, Operating Curves, Dimensions*

# OsiSense® XU Photoelectric sensors

## Application, packaging series

For detection of transparent materials
Design ø18, plastic or stainless steel
Three-wire DC, solid-state output

## Specifications

| Sensor type | | | | XUBT●●●●M12 | XUBT●●●●L2 |
|---|---|---|---|---|---|
| **Product certifications** | | | | UL, CSA, CE | |
| **Connection** | Connector | DIN 40050 | | M12 | – |
| | Pre-cabled | IEC 60529 | | – | Length: 2 m |
| **Nominal sensing distance Sn** | Line of sight along case axis | | **m (ft)** | 0–1.4 (0–4.59) with reflector XUZC50/C50HP | |
| | Line of sight 90° to case axis | | **m (ft)** | 0–0.8 (0–2.62) with reflector XUZC50/C50HP | |
| **Beam divergence** | | | | 1.5° (Ø 37 mm spot at 1.4 m) | |
| **Blind zone** | | | | 0 | |
| **Preferred approach direction** | | | | Any | |
| **Type of transmission** | | | | Coaxial polarized red | |
| **Degree of protection** | | | | **XUBTA (plastic)** IP65, IP67, cable version (IEC 60529); IP 69K connector version (DIN 40050) **XUBTS (stainless)** IP 65, IP 67, and IP 69K double insulation ⧈ | |
| **Temperature** | Storage | | **°C (°F)** | -40 to +70 (-40 to +158) | |
| | Operation | | **°C (°F)** | 0 to +55 (+32 to +131) | |
| **Materials** | Case | | | **XUBTA●●●●●**: plastic, PBT<br>**XUBTS●●●●●**: stainless steel (grade 304Cu) | |
| | Lens | | | PMMA | |
| | Cable | | | PvR | |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | | | 7 gn, amplitude ± 1 mm (f = 10 to 55 Hz) | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | | | 30 gn, duration 11 ms | |
| **Indicator lights** | Output state | | | Yellow LED | |
| | Supply on | | | Green LED | |
| | Stability | | | Red LED | |
| **Rated supply voltage** | | | **V** | ⎓ 12–24 with protection against reverse polarity | |
| **Voltage limits (including ripple)** | | | **V** | ⎓ 10–32 | |
| **Current consumption, no-load** | | | **mA** | 45 | |
| **Switching capacity per output** | | | **mA** | ≤ 100 with overload and short-circuit protection | |
| **Voltage drop, closed state** | | | **V** | ≤ 1.5 | |
| **Maximum switching frequency** | | | **Hz** | 1000 | |
| **Delays** | First-up | | **ms** | < 200 | |
| | Response and recovery | | **µs** | < 500 | |

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## Wiring diagrams

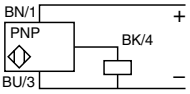
### M12 connector


3 (-)
1 (+)
4 OUT/Output
2 Not connected

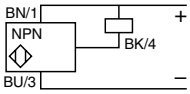
### Pre-cabled

(-) BU (Blue)
(+) BN (Brown)
OUT/Output BK (Black)

### PNP



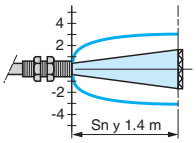

### NPN



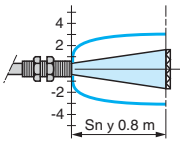

## Operating curves

### With reflector XUZC50

**Line of sight along case axis**

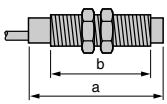



**Line of sight 90° to case axis**




## Dimensions (mm)

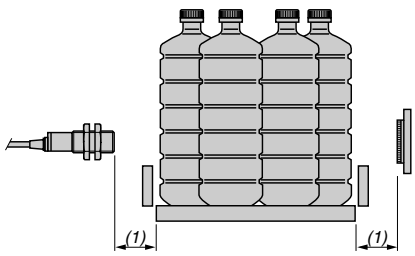
### XUBT●●●●




| | Pre-cabled (mm) | | Plug-in connector (mm) | |
|---|---|---|---|---|
| | a | b | a | b |
| Ø 18, line of sight along case axis | 64 | 44 | 78 | 44 |
| Ø 18, line of sight 90° to case axis | 78 | 44 | 92 | 44 |

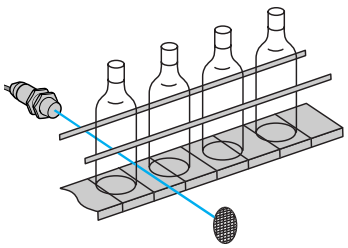
## Setup

### Recommended distances and application restraints

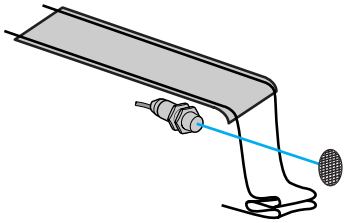



*(1) No blind zone.*

## Application examples

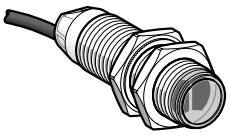


*Detection of transparent bottles.*

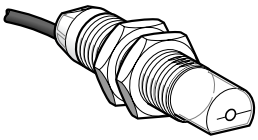


*Detection of plastic film.*

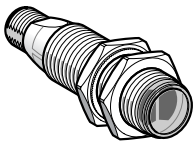
# OsiSense® XU
# Photoelectric sensors
## Application, multimode
## food and beverage processing series
## Design ø18, metal, stainless steel
## Three-wire DC, solid-state output



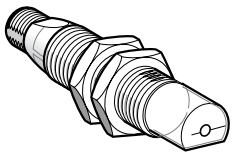
XUB0●●●NL2



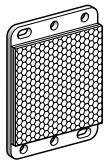
XUB0●●●WL2



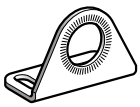
XUB0●●●NM12



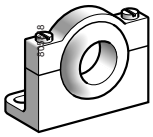
XUB0●●●WM12



XUZC50



XUZA118



XUZA218

XUZB2005

### Ø 18 stainless steel

**Pre-cabled** *(1)*

| Sensing distance Sn, m (ft) | Function | Output | Line of sight | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **0–15 (0–49.21)** depending on whether accessories are used | NO or NC, by programming | PNP | Along case axis | **XUB0SPSNL2** | 0.105 | (0.23) |
| | | | 90° to case axis | **XUB0SPSWL2** *(3)* | 0.110 | (0.24) |
| | | NPN | Along case axis | **XUB0SNSNL2** | 0.105 | (0.23) |
| | | | 90° to case axis | **XUB0SNSWL2** *(3)* | 0.110 | (0.24) |
| **M12 connector** | | | | | | |
| **0–15 (0–49.21)** depending on whether accessories are used | NO or NC, by programming | PNP | Along case axis | **XUB0SPSNM12** | 0.055 | (0.12) |
| | | | 90° to case axis | **XUB0SPSWM12** *(3)* | 0.060 | (0.13) |
| | | NPN | Along case axis | **XUB0SNSNM12** | 0.055 | (0.12) |
| | | | 90° to case axis | **XUB0SNSWM12** *(3)* | 0.060 | (0.13) |

**Accessories**

| Description | Connection | Line of sight | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|
| **Thru-beam accessories** (transmitter) | Pre-cabled *(1)* | Along case axis | **XUB0SKSNL2T** | 0.105 | (0.23) |
| | | 90° to case axis | **XUB0SKSWL2T** *(3)* | 0.110 | (0.24) |
| | M12 connector | Along case axis | **XUB0SKSNM12T** | 0.055 | (0.12) |
| | | 90° to case axis | **XUB0SKSWM12T** *(3)* | 0.060 | (0.13) |
| **Reflector** 50 x 50 mm | – | – | **XUZC50** | 0.020 | (0.04) |

**Mounting accessories**

| Description | Catalog Number | Weight kg | (lb) |
|---|---|---|---|
| **Stainless steel mounting bracket** | **XUZA118** | 0.045 | (0.10) |
| **Plastic mounting bracket** with adjustable ball-joint | **XUZA218** | 0.035 | (0.08) |
| **Plastic mounting clamp,** 24.1 mm centers with locking screw | **XUZB2005** | 0.007 | (0.02) |

*(1) For a 5 m cable, replace L2 with L5.*
*Example: XUB0SPSNL2 becomes **XUB0SPSNL5**.*

*Specifications, Wiring Diagrams, Operating Curves, Dimensions*

# OsiSense® XU Photoelectric sensors

## Application, multimode food and beverage processing series

Design ø18, metal, stainless steel

Three-wire DC, solid-state output

## Specifications

| Sensor type | | | XUB0●●●●M12, XUB0●●●●M12T | | XUB0●●●●L2, XUB0●●●●L2T |
|---|---|---|---|---|---|
| **Product certifications** | | | UL, CSA, CE | | |
| **Connection** | Connector | | M12 | | – |
| | Pre-cabled | | – | | Length: 2 m |
| **Sensing distance:** | | | Line of sight along case axis | Line of sight 90° to case axis | Accessory |
| **nominal Sn** (excess gain = 2) | | m (ft) | 0.12 / 0.12 (0.39 / 0.39) | 0.11 / 0.11 (0.36 / 0.36) | Without (diffuse with background suppression) |
| maximum (excess gain = 1) | | m (ft) | 0.3 / 0.4 (0.98 / 1.31) | 0.2 / 0.3 (0.66 / 0.98) | Without (diffuse) |
| | | m (ft) | 2 / 3 (6.56 / 9.84) | 1.5 / 2 (4.92 / 6.56) | With reflector (polarized retroreflective) |
| | | m (ft) | 15 / 20 (49.21 / 65.62) | 10 / 14 (32.81 / 45.93) | With thru-beam accessory (thru-beam) |
| **Type of transmission** | | | Infrared, except polarized retroreflective (red) | | |
| **Degree of protection** | | | IP 65, IP 67 conforming to IEC 60529; IP 69K conforming to DIN 40050; double insulation ⧈ | | |
| **Storage temperature** | | °C | -40 to +70 (-40 to +158 °F) | | |
| **Operating temperature** | | °C | -25 to +55 (-13 to +131 °F) | | |
| **Materials** | | | Case: stainless steel, grade 304CU; Lens: PMMA; Cable: PvR | | |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | | 7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz) | | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | | 30 gn, duration 11 ms | | |
| **Indicator lights** | Output state | | Yellow LED (transmission present for **XUB0●●●●●●T**) | | |
| | Supply on | | Green LED | | |
| | Stability | | Red LED (except for **XUB0●●●●●●T**) | | |
| **Rated supply voltage** | | Vdc | 12–24 with protection against reverse polarity | | |
| **Voltage limits (including ripple)** | | Vdc | 10–36 | | |
| **Current consumption, no-load** | | mA | 35 (20 for **XUB0●●●●●●T**) | | |
| **Switching capacity** | | mA | ≤ 100 with overload and short-circuit protection | | |
| **Voltage drop, closed state** | | V | 1.5 | | |
| **Maximum switching frequency** | | Hz | 250 | | |
| **Delays** | First-up | ms | < 200 | | |
| | Response | ms | < 2 | | |
| | Recovery | ms | < 2 | | |

## Wiring diagrams

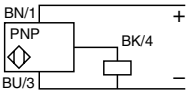
### M12 connector


3 (-)
1 (+)
4 OUT/Output
2 Beam break input *(1)*

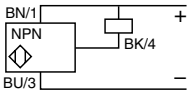
### Pre-cabled

(-) BU (Blue)
(+) BN (Brown)
OUT/Output BK (Black)
Beam break input *(1)*
VI (Violet)

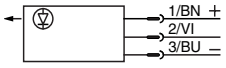
### PNP




### NPN



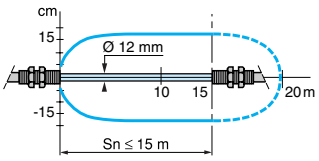

### Thru-beam accessory



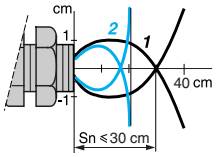

Input 2/VI:
- not connected: *beam made*
- connected to –: *beam broken*

## Operating curves (line of sight along case axis)

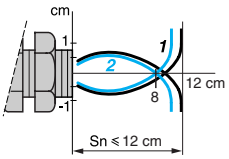
### With thru-beam accessory (thru-beam)




### Without accessory (diffuse)

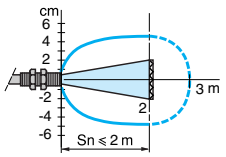



### Without accessory (diffuse with bckgrnd. suppression




*Object: 10 x 10 cm, **1**: white 90%, **2**: gray 18%*

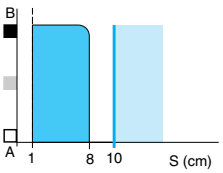
### With reflector (polarized retroreflective)




*With reflector XUZC50*

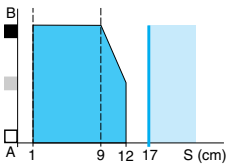
### Variation of usable sensing distance Su (without accessory, with adjustable background suppression)

Teach mode at minimum



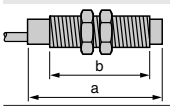

A-B: *object reflection coefficient*
- *Black 6%*
- *Gray 18%*
- *White 90%*
- *Sensing range*
- *Non-sensing zone (matte surfaces)*

Teach mode at maximum




## Dimensions (mm)

### XUB




| | Pre-cabled (mm) | | Connector (mm) | |
|---|---|---|---|---|
| | a | b | a | b |
| Ø 18, line of sight along case axis | 64 *(2)* | 44 | 78 *(2)* | 44 |
| Ø 18, line of sight 90° to case axis | 78 | 44 | 92 | 44 |

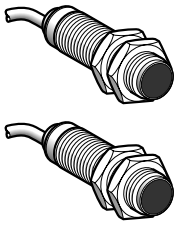
*(1) Beam break input on thru-beam transmitter only.*
*(2) For **XUB0●●●●●●T**, 64 becomes 62 mm and 78 becomes 76 mm.*

# OsiSense® XU Photoelectric sensors

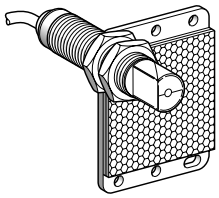
## Application, single mode
food and beverage processing series
Stainless steel case M18 x 1
DC Solid-state output

**Design ø18**

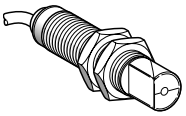
1



2



3



| System | | Thru-beam 1 | Retroreflective 2 | Polarized retroreflective 2 | Diffuse 3 |
|---|---|---|---|---|---|
| Type of transmission | | Infrared | Infrared | Red | Infrared |
| Sensing distance, m (ft) | Nominal Sn (excess gain = 2) | 15 (49.21) | 4 (13.12) | 2 (6.56) | 0.10 (0.33) |
| | Maximum (excess gain = 1) | 20 (65.62) | 5.5 (18.04) (with 50 x 50 mm reflector) | 3 (9.84) (with 50 x 50 mm reflector) | 0.15 (0.49) |
| **Catalog numbers of pre-cabled versions** *(1)* | | | | | |
| 3-wire, PNP NO or NC programmable function | Line of sight along case axis | **XU2N18PP341** *(2)* | **XU1N18PP341** *(3)* | **XU9N18PP341** *(3)* | **XU5N18PP341** |
| | Line of sight 90° to case axis | **XU2N18PP341W** *(2)* | **XU1N18PP341W** *(3)* | **XU9N18PP341W** *(3)* | **XU5N18PP341W** |
| 3-wire, NPN NO or NC programmable function | Line of sight along case axis | **XU2N18NP341** *(2)* | **XU1N18NP341** *(3)* | **XU9N18NP341** *(3)* | **XU5N18NP341** |
| | Line of sight 90° to case axis | **XU2N18NP341W** *(2)* | **XU1N18NP341W** *(3)* | **XU9N18NP341W** *(3)* | **XU5N18NP341W** |
| Weight, kg (lb) | | 0.270 (0.60) | 0.155 (0.34) | 0.155 (0.34) | 0.135 (0.30) |
| **Catalog numbers of connector versions** | | | | | |
| 3-wire, PNP NO or NC programmable function | Line of sight along case axis | **XU2N18PP341D** *(2)* | **XU1N18PP341D** *(3)* | **XU9N18PP341D** *(3)* | **XU5N18PP341D** |
| | Line of sight 90° to case axis | **XU2N18PP341WD** *(2)* | **XU1N18PP341WD** *(3)* | **XU9N18PP341WD** *(3)* | **XU5N18PP341WD** |
| 3-wire, NPN NO or NC programmable function | Line of sight along case axis | **XU2N18NP341D** *(2)* | **XU1N18NP341D** *(3)* | **XU9N18NP341D** *(3)* | **XU5N18NP341D** |
| | Line of sight 90° to case axis | **XU2N18NP341WD** *(2)* | **XU1N18NP341WD** *(3)* | **XU9N18NP341WD** *(3)* | **XU5N18NP341WD** |
| Weight, kg (lb) | | 0.130 (0.29) | 0.085 (0.19) | 0.085 (0.19) | 0.065 (0.14) |

*(1) Sensors available with 5 m long cable: To order, add **L5** to the end of the catalog number selected from above.*
*Example: sensor **XU1N18PP341** with 5 m cable becomes **XU1N18PP341L5**.*
*(2) Catalog numbers for both transmitter and receiver for thru-beam system sensors.*
*(3) 50 x 50 mm reflector included with retroreflective system sensors.*

## Catalog numbers of mounting accessories

| Description | Catalog Number | Weight kg | (lb) |
|---|---|---|---|
| **Stainless steel mounting bracket** | **XUZA118** | 0.045 | (0.10) |
| **Plastic mounting bracket** | **XUZA218** | 0.035 | (0.08) |
| **Set of 2 stainless steel nuts** | **XSZE318** | 0.020 | (0.04) |
| **Set of 2 plastic nuts** | **XSZE218** | 0.004 | (0.01) |

# OsiSense® XU Photoelectric sensors

Application, single mode
food and beverage processing series
Stainless steel case M18 x 1
DC Solid-state output

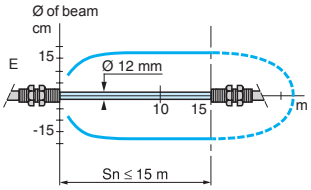
## Specifications

| | | |
|---|---|---|
| **Product certifications** | | CE, UL, CSA |
| **Ambient air temperature** | | For operation: -25 to +55 °C (-13 to +131 °F). For storage: -40 to+70 °C (-40 to +158 °F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 25 gn, amplitude ± 1.5 mm (f = 10–55 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 30 gn, duration 11 ms |
| **Degree of protection** | Conforming to IEC 60529 | IP 67 |
| **Connection** | Pre-cabled | Pre-cabled, diameter 4.2 mm, length 2 m (3), wire c.s.a.: 4 x 0.34 mm² (22 AWG) |
| | Connector | M12 male connector, 4-pin (suitable female connectors, including pre-wired versions. ) |
| **Materials** | Case | Food and beverage processing stainless steel, grade 304 Cu |
| | Lenses | PMMA |
| | Cable | PvR |
| **Rated supply voltage** | | 12–24 Vdc with protection against reverse polarity |
| **Voltage limits** | | 10–0 Vdc (including ripple) |
| **Switching capacity** (sealed) | | ≤100 mA with overload and short-circuit protection |
| **Voltage drop, closed state** | | ≤ 1.5 V |
| **Current consumption, no-load** | | ≤ 30 mA (retroreflective and diffuse), ≤ 50 mA (thru-beam) |
| **Maximum switching frequency** | | 500 Hz |
| **Delays** | First-up | ≤ 15 ms |
| | Response | ≤ 1 ms |
| | Recovery | ≤ 1 ms |
| **Indicator lights** | Supply on | Green LED, on transmitter only |
| | Output state | Yellow LED, on receiver only |

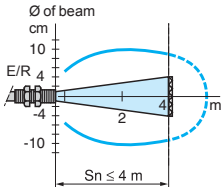
*(1) Sensors available with 5 m long cable: To order, add **L5** to the end of the catalog number selected from above.*
*Example: sensor **XU1N18PP341** with 5 m cable becomes **XU1N18PP341L5**.*

## Operating Curves

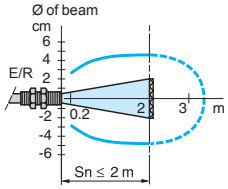
**Thru-beam system**



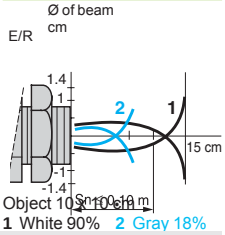

**Retroreflective system with reflector XUZC50**




**Polarized retroreflective system with reflector XUZC50**

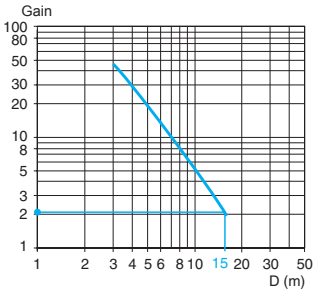



**Diffuse system**

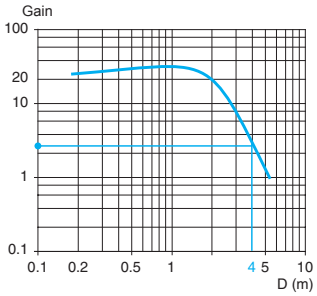



**Excess gain curves (ambient temperature: +25 °C [+77 ° F] )**

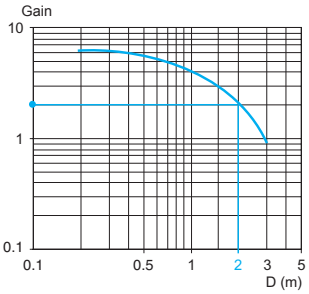
**Thru-beam system**



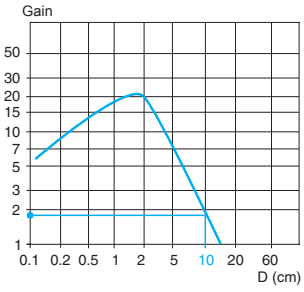

**Retroreflective system with reflector XUZC50**




**Polarized retroreflctive system with reflector XUZC50**




**Diffuse system**

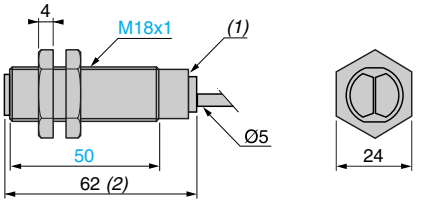



Object 10 x 10 cm
White 90%

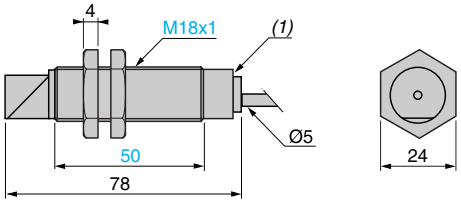
# OsiSense® XU
# Photoelectric sensors
## Application, single mode
food and beverage processing series
Stainless steel case M18 x 1
DC Solid-state output

## Dimensions (mm)

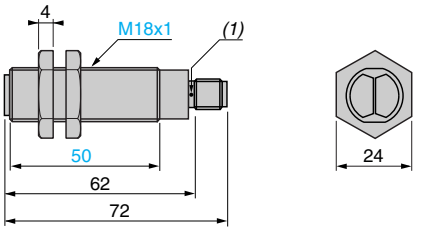
**XU●N18●●341**



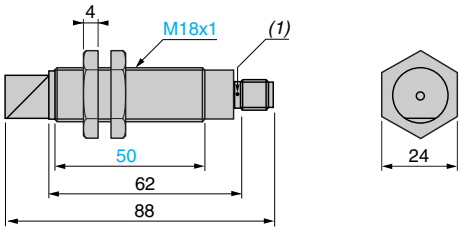

**XU●N18●●341W**




**XU●N18●●341D**




**XU●N18●●341WD**




*(1) LED*
*(2) 64 for XU9N18●●341*
*mounting nut tightening torque: < 15 N•m (132.76 lb-in)*
*Connector tightening torque: 2 N•m (17.70 lb-in)*

5

# OsiSense® XU Photoelectric sensors

XU Application, single mode
food and beverage processing series
Stainless steel case M18 x 1
DC Solid-state output

## Wiring diagrams

### M12 connector

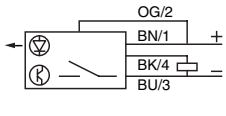

3 (–)
1 (+)
4 OUT/Output
2 Prog (or beam break input for thru-beam transmitter only)

### Pre-cabled

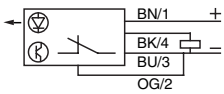
(–) BU (Blue)
(+) BN (Brown)
(Out/Output) BK (Black)
(Prog) OG (Orange)
(Beam break input) VI (Violet) on thru-beam transmitter only

### Wiring diagrams - diffuse

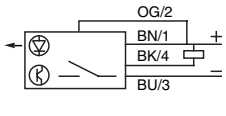
**PNP NO**



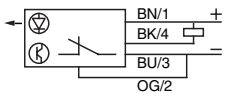

**PNP NC**



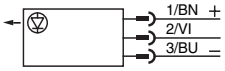

**NPN NO**




**NPN NC**

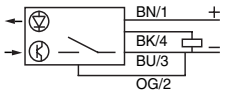



**Transmitter**

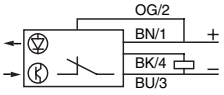



### Wiring diagrams - retroreflective and thru-beam

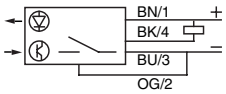
**PNP NO**



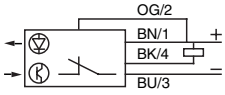

**PNP NC**




**NPN NO**

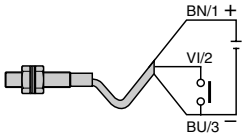



**NPN NC**

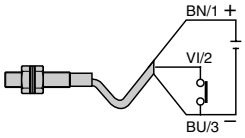



### Beam break input on thru-beam transmitter only

**Beam made**




**Beam broken**



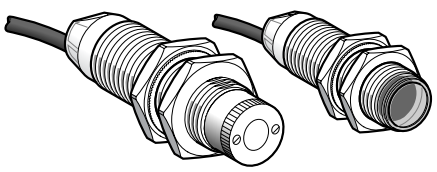

5

# OsiSense® XU Photoelectric sensors

## Application, material handling series

Laser transmission. Design ø18, plastic or metal

Three-wire DC Solid-state output



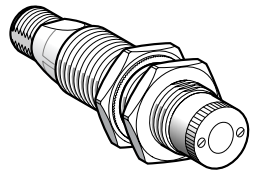
*XUBL●●CNL2*

### Ø 18, plastic, thru-beam system with teach mode, laser transmission (Transmitter +receiver)

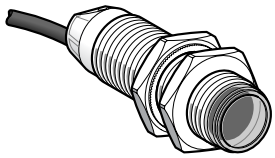
| Sensing distance (Sn) m, (ft) | Function | Connection | Output | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **0–100 (328.08)** | NO or NC, by programming | Pre-cabled | PNP | **XUBLAPCNL2** | 0.180 | (0.40) |
| | | | NPN | **XUBLANCNL2** | 0.180 | (0.40) |
| | | M12 connector | PNP | **XUBLAPCNM12** | 0.078 | (0.17) |
| | | | NPN | **XUBLANCNM12** | 0.078 | (0.17) |

### Ø 18, metal, thru-beam system with teach mode, laser transmission (Transmitter +receiver)

| Sensing distance (Sn) m, (ft) | Function | Connection | Output | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **0–100 (328.08)** | NO or NC, by programming | Pre-cabled | PNP | **XUBLBPCNL2** | 0.230 | (0.51) |
| | | | NPN | **XUBLBNCNL2** | 0.230 | (0.51) |
| | | M12 connector | PNP | **XUBLBPCNM12** | 0.130 | (0.29) |
| | | | NPN | **XUBLBNCNM12** | 0.130 | (0.29) |



*XUBL●●CNM12T*



*XUBL●●CNL2R*

### Separate components

#### Ø 18 transmitter

| Description | Connection | Output | For use with | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **Plastic** | Pre-cabled | – | XUBLA●CNL2 | **XUBLAKCNL2T** | 0.090 | (0.20) |
| | M12 connector | – | XUBLA●CNM12 | **XUBLAKCNM12T** | 0.040 | (0.09) |
| **Metal** | Pre-cabled | – | XUBLB●CNL2 | **XUBLBKCNL2T** | 0.110 | (0.24) |
| | M12 connector | – | XUBLB●CNM12 | **XUBLBKCNM12T** | 0.060 | (0.13) |

#### Ø 18 receiver

| Description | Connection | Output | For use with | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **Plastic** | Pre-cabled | PNP | XUBLAPCNL2 | **XUBLAPCNL2R** | 0.090 | (0.20) |
| | | NPN | XUBLANCNL2 | **XUBLANCNL2R** | 0.090 | (0.20) |
| | M12 connector | PNP | XUBLAPCNM12 | **XUBLAPCNM12R** | 0.040 | (0.09) |
| | | NPN | XUBLANCNM12 | **XUBLANCNM12R** | 0.040 | (0.09) |
| **Metal** | Pre-cabled | PNP | XUBLBPCNL2 | **XUBLBPCNL2R** | 0.120 | (0.26) |
| | | NPN | XUBLBNCNM12 | **XUBLBNCNL2R** | 0.120 | (0.26) |
| | M12 connector | PNP | XUBLBPCNM12 | **XUBLBPCNM12R** | 0.070 | (0.15) |
| | | NPN | XUBLBNCNM12 | **XUBLBNCNM12R** | 0.070 | (0.15) |

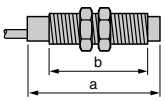
*XUZA318*

*XUZA218*

### Mounting accessories for XUBL●

| Description | Catalog Number | Weight kg | (lb) |
|---|---|---|---|
| **Precision mounting bracket** with micrometric adjustment | **XUZA318** | 0.170 | (0.37) |
| **Plastic mounting bracket** with adjustable ball-joint | **XUZA218** | 0.035 | (0.08) |

### Dimensions (mm)




| | Pre-cabled (mm) | | Connector (mm) | |
|---|---|---|---|---|
| | a | b | a | b |
| Receiver *(1)* | 62 | 44 | 76 | 44 |
| Transmitter *(2)* | 52 | 28 | 66 | 28 |

*(1) Yellow, green and red LED on receiver*

*(2) Green LED on transmitter*

***Note:** mounting nut tightening torque: < 4 Nm (35.40 lb-in)*

# OsiSense® XU Photoelectric sensors

## Application, material handling series

Laser transmission. Design ø18, plastic or metal
Three-wire DC Solid-state output

## Specifications

| Sensor type | | | XUBL●●●●M12 | XUBL●●●●L2 |
|---|---|---|---|---|
| **Product certifications** | | | UL, CSA, CE | |
| **Connection** | Connector | | M12 (suitable female connectors, including pre-wired versions | – |
| | Pre-cabled | | – | Length: 2 m |
| **Nominal sensing distance Sn** | | **m** | 0–100, excess gain 70–3 | |
| **Blind zone** | | | 0 | |
| **Preferred object approach direction** | | | Any | |
| **Type of transmission** | | | Red laser, wavelength 670 nm | |
| **Transmission power** | | | Power < 1 mW, class 1 conforming to IEC 825-1 | |
| **Degree of protection** | Conforming to IEC 60529 | | IP 67, double insulation ⧈ | |
| **Temperature** | Storage | **°C** | -40 to +70 (-40 to +158 °F) | |
| | Operation | **°C** | -10 to +45 (+14 to +113 °F) | |
| **Materials** | Case | | **XUBLA●●●●●**: PBT; **XUBLB●●●●●**: nickel plated brass | |
| | Lens | | PMMA | |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | | 7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz) | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | | 30 gn, duration 11 ms | |
| **Indicator lights** | Output state and alignment aid | | Yellow LED | |
| | Supply on and teaching | | Green LED | |
| | Stability | | Red LED | |
| **Rated supply voltage** | | **V** | ⎓ 12–24 with protection against reverse polarity | |
| **Voltage limits (including ripple)** | | **V** | ⎓ 10–30 | |
| **Current consumption, no-load** | | **mA** | 25 for transmitter or receiver | |
| **Switching capacity per output** | | **mA** | ≤ 100 with overload and short-circuit protection | |
| **Voltage drop, closed state** | | **V** | ≤ 1.5 | |
| **Maximum switching frequency** | | **Hz** | 1500 | |
| **Delays** | First-up | **ms** | < 80 | |
| | Response and recovery | **ms** | < 0.4 | |

## Wiring diagrams

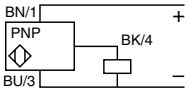
### M12 connector


3 (-)
1 (+)
4 OUT/Output
2 Beam break input

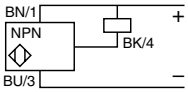
### Pre-cabled

(-) BU (Blue)
(+) BN (Brown)
OUT/Output BK (Black)
Beam break input
VI (Violet)

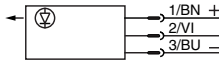
### PNP




### NPN



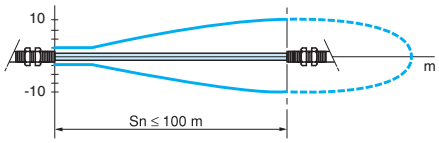

### Transmitter



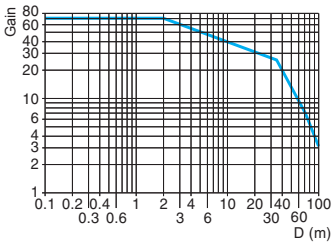

Input 2/VI:
*- not connected: beam made*
*- connected to -: beam broken*

## Operating curves

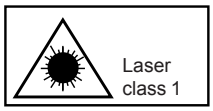
### Detection curve (set to infinity)




### Excess gain curve

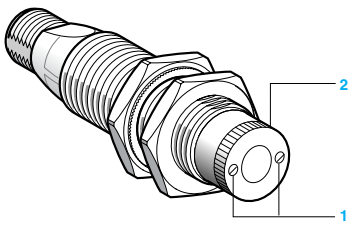



## Operating considerations

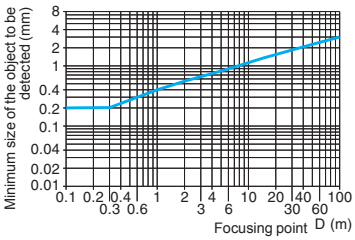



Laser class 1, conforming to IEC 825-1.

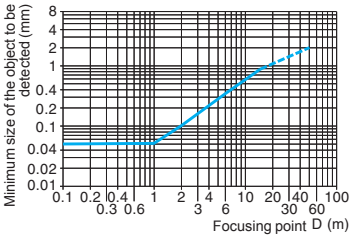
## Adjustment




### Standard curve




### Detection limit curve




The adjustment of the focus point enables the detection of objects down to a size of < 0.2 mm (0.01 in.).
After loosening the mounting screws (1). adjust the focusing point of the laser beam by rotating the serrated sleeve (2) located on the face of the sensor. Re-tighten mounting screws.

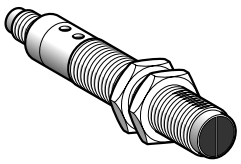
***Note:*** mounting clamp ***XUZA218*** with ball-joint and, in particular, bracket ***XUZA318*** with precise micrometric adjustment and locking by 6 screws, are specially suited for mounting the sensor and adjusting beam alignment when the sensing range is several tens of meters.

# OsiSense® XU Photoelectric sensors

## Application, material handling series

With analog output signal 4–20 mA *(1)*
DC supply

**Design ø18**



| | | |
|---|---|---|
| **System** | | **Diffuse** |
| **Type of transmission** | | Infrared |
| **Nominal sensing distance** Sn, mm (in.) | | **50–400 (1.97–15.75)** |
| **Catalog Numbers** | | |
| **3-wire, PNP** | | **XU5M18AB20D** |
| **Weight,** kg (lb) | | 0.075 (0.17) |
| **Specification** | | |
| **Product certifications** | | CE, CSA, UL |
| **Ambient air temperature** | | For operation: -25 to +55 °C (-13 to +131 °F).<br>For storage: -40 to +70 °C (-40 to +158 °F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 25 gn, amplitude ± 2 mm (f = 10–55 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 30 gn, duration 11 ms |
| **Degree of protection** | Conforming to IEC 60529 | IP 67 |
| **Connection** | | M12 male connector, 4-pin<br>(suitable female connectors, including pre-wired versions) |
| **Materials** | | Case: nickel plated brass, lens: PMAA |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against reverse polarity |
| **Voltage limits** | | ⎓ 10–30 V (including ripple) |
| **Output current** | Maximum | 20 mA |
| | Minimum | 4 mA |
| **Output current drift in relation to temperature** | | < 10% between -25 and +55 °C (-13 and +122 °F), < 5% between 0 and +40 °C (+32 and +104 °F) |
| **Output current drift in relation to supply** | | < 3% |
| **Current consumption, no-load** | | ≤ 30 mA |
| **Maximum switching frequency** | | 20 Hz (for an output current variation of 10 mA) |
| **Delays** | | First-up: ≤ 50 ms |
| **Indicator light** | | The brightness of the green LED is proportional to the output current<br>Ie = 20 mA: indicator light at maximum intensity<br>Ie = 4 mA: indicator light at minimum intensity |

*(1) Applications: position control, monitoring concentricity or eccentricity, closed loop regulation, monitoring displacement, etc.*

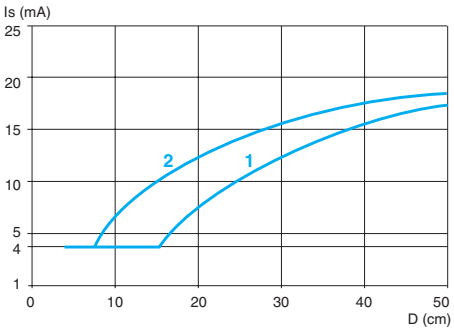
# OsiSense® XU Photoelectric sensors

## Application, material handling series

With analog output signal 4–20 mA
DC supply

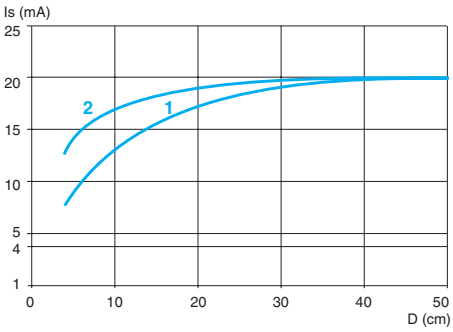
**Output signal** (related to distance of object)

**Potentiometer set at maximum**



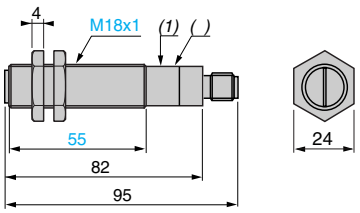

1 White 90% object
2 Gray 15% object

**Potentiometer set at minimum**




1 White 90% object
2 Gray 15% object

**Dimensions (mm)**

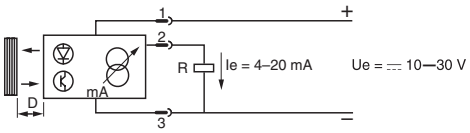



*(1) Potentiometer.*
*(2) Green LED.*
Mounting nut tightening torque: 15 N•m. (132.76 lb-in)
Connector tightening torque: 2 N•m. (17.70 lb-in)

**Wiring diagrams**

**Diffuse system**

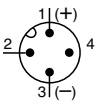
Output current




**Connector diagram**

**Sensor connector pin view**

Analog output




**Load specifications (R)**

The output current varies between 4 and 20 mA, depending on the distance of the object, and therefore, the load must be less than 800 Ω for a 24 V supply and less than 300 Ω for a 12 V supply.

5

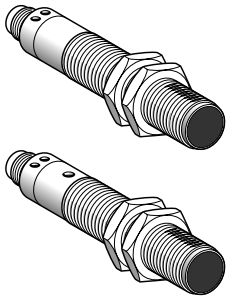
# OsiSense® XU Photoelectric sensors

## Application, material handling series

Thru-beam system with high excess gain *(1)*

Solid-state output and analog output 4–20 mA

**Design ø18**



| | | |
|---|---|---|
| **System** | | **Thru-beam** |
| **Type of transmission** | | Infrared |
| **Nominal sensing distance (Sn) /** maximum, m (ft) | | **50 (164.04 /** 70 (229.66) (transmitter +receiver) |
| **Catalog Number** | | |
| **3-wire, PNP** | NO (object detection) + analog output | **XU2M18AP20D** *(2)* |
| **Weight, kg (lb)** | | 0.155 (0.34) |
| **Specifications** | | |
| **Product certifications** | | CE, CSA, UL |
| **Ambient air temperature** | For operation | -25 to +55 °C (-13 to +131 °F) |
| | For storage | -40 to +70 °C (-40 to +158 °F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 25 gn, amplitude ± 2 mm (f = 10–55 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 30 gn, duration 11 ms |
| **Degree of protection** | Conforming to IEC 60529 | IP 67 |
| **Connection** | | M12 male connector, 4-pin (suitable female connectors, including pre-wired versions) |
| **Materials** | Case | Nickel plated brass |
| | Lenses | PMMA |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against reverse polarity |
| **Voltage limits** | | ⎓ 10–30 V (including ripple) |
| **Solid-state digital output** | Switching capacity (sealed) | ≤100 mA with overload and short-circuit protection |
| | Voltage drop, closed state | ≤ 1.5 V |
| | Maximum switching frequency | 30 Hz |
| | First-up delay | ≤ 50 ms |
| | Response delay | ≤ 15 ms |
| | Recovery delay | ≤ 15 ms |
| **Analog output** | Output current | 4–20 mA<br>Drift < 5% for temperature between 0 and +40 °C (+32 and 104 °F) |
| | Delay | ≤ 15 ms |
| **Current consumption, no-load** | | ≤ 55 mA (transmitter +receiver) |
| **Indicator lights** | Transmitter | Green LED, supply on |
| | | Yellow LED illuminated = beam transmission |
| | Receiver | Yellow LED illuminated = solid-state output On = object detected within beam |
| | | Green LED: the brightness of the LED is proportional to the output current:<br>- for I = 20 mA, object slightly opaque, intensity at maximum,<br>- for I = 4 mA, object completely opaque, intensity at minimum. |

*(1) Applications: detection of objects in spite of a difficult environment (smoke, dust, mist, etc.), detection of objects inside packaging, etc.*

***Example of values***

| **Object: white sheets of 80 gsm paper. Transmitter-receiver distance = 10 cm** | | | | |
|---|---|---|---|---|
| Number of sheets | 1 | 11 | 27 | 31 |
| Analog output current (mA) | 17.3 | 12 | 6 | 5 |

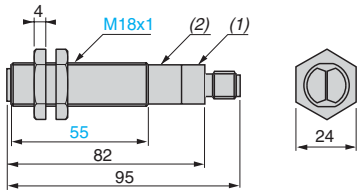
*(2) Catalog number for both transmitter and receiver for thru-beam system.*

# OsiSense® XU Photoelectric sensors

## Application, material handling series

Thru-beam system with high excess gain *(1)*
Solid-state output and analog output 4–20 mA

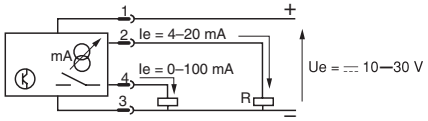
## Dimensions (mm)




*(1) LEDs*
*(2) Potentiometer (only on receiver)*
*Mounting nut tightening torque: 15 N•m (132.76 lb-in)*
*Connector tightening torque: 2 N•m (17.70 lb-in)*

## Wiring diagrams

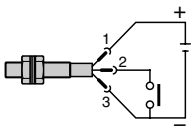
### Receiver



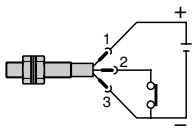

*R max. < 800 Ω (Ue = 24 V), < 300 Ω (Ue = 12 V)*

### Beam break test (only on transmitter)

Beam made



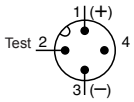

Beam broken



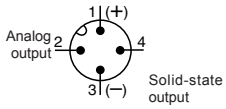

## Connector diagram

### Sensor connector pin view

**Transmitter**



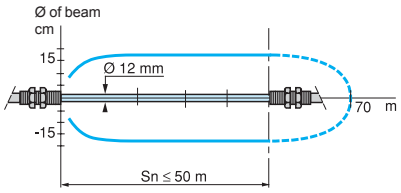

**Receiver**




## Operating Curves

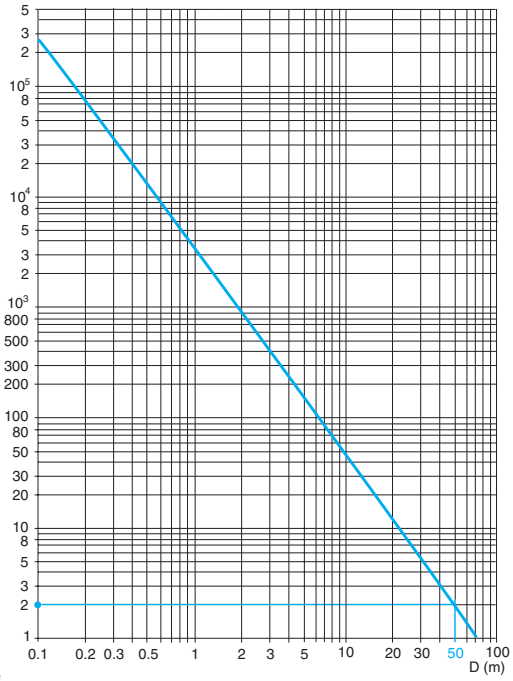
### Detection curve

**Thru-beam system**



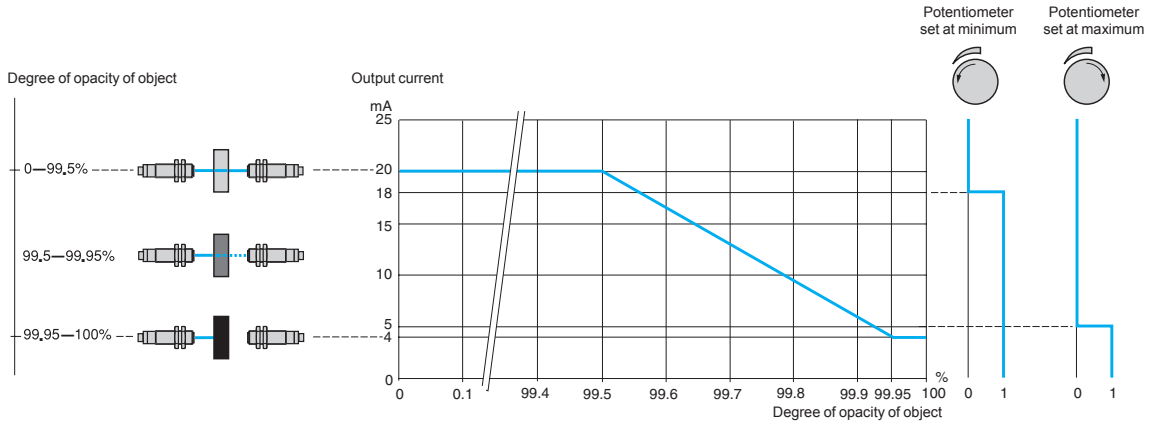

### Excess gain curve (ambient temperature: +25 °C [+77 °F])

**Thru-beam system**



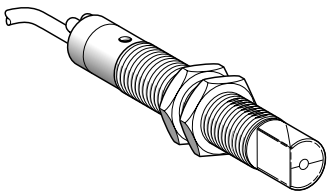

## Operation, settings

| Type, opacity of object | Analog output curve | Switching level of digital solid-state PNP output |
|---|---|---|

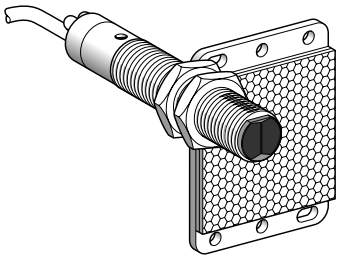


# OsiSense® XU Photoelectric sensors

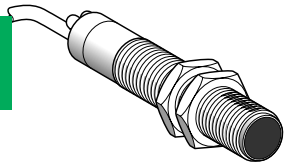
## Application
## Design ø18
## Two-wire AC *(1)* or DC, solid-state output with adjustable sensitivity



*XU5M18M●230W*
*XU8M18M●230W*



*XU9M18M●230*



*XU2M18M●230*

### Diffuse system with adjustable background suppression

| Sensing distance (Sn) m (ft) | Function | Line of sight | Connection | Catalog Numbers | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **0.12 (0.39)** | NO | Along case axis | Pre-cabled *(2)* | **XU8M18MA230** | 0.150 | (0.33) |
| | | | 1/2-20UNF | **XU8M18MA230K** | 0.075 | (0.17) |
| | | 90° to case axis | Pre-cabled *(2)* | **XU8M18MA230W** | 0.150 | (0.33) |
| | | | 1/2-20UNF | **XU8M18MA230WK** | 0.075 | (0.17) |
| | NC | Along case axis | Pre-cabled *(2)* | **XU8M18MB230** | 0.150 | (0.33) |
| | | | 1/2-20UNF | **XU8M18MB230K** | 0.075 | (0.17) |
| | | 90° to case axis | Pre-cabled *(2)* | **XU8M18MB230W** | 0.150 | (0.33) |
| | | | 1/2-20UNF | **XU8M18MB230WK** | 0.075 | (0.17) |

### Diffuse system

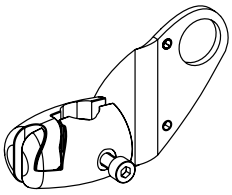
| Sensing distance (Sn) m (ft) | Function | Line of sight | Connection | Catalog Numbers | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **0.40 (1.31)** | NO | Along case axis | Pre-cabled *(2)* | **XU5M18MA230** | 0.150 | (0.33) |
| | | | 1/2-20UNF | **XU5M18MA230K** | 0.075 | (0.17) |
| | | 90° to case axis | Pre-cabled *(2)* | **XU5M18MA230W** | 0.150 | (0.33) |
| | | | 1/2-20UNF | **XU5M18MA230WK** | 0.075 | (0.17) |
| | NC | Along case axis | Pre-cabled *(2)* | **XU5M18MB230** | 0.150 | (0.33) |
| | | | 1/2-20UNF | **XU5M18MB230K** | 0.075 | (0.17) |
| | | 90° to case axis | Pre-cabled *(2)* | **XU5M18MB230W** | 0.150 | (0.33) |
| | | | 1/2-20UNF | **XU5M18MB230WK** | 0.075 | (0.17) |

### Polarized retroreflective system *(3)*

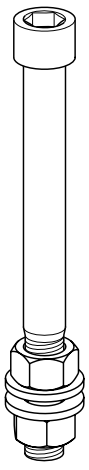
| Sensing distance (Sn) m (ft) | Function | Line of sight | Connection | Catalog Numbers | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **2 (6.56)** | NO | Along case axis | Pre-cabled *(2)* | **XU9M18MA230** | 0.170 | (0.37) |
| | | | 1/2-20UNF | **XU9M18MA230K** | 0.090 | (0.20) |
| | | 90° to case axis | Pre-cabled *(2)* | **XU9M18MA230W** | 0.170 | (0.37) |
| | | | 1/2-20UNF | **XU9M18MA230WK** | 0.090 | (0.20) |
| | NC | Along case axis | Pre-cabled *(2)* | **XU9M18MB230** | 0.170 | (0.37) |
| | | | 1/2-20UNF | **XU9M18MB230K** | 0.095 | (0.21) |
| | | 90° to case axis | Pre-cabled *(2)* | **XU9M18MB230W** | 0.170 | (0.37) |
| | | | 1/2-20UNF | **XU9M18MB230WK** | 0.090 | (0.20) |

### Thru-beam system *(4)*

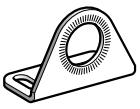
| Sensing distance (Sn) m (ft) | Function | Line of sight | Connection | Catalog Numbers | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **15 (49.21)** | NO | Along case axis | Pre-cabled *(2)* | **XU2M18MA230** | 0.285 | (0.63) |
| | | | 1/2-20UNF | **XU2M18MA230K** | 0.155 | (0.34) |
| | | 90° to case axis | Pre-cabled *(2)* | **XU2M18MA230W** | 0.285 | (0.63) |
| | | | 1/2-20UNF | **XU2M18MA230WK** | 0.155 | (0.34) |
| | NC | Along case axis | Pre-cabled *(2)* | **XU2M18MB230** | 0.285 | (0.63) |
| | | | 1/2-20UNF | **XU2M18MB230K** | 0.155 | (0.34) |
| | | 90° to case axis | Pre-cabled *(2)* | **XU2M18MB230W** | 0.285 | (0.63) |
| | | | 1/2-20UNF | **XU2M18MB230WK** | 0.155 | (0.34) |



*XUZB2003*



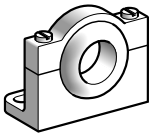
XUZ2001



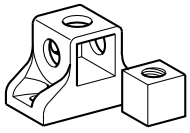
XUZA118

### Mounting accessories

| Description | Catalog Numbers | Weight kg | (lb) |
|---|---|---|---|
| **3D mounting kit** for use on M12 rod, for XU● M18 or XUZC50 | **XUZB2003** | 0.170 | (0.37) |
| **M12 rod** | **XUZ2001** | 0.050 | (0.11) |
| **Support for M12 rod** | **XUZ2003** | 0.150 | (0.33) |
| **Stainless steel mounting bracket** | **XUZA118** | 0.045 | (0.10) |
| **Plastic mounting bracket** with adjustable ball-joint | **XUZA218** | 0.035 | (0.08) |



XUZA218



XUZ2003

*(1) These sensors do not incorporate overload or short-circuit protection and therefore, a 0.4 A fast-acting fuse must be connected in series with the load.*
*(2) For a 5 m long cable add **L5**.*
*Example: XU2M18MA230 becomes **XU2M18MA230L5**.*
*(3) 50 x 50 mm reflector **XUZC50** included with polarized retroreflective system.*
*(4) Comprising both thru-beam transmitter and receiver.*

# OsiSense® XU Photoelectric sensors

Application
Design ø18
Two-wire AC *(1)* or DC, solid-state output with adjustable sensitivity

## Specifications

| Sensor type | | | XU2M, XU5M, XU8M, XU9M | XU2M, XU5M, XU8M, XU9M●●●●●●●K |
|---|---|---|---|---|
| **Product certifications** | | | UL, CSA, CE | |
| **Connection** | Connector | | – | 1/2-20UNF |
| | Pre-cabled | | Length: 2 m | – |
| **Sensing distance:** | | | | |
| **nominal Sn** (excess gain = 2) | | **m (ft)** | 0.12 / 0.12 (0.39 / 0.39) diffuse with background suppression | |
| maximum (excess gain = 1) | | **m (ft)** | 0.4 / 0.6 (1.31 / 1.97) diffuse | |
| | | **m (ft)** | 2 / 3 (6.56 / 9.84) polarized retroreflective | |
| | | **m (ft)** | 15 / 20 (49.21 / 65.62) thru-beam | |
| **Type of transmission** | | | Infrared, except XU9 (red) | |
| **Degree of protection** | Conforming to IEC 60529 | | IP 67, double insulation ⧈ | IP 67 |
| **Storage temperature** | | **°C** | -40 to +70 (-40 to +158 °F) | |
| **Operating temperature** | | **°C** | -25 to +55 (-40 to +122 °F) | |
| **Materials** | | | Case: nickel plated brass; Lens: PMMA; Cable: PvR | |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | | 7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz) | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | | 30 gn, duration 11 ms | |
| **Indicator lights** | Output state | | Yellow LED | |
| | Stability | | Red LED (for retroreflective and thru-beam only) | |
| **Rated supply voltage** | | **V** | ∿/⎓ 24–240 | |
| **Voltage limits (including ripple)** | | **V** | ∿/⎓ 200–264 | |
| **Residual current, open state** | | **mA** | < 1.5 | |
| **Switching capacity** | | **mA** | 10–200 *(1)* | |
| **Voltage drop, closed state** | | **V** | 6 | |
| **Maximum switching frequency** | | **Hz** | 25 | |
| **Delays** | First-up | **ms** | < 300 | |
| | Response | **ms** | < 20 | |
| | Recovery | **ms** | < 20 | |

*(1) These sensors do not incorporate overload or short-circuit protection and therefore, a 0.4 A fast-acting fuse must be connected in series with the load.*

## Wiring diagrams

**Connector**

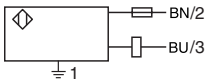
1/2-20UNF


1 ⏚
2 ∿
3 ∿

**Pre-cabled**

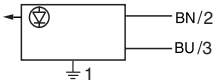
(∿) BU (Blue)
(∿) BN (Brown)

**2-wire ∿ or ⎓**




⏚ on connector models

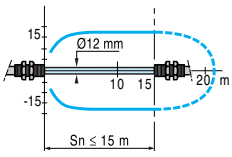
**Transmitter**



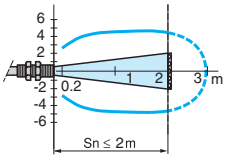

⏚ on connector models

## Operating curves

**Thru-beam system**

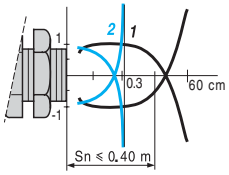



**Polarized retroreflctive system**



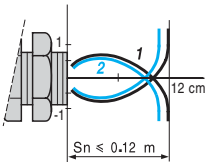

*With reflector XUZC50*

**Diffuse system**



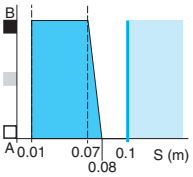

*Object 10 x 10 cm; **1** White 90%; 2 Gray 18%*

**Diffuse system with adjustable background suppression**

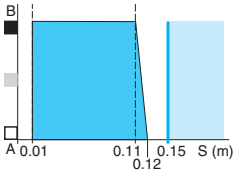



**Variation of usable sensing distance Su**

*Potentiometer set at minimum*



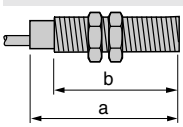

*Potentiometer set at maximum*




A-B: *object reflection coefficient*
*Black 6%*
*Gray 18%*
*White 90%*
*Sensing range*
*Non-sensing zone (matte surfaces)*

## Dimensions (mm)

**XU●**




| | Pre-cabled (mm) | | Connector (mm) | |
|---|---|---|---|---|
| | a | b | a | b |
| Ø 18, line of sight along case axis | 82 | 55 | 95 | 55 |
| Ø 18, line of sight 90° to case axis | 97 | 55 | 110 | 55 |

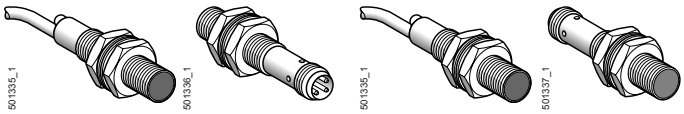
# OsiSense® XU Photoelectric sensors

## Application, assembly series

Metal case, cylindrical, threaded M8 x 1

DC supply. Solid-state output

### Design



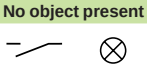
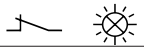
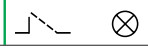

| | | | | | |
|---|---|---|---|---|---|
| **Connection** | Pre-cabled | ■ | – | ■ | – |
| | Connector | – | ■ | – | ■ |
| **System** | | Thru-beam | Thru-beam | Diffuse | Diffuse |
| **Type of transmission** | | Infrared | Infrared | Infrared | Infrared |
| **Nominal sensing distance Sn, m (ft)** | | 2 (6.56) | 2 (6.56) | 0.05 (0.16) | 0.05 (0.16) |

### Catalog Number

| | | | | | |
|---|---|---|---|---|---|
| **3-wire, PNP** | NO function | **XUAH0214** | **XUAH0214S** | **XUAH0515** | **XUAH0515S** |
| | NC function | **XUAH0224** | **XUAH0224S** | **XUAH0525** | **XUAH0525S** |
| **3-wire, NPN** | NO function | **XUAJ0214** | **XUAJ0214S** | **XUAJ0515** | **XUAJ0515S** |
| | NC function | **XUAJ0224** | **XUAJ0224S** | **XUAJ0525** | **XUAJ0525S** |
| **Transmitter** | | **XUAH0203** | **XUAH0203S** | – | – |
| **Weight,** kg (lb) | | 0.050 (0.11) | 0.015 (0.03) | 0.50 (1.10) | 0.015 (0.03) |

### Specification

| | | | | | |
|---|---|---|---|---|---|
| **Product certifications** | | CE, cULus | | | |
| **Ambient air temperature** | For operation | -25 to +55 °C (-13 to +131 °F) | | | |
| | For storage | -30 to +70 °C (-22 to +158 °F) | | | |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 7 gn, amplitude ± 1 mm (f = 10–55 Hz) | | | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 30 gn, duration 11 ms | | | |
| **Degree of protection** | Conforming to IEC 60529 | IP 67 - IP 65 | IP 65 | IP 67 - IP 65 | IP 65 |
| **Connection** | Pre-cabled | Ø 3.5 mm, length 2 m, wire c.s.a.: 3 x 0.14 mm² (26 AWG) | | | |
| | Connector | M8 female connectors, 3-pin | | | |
| **Materials** | Case | Nickel plated brass | | | |
| | Cable | PvR | – | PvR | – |
| | Lenses | PMMA | | | |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against reverse polarity | | | |
| **Voltage limits (including ripple)** | | ⎓ 10–30 V | | | |
| **Switching capacity** (sealed) | | ≤ 100 mA with overload and short-circuit protection | | | |
| **Voltage drop, closed state** | | ≤ 1 V | | | |
| **Current consumption, no-load** | Transmitter | ≤ 15 mA | | | |
| | Receiver | ≤ 10 mA | | | |
| | Diffuse | ≤ 25 mA | | | |
| **Maximum switching frequency** | | 2000 Hz | | 1000 Hz | |
| **Delays** | First-up | ≤ 20 ms | | | |
| | Response and recovery | ≤ 0.25 ms | | ≤ 0.5 ms | |

| **Function table** | **Function** | **Diffuse or through beam system** | |
|---|---|---|---|
| | | **No object present in the beam** | **Object present in the beam** |
| **Output state (PNP or NPN)** **indicator: yellow LED** (illuminated when sensor output is ON) | NO |  |  |
| | NC |  |  |

5

# OsiSense® XU Photoelectric sensors

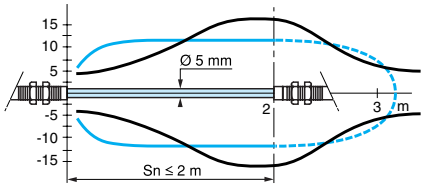
## Application, assembly series

Metal case, cylindrical, threaded M8 x 1
DC supply. Solid-state output

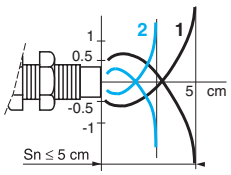
## Operating curves

### Detection curves

**Thru-beam system**



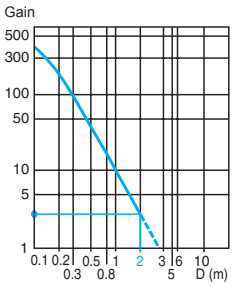

**Diffuse system**



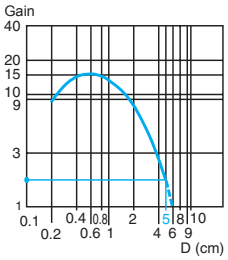

*Object 5 x 5 cm; **1** White 90%; 2 Gray 18%*

### Excess gain curves (ambient temperature: ± 25 °C)

**Thru-beam system**

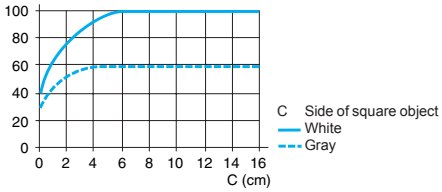



**Diffuse system**




*Object 5 x 5 cm, White 90%*

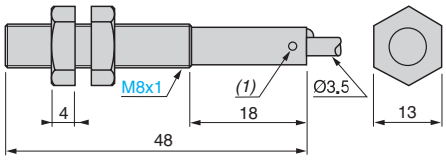
Variation of sensing distance Sn




*Detection differential (H) when object approaches from the front: H ≤ 25% of Sn*

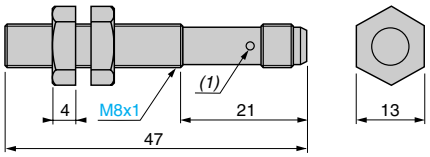
## Dimensions (mm)

**XUA**




*(1) LED, 4 viewing ports at 90°.*

**XUA●●●●●S**




*(1) LED, 4 viewing ports at 90°.*

**M8 connector**

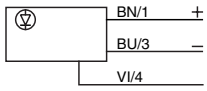

1 +
3 -
4 OUT or test

***Note:** mounting nut tightening torque: < 2 N•m (17.70 lb-in)*

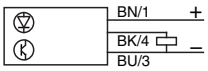
## Wiring diagrams (3-wire ⎓)

**XUA**

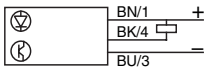
**Transmitter**




**PNP**

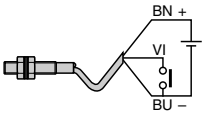



**NPN**

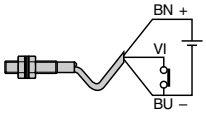



## Beam break test

**For thru-beam transmitter XUAH0203 only**

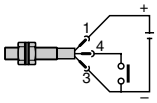



*Beam made*
*LED on (steady light)*

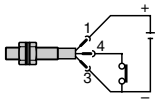



*Beam broken*
*LED flashing*

**For thru-beam transmitter XUAH0203S only**




*Beam made*
*LED on (steady light)*



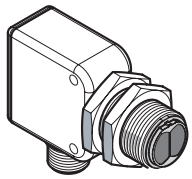

*Beam broken*
*LED flashing*

5

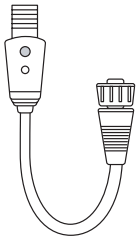
# OsiSense® XU Photoelectric sensors

## Single and multimode function

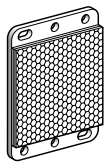
Dual Mount Design with ø18 snout, plastic
Three-wire DC, solid-state output



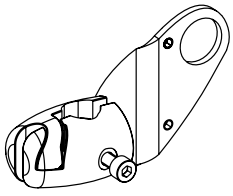
*XUN●A●●NM12*



*XXZPB100*

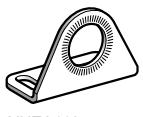


*XUZC50*

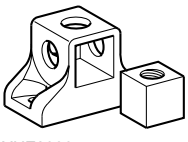


*XUZB2003*

XUZ2001



XUZA118



XUZ2003

| Connector | | | | | |
|---|---|---|---|---|---|
| **Sensing distance Sn, m (ft)** | **Function** | **Output** | **Catalog Number** | **Weight kg** | **(lb)** |
| **Multimode** | | | | | |
| **0–15 (0–49.2) depending on whether accessories are used** | NO/NC | PNP | **XUN0APSNM12** | 0.045 | (0.10) |
| | | NPN | **XUN0ANSNM12** | 0.045 | (0.10) |
| **Diffuse system, short range** | | | | | |
| **0.1 (0.33)** | NO | PNP | **XUN4APANM12** | 0.040 | (0.09) |
| | | NPN | **XUN4ANANM12** | 0.040 | (0.09) |
| **Diffuse system, long range** | | | | | |
| **0.6 (2.0)** | NO | PNP | **XUN5APANM12** | 0.045 | (0.10) |
| | | NPN | **XUN5ANANM12** | 0.045 | (0.10) |
| **Polarized Retroreflective system** | | | | | |
| **2 (6.6)** | NO | PNP | **XUN9APANM12** | 0.040 | (0.09) |
| | | NPN | **XUN9ANANM12** | 0.040 | (0.09) |
| **Thru-beam system** | | | | | |
| **Transmitter 15 (49.21)** | | – | **XUN0AKSNM12T** | 0.045 | (0.10) |
| **Receiver 15 (49.21)** | NO | PNP | **XUN0APSNM12** | 0.045 | (0.10) |
| | | NPN | **XUN0ANSNM12** | 0.045 | (0.10) |

| Accessories | | | |
|---|---|---|---|
| **Description** | **Catalog Number** | **Weight kg** | **(lb)** |
| Teach pushbutton | **XXZPB100** | 0.40 | (0.10) |
| Reflector, 50 x 50 mm | **XUZC50** | 0.20 | (0.44) |
| **3D mounting kit** for use on M12 rod, for XUN or XUZC50 | **XUZB2003** | 0.170 | (0.37) |
| **M12 rod** | **XUZ2001** | 0.050 | (0.11) |
| **Support for M12 rod** | **XUZ2003** | 0.150 | (0.33) |
| **Stainless steel mounting bracket** | **XUZA118** | 0.045 | (0.10) |
| **Plastic mounting bracket** with adjustable ball-joint | **XUZA218** | 0.035 | (0.08) |

5

*Specifications, Wiring Diagrams, Operating Curves, Dimensions*

# OsiSense® XU Photoelectric sensors

## Single and multimode function

Dual Mount Design with ø18 snout, plastic
Three-wire DC, solid-state output

## Specifications

| Sensor type | | | XUN0•••M12, XUN0•••M12T | XUN4, XUN5, XUN9 |
|---|---|---|---|---|
| **Product certifications** | | | UL, CSA, CE | |
| **Connection** | Connector | | M12 | |
| **Sensing distance:** | | | | |
| **nominal Sn** (excess gain = 2) | | **m (ft)** | 0.12 / 0.12 (0.39 / 0.39) diffuse with adjustable sensitivity | |
| maximum (excess gain = 1) | | **m (ft)** | 0.1 / 0.15 (0.33 / 0.49) diffuse, short range | |
| | | **m (ft)** | 0.6 / 0.8 (1.97 / 2.62) diffuse, long range | |
| | | **m (ft)** | 2 / 3 (6.56 / 9.84) polarized retroreflective | |
| | | **m (ft)** | 15 / 20 (49.21 / 65.62) thru-beam | |
| **Type of transmission** | | | Infrared, except polarized retroreflective (red) | |
| **Degree of protection** | Conforming to IEC 60529 | | IP 67, double insulation ⧈ | |
| **Storage temperature** | | **°C** | -40 to +70 (-40 to +158 °F) | |
| **Operating temperature** | | **°C** | -25 to +55 (-13 to +122 °F) | |
| **Materials** | Case | | Valox® | |
| | Lens | | PMMA | |
| | Cable | | – | PvR |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | | 7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz) | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | | 30 gn, duration 11 ms | |
| **Indicator lights** | Output state | | Yellow LED (transmission present for XUN0•••T) | |
| | Supply on | | Green LED | |
| | Instability | | Red LED (except for XUN0•••T) | |
| **Rated supply voltage** | | **V** | ⎓ 12–24 with protection against reverse polarity | |
| **Voltage limits (including ripple)** | | **V** | ⎓ 10–36 | |
| **Current consumption, no-load** | | **mA** | 35 (20 for XUN0•••T) | |
| **Switching capacity** | | **mA** | ⩽ 100 with overload and short-circuit protection | |
| **Voltage drop, closed state** | | **V** | 1.5 | |
| **Maximum switching frequency** | | **Hz** | 250 | 500 |
| **Delays** | First-up | **ms** | < 200 | < 15 |
| | Response | **ms** | < 2 | < 1 |
| | Recovery | **ms** | < 2 | < 1 |

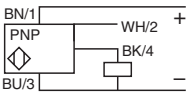
5

## Wiring diagrams

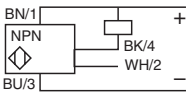
### M12 connector


3 (-)
1 (+)
4 OUT/Output
2 Beam break input *(1)*

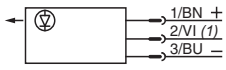
### PNP




### NPN



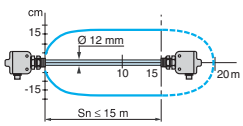

### Transmitter



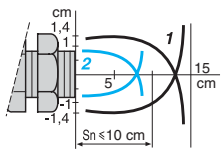

Input 2/VI:
- not connected: *beam made*
- connected to –: *beam broken*

## Operating curves

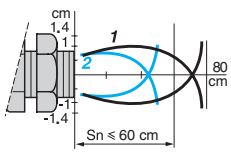
### Thru-beam system



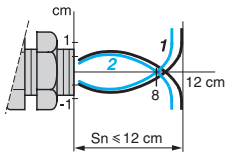

### Diffuse system, short range



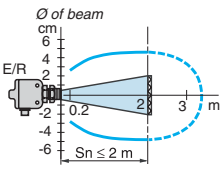

### Diffuse system, long range




### Diffuse system with adjustable sensitivity




### Polarized retroreflective system

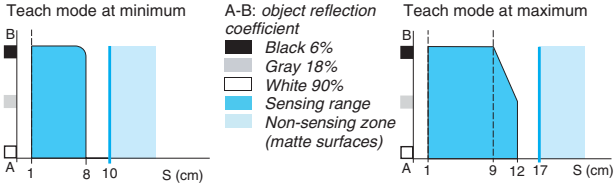



*Object 10 x 10 cm; **1** White 90%; **2** Gray 18%*

*With reflector XUZC50*

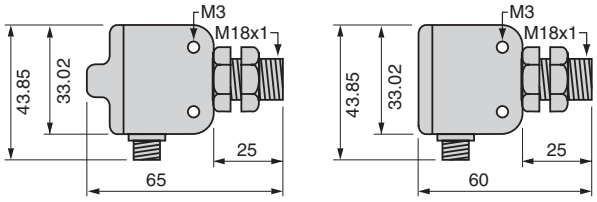
## Variation of usable sensing distance

**(without accessory, with adjustable background suppression**




## Dimensions (mm)

**XUN**



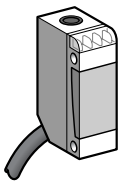

*(1) beam break input on thru-beam transmitter only*

# OsiSense® XU Photoelectric sensors

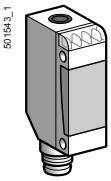
## Multimode

### Miniature design

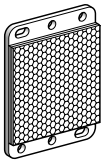
### Three-wire DC supply, solid-state output


501542_1

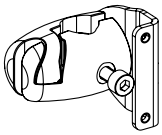
*XUM0A●●●L2*


501543_1

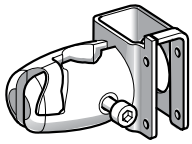
*XUM0A●●●M8*


805799

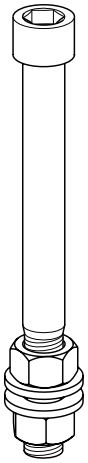
*XUZC50*


560014

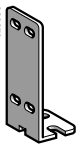
*XUZM2003*


562213

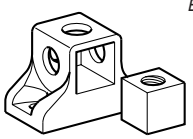
*XUZM2004*


520312

*XUZ2001*


520960

*XUZA50*


520984

*XUZ2003*

## Miniature design, DC supply

| Sensing distance Sn, m (ft) | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **0–10 (0–32.81)** depending on whether accessories are used | N/O or N/C by programming | PNP | Pre-cabled (L = 2 m) *(1)* | **XUM0APSAL2** | 0.050 | (0.11) |
| | | | M8 connector | **XUM0APSAM8** | 0.035 | (0.08) |
| | | NPN | Pre-cabled (L = 2 m) *(1)* | **XUM0ANSAL2** | 0.050 | (0.11) |
| | | | M8 connector | **XUM0ANSAM8** | 0.035 | (0.08) |

## Accessories

| Description | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|
| **Thru-beam transmitter** | Pre-cabled (L = 2 m) *(1)* | **XUM0AKSAL2T** | 0.050 | (0.11) |
| | M8 connector | **XUM0AKSAM8T** | 0.035 | (0.08) |
| **Reflector** 50 x 50 mm | – | **XUZC50** | 0.020 | (0.04) |

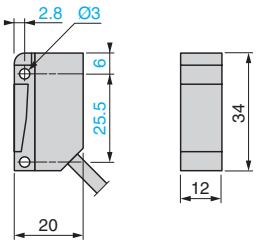
## Mounting accessories

| Description | Catalog Number | Weight kg | (lb) |
|---|---|---|---|
| **3D mounting kit** for use on M12 rod for XUM or XUZC50 | **XUZM2003** | 0.140 | (0.31) |
| **3D mounting kit** for use on M12 rod and with protective cover for XUM | **XUZM2004** | 0.155 | (0.34) |
| **M12 rod** | **XUZ2001** | 0.050 | (0.11) |
| **Support for M12 rod** | **XUZ2003** | 0.150 | (0.33) |
| **Mounting bracket** | **XUZA50** | 0.015 | (0.03) |

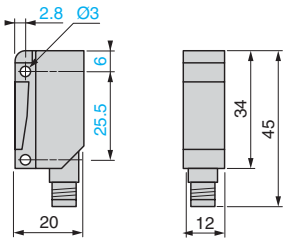
*(1) For a 5 m cable, replace L2 with **L5**.*
*Example: XUM0APSAL2 becomes **XUM0APSAL5**.*

## Dimensions (mm)

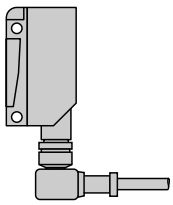
### XUM0A●●●L2




### XUM0A●●●M8




**Elbowed connector**



# OsiSense® XU Photoelectric sensors

## Multimode
## Miniature design
## Three-wire DC solid-state output

## Specifications

| Sensor type | | | XUM●●●●●M8 | XUM●●●●●L2 |
|---|---|---|---|---|
| **Product certifications** | | | UL, CSA, CE | |
| **Connection** | Connector | | M8 | – |
| | Pre-cabled | | – | Length: 2 m |
| **Sensing distance:** | | | | |
| **nominal Sn** (excess gain = 2) | | **m (ft)** | 0.11 (0.36) without accessory (diffuse system with background suppression) | |
| maximum (excess gain = 1) | | **m (ft)** | 0.4 (1.31) / 0.55 (1.80) without accessory (diffuse system) | |
| | | **m (ft)** | 3 (9.84) / 4 (13.12) with reflector (polarized retroreflective) | |
| | | **m (ft)** | 10 (32.81) / 14 (45.93) with thru-beam transmitter (thru-beam) | |
| **Type of transmission** | | | Infrared, except for polarized retroreflective (red) | |
| **Degree of protection** | Conforming to IEC 60529 | | IP 65, IP67 | IP65, IP67 |
| **Storage temperature range** | | **°C** | -40 to +70 (-40 to +158 °F) | |
| **Operating temperature range** | | **°C** | -25 to +55 (-13 to +131 °F) | |
| **Materials** | Case | | PBT | PBT double insulation ⧈ |
| | Lens | | PMMA | |
| | Cable | | – | PvR |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | | 7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz) | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | | 30 gn, duration 11 ms | |
| **Indicator lights** | Output state | | Yellow LED (transmission present for **XUM0●●●●●●T**) | |
| | Supply on | | Green LED | |
| | Optical alignment aid/Dirt indication | | Red LED (except for **XUM0●●●●●●T**) | |
| **Rated supply voltage** | | **Vdc** | 12–24 with protection against reverse polarity | |
| **Voltage limits (including ripple)** | | **Vdc** | 10–30 | |
| **Current consumption, no-load** | | **mA** | 35 (20 for **XUM0●●●●●●T**) | |
| **Switching capacity** | | **mA** | ≤ 100 with overload and short-circuit protection | |
| **Voltage drop, closed state** | | **V** | ≤ 1.5 | |
| **Maximum switching frequency** | | **Hz** | 250 (200 for diffuse system with adjustable background suppression) | |
| **Delays** | First-up | **ms** | < 200 | |
| | Response | **ms** | < 2 (< 2.5 for diffuse system with adjustable background suppression) | |
| | Recovery | **ms** | < 2 (< 2.5 for diffuse system with adjustable background suppression) | |

## Wiring diagrams

### M8 Connector

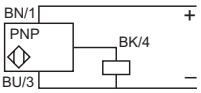

3 (-)
1 (+)
4 OUT/Output
2 beam break input *(1)*

### Pre-cabled

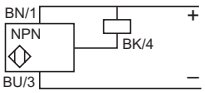
(-) BU (Blue)
(+) BN (Brown)
OUT/Output BK (Black)
Beam break input
VI (Violet) *(1)*

*(1) Beam break input on thru-beam transmitter only.*

### Receiver with PNP ouput

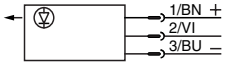



### Receiver with NPN output




### Thru-beam transmitter

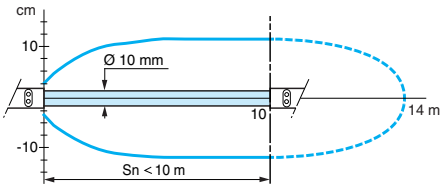
Transmitter



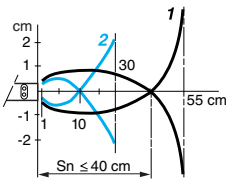

2/VI input:
- not connected: *beam made*
- connected to –: *beam broken*

## Operating curves

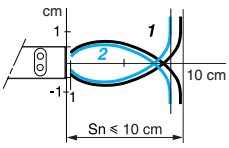
### With thru-beam accessory (thru-beam)



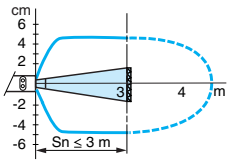

### Without accessory (diffuse system)




### Without accessory (diffuse system with adjustable background suppression)



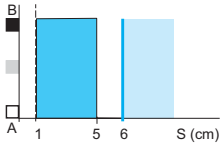

### With reflector (polarized retroreflective)



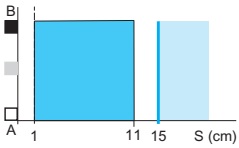

*Object: 10 x 10 cm, **1**: white 90 %, **2**: gray 18 %*

### Variation of usable sensing distance Sn (without accessory, with adjustable background suppression)

Teach mode at minimum.




Teach mode at maximum.

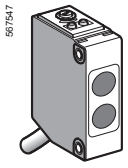



A-B: *object reflection coefficient*
- *Black 6 %*
- *Gray 18 %*
- *White 90 %*
- *Sensing range*
- *Non-sensing zone (matte surfaces)*

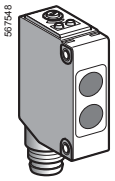
5

# OsiSense® XU Photoelectric sensors

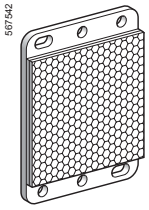
## Single mode
Miniature design, plastic
Three-wire DC solid-state output
NO/NC configuration switch



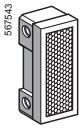
XUM5A●CNL2



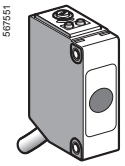
XUM5A●CNM8



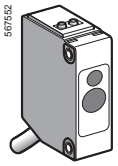
XUZC50



XUZC08

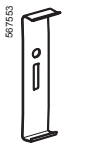


XUM2AKCNL2T

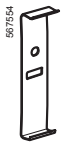


XUM2A●CNL2R

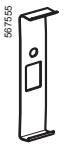
| Sensing distance Sn, m (ft) | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **Diffuse system with adjustable sensitivity** | | | | | | |
| **1 (3.28)** | NO/NC configuration switch | PNP | Pre-cabled (L = 2 m) | **XUM5APCNL2** | 0.063 | (0.14) |
| | | | M8 connector | **XUM5APCNM8** | 0.010 | (0.02) |
| | | NPN | Pre-cabled (L = 2 m) | **XUM5ANCNL2** | 0.063 | (0.14) |
| | | | M8 connector | **XUM5ANCNM8** | 0.010 | (0.02) |
| **Polarized retroreflective system with adjustable sensitivity** | | | | | | |
| **5 (16.40)** with reflector XUZC50<br>**2 (6.56)** with reflector XUZC08 | NO/NC configuration switch | PNP | Pre-cabled (L = 2 m) | **XUM9APCNL2** | 0.063 | (0.14) |
| | | | M8 connector | **XUM9APCNM8** | 0.010 | (0.02) |
| | NO/NC configuration switch | NPN | Pre-cabled (L = 2 m) | **XUM9ANCNL2** | 0.063 | (0.14) |
| | | | M8 connector | **XUM9ANCNM8** | 0.010 | (0.02) |
| **Reflectors** | | | | | | |
| Universal reflector 50 x 50 mm | – | – | | **XUZC50** | 0.020 | (0.04) |
| Lateral reflector 8.6 x 29.5 mm | – | – | | **XUZC08** | 0.006 | (0.01) |
| **Thru-beam system (transmitter +receiver) with adjustable sensitivity** | | | | | | |
| **15 (49.21)** | NO/NC configuration switch | PNP | Pre-cabled (L = 2 m) | **XUM2APCNL2** | 0.119 | (0.26) |
| | | | M8 connector | **XUM2APCNM8** | 0.019 | (0.04) |
| | | NPN | Pre-cabled (L = 2 m) | **XUM2ANCNL2** | 0.119 | (0.26) |
| | | | M8 connector | **XUM2ANCNM8** | 0.019 | (0.04) |
| **Transmitter only** | | | | | | |
| **15 (49.21)** | | | Pre-cabled (L = 2 m) | **XUM2AKCNL2T** | 0.063 | (0.14) |
| | | | M8 connector | **XUM2AKCNM8T** | 0.010 | (0.02) |
| **Receiver only** | | | | | | |
| **15 (49.21)** | NO/NC configuration switch | PNP | Pre-cabled (L = 2 m) | **XUM2APCNL2R** | 0.063 | (0.14) |
| | | | M8 connector | **XUM2APCNM8R** | 0.010 | (0.02) |
| | | NPN | Pre-cabled (L = 2 m) | **XUM2ANCNL2R** | 0.063 | (0.14) |
| | | | M8 connector | **XUM2ANCNM8R** | 0.010 | (0.02) |



XUZMSV●●

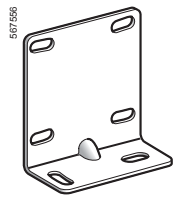


XUZMSH●●

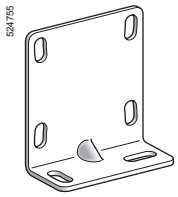


XUZMU01

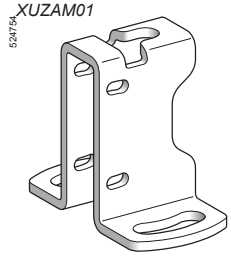
| Accessories for thru-beam system | | | | | |
|---|---|---|---|---|---|
| **Description** | **Dimensions mm** | **Sensing distance m, (ft)** | **Catalog Number** | **Weight kg** | **(lb)** |
| Vertical diaphragm<br>Sold in lots of 2 | 0.5 x 6.4 | 1.2 (3.94) | **XUZMSV05** | 0.002 | (0.004) |
| | 1 x 6.4 | 3 (9.84) | **XUZMSV10** | 0.002 | (0.004) |
| | 1.5 x 6.4 | 4 (13.12) | **XUZMSV15** | 0.002 | (0.004) |
| | 2 x 6.4 | 5 (16.40) | **XUZMSV20** | 0.002 | (0.004) |
| Horizontal diaphragm<br>Sold in lots of 2 | 0.5 x 6.4 | 1.2 (3.94) | **XUZMSH05** | 0.002 | (0.004) |
| | 1 x 6.4 | 3 (9.84) | **XUZMSH10** | 0.002 | (0.004) |
| | 1.5 x 6.4 | 4 (13.12) | **XUZMSH15** | 0.002 | (0.004) |
| | 2 x 6.4 | 5 (16.40) | **XUZMSH20** | 0.002 | (0.004) |
| Anti-interference filter<br>Sold in lots of 4 | – | 7 (22.97) | **XUZMU01** | 0.006 | (0.013) |



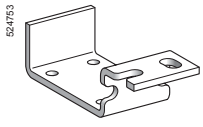
XUZAM01



XUZAM04



XUZAM02



XUZAM03

| Mounting accessories | | | |
|---|---|---|---|
| **Description** | **Catalog Number** | **Weight kg** | **(lb)** |
| Base mounting bracket | **XUZAM01** | 0.017 | (0.04) |
| Side mounting bracket | **XUZAM04** | 0.026 | (0.06) |
| Vertical mounting bracket with protective cover | **XUZAM02** | 0.062 | (0.14) |
| Horizontal mounting bracket with protective cover | **XUZAM03** | 0.026 | (0.06) |

# OsiSense® XU Photoelectric sensors

## Single mode
Miniature design, plastic
Three-wire DC solid-state output
NO/NC configuration switch

## Specifications

| Sensor type | | | XUM●A●●●M8 | XUM●A●●●L2 |
|---|---|---|---|---|
| **Product certifications** | | | CE, cULus, CTick | |
| **Connection** | Connector | | M8 | – |
| | Pre-cabled | | – | Length: 2 m |
| **Sensing distance: nominal Sn** (excess gain = 2) | | **m (ft)** | 1 (3.28), diffuse system with adjustable sensitivity | |
| | | **m (ft)** | 5 (16.40), polarized retroreflective with adjustable sensitivity | |
| | | **m (ft)** | 15 (49.21), thru-beam with adjustable sensitivity | |
| **Type of transmission** | | | Red, except diffuse system (Infrared) | |
| **Degree of protection** | Conforming to IEC 60529 | | IP 65, IP 67 | |
| **Storage temperature** | | **°C** | -40 to +70 (-40 to +158 °F) | |
| **Operating temperature** | | **°C** | -30 to +60 (-22 to +140 °F) | |
| **Materials** | Case | | PBT | |
| | Lens | | PMMA | |
| | Cable | | – | PVC (black for transmitter, gray for other versions) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | | 10 to 55 Hz, amplitude ± 1.5 mm, 2 hours in each direction X, Y, and Z | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | | 500 m/s² 10 x in each direction X, Y and Z | |
| **Indicator lights** | Output state | | Orange LED (excluding transmitter) | |
| | Stability | | Green LED | |
| | Transmitter | | Orange LED: supply on | |
| | Receiver | | Red LED: light received; green LED: supply on | |
| **Rated supply voltage** | | **Vdc** | 12–24 with protection against reverse polarity | |
| **Voltage limits (including ripple)** | | **Vdc** | 10–30 | |
| **Current consumption, no-load** | | **mA** | 16 for **XUM5**; 13 for **XUM9**; 11 for transmitter **XUM2**; 13 for receiver **XUM2** | |
| **Switching capacity** | | **mA** | ≤ 100 with overload and short-circuit protection | |
| **Voltage drop, closed state** | | **V** | ≤ √3 | |
| **Maximum switching frequency** | | **Hz** | 1000 | |
| **Delays** | First-up | **ms** | < 100 | |
| | Response | **ms** | 0.5 | |
| | Recovery | **ms** | 0.5 | |

## Wiring diagrams

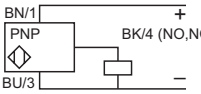
**M8 connector**


3 (-)
1 (+)
4 OUT/Output

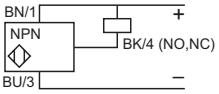
**Pre-cabled**

(-) BU (Blue)
(+) BN (Brown)
OUT/Output BK (Black)

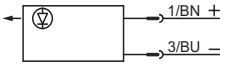
**PNP**




**NPN**

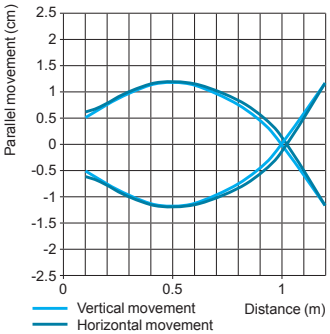



**Transmitter ⎓**

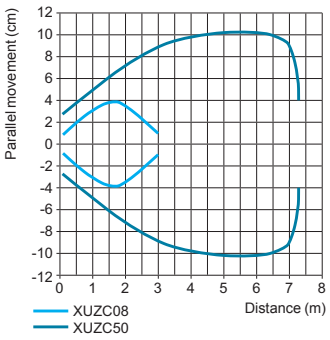



## Operating curves

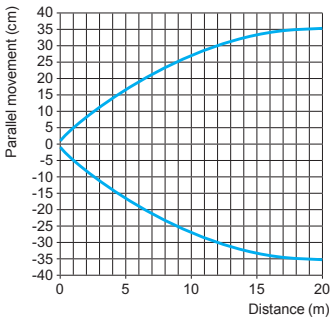
**Diffuse**




**Polarized retroreflective**




**Thru-beam**



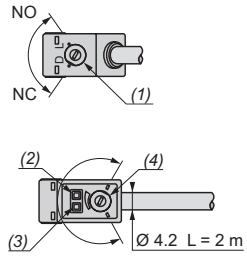
# OsiSense® XU Photoelectric sensors

## Single mode
Miniature design, plastic
Three-wire DC solid-state output
NO/NC configuration switch

## Diffuse system, polarized retroreflective system (mm)

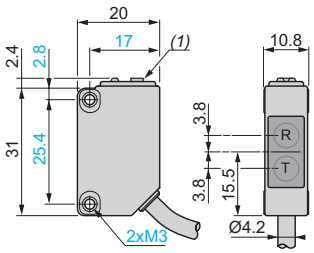
### Pre-cabled version

**Description - XUM5A●CNL2, XUM9A●CNL2**




*(1) Configuration switch*
*(2) Output state LED*
*(3) Stability and power-on LED*
*(4) Adjustment potentiometer*

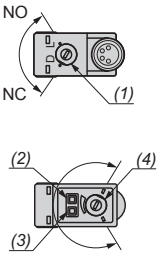
**Dimensions - XUM5A●CNL2, XUM9A●CNL2**




*R: Reception, T: Transmission*
*(1) Potentiometer*

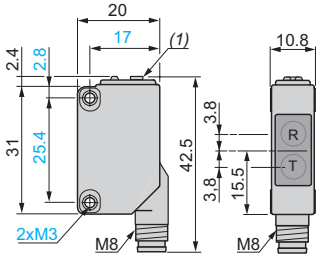
### Connector version

**Description - XUM5A●CNM8, XUM9A●CNM8**




*(1) Configuration switch*
*(2) Output state LED*
*(3) Stability and power-on LED*
*(4) Adjustment potentiometer*

**Dimensions - XUM5A●CNM8, XUM9A●CNM8**

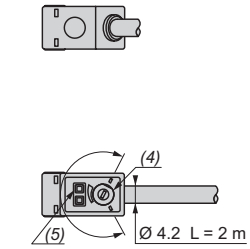



*R: Reception, T: Transmission*
*(1) Potentiometer*

## Thru-beam system (mm)

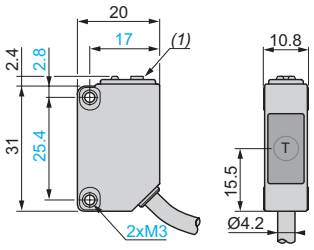
### Pre-cabled version

**Description - XUM2AKCNL2T**



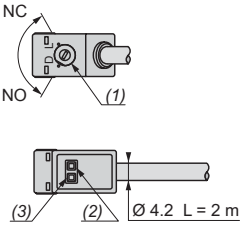

*(4) Adjustment potentiometer*
*(5) Power-on LED*

**Dimensions - XUM2AKCNL2T**



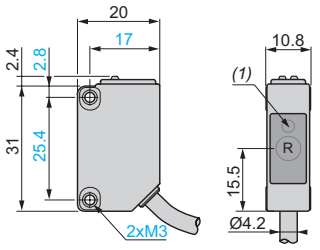

*T: Transmission*
*(1) Potentiometer*

**Description - XUM2A●CNL2R**




*(1) Configuration switch*
*(2) Output state LED*
*(3) Stability and power-on LED*

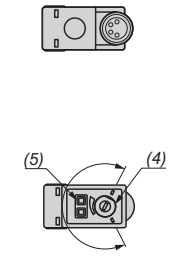
**Dimensions - XUM2A●CNL2R**




*R: Reception*
*(1) Output state LED on front face*

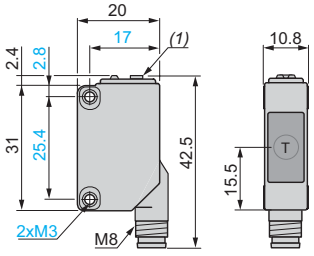
### Connector version

**Description - XUM2AKCNM8T**



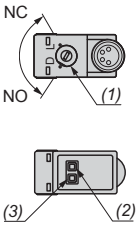

*(4) Adjustment potentiometer*
*(5) Power-on LED*

**Dimensions - XUM2AKCNM8T**



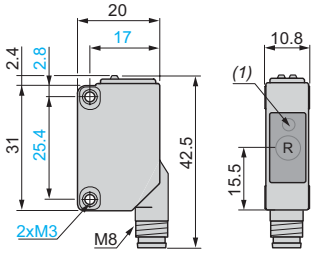

*T: Transmission*
*(1) Potentiometer*

**Description - XUM2A●CNM8R**




*(1) Configuration switch*
*(2) Output state LED*
*(3) Stability and power-on LED*

**Dimensions - XUM2A●CNM8R**




*R: Reception*
*(1) Output state LED on front face*

5

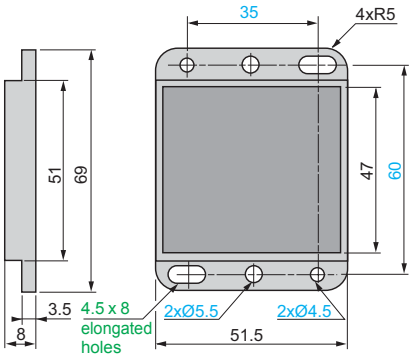
# OsiSense® XU Photoelectric sensors

Single mode
Miniature design, plastic
Three-wire DC solid-state output
NO/NC configuration switch

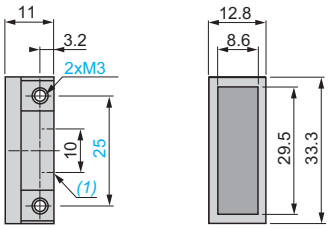
## Accessories (mm)

### Reflectors

**XUZC50**



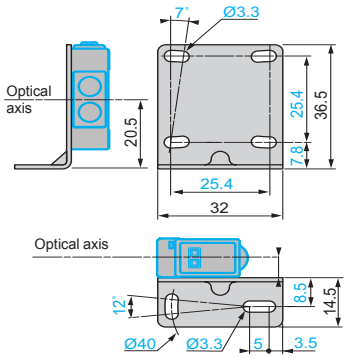

**XUZC08**



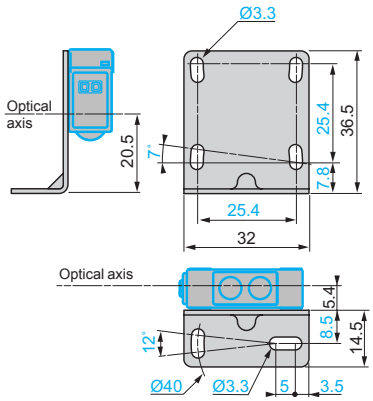

*1) 2 x M3*

### Mounting brackets

**XUZAM01**

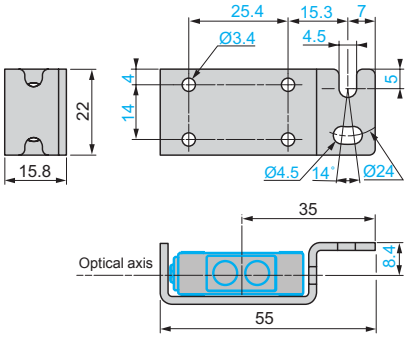



**XUZAM04**

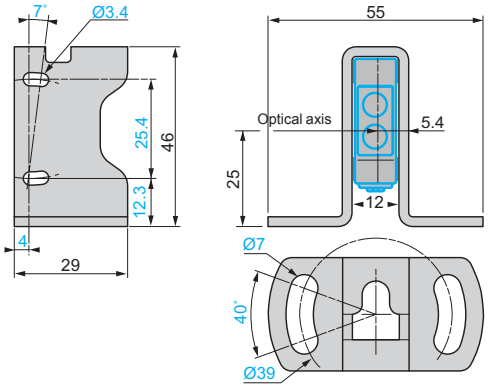



### Mounting bracket with protective cover

**XUZAM03**

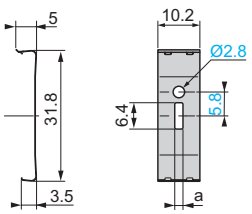



**XUZAM02**

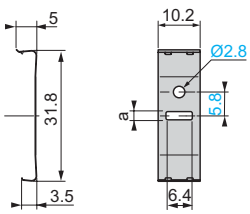



### Diaphragms

**XUZMSV••**



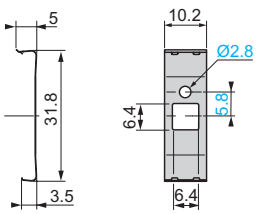

**XUZMSH••**




| XUZ | a |
|---|---|
| MSV05 | 0.5 |
| MSV10 | 1 |
| MSV15 | 1.5 |
| MSV20 | 2 |
| MSH05 | 0.5 |
| MSH10 | 1 |
| MSH15 | 1.5 |
| MSH20 | 2 |

### Filter

**XUZMU01**



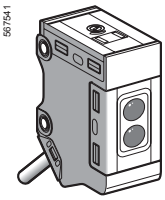

5

# OsiSense® XU Photoelectric sensors

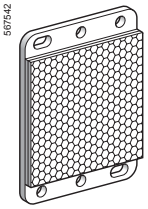
## Application

Miniature design, metal

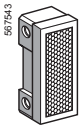
Three-wire DC solid-state output



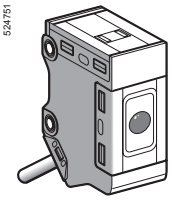

*XUM5B●●NL2*



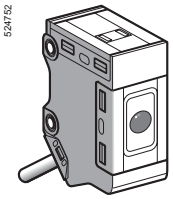

*XUZC50*



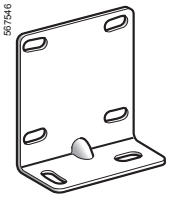

*XUZC08*




*XUM2B2KCL2T*




*XUM2B●●NL2R*




*XUZAM81*

| Sensing distance Sn, m (ft) | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **Diffuse system with adjustable sensitivity** | | | | | | |
| **0.77 (2.53)** | NO | PNP | Pre-cabled (L = 2 m) | **XUM5BPANL2** | 0.128 | (0.28) |
| | | NPN | Pre-cabled (L = 2 m) | **XUM5BNANL2** | 0.128 | (0.28) |
| | NC | PNP | Pre-cabled (L = 2 m) | **XUM5BPBNL2** | 0.128 | (0.28) |
| | | NPN | Pre-cabled (L = 2 m) | **XUM5BNBNL2** | 0.128 | (0.28) |
| **Polarized retroreflective system** | | | | | | |
| **5 (16.40)** with reflector XUZC50<br>**2 (6.56)** with reflector XUZC08 | NO | PNP | Pre-cabled (L = 2 m) | **XUM9BPANL2** | 0.128 | (0.28) |
| | | NPN | Pre-cabled (L = 2 m) | **XUM9BNANL2** | 0.128 | (0.28) |
| | NC | PNP | Pre-cabled (L = 2 m) | **XUM9BPBNL2** | 0.128 | (0.28) |
| | | NPN | Pre-cabled (L = 2 m) | **XUM9BNBNL2** | 0.128 | (0.28) |
| **Reflectors** | | | | | | |
| Universal reflector 50 x 50 mm | | – | – | **XUZC50** | 0.020 | (0.04) |
| Lateral reflector 8.6 x 29.5 mm | | – | – | **XUZC08** | 0.006 | (0.01) |
| **Thru-beam system (transmitter +receiver)** | | | | | | |
| **15 (49.21)** | NO | PNP | Pre-cabled (L = 2 m) | **XUM2BPANL2** | 0.237 | (0.52) |
| | | NPN | Pre-cabled (L = 2 m) | **XUM2BNANL2** | 0.237 | (0.52) |
| | NC | PNP | Pre-cabled (L = 2 m) | **XUM2BPBNL2** | 0.237 | (0.52) |
| | | NPN | Pre-cabled (L = 2 m) | **XUM2BNBNL2** | 0.237 | (0.52) |
| **Transmitter only** | | | | | | |
| **15 (49.21)** | | | Pre-cabled (L = 2 m) | **XUM2BKCNL2T** | 0.128 | (0.28) |
| **Receiver only** | | | | | | |
| **15 (49.21)** | NO | PNP | Pre-cabled (L = 2 m) | **XUM2BPANL2R** | 0.128 | (0.28) |
| | | NPN | Pre-cabled (L = 2 m) | **XUM2BNANL2R** | 0.128 | (0.28) |
| | NC | PNP | Pre-cabled (L = 2 m) | **XUM2BPBNL2R** | 0.128 | (0.28) |
| | | NPN | Pre-cabled (L = 2 m) | **XUM2BNBNL2R** | 0.128 | (0.28) |

| Description | Catalog Number | Weight kg | (lb) |
|---|---|---|---|
| **Mounting accessory** | | | |
| **Base mounting bracket** | **XUZAM81** | 0.020 | (0.04) |

# OsiSense® XU Photoelectric sensors

## Application

Miniature design, metal
Three-wire DC solid-state output

## Specifications

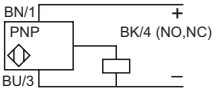
| Sensor type | | | XUM●B●●NL2 | |
|---|---|---|---|---|
| **Product certifications** | | | CE, cULus, CTick | |
| **Connection** | Pre-cabled | | Length: 2 m | |
| **Sensing distance: nominal Sn** (excess gain = 2) | | **m (ft)** | 0.77 (2.53), diffuse system with adjustable sensitivity | |
| | | **m (ft)** | 5 (16.40), polarized retroreflective | |
| | | **m (ft)** | 15 (49.21), thru-beam | |
| **Type of transmission** | | | Red, except diffuse system (Infrared) | |
| **Degree of protection** | Conforming to IEC 60529 | | IP67 | |
| | DIN 40050 | | IP69 K, IP67 G | |
| **Storage temperature** | | **°C** | -40 to +70 (-40 to +158 °F) | |
| **Operating temperature** | | **°C** | -30 to +60 (-22 to +140 °F) | |
| **Materials** | Case | | Zamak and stainless steel | |
| | Lens | | Glass | |
| | Cable | | – | PVC (black for transmitter, gray for other versions) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | | 10 to 55 Hz, amplitude ± 1.5 mm, 2 hours in each direction X, Y, and Z | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | | 500 $m/s^2$ 10 x in each direction X, Y and Z | |
| **Indicator lights** | Output state | | Orange LED (excluding transmitter) | |
| | Stability | | Green LED | |
| | Transmitter | | Orange LED: supply on | |
| | Receiver | | Red LED: light received; green LED: supply on | |
| **Rated supply voltage** | | **Vdc** | 12–24 with protection against reverse polarity | |
| **Voltage limits (including ripple)** | | **Vdc** | 10–30 | |
| **Current consumption, no-load** | | **mA** | 16 for **XUM5**; 13 for **XUM9**; 11 for transmitter **XUM2**; 13 for receiver **XUM2** | |
| **Switching capacity** | | **mA** | ≤ 100 with overload and short-circuit protection | |
| **Voltage drop, closed state** | | **V** | ≤ √3 | |
| **Maximum switching frequency** | | **Hz** | 1000 | |
| **Delays** | First-up | **ms** | < 100 | |
| | Response | **ms** | 0.5 | |
| | Recovery | **ms** | 0.5 | |

## Wiring diagrams

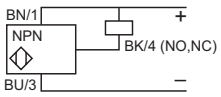
### Pre-cabled

(-) BU (Blue)
(+) BN (Brown)
OUT/Output BK (Black)

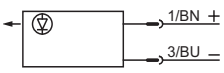
### PNP




### NPN

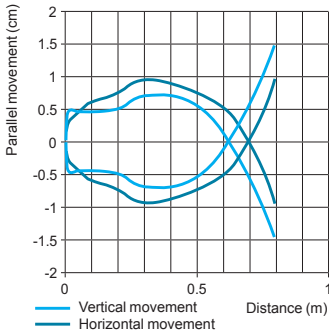



### Transmitter ⎓

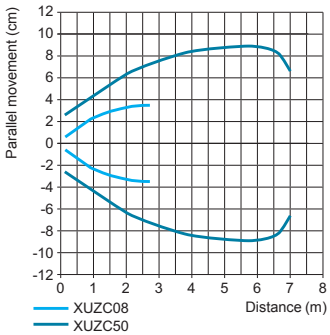



## Operating Curves

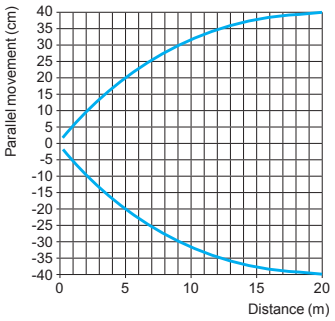
### Diffuse




### Polarized retroreflective




### Thru-beam




5

# OsiSense® XU Photoelectric sensors

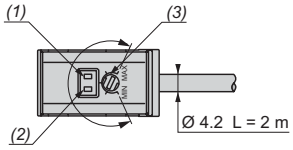
## Application

Miniature design, metal

Three-wire DC solid-state output

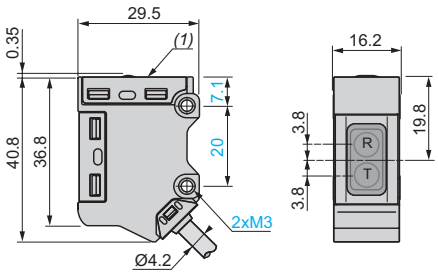
## Diffuse system (mm)

**Description - XUM5B●●NL2**




*(1) Output state LED.*
*(2) Stability and power-on LED.*
*(3) Adjustment potentiometer.*

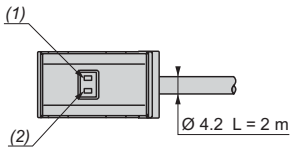
**Dimensions - XUM5B●●NL2**




*(1) Potentiometer.*
*R: Reception, T: Transmission.*

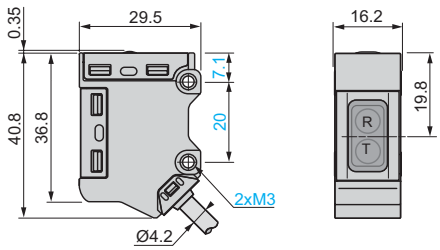
## Polarized retroreflective system (mm)

**Description - XUM9B●●NL2**




*(1) Output state LED.*
*(2) Stability and power-on LED.*

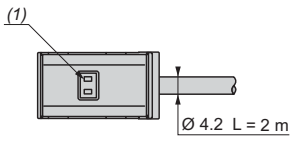
**Dimensions - XUM9B●●NL2**




*R: Reception, T: Transmission.*

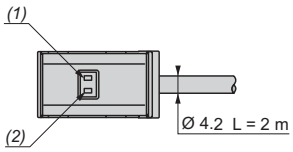
## Thru-beam system (mm)

**Description - XUM2BKCNL2T**



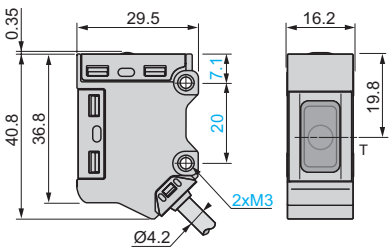

*(1) Output state LED.*

**Description - XUM2B●●NL2R**



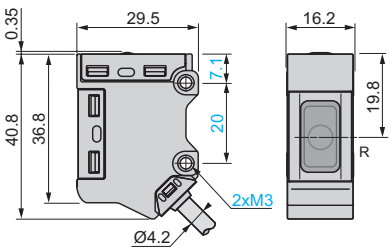

*(1) Output state LED.*
*(2) Stability and power-on LED.*

**Dimensions - XUM2BKCNL2T**




*T: Transmission.*

**Dimensions - XUM2B●●NL2R**




*R: Reception*

5

# OsiSense® XU Photoelectric sensors

## Application

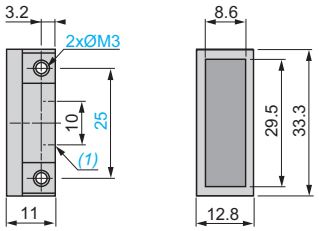
Miniature design, metal

Three-wire DC solid-state output

## Accessories (mm)

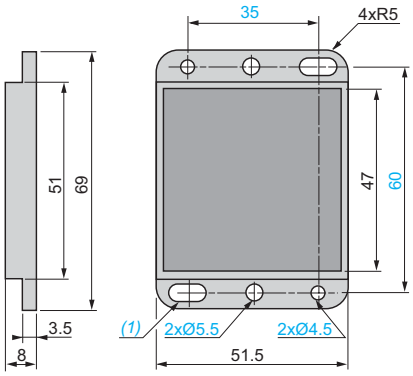
### Reflectors

#### XUZC08




*(1) 2 x M3*

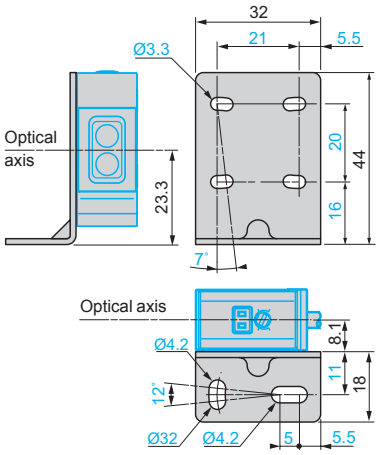
#### XUZC50




*(1) Elongated holes 4.5 x 8*

### Mounting bracket

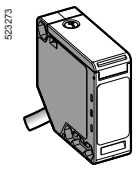
#### XUZAM81



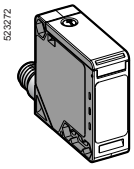

5

# OsiSense® XU Photoelectric sensors

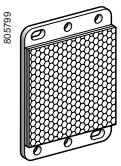
## Multimode
Compact design 50 x 50
5-wire AC or DC, 1 CO relay output
3-wire DC, solid state output



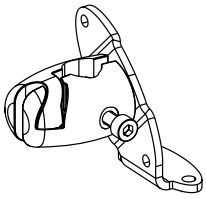
*XUK0AKSAL2*



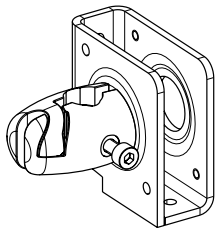
*XUK0AKSAM12*



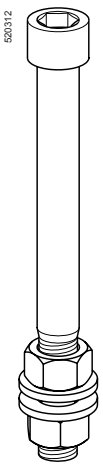
*XUZC50*



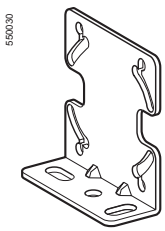
*XUZK2003*



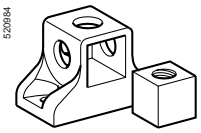
*XUZK2004*



*XUZ2001*



*XUZA51*



*XUZ2003*

## Catalog Numbers

### DC

| Sensing distance (Sn) m (ft) | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **0–30 (0–98.42)** depending on whether accessories are used | NO or NC, by programming | PNP/NPN | Pre-cabled (L = 2 m) *(1)* | **XUK0AKSAL2** | 0.175 | (0.39) |
| | | | M12 connector | **XUK0AKSAM12** | 0.090 | (0.20) |

### Accessories

| Description | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|
| **Transmitter for thru-beam function** | Pre-cabled (L = 2 m) *(1)* | **XUK0AKSAL2T** | 0.140 | (0.31) |
| | M12 connector | **XUK0AKSAM12T** | 0.090 | (0.20) |
| **Reflector** 50 x 50 mm | – | **XUZC50** | 0.020 | (0.44) |

### AC or DC

| Sensing distance (Sn) m (ft) | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **0–30 (0–98.42)** depending on whether accessories are used | NO or NC, by programming | Time delay relay | Pre-cabled (L = 2 m) *(1)* | **XUK0ARCTL2** | 0.175 | (0.39) |

### Accessories

| Description | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|
| **Transmitter for thru-beam function** | Pre-cabled (L = 2 m) *(1)* | **XUK0ARCTL2T** | 0.140 | (0.31) |
| **Reflector** 50 x 50 mm | – | **XUZC50** | 0.020 | (0.44) |

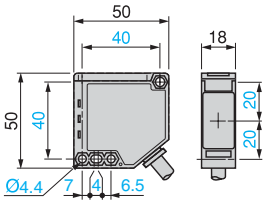
### Mounting accessories

| Description | Catalog Number | Weight kg | (lb) |
|---|---|---|---|
| **3D mounting kit** for use on M12 rod, for XUK or XUZ C50 | **XUZK2003** | 0.170 | (0.37) |
| **3D mounting kit** for use on M12 rod, with protective cover for XUK | **XUZK2004** | 0.270 | (0.60) |
| **M12 rod** | **XUZ2001** | 0.050 | (0.11) |
| **Support for M12 rod** | **XUZ2003** | 0.150 | (0.33) |
| **Mounting bracket** | **XUZA51** | 0.050 | (0.11) |

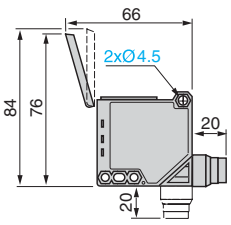
*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: XUK0AKSAL2 becomes **XUK0AKSAL5** or **XUK0AKSAL10.***

## Dimensions (mm)

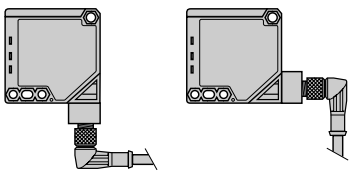
**XUK0A●●●L2**




**XUK0A●●●M12**




**Possible orientation of elbowed connector**



*Specifications,*
*Wiring Diagrams,*
*Operating Curves*

# OsiSense® XU Photoelectric sensors

## Multimode
Compact design 50 x 50
5-wire AC or DC, 1 CO relay output
3-wire DC, solid state output

## Specifications

| Sensor type | | | XUK●●●●●M12 | XUK●●●●●L2 |
|---|---|---|---|---|
| **Product certifications** | | | UL, CSA, CE | |
| **Connection** | | | M12 connector | Pre-cabled, length: 2 m |
| **Sensing distance:** **nominal Sn (excess gain = 2)** **maximum (excess gain = 1)** | | **m (ft)** | 0.28 / 0.28 (0.92 / 0.92) without accessory (diffuse with background suppression) | |
| | | **m (ft)** | 0.8 / 1.2 (2.62 / 3.94) without accessory (diffuse) | |
| | | **m (ft)** | 4 / 5.7 (13.12 / 18.70) with reflector (polarized retroreflective) | |
| | | **m (ft)** | 30 / 35 (98.42 / 114.83) with transmitter for thru-beam function (thru-beam) | |
| **Type of transmission** | | | Infrared, except polarized retroreflective (red) | |
| **Degree of protection** | Conforming to IEC 60529 | | IP 65, double insulation ⧈ | |
| **Storage temperature** | | **°C** | -40 to +70 (-40 to +158 °F) | |
| **Operating temperature** | | **°C** | -25 to +55 (-13 to +131 °F) | |
| **Materials** | Case | | PBT | |
| | Lens | | PMMA | |
| | Cable | | – | PvR |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | | 7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz) | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | | 30 gn, duration 11 ms | |
| **Indicator lights** | Output state | | Yellow LED (transmission present for **XUK0●●●●●●T**) | |
| | Supply on | | Green LED | |
| | Optical alignment aid/dirty | | Red LED (except for **XUK0●●●●●●T**) | |
| **Alarm output** | | **mA** | ≤ 50 with overload and short-circuit protection (except XUK0ARCT●) | |
| **Rated supply voltage** | PNP/NPN | **V** | 12–24 ⎓ with protection against reverse polarity | |
| | Relay output | **V** | – | ≂ 24–240 |
| **Voltage limits (including ripple)** | PNP/NPN | **V** | 10–36 ⎓ | |
| | Relay output | **V** | – | ≂ 20–264 |
| **Current consumption, no-load** | PNP/NPN | **mA** | ≤ 35; 20 for **XUK0AK●●●●T** | |
| **Power consumption** | Relay output | **W** | – | 3 ∿ or ⎓ |
| **Switching capacity** | PNP/NPN | **mA** | ≤ 100 with overload and short-circuit protection | |
| | Relay output | **A** | – | 3 ∿ or ⎓ |
| **Voltage drop, closed state** | | **V** | ≤ 1.5 | |
| **Time delay** | Relay output | **s** | 0–10 on-delay, off-delay, monostable | |
| **Maximum switching frequency** | PNP/NPN | **Hz** | 250 (200 for diffuse with background suppression) | |
| | Relay output | **Hz** | – | 20 |
| **Delays** | First-up | **ms** | < 200 (PNP/NPN); < 300 (relay output) | |
| | Response | **ms** | < 2 (PNP/NPN); < 25 (relay output) (< 2.5 for diffuse with background suppression) | |
| | Recovery | **ms** | < 2 (PNP/NPN); < 25 (relay output) (< 2.5 for diffuse with background suppression) | |

## Wiring diagrams

**M12 connector**


3 (-)
1 (+)
4 OUT/Output
2 Alarm or beam break input *(1)*

*(1) Beam break input on thru-beam transmitter only.*

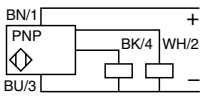
**Pre-cabled**

(-) BU (Blue)
(+) BN (Brown)
OUT/Output BK (Black)
Alarm/WH (White)
Beam break input *(1)*VI (Violet)

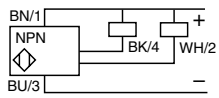
**Pre-cabled, relay output**

(≂) BU (Blue)
(≂) BN (Brown)
Relay common/GY (Gray)
NO BK (Black)
NC WH (White)

**Receiver, PNP output**

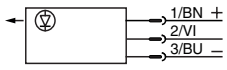



**Receiver, NPN output**




**Thru-beam transmitter ⎓**

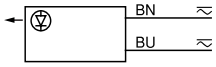
Transmitter



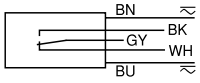

Input 2/VI:
- not connected: *beam made*
- connected to –: *beam broken*

**Thru-beam transmitter ∿**

Transmitter

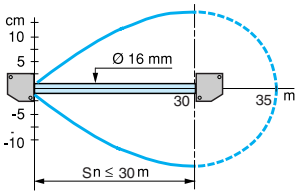



**Relay output**

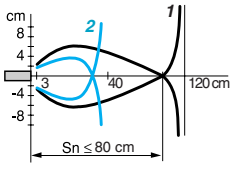



## Operating curves

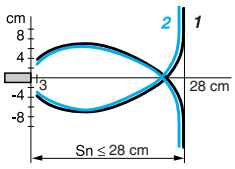
**With thru-beam accessory (thru-beam)**




**Without accessory (diffuse)**

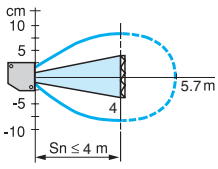



**Without accessory (diffuse with background suppression)**




*Object 10 x 10 cm; **1** White 90%; 2 Gray 18%*

**With reflector (polarized retroreflective)**

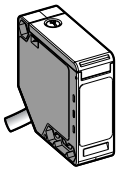



*With reflector XUZC50*

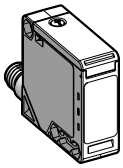
5

# OsiSense® XU Photoelectric sensors

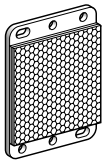
## Single mode function
Compact design, 50 x 50
Five-wire AC or DC, 1 CO relay output
Three-wire DC, solid-state output



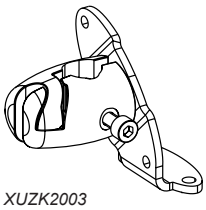
XUK●A●●●L2

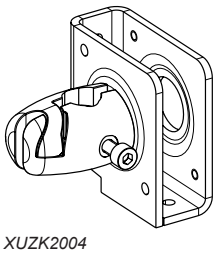


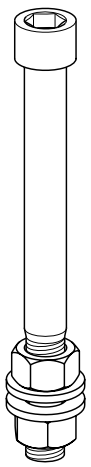
XUK●A●●●M12

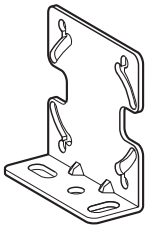


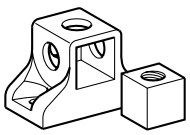
XUZC50


XUZK2003


XUZK2004


XUZ2001


XUZA51


XUZ2003

| Sensing distance (Sn) m (ft) | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **Diffuse system with adjustable sensitivity** | | | | | | |
| **DC** | | | | | | |
| **1 (3.28)** | NO | PNP | Pre-cabled (L = 2 m) *(1)* | **XUK5APANL2** | 0.190 | (0.42) |
| | | | M12 connector | **XUK5APANM12** | 0.070 | (0.15) |
| | | NPN | Pre-cabled (L = 2 m) *(1)* | **XUK5ANANL2** | 0.190 | (0.42) |
| | | | M12 connector | **XUK5ANANM12** | 0.070 | (0.15) |
| | NC | PNP | Pre-cabled (L = 2 m) *(1)* | **XUK5APBNL2** | 0.190 | (0.42) |
| | | | M12 connector | **XUK5APBNM12** | 0.070 | (0.15) |
| | | NPN | Pre-cabled (L = 2 m) *(1)* | **XUK5ANBNL2** | 0.190 | (0.42) |
| | | | M12 connector | **XUK5ANBNM12** | 0.070 | (0.15) |
| **AC or DC** | | | | | | |
| **1 (3.28)** | NO +NC | Relay | Pre-cabled (L = 2 m) *(1)* | **XUK5ARCNL2** | 0.190 | (0.42) |
| **Polarized retroreflective system** | | | | | | |
| **DC** | | | | | | |
| **5 (16.40)** | NO | PNP | Pre-cabled (L = 2 m) *(1)* | **XUK9APANL2** | 0.190 | (0.42) |
| | | | M12 connector | **XUK9APANM12** | 0.070 | (0.15) |
| | | NPN | Pre-cabled (L = 2 m) *(1)* | **XUK9ANANL2** | 0.190 | (0.42) |
| | | | M12 connector | **XUK9ANANM12** | 0.070 | (0.15) |
| | NC | PNP | Pre-cabled (L = 2 m) *(1)* | **XUK9APBNL2** | 0.190 | (0.42) |
| | | | M12 connector | **XUK9APBNM12** | 0.070 | (0.15) |
| | | NPN | Pre-cabled (L = 2 m) *(1)* | **XUK9ANBNL2** | 0.190 | (0.42) |
| | | | M12 connector | **XUK9ANBNM12** | 0.070 | (0.15) |
| **DC or AC** | | | | | | |
| **5 (16.40)** | NO +NC | Relay | Pre-cabled (L = 2 m) *(1)* | **XUK9ARCNL2** | 0.190 | (0.42) |
| **Reflector** 50 x 50 mm *(2)* | | – | – | **XUZC50** | 0.020 | (0.04) |
| **Retroreflective system** | | | | | | |
| **DC** | | | | | | |
| **7 (22.97)** | NO | PNP | Pre-cabled (L = 2 m) *(1)* | **XUK1APANL2** | 0.070 | (0.15) |
| | | | M12 connector | **XUK1APANM12** | 0.070 | (0.15) |
| | | NPN | Pre-cabled (L = 2 m) *(1)* | **XUK1ANANL2** | 0.070 | (0.15) |
| | | | M12 connector | **XUK1ANANM12** | 0.070 | (0.15) |
| | NC | PNP | Pre-cabled (L = 2 m) *(1)* | **XUK1APBNL2** | 0.070 | (0.15) |
| | | | M12 connector | **XUK1APBNM12** | 0.070 | (0.15) |
| | | NPN | Pre-cabled (L = 2 m) *(1)* | **XUK1ANBNL2** | 0.070 | (0.15) |
| | | | M12 connector | **XUK1ANBNM12** | 0.070 | (0.15) |
| **AC or DC** | | | | | | |
| **7 (22.97)** | NO +NC | Relay | Pre-cabled (L = 2 m) *(1)* | **XUK1ARCNL2** | 0.175 | (0.39) |
| **Reflector** 50 x 50 mm *(2)* | | – | – | **XUZC50** | 0.020 | (0.04) |
| **Thru-beam system** | | | | | | |
| **DC** | | | | | | |
| **Transmitter 30 (98.42)** | – | – | Pre-cabled (L = 2 m) *(1)* | **XUK2AKSNL2T** | 0.190 | (0.42) |
| | – | – | M12 connector | **XUK2AKSNM12T** | 0.070 | (0.15) |
| **Receiver 30 (98.42)** | NO | PNP | Pre-cabled (L = 2 m) *(1)* | **XUK2APANL2R** | 0.140 | (0.31) |
| | | | M12 connector | **XUK2APANM12R** | 0.075 | (0.17) |
| | | NPN | Pre-cabled (L = 2 m) *(1)* | **XUK2ANANL2R** | 0.140 | (0.31) |
| | | | M12 connector | **XUK2ANANM12R** | 0.075 | (0.17) |
| | NC | PNP | Pre-cabled (L = 2 m) *(1)* | **XUK2APBNL2R** | 0.140 | (0.31) |
| | | | M12 connector | **XUK2APBNM12R** | 0.075 | (0.17) |
| | | NPN | Pre-cabled (L = 2 m) *(1)* | **XUK2ANBNL2R** | 0.140 | (0.31) |
| | | | M12 connector | **XUK2ANBNM12R** | 0.075 | (0.17) |
| **AC or DC** | | | | | | |
| **Transmitter (98.42)** | – | – | Pre-cabled (L = 2 m) *(1)* | **XUK2ARCNL2T** | 0.140 | (0.31) |
| **Receiver (98.42)** | NO +NC | Relay | Pre-cabled (L = 2 m) *(1)* | **XUK2ARCNL2R** | 0.070 | (0.15) |

## Mounting accessories

| Description | Catalog Number | Weight kg | (lb) |
|---|---|---|---|
| **3D mounting kit** for use on M12 rod, for XUKor XUZC50 | **XUZK2003** | 0.170 | (0.37) |
| **3D mounting kit** for use on M12 rod, with protective cover for XUK | **XUZK2004** | 0.270 | (0.60) |
| **M12 rod** | **XUZ2001** | 0.050 | (0.11) |
| **Support for M12 rod** | **XUZ2003** | 0.150 | (0.33) |
| **Mounting bracket** | **XUZA51** | 0.050 | (0.11) |

*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**. Example: XUK5APANL2 becomes **XUK5APANL5** or **XUK5APANL10.***
For availability, consult the Sensor Competency Center.

*Specifications, Wiring Diagrams, Operating Curves, Dimensions*

# OsiSense® XU Photoelectric sensors

## Single mode function
Compact design, 50 x 50
Five-wire AC or DC, 1 CO relay output
Three-wire DC, solid-state output

## Specifications

| Sensor type | | | XUK●●●●●M12 | XUK●●●●●L2 |
|---|---|---|---|---|
| **Product certifications** | | | UL, CSA, CE | |
| **Connection** | | | M12 connector | Pre-cabled, length: 2 m |
| **Sensing distance:** **nominal Sn (excess gain = 2)** **maximum (excess gain = 1)** | | **m (ft)** | PNP/NPN or relay output 1 / 1.5 (3.28 / 4.92) diffuse | |
| | | **m (ft)** | PNP/NPN or relay output 5 / 8 (16.40 / 26.25) polarized retroreflective | |
| | | **m (ft)** | PNP/NPN or relay output 7 / 10 (22.97 / 32.81) retroreflective | |
| | | **m (ft)** | PNP/NPN or relay output 30 / 45 (98.42 / 147.64) thru-beam | |
| **Type of transmission** | | | Infrared, except polarized retroreflective (red) | |
| **Degree of protection** | Conforming to IEC 60529 | | IP 65, double insulation ⧈ | |
| **Storage temperature** | | **°C** | -40 to +70 (-40 to +158 °F) | |
| **Operating temperature** | | **°C** | -25 to +55 (-13 to 131 °F) | |
| **Materials** | Case | | PBT | |
| | Lens | | PMMA | |
| | Cable | | – | PVC |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | | 7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz) | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | | 30 gn, duration 11 ms | |
| **Indicator lights** | Output state | | Yellow LED (except for **XUK2●●●●●●T**) | |
| | Supply on | | Green LED (only for **XUK2●●●●●●T)** | |
| **Rated supply voltage** | PNP/NPN | **V** | 12–24 with protection against reverse polarity | |
| | Relay output | **V** | – | ≂ 24–240 |
| **Voltage limits (including ripple)** | PNP/NPN | **V** | ⎓ 10–36 | |
| | Relay output | **V** | – | ≂ 20–264 |
| **Current consumption, no-load** | PNP/NPN | **mA** | ≤ 35 | |
| **Power consumption** | Relay output | **W** | – | ≂ 2 |
| **Switching capacity** | PNP/NPN | **mA** | ≤ 100 with overload and short-circuit protection | |
| | Relay output | **A** | – | ≂ 3 |
| **Voltage drop, closed state** | | **V** | ≤ 1.5 | |
| **Maximum switching frequency** | PNP/NPN | **Hz** | 250 | |
| | Relay output | **Hz** | – | 20 |
| **Delays** | First-up | **ms** | < 15 (PNP/NPN); < 60 (relay output) | |
| | Response | **ms** | < 2 (PNP/NPN); < 25 (relay output) | |
| | Recovery | **ms** | < 2 (PNP/NPN); < 25 (relay output) | |

## Wiring diagrams

### M12 connector


3 (-)
1 (+)
4 OUT/Output
2 Beam break input *(1)*

*(1) Beam break input on thru-beam transmitter only.*

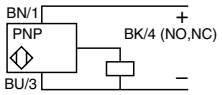
### Pre-cabled, PNP/NPN

(-) BU (Blue)
(+) BN (Brown)
OUT/Output BK (Black)
Beam break input *(1)* VI (Violet)

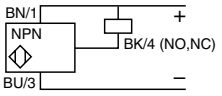
### Pre-cabled, relay output

(≂) BU (Blue), (≂) BN (Brown)
Relay common/GY (Gray)
NO BK (Black)
NC WH (White)

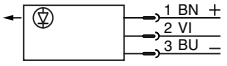
### Receiver, PNP output




### Receiver, NPN output

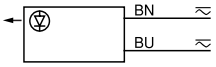



### Thru-beam transmitter ⎓

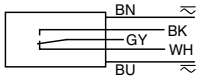



Input 2/VI:
- not connected: *beam made*
- connected to –: *beam broken*

### Thru-beam transmitter ≂

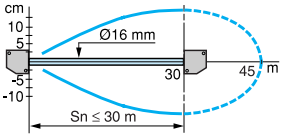



### Relay output

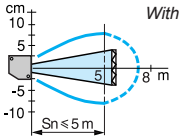



## Operating curves

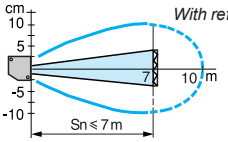
### Thru-beam system



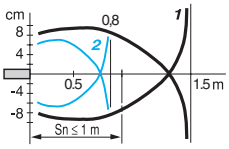

### Polarized retroreflective system




### Retroreflective system



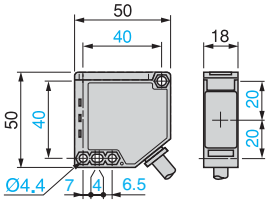

### Diffuse system



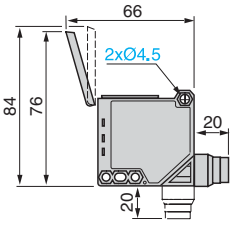

*Object: 10 x 10 cm,*
***1**: white 90%, **2**: gray 18%*

## Dimensions (mm)

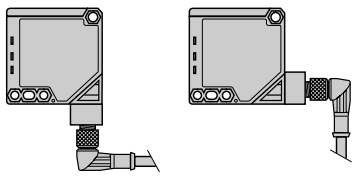
### XUK●●●●●L2




### XUK●●●●●M12




### Possible orientation of elbowed connector



5

# OsiSense® XU Photoelectric sensors

## Application, material handling series

Diffuse with adjustable background suppression
Mechanical display of setting
DC supply. Solid-state output

**Compact design**

| | | | |
|---|---|---|---|
| **System** | | **Diffuse with adjustable background suppression, long sensing distance with high accuracy** | |
| **Type of transmission** | | Infrared | |
| **Nominal sensing distance** Sn, m (ft) | | **1 (6.56)** | |
| **Catalog Numbers** | | | |
| **3-wire, PNP or NPN programmable** | NO or NC programmable function | **XUK8AKSNL2** | **XUK8AKSNM12** |
| **Weight,** kg (lb) | | 0.190 (0.42) | 0.070 (0.15) |
| **Specifications** | | | |
| **Product certifications** | | CE, UL, CSA | |
| **Ambient air temperature** | | For operation: -25 to +55 °C (-13 to +122 °F)<br>For storage: -30 to +70 °C (-22 to +158 °F) | |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 7 gn (f = 10–55 Hz) | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 10 gn, duration 11 ms | |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 (IP 30 with cover open).<br>NEMA 4X indoor use, 12 and 13 double insulation | |
| **Materials** | | Case: PC, lenses: PMMA, cable: PVC | |
| **Connection** *(1)* | | Pre-cabled, diameter 6 mm, length 2 m, wire c.s.a.: 5 x 0.34 $mm^2$ (22 AWG) | M12 male connector, 4-pin, can be set at 2 positions (suitable female connectors, including pre-wired versions) |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against reverse polarity | |
| **Voltage limits** | | ⎓ 10–36 V (including ripple) | |
| **Switching capacity** (sealed) | | ≤ 100 mA with overload and short-circuit protection | |
| **Voltage drop, closed state** | | ≤ 1.5 V | |
| **Current consumption, no-load** | | 35 mA | |
| **Maximum switching frequency** | | 250 Hz | |
| **Delays** | | First-up: ≤ 80 ms; response: ≤ 2 ms; recovery: ≤ 2 ms | |

| **Function table** | **Function** | **Diffuse system** | |
|---|---|---|---|
| | | **No object present in the beam** | **Object present in the beam** |
| **Output state (PNP or NPN) indicator: yellow LED** (illuminated when sensor output is ON) | NO |  | |
| | NC |  | |

*(1) For a 5 m long cable replace L2 by* ***L10****.*

# OsiSense® XU Photoelectric sensors

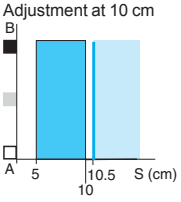
## Application, material handling series

Diffuse with adjustable background suppression
Mechanical display of setting
DC supply. Solid-state output

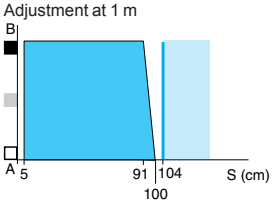
### Detection curves

#### Variation of usable sensing distance Su

Adjustment at 10 cm




Adjustment at 1 m

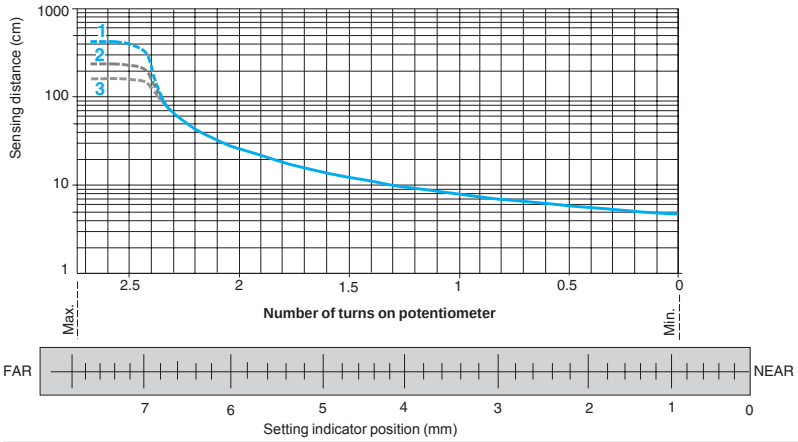



A-B: Object reflection coefficient

Black 6%
Gray 18%
White 90%

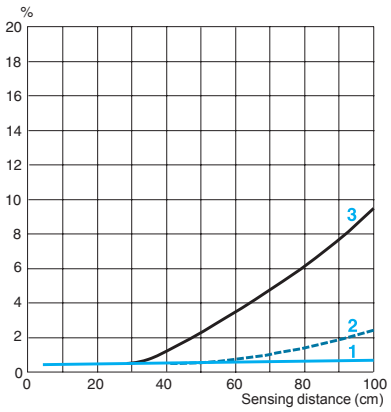
Sensing range
Non-sensing zone (Matte surfaces)

#### Sensing distance adjustment




1 White 90%
2 Gray 18%
3 Black 6%

#### Relative difference in sensing distances according to object color

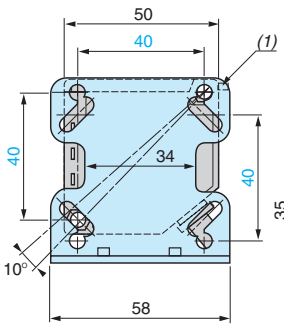



1 White 90%
2 Gray 18%
3 Black 6%

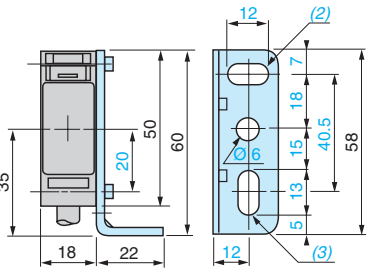
5

### Dimensions (mm)

#### XUK8AKSNL2

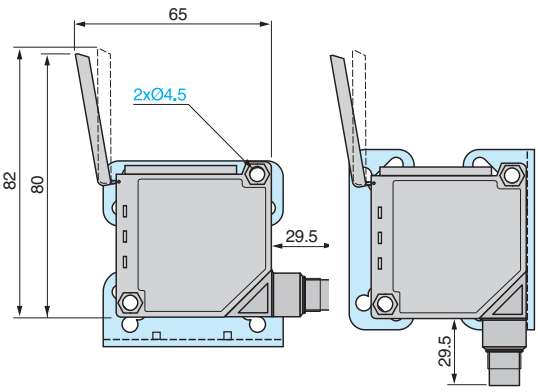



#### Bracket mounting

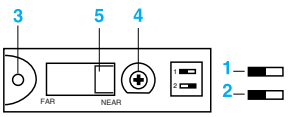



*(1) Cover locking tongue.*
*(2) 1 elongated hole Ø 6 x 12.*
*(3) 1 elongated hole Ø 6 x 13.*

#### XUK8AKSNM12 with cover raised




### Functions

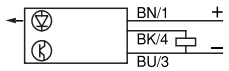



**Switches**
1 NO/NC programming
2 PNP or NPN output
**LED**
3 Yellow LED, output
**Potentiometer**
4 Sensing distance adjustment
**Setting indicator**
5 Potentiometer setting indication

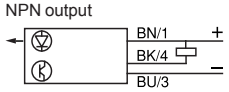
### Wiring diagram (3-wire ⎓)

#### NO/NC programming

PNP output




NPN output




NO: detection of object presence
NC: detection of object absence

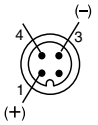
### Cable connections

#### XUK8AKSNL2

(-) BU (Blue)
(+) BN (Brown)
(OUT) BK (Black)

### Connector diagram

#### XUK8AKSNM12

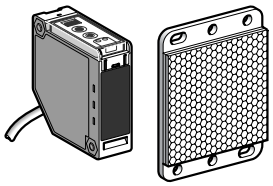


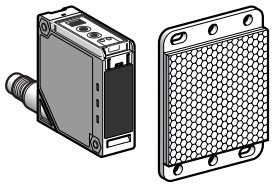
# OsiSense® XU Photoelectric sensors

## Application, packaging series

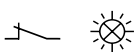
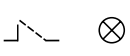
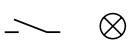
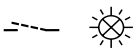
For detection of transparent materials, with teach mode and automatic compensation for accumulation of dirt *(1)*
DC supply, solid-state output

**Compact design**





| | | | |
|---|---|---|---|
| **System** | | **Retroreflective** | |
| **Type of transmission** | | Red | |
| **Nominal sensing distance** Sn, m (ft) | | **1.5 (4.92)** (with 50 x 50 mm reflector) | |
| **Catalog Numbers** | | | |
| 3-wire, PNP or NPN | Light or dark programmable switching | **XUKT1KSML2** *(2)* | **XUKT1KSMM12** *(2)* |
| Weight, kg (lb) | | 0.280 (0.62) | 0.120 (0.26) |
| **Specifications** | | | |
| **Product certifications** | | CE, UL, CSA | |
| **Ambient air temperature** | For operation | -25 to +55 °C (-13 to +131 °F) | |
| | For storage | -30 to +70 °C (-22 to +158 °F) | |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 7 gn (f = 10–55 Hz) | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 10 gn, duration 11 ms | |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 | |
| **Materials** | Case | PC | |
| | Lenses | PMMA | |
| | Cable | PVC | |
| **Connection** | | Pre-cabled, diameter 6 mm, length 2 m, wire c.s.a.: 4 x 0.34 mm² (22 AWG) | M12 male connector, adjustable to 2 positions (suitable female connectors, including pre-wired versions) |
| **Rated supply voltage** | | ⎓ **12–24 V with protection against reverse polarity** | |
| **Voltage limits** | | ⎓ 10–30 V (including ripple) | |
| **Switching capacity** (sealed) | | ≤ **100 mA with overload and short-circuit protection** | |
| **Voltage drop, closed state** | | ≤ 2 V | |
| **Current consumption, no-load** | | ≤ 35 mA | |
| **Maximum switching frequency** | | 1500 Hz | |
| **Delays** | First-up | ≤ 80 ms | |
| | Response | ≤ 0.3 ms | |
| | Recovery | ≤ 0.3 ms | |
| **Time delay** | | Monostable, on-delay or off-delay (programmable) adjustable from 0.1 to 5 seconds | |

| **Function table** | **Function** | **Retroreflective system** | |
|---|---|---|---|
| | | **No object present in the beam** | **Object present in the beam** |
| **Output state (PNP or NPN) indicator: yellow LED** (illuminated when sensor output is ON) | Light switching |  |  |
| | Dark switching |  |  |

*(1) Sensor memorizes, in teach mode, the environmental conditions in which the object is to be detected and adapts to any variations.*
*(2) 50 x 50 mm reflector catalog number **XUZC50** included with the sensor.*

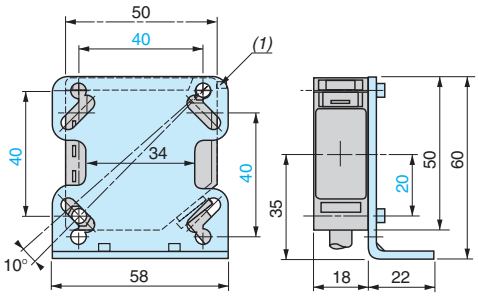
# OsiSense® XU
# Photoelectric sensors

## Application, packaging series

For detection of transparent materials, with teach mode and automatic compensation for accumulation of dirt *(1)*
DC supply, solid-state output

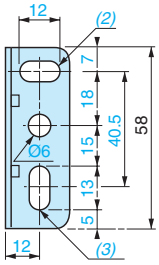
## Dimensions

**XUKT1KSML2**



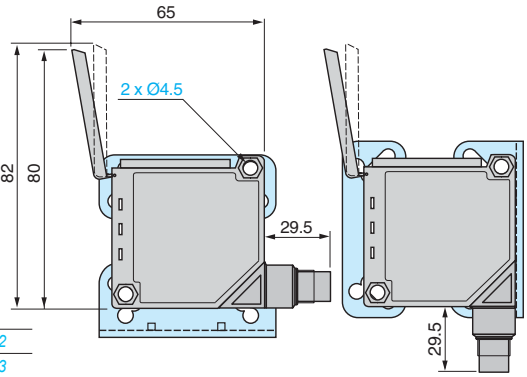

*(1) Cover locking tongue*

Bracket mounting




*(2) 1 elongated hole Ø 6 x 12*
*(3) 1 elongated hole Ø 6 x 13*

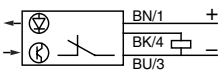
**XUKT1KSMM12** with cover raised
mounting bracket mounting according to position of connector



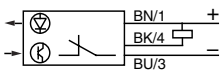

## Wiring diagrams (3-wire ⎓)

**Light switching programmed** (no object present)

PNP output programmed

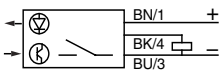



NPN output programmed

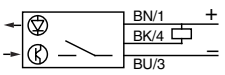



**Dark switching programmed** (no object present)

PNP output programmed

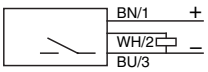



NPN output programmed

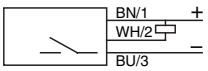



**Alarm output**

PNP programmed




NPN programmed




## Connection

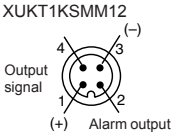
**Cable connections**

**XUKT1KSML2**

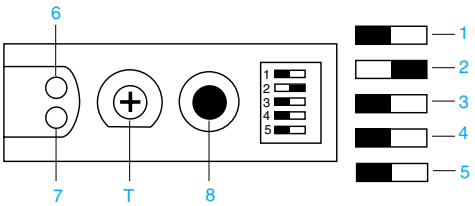
| | | |
|---|---|---|
| (–) | BU | (Blue) |
| (+) | BN | (Brown) |
| (OUT) | BK | (Black) |
| Alarm | WH | (White) |

**Connector diagram**

XUKT1KSMM12




## Functions




**Switches**

1 Light/dark switching programming
2 Time delay activated or deactivated
3 Normal time delay or monostable
4 Normal time delay On-delay or Off-delay
5 PNP or NPN output

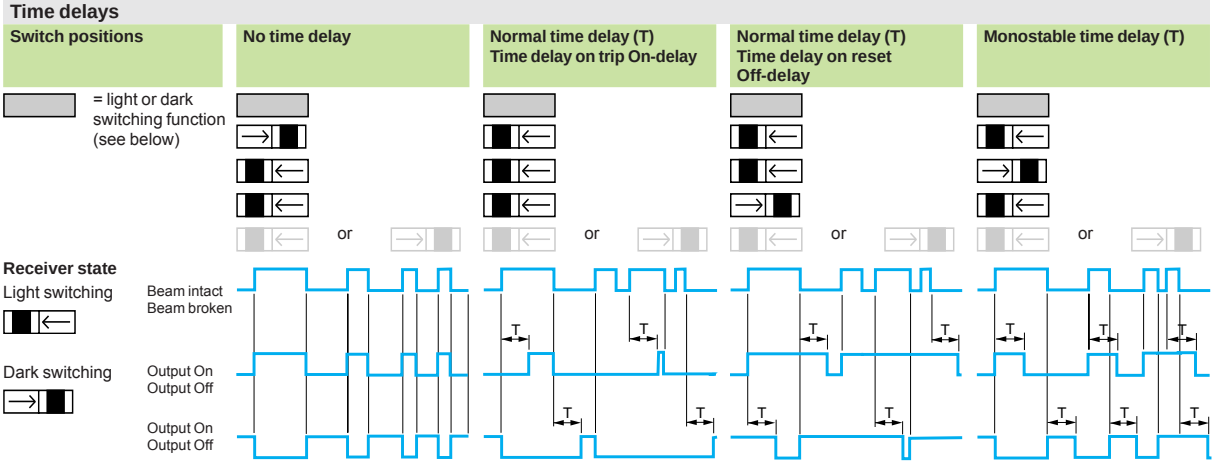
**LEDs**

6 Yellow LED: output and teach mode aid
7 Red LED: alignment aid and alarm indicator

**Potentiometer and button**

T Time delay adjustment
8 Teach mode button

## Time delays

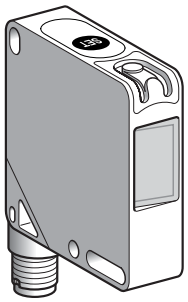



5

# OsiSense® XU Photoelectric sensors

## Application, packaging series
## Compact design, 50 x 50
## Color mark readers *(1)*
## DC supply. Solid-state output

**Compact design, 50 x 50**



| | | |
|---|---|---|
| **System** | | **Diffuse** |
| **Type of transmission** | | White LED (400-700 nm) |
| **Nominal sensing distance Sn, mm (in.)** | | **19 (0.75)** |

## Catalog Numbers

| **Description** | | **Catalog Number** |
|---|---|---|
| **3-wire, PNP or NPN** | PNP output | **XUKR1PSMM12** |
| | NPN output | **XUKR1NSMM12** |
| **Weight, kg (lb)** | | 0.045 (0.10) |

## Specifications

| | | |
|---|---|---|
| **Product certifications** | | CE, cULus |
| **Ambient air temperature** | For operation | -10 to +55 °C (+14 to +122 °F) |
| | For storage | -20 to +70 °C (-4 to +158 °F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | Amplitude ± 0.5 mm, f = 10–55 Hz for each axis |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 30 gn, duration 11 ms, 6 shocks on each axis |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 |
| **Connection** | | M12, 4-pin connector; can be set at 90° |
| **Materials** | Case | ABS |
| | Lenses | Glass (window tilted, anti-reflective glass) |
| **Spot diameter** | | At 19 mm: Ø 3.5 mm |
| **Resolution** | | 0.5 mm |
| **Depth of field** | | ± 2 mm |
| **Adjustment** | | Teach mode using button or remotely using remote wire |
| **Indicator lights** | Output | Yellow LED |
| | Stability | Green LED: Ready<br>Flashing green/red: error |
| **Rated supply voltage** | | ⎓ 12–24 V |
| **Voltage limits** | | ⎓ 10–30 V (including ripple) |
| **Switching capacity** (sealed) | | ≤ 100 mA with protection against reverse polarity, overload and short-circuit |
| **Voltage drop, closed state** (saturation voltage) | | ≤ 2 V |
| **Current consumption, no-load** | | ≤ 30 mA |
| **Maximum linear speed of mark** | | 2.5 m/s for 1 mm wide mark |
| **Maximum switching frequency** | | 5 kHz |
| **Delay** | | 100 µs for response and recovery |
| **Time delay** | Time delay function | Minimum time output active: 20 ms |
| | Auxiliary functions | Remote teaching via remote wire; teach mode button locking |
| | Operating mode | Standard teaching: output activated on dark mark |

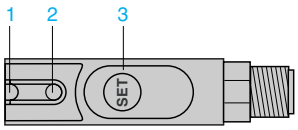
*(1) Applications: detection of contrasting colors on reflective, matte or embossed surfaces; color mark and index mark reading function on automated packaging and filling systems and on labelling, heat sealing, thermo-forming and printing machines, etc.*

# OsiSense® XU Photoelectric sensors

## Application, packaging series
## Compact design, 50 x 50
## Color mark readers *(1)*
## DC supply. Solid-state output

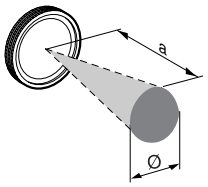
## Presentation

### Description



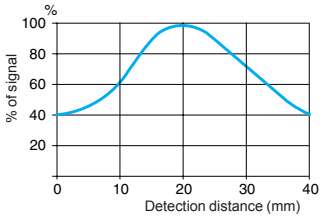

1 Output LED
2 Dual color stability LED
3 SET button

### Detection zone and spot size




| | a (mm) | Ø (mm) |
|---|---|---|
| **XUKR1●SMM12** | 19 | 3.5 |

### Detection curve

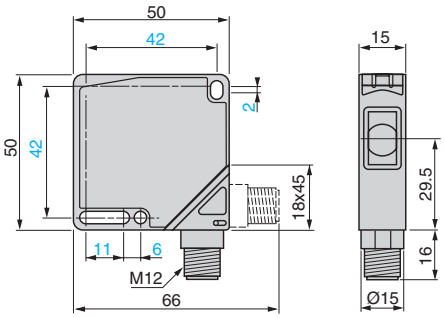



## Mounting accessory

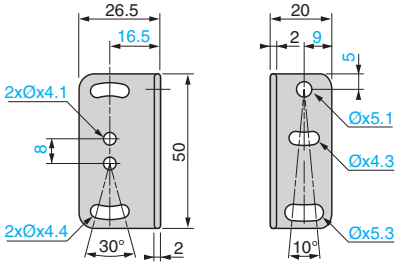
| Description | Catalog Number | Weight kg (lb) |
|---|---|---|
| **Mounting bracket**<br>(2 screws, 2 nuts and 2 washers included) | **XUZK2000** | 0.040 (0.09) |

## Dimensions (mm)

### XUKR1●SMM12



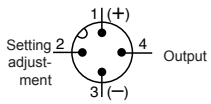

### Mounting bracket XUZK2000




## Wiring Diagrams

### Connector diagram

**Sensor connector pin view**



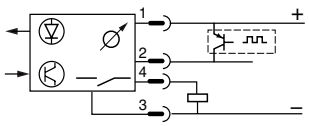

| Pin N° | Type | Color |
|---|---|---|
| 1 | ⎓ 10–30 V | Brown |
| 2 | Adjustment input *(1)* | White |
| 3 | 0 V | Blue |
| 4 | Output | Black |

*(1) Connecting the remote adjustment input to +Vdc is equivalent to pressing the Set button.*

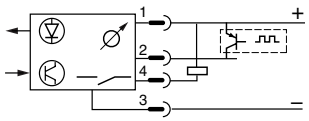
### Wiring diagram

Automatic NC or NO selection depending on chronological order of teaching for the mark and the background.

**PNP output**



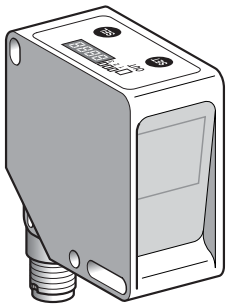

**NPN output**



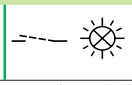
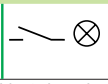
# OsiSense® XU Photoelectric sensors

## Application, packaging series
## Compact design, 50 x 50
## For color detection *(1)*
## DC supply. Solid-state output

**Compact design, 50 x 50**



| | | |
|---|---|---|
| **System** | | **Diffuse** |
| **Type of transmission** | | White LED (400-700 nm) |
| **Type of color processing** | | RGB |
| **Nominal sensing distance Sn, mm (in.)** | | **20** (0.79) (Operational distance, see operating curve on page 77) |
| **Catalog Number** | | |
| **3-wire, PNP +1 synchro input** | NO function | **XUKC1PSMM12** |
| **3-wire, NPN +1 synchro input** | NO function | **XUKC1NSMM12** |
| **Weight, kg (lb)** | | 0.085 (0.19) |
| **Specifications** | | |
| **Product certifications** | | CE, cULus |
| **Ambient air temperature** | For operation | -10 to +55 °C (+14 to +122 °F) |
| | For storage | -20 to +70 °C (-4 to +158 °F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | Amplitude ± 0.5 mm, f = 10–55 Hz for each axis |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 30 gn, duration 11 ms, 6 shocks on each axis |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 |
| **Connection** | | M12, 8-pin connector; can be set at 90° |
| **Materials** | Case | ABS |
| | Lenses | Glass (window tilted, anti-reflective glass) |
| **Spot diameter** | | At 20 mm: Ø 4 mm |
| **Adjustment** | Teach mode | Teaching using SET (adjustment) and SEL (Selection) buttons |
| | Operating mode | C (color) or C+I (color +intensity), independent for each channel |
| | Tolerance level | Selectable tolerance for varying shades of color from TOL 0 to TOL 9 |
| **Auxiliary functions** | | External synchronization, locking |
| **Indicator lights and display** | Display | 4-digit |
| | Output active | 3 green LEDs: output 1, 2 or 3 |
| | Output state OUT | Yellow LED if one output (1, 2 or 3) activated |
| **Rated supply voltage** | | ⎓ 12–24 V |
| **Voltage limits** | | ⎓ 10–30 V (including ripple) |
| **Switching capacity** (sealed) | | ≤ 100 mA with protection against reverse polarity, overload and short-circuit |
| **Voltage drop, closed state** | | ≤ 2 V |
| **Current consumption, no-load** | | ≤ 60 mA |
| **Maximum switching frequency** | | 1.5 kHz |
| **Delay** | | 335 µs for response and recovery |
| **Time delay** | | Selectable (5, 10, 20, 30 or 40 ms) |

| **Function table for each channel (3 channels)** NO function | **Color recognized by sensor** | **Color not recognized by sensor** |
|---|---|---|
| **Output state (PNP or NPN) indicator** (illuminated when sensor output is ON) |  |  |

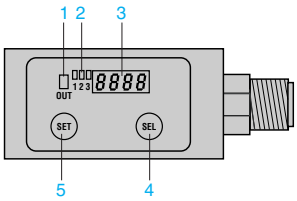
*(1) Applications: OsiSense® XU Full color is a color sensor that can recognize up to 3 colors. It can be used to sort objects by color or to monitor colors, and is insensitive to surface finishes (matte or reflective), as well as ambient lighting. The sensor is suitable for use in many industrial sectors, such as packaging machines, printing machines, etc.*

# OsiSense® XU Photoelectric sensors

## Application, packaging series
Compact design, 50 x 50
For color detection
DC supply. Solid-state output

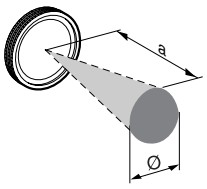
## Presentation

### Description



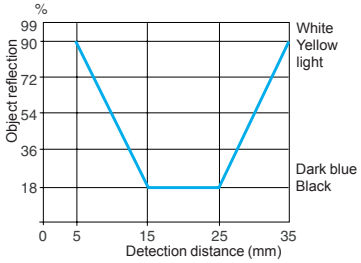

1 Output LED
2 OUT1, OUT2 and OUT3 LEDs
3 Display (green, 4-digit)
4 SEL button (adjustment)
5 SET button

### Detection zone and spot size




| | a (mm) | Ø (mm) |
|---|---|---|
| XUKC1●SMM12 | 20 | 4 |

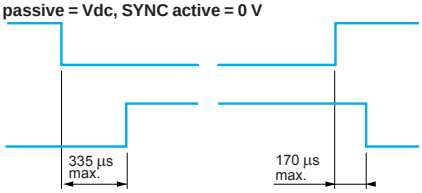
### Operating curve




*Detection distance related to object's degree of reflection*

## Diagram

**SYNC passive = Vdc, SYNC active = 0 V**

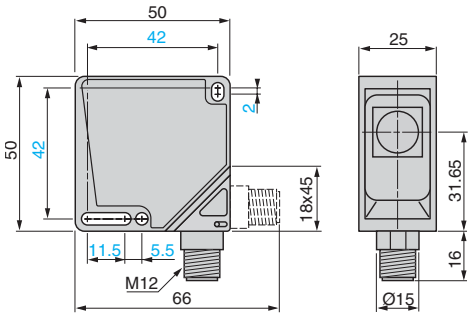



## Accessories

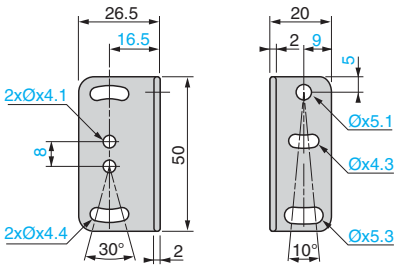
| Description | Diameter mm | Length m | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|
| **Pre-wired M12, 8-pin connectors, shielded cable** *(1)* | 6.5 | 3 | **XSZMCR03** | 0.230 | (0.51) |
| | | 10 | **XSZMCR10** | 0.715 | (1.58) |
| **Mounting bracket** (2 screws, 2 nuts and 2 washers included) | – | – | **XUZK2000** | 0.040 | (0.09) |

## Dimensions (mm)

### XUKC1●SMM12



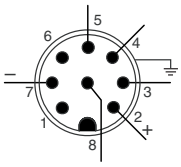

### Mounting bracket XUZK2000




## Wiring diagrams

### Pre-wired connector XSZMCR●●

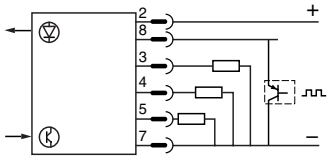
**Sensor connector pin view**



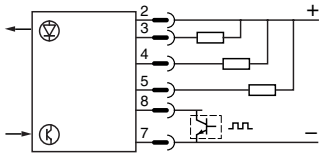

| Pin N° | Type | Color *(2)* |
|---|---|---|
| 1 | – | WH (white) |
| 2 | ⎓ 10...30 V | BN (brown) |
| 3 | Output 1 | TAN (tan) |
| 4 | Output 2 | YE (yellow) |
| 5 | Output 3 | GY (gray) |
| 6 | – | PK (pink) |
| 7 | 0 V | VT (violet) |
| 8 | Synchro | RD (red) |
| – | Screening | TR (transparent) |

### Wiring diagram

**PNP output +synchro input**




**NPN output +synchro input**




*(1) The use of shielded cable is recommended for correct operation of the sensor, especially in environments subject to electromagnetic interference.*
*(2) With pre-wired connector XSZMCR●●.*

5

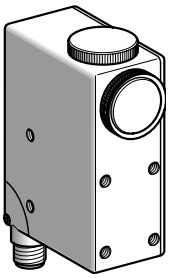
# OsiSense® XU Photoelectric sensors

## Application, packaging series

Color mark readers *(1)*

DC supply. Solid-state output

**Compact design**



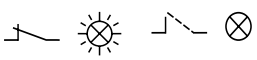
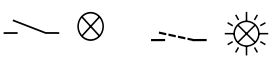
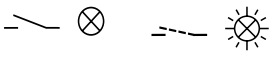
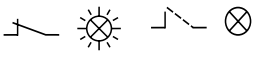
| | |
|---|---|
| **System** | **Diffuse** |
| **Type of transmission** (line of sight along case axis or at 90° depending on position of lens) | Red or green, automatically selected when using teach mode |
| **Nominal sensing distance** Sn, mm (in.) | **9 (0.35), 7 (0.28) with XURZ02 or 18 (0.71) with XURZ01** *(2)* |
| **Sensitivity adjustment** | Automatic when using teach mode |

## Catalog number

| | | |
|---|---|---|
| **3-wire, PNP or NPN programmable** | NO or NC programmable function *(3)* | **XURK1KSMM12** |
| **Weight,** kg, (lb) | | 0.550 (0.26) |

## Specifications

| | | |
|---|---|---|
| **Product certifications** | | CE |
| **Ambient air temperature** | | For operation: -10 to +55 °C (+14 to 131 °F). For storage: -20 to +70 °C (-4 to 158 °F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 7 gn, amplitude ± 0.6 mm (f = 10–55 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 30 gn, duration 11 ms |
| **Degree of protection** | Conforming to IEC 60529 | IP 67 |
| **Connection** | | M12 connector, can be set at 3 positions |
| | | (suitable female connectors, including pre-wired versions) |
| **Materials** | | Case: zinc alloy; lenses: glass |
| **Spot dimensions** | | At 9 mm: 1.5 x 5 mm (with lens **XURZ0●**) |
| **Minimum detectable width of mark** | | 0.5 mm |
| **Maximum vertical inclination of reader** | | 20° |
| **Maximum linear speed of mark** | | 10 m/s (for 1 mm wide mark) |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against reverse polarity |
| **Voltage limits** | | ⎓ 10–30 V (including ripple) |
| **Switching capacity** (sealed) | | ⩽ 200 mA with overload and short-circuit protection |
| **Voltage drop, closed state** | | ⩽ 1 V (NPN); ⩽ 2 V (PNP) |
| **Current consumption, no-load** | | ⩽ 80 mA |
| **Maximum switching frequency** | | 10 kHz |
| **Delays** | | First-up: ⩽ 100 ms; response: ⩽ 50 µs; recovery: ⩽ 50 µs |
| **Time delay** | | Off delay: 20 ms, activated/deactivated by internal switch |
| **Analogue output** | | ⎓ 0–5.5 V (voltage proportional to light reflected by the object) |

| **Function table** | **Function** | **Detection of dark mark on light background** | | **Function** | **Detection of light mark on dark background** | |
|---|---|---|---|---|---|---|
| | | **No mark present in the beam** | **Mark present in the beam** | | **No mark present in the beam** | **Mark present in the beam** |
| **Output state (PNP or NPN) indicator: red LED** (illuminated when sensor output is ON) | NC |  | | NO |  | |
| | NO |  | | NC |  | |

*(1) Applications: detection of contrasting colors on reflective, matte or embossed surfaces; color mark and index mark reading function on automated packaging and filling systems and on labelling, heat sealing, thermo-forming and printing machines, etc.*

*(2) Lenses for reduction or magnification of spot.*

*(3) Automatic programming depending on chronological order of teaching for the mark and the background.*

# OsiSense® XU Photoelectric sensors

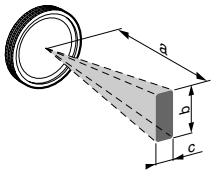
## Application, packaging series

Color mark readers *(1)*

DC supply. Solid-state output

### XURK1KSMM12

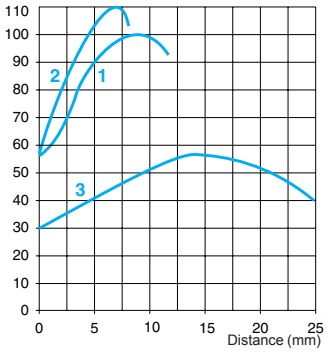
**Detection zone and spot size** (mm)




| XUR | a | b | c |
|---|---|---|---|
| K●●●●●●● | 9 | 5 | 1.5 |
| K●●●●●●● +XURZ01 | 18 | 7 | 2 |
| K●●●●●●● +XURZ02 | 7 | 4 | 1 |

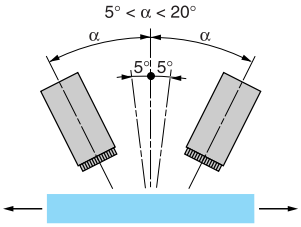
Lenses **XURZ0●**

**Detection curve**




1 **XURK●●●●●●●**
2 **XURK●●●●●●● +XURZ02**
3 **XURK●●●●●●● +XURZ01**

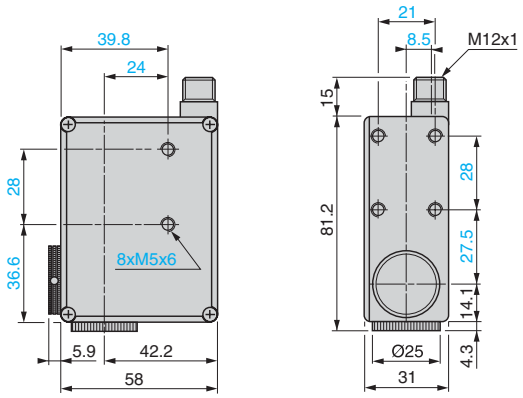
**Vertical inclination**




An angle of 5 to 10° from vertical is recommended for reflective or transparent surfaces.
Maximum vertical inclination: 20°.

### Dimensions (mm)

**XURK1KSMM12**

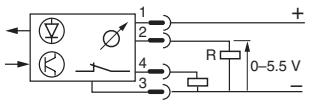



### Wiring diagrams (3-wire ⎓)

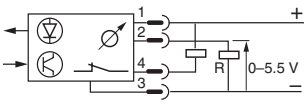
**XURK1KSMM12**

Automatic NC or NO selection depending on chronological order of teaching for the mark and the background

PNP output



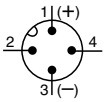

NPN output



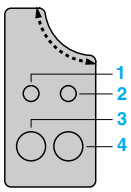

*R = 2.2 kΩ*

**Connector diagram**

(sensor connector pin view)




**Functions**




PNP/NPN programming and time delay by internal switches

1 Green LED, sensor in teach mode
2 Red LED, output state
3 Teach mode button for mark
Teach mode button for
4 background

5

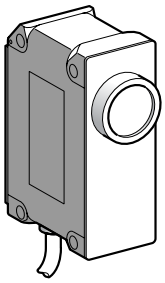
# OsiSense® XU Photoelectric sensors

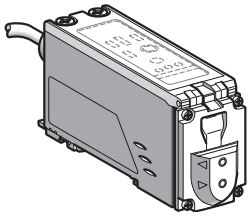
## Application, packaging series

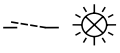
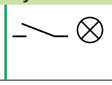
For color detection *(1)*

DC supply. Solid-state output

**Compact design and fiber design**





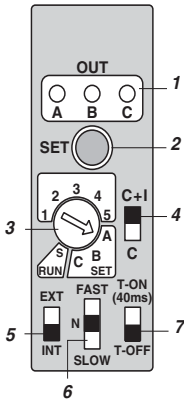
| | | | |
|---|---|---|---|
| **System** | | **Diffuse** | **Thru-beam or diffuse depending on fibers optics selected** |
| **Type of transmission** | | Red, blue and green | |
| **Nominal sensing distance, Sn, mm (in.)** | | **40–60 (1.57–2.36)** | **4–250 (0.16–9.84) depending on fiber optics used** (see page 118) |
| **Catalog Number** | | | |
| **3-wire, PNP** | NO function | **XURC3PPML2** | **XURC4PPML2** |
| **3-wire, NPN** | NO function | **XURC3NPML2** | **XURC4NPML2** |
| **Weight, kg (lb)** | | 0.260 (0.57) | 0.190 (0.42) |
| **Specifications** | | | |
| **Product certifications** | | CE | |
| **Ambient air temperature** | For operation | -10 to +50 °C (+14 to 122 °F) | |
| | For storage | -30 to +70 °C (-22 to +158 °F) | |
| **Ambient humidity** | | 35–85% RH (without condensation) | |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | Amplitude ± 0.75 mm, f = 10–55 Hz, 2 hours on the 3 axes | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 50 gn, 5 shocks on the 3 axes | |
| **Degree of protection** | Conforming to IEC 60529 | IP 67 | IP 65 |
| **Connection** | | Pre-cabled: diameter 5.4 mm, length 2 m, wire c.s.a.: 7 x 0.2 mm² (24 AWG) | |
| **Materials** | Case | Aluminium | |
| | Lenses | Glass | – |
| | Cable | Vinyl rubber sleeve | |
| | Cover | Polyacrylate | |
| **Spot diameter, mm (in.)** | | At 40 (1.57): 4 (0.16) | Depending on fiber optics used: 2.5–8 (0.10–0.31) (see page 118) |
| | | At 50 (1.97): 6 (0.24) | |
| | | At 60 (2.36): 8 (0.31) | |
| **Immunity to ambient light** | Sunlight | 10 000 Lux max. | |
| | Halogen light | 3000 Lux max. | |
| **Rated supply voltage** | | ⎓ 12–24 V | |
| **Voltage limits** | | ⎓ 10–30 V (including ripple) | |
| **Switching capacity** (sealed) | | ≤100 mA with overload and short-circuit protection | |
| **Voltage drop, closed state** | | ≤ 1.5 V | |
| **Current consumption, no-load** | | ≤ 150 mA | |
| **Switching time** | | Programmable by switch: 0.8 ms, 1.5 ms or 6 ms | |
| **Maximum switching frequency** | | 1.2 kHz | |
| **Time delay** | | Programmable by switch: 40 ms on falling edge | |
| **Function table for each channel (3 channels)** NO function | | **Color recognized by sensor** | **Color not recognized by sensor** |
| **Output state (PNP or NPN) indicator** (illuminated when sensor output is ON) | |  |  |

*(1) Applications: OsiSense® XU Full color is a color sensor that can recognize up to three colors. It can be used to sort objects by color or to monitor colors, and is insensitive to surface finishes (matte or reflective), as well as ambient lighting. The sensor is suitable for use in many industrial sectors, such as packaging machines, printing machines, etc.*

# OsiSense® XU Photoelectric sensors

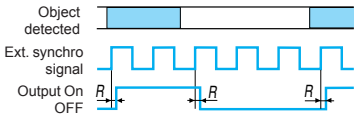
## Application, packaging series
For color detection
DC supply. Solid-state output

## Presentation



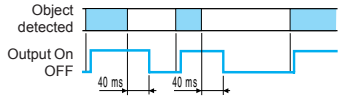

***1 Operational status LED***
***2 Teach mode button, for memorizing reference colors***
***3 Reference colors and operating mode selector***
*□ Selection of reference colors (SET)*
*□ Selection of operating mode:*
*- TOLERANCE mode (positions 1–5): 5 positions allow selection of the tolerance level to be applied to the shading of the color to be detected.*
*- RUN mode (position S): this mode enables sorting by color.*

***4 C or C +I selector***
*□ Mode C: this mode is used for the detection of different colored objects.*
*□ Mode C +I: in this mode the sensor is insensitive to varying surface finishes of the object.*
***5 Synchronization mode selector***
*□ Internal synchronization mode (INT): in this mode, color detection is performed continually.*
*□ External synchronization mode (EXT): in this mode, color detection is synchronized with an external signal.*

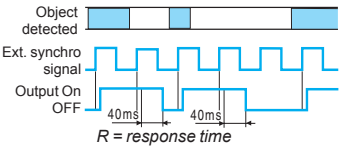



***6 Response time mode selector***
*□ Fast mode (F), normal mode (N) or slow mode (S).*

***7 Output time delay selector (T-ON/T-OFF)***
*□ Output time delay, internal synchronization mode*



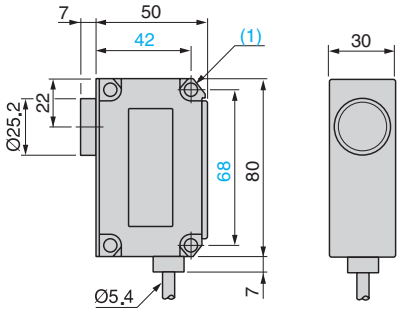

*□ Output time delay, external synchronization mode*




Same color
Different color

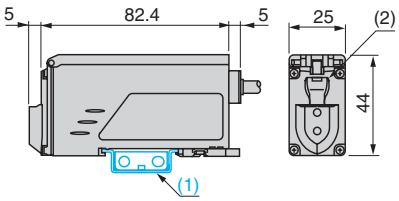
## Dimensions (mm)

### XURC3●PML2



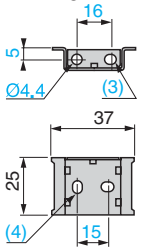

*(1) 2 holes for M5 screws, depth 10 mm*

### XURC4●PML2




*(1) Mounting on rail*
*(2) Fiber optic clamp*
*(3) 1 elongated hole Ø 4.4 x 5.4*
*(4) 2 elongated holes Ø 4.4 x 6.4*

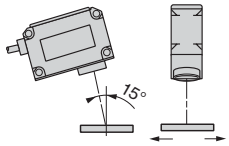
**Mounting rail**



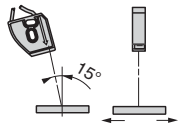

## Mounting

### Installation considerations

*XURC3●PML2*




*XURC4●PML2*




- To obtain optimal detection of the colors, it is recommended that the sensor be positioned such that the transmitted light beams strikes the object at an angle of 15° from its vertical axis *(figure 1)*.
- The direction of travel of the object must be as shown in *figure 2*. This provides detection that is less sensitive to variations in the angle of detection.

### Suitable fiber optics. For further information, see pages 118–131.

| Type of fiber | System | Catalog Number | Sensing distance mm (in.) | Diameter of spot mm |
|---|---|---|---|---|
| Focused | Diffuse | XUFN5L01L2 | 10 (0.39) | Ø 2.5 |
| | | XUFN5L02L2 | 20 (0.79) | Ø 5 |
| | | XUFN5L03L2 | 30 (1.18) | Ø 8 |
| Standard | Diffuse | XUFN05321 | 5 (0.20) | – |
| | | XUFS0520 | 4 (0.16) | – |
| | | XUFN02323 +XUFZ06 | 7 (0.28) | Ø 0.5 |
| | Thru-beam *(1)* | XUFN12301 +XUFZ01 | 250 (9.84) | – |
| | | XUFS2020 +XUFZ01 | 150 (5.91) | – |

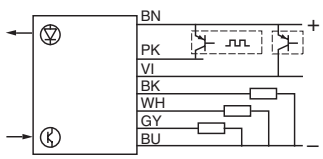
*(1) Detection of color by transparency*

### Cable connections

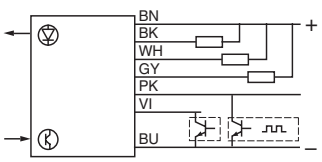
| | | |
|---|---|---|
| BN | (brown) | +Supply (12–24 V) |
| BU | (blue) | - |
| PK | (pink) | SET signal (remote activation of teach mode to memorize reference colors) |
| VI | (violet) | EXT signal (external synchronization) |
| BK | (black) | Output A |
| WH | (white) | Output B |
| GR | (gray) | Output C |

### Wiring diagram

**PNP**




**NPN**



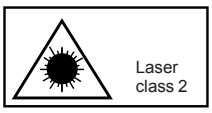

5

# OsiSense® XU Photoelectric sensors

## Application, material handling series

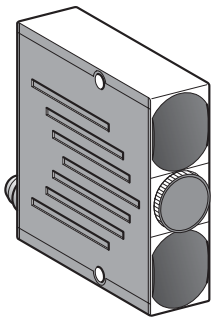
Diffuse, with laser transmission
With background suppression
DC supply. Solid-state output

### Compact design




Laser class 2, conforming to IEC 825-1

Visible laser radiation: do not stare into beam.



| | | |
|---|---|---|
| **System** | | **Diffuse with background suppression** |
| **Type of transmission** | | **Red laser, pulsed, Class 2,** wavelength: 675 nm |
| **Detection distance** | | **Adjustable from 50 to 300 mm (1.97 to 11.81 in.)** |
| **Minimum size of object** | | **0.5 mm (0.02 in.)** |

### Catalog Number

| | | |
|---|---|---|
| **4-wire, PNP and NPN output** | NO/NC depending on wiring | **XUYPS1LCO965S** |
| **Weight, kg (lb)** | | 0.081 (0.18) |

### Specifications

| | | |
|---|---|---|
| **Product certifications** | | CE, cULus *(1)* |
| **Ambient air temperature** | For operation | 0 to +50 °C (+32 to 122 °F) |
| | For storage | -20 to +80 °C (-4 to +176 °F) |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 |
| **Connection** | | M8, 4-pin male connector (for pre-cabled version consult the Sensor Competency Center) |
| **Materials** | Case | Glass impregnated nylon |
| | Lens | PMMA |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against reverse polarity |
| **Voltage limits (including ripple)** | | ⎓ 10–30 V |
| **Immunity to ambient light** | Incandescent bulb | 500 lux |
| | Natural light | 10,000 lux |
| **Laser transmission** | Pulsed laser LED | T pulse: 6 µs, T period < 50 µs |
| **Spot size** | | Manual adjustment of focusing |
| **Switching capacity** | | 100 mA with overload and short-circuit protection |
| **Voltage drop, closed state** | | < 2 V |
| **Current consumption, no-load** | | 35 mA |
| **Maximum switching frequency** | | 5 kHz |
| **Delays** | Response and recovery | < 150 µs |
| **Indicator lights** | Time delay active | Red indicator |
| | Output state | Green indicator |
| | NO function | Red indicator |
| | NC function | Indicator off |
| **Output signal time delay** | | 40 ms, depending on wiring |

*(1) This product is UL Listed if supplied by a class II or isolated supply delivering ⎓ 30 V max. (isolated transformer for example) and protected by a UL fuse rated at 3 A max.*

**Applications**: monitoring of small parts on production machine, detection of components on a printed circuit, monitoring for a crack on a component, control of level, suppression of a background.

### Accessories

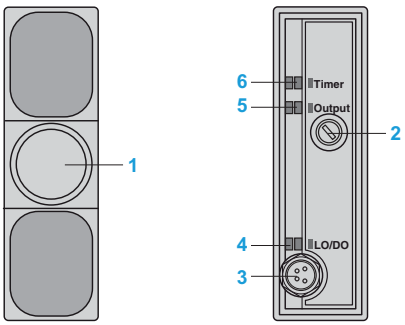
| Description | Details | Length of cable | Catalog Number | Weight | |
|---|---|---|---|---|---|
| | | m | | kg | (lb) |
| **Pre-wired M8 connector** | Straight | 2 | **XZC P0941L2** | 0.080 | (0.18) |
| | Elbowed (90°) | 2 | **XZC P1041L2** | 0.080 | (0.18) |
| | Straight | 5 | **XZC P0941L5** | 0.180 | (0.40) |
| | Elbowed (90°) | 5 | **XZC P1041L5** | 0.180 | (0.40) |

# OsiSense® XU
# Photoelectric sensors
## Application, material handling series
Diffuse, with laser transmission
With background suppression
DC supply. Solid-state output

## Presentation

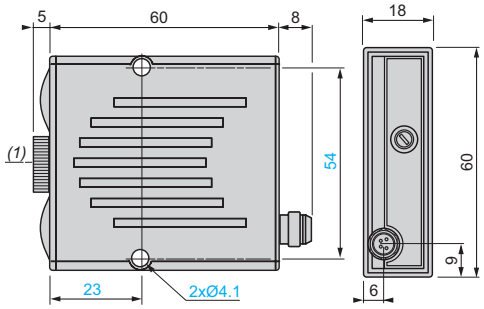
**XUYPS1LCO965S**

Rear view




1 Adjustment of spot size
2 Detection distance adjustment screw
3 M8 connector
4 On: NO function
Off: NC function
5 Object detected
6 Time delay active

## Dimensions (mm)

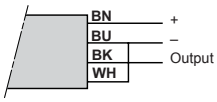



*(1) Optical axis of laser*

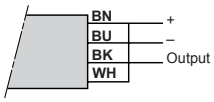
## Wiring diagrams

### NO function

**Without time delay**

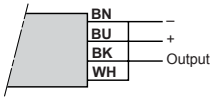



**With 40 ms time delay**

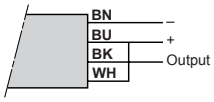



### NC function

**Without time delay**




**With 40 ms time delay**

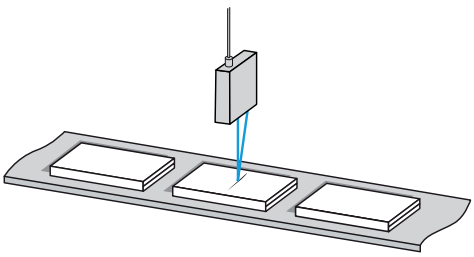



### M8 connector

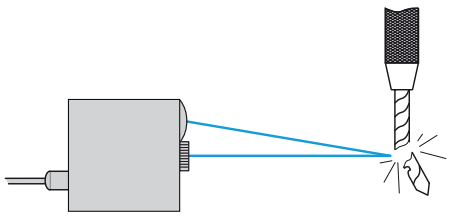

| Pin n° - color |
|---|
| **1 BN:** Brown |
| **2 WH**: White |
| **3 BU**: Blue |
| **4 BK**: Black |

## Application examples

**Monitoring for a crack in a component**



**Monitoring for a broken punch on press tool**



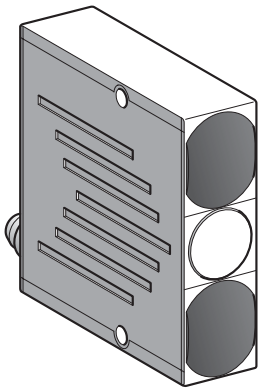
5

# OsiSense® XU Photoelectric sensors

## Application, material handling series

Diffuse, with 2 channels using triangulation with background suppression
DC supply. Solid-state output

**Compact design**



| | | | |
|---|---|---|---|
| **System** | | **Diffuse with background suppression** | |
| **Type of transmission** | | Infrared LED, modulated, Ø 15 mm beam | |
| **Detection distance, mm (in.)** | | **Adjustable from 50 to 600 (1.97 to 23.62)** | |
| **Catalog Number** | | | |
| **4-wire, PNP and NPN output** | NO/NC programmable function | **XUYPS2945S** | **XUYPS2CO945S** |
| **Weight, kg (lb)** | | 0.135 (0.30) | 0.055 (0.12) |
| **Specifications** | | | |
| **Product certifications** | | CE, cULus *(1)* | |
| **Ambient air temperature** | For operation | 0 to +50 °C (+32 to 122 °F) | |
| | For storage | -20 to +80 °C (-4 to +176 °F) | |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 | |
| **Connection** | | Pre-cabled, length 2 m | M8, 4-pin male connector |
| **Materials** | Case | Glass impregnated nylon | |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against reverse polarity | |
| **Voltage limits** (including ripple) | | ⎓ 10–30 V | |
| **Immunity to ambient light** | Incandescent bulb | 1,300 lux | |
| | Natural light | 10,000 lux | |
| **Switching capacity** | | 100 mA with overload and short-circuit protection | |
| **Voltage drop, closed state** | | < 2 V | |
| **Current consumption, no-load** | | < 1.5 W | |
| **Maximum switching frequency** | | **370 Hz** | |
| **Delay** | Response and recovery | < 1.8 ms | |
| **Output signal time delay** | For A and B/A or B *(2)* | Determined by wiring | |
| **Indicator light** | Output signal | Green LED | |

*(1) This product is UL Listed if supplied by a class II or isolated supply delivering ⎓ 30 V max. (isolated transformer for example) and protected by a UL fuse rated at 3 A max.*
*(2) See page 85*

■ Applications:
□ Control of filling, detection of object on conveyor against reflective background.

## Accessories

| Description | Details | Length of cable | Catalog Number | Weight | |
|---|---|---|---|---|---|
| | | m | | kg | (lb) |
| **Pre-wired M8 connector** | Straight | 2 | **XZCP0941L2** | 0.080 | (0.18) |
| | Elbowed (90°) | 2 | **XZCP1041L2** | 0.080 | (0.18) |
| | Straight | 5 | **XZCP0941L5** | 0.180 | (0.40) |
| | Elbowed (90°) | 5 | **XZCP1041L5** | 0.180 | (0.40) |

# OsiSense® XU Photoelectric sensors

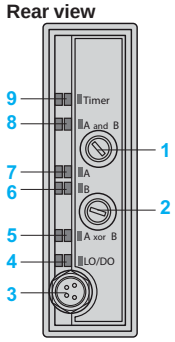
## Application, material handling series

Diffuse, with 2 channels using triangulation with background suppression
DC supply. Solid-state output

## Presentation

**XUYPS2945S, XUYPS2CO945S**

**Rear view**

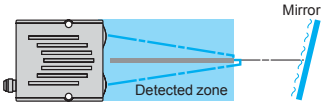



1 Adjustment of zone A detection distance
2 Adjustment of zone B detection distance
3 Pre-cabled connection (XUYPS2945S) or M8 connector
4 (XUYPS2CO945S)
5 On in direct mode
Illuminates when the exclusive OR function between the two
6 zones A and B is obtained
On when the object is present
7 in zone B
On when the object is present
8 in zone A
Illuminates when the AND object logic function between
9 the two zones A and B is
5 & 8 obtained
Indicates time delay mode
Simultaneously on when the OR logic function between the two zones A or B is obtained

## Description (four operating modes)

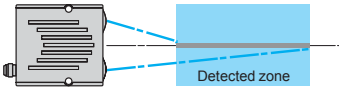
**Two independent sensors with triangulation: A, B**


**Immunity to reflection: A and B**



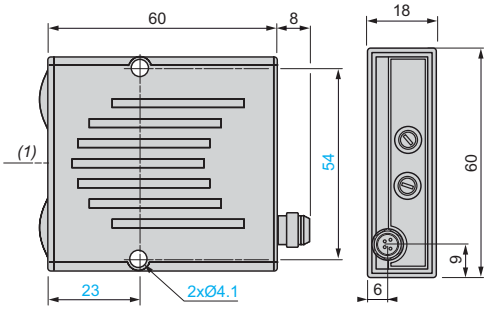

**Detection of contrasting objects: A or B**


**Monitoring of distance: A xor B**




## Dimensions (mm)

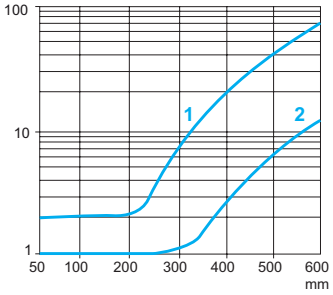
**XUYPS2945S, XUYPS2CO945S**




*(1) Optical axis.*

## Operating curves (typical)

**XUYPS2945S, XUYPS2CO945S**



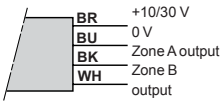

1 Black 6%
2 Gray 18% - *Distance (mm) set on 92% (Kodak 1527795)*

5

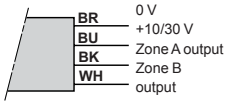
## Wiring diagrams and outputs

**Two independent sensors with triangulation: A, B**

**NO output**



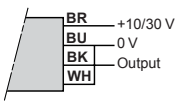

**NC output**



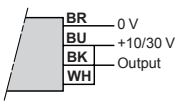

**Immunity to reflection: A and B**

**Without time delay**

**NO output**

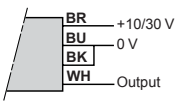



**NC output**

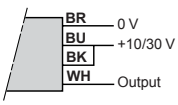



**With 40 ms time delay**

**NO output**

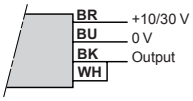



**NC output**

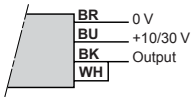



**Detection of contrasting objects: A or B**

**NO output**



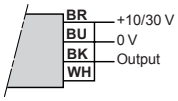

**NC output**



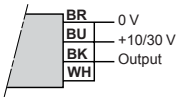

**Monitoring of distance: A xor B**

**Without time delay**

**NO output**

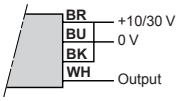



**NC output**

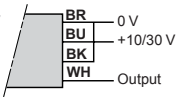



**With 40 ms time delay**

**NO output**



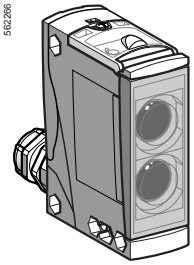

**NC output**



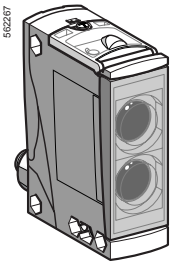

**BR:** Brown
**BU:** Blue
**BK:** Black
**WH:** White

# OsiSense® XU Photoelectric Sensors

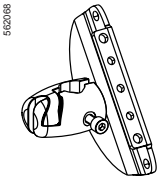
## Multimode function *(1)*
## Compact design
### Five-wire AC or DC, 1 CO relay output
### Three-wire DC, solid-state output



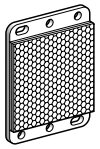

*XUX0ARCTT16*



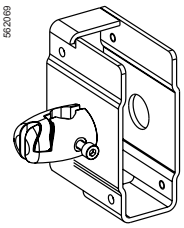

*XUX0AKSAM12*



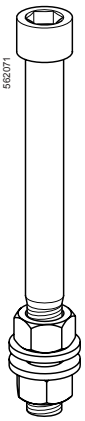

*XUZX2003*



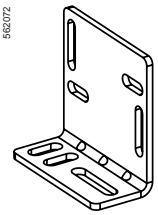

*XUZC50*



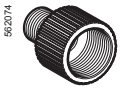

*XUZX2004*



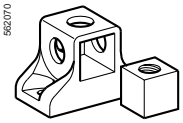

*XUZ2001*




*XUZX2000*




*XUZX2001*




*XUZ2003*

## Catalog Numbers

### DC

| Sensing distance Sn, m (ft) | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **0–40 (131.23)** depending on whether accessories are used | NO or NC, by programming | PNP/NPN | Screw terminals, ISO 16 cable gland *(2)* | **XUX0AKSAT16** | 0.200 | (0.44) |
| | | | M12 connector | **XUX0AKSAM12** | 0.200 | (0.44) |

### Accessories

| Description | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|
| **Transmitter for thru-beam function** | Screw terminals, ISO 16 cable gland *(2)* | **XUX0AKSAT16T** | 0.200 | (0.44) |
| | M12 connector | **XUX0AKSAM12T** | 0.200 | (0.44) |
| **Reflector** 50 x 50 mm | – | **XUZC50** | 0.020 | (0.44) |

### AC or DC

| Sensing distance (Sn) m | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **0–40 (131.23)** depending on whether accessories are used | NO or NC, by programming | Time delay relay | Screw terminals, ISO 16 cable gland *(2)* | **XUX0ARCTT16** | 0.200 | (0.44) |

### Accessories

| Description | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|
| **Transmitter for thru-beam function** | Screw terminals, ISO 16 cable gland *(2)* | **XUX0ARCTT16T** | 0.200 | (0.44) |
| **Reflector** 50 x 50 mm | | **XUZC50** | 0.020 | (0.44) |

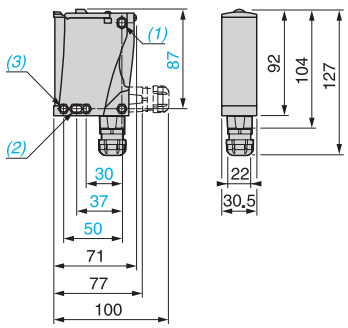
### Mounting accessories

| Description | Catalog Number | Weight kg | (lb) |
|---|---|---|---|
| **3D mounting kit** for use on M12 rod, for XUX or XUZC50 | **XUZX2003** | 0.220 | (0.49) |
| **3D mounting kit** for use on M12 rod, with protective cover for XUX | **XUZX2004** | 0.420 | (0.93) |
| **M12 rod** | **XUZ2001** | 0.050 | (0.11) |
| **Support for M12 rod** | **XUZ2003** | 0.150 | (0.33) |
| **Mounting bracket** | **XUZX2000** | 0.120 | (0.26) |
| **Adapter, ISO 16 - 1/2 NPT** | **XUZX2001** | 0.050 | (0.11) |
| **Adapter, ISO 16 - ISO 20** | **XUZX2002** | 0.050 | (0.11) |

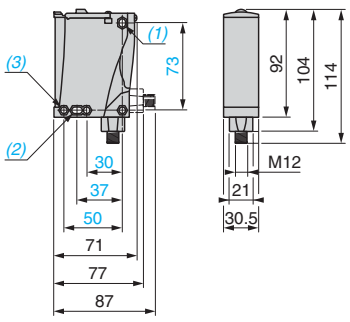
*(1) For further information on* ***the multimode function****, see page 14.*
*(2) For Ø 7 to 10 mm cable.*

## Dimensions (mm)

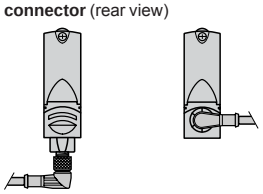
**XUX●●●●●T16**




**XUX●●●●●M12**




**Possible orientation of elbowed connector** (rear view)



## Specifications

*Specifications, Wiring Diagrams, Operating Curves*

# OsiSense® XU Photoelectric Sensors

## Multimode function
## Compact design
### Five-wire AC or DC, 1 CO relay output
### Three-wire DC, solid-state output

| Sensor type | | | XUX●●●●●M12 | XUX●●●●●T16 |
|---|---|---|---|---|
| Product certifications | | | UL, CSA, CE | |
| Connection | | | M12 connector | Screw terminals, ISO 16 cable gland |
| Sensing distance: nominal Sn (excess gain = 2) | | m (ft) | 1.3 / 1.3 (4.27 / 4.27) without accessory (diffuse with background suppression) | |
| maximum (excess gain = 1) | | m (ft) | 2 / 3 (6.56 / 9.84) without accessory (diffuse) | |
| | | m (ft) | 11 / 15 (36.09 / 49.21) with reflector (polarized retroreflective) | |
| | | m (ft) | 40 / 60 (131.23 / 196.85) with transmitter for thru-beam function (thru-beam) | |
| Type of transmission | | | Infrared, except for polarized retroreflective (red) | |
| Degree of protection | Conforming to IEC 60529 | | IP 65, IP 67, double insulation ⧈ | |
| Storage temperature | | °C | -40 to +70 (-40 to +158 °F) | |
| Operating temperature | | °C | -25 to +55 (-13 to +131 °F) | |
| Materials | Case | | PBT | |
| | Lens | | PMMA | |
| Vibration resistance | Conforming to IEC 60068-2-6 | | 7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz) | |
| Shock resistance | Conforming to IEC 60067-2-27 | | 30 gn, duration 11 ms | |
| Indicator lights | Output state | | Yellow LED (transmission present for **XUX0●●●●●●●T**) | |
| | Supply on | | Green LED | |
| | Stability | | Red LED (except for **XUX0●●●●●●●T**) | |
| Rated supply voltage | PNP/NPN | V | ⎓ 12–24 with protection against reverse polarity | |
| | Relay output | V | – | 24–240 ∿ or ⎓ |
| Voltage limits (including ripple) | PNP/NPN | V | ⎓ 10–36 | |
| | Relay output | V | – | 20–264 ∿ or ⎓ |
| Current consumption, no-load | PNP/NPN | mA | ≤ 35 (20 for **XUX0●●●●●●●T**) | |
| Power consumption | Relay output | W | – | 2 ∿ or ⎓ |
| Alarm output | | mA | ≤ 100 with overload and short-circuit protection | |
| Switching capacity | PNP/NPN | mA | ≤ 100 with overload and short-circuit protection | |
| | Relay output | A | – | 500,000 operating cycles<br>3 A: cos φ = 1/0.5 A: cos φ = 0.4 |
| Voltage drop, closed state | | V | ≤ 1.5 | |
| Maximum switching frequency | PNP/NPN | Hz | 240 | |
| | Relay output | Hz | – | 20 |
| Time delay | Relay output | s | – | 0.02–15 on-delay, off-delay, monostable |
| Delays | First-up | ms | < 200 | |
| | Response | ms | < 2 (PNP/NPN); < 25 (relay output) | |
| | Recovery | ms | < 2 (PNP/NPN); < 25 (relay output) | |

5

## Wiring diagrams

**M12 connector**


**Relay output ∿**

| Terminals | |
|---|---|
| 1 | ⊘ ∿ |
| 2 | ⊘ ∿ |
| 3 | ⊘ NO |
| 4 | ⊘ Relay common |
| 5 | ⊘ NC |

**PNP/NPN ⎓**

| M12 | | Terminals | |
|---|---|---|---|
| 1 | ● | 1 ⊘ | + |
| 3 | ● | 2 ⊘ | - |
| 4 | ● | 3 ⊘ | Output |
| 2 | ● | 4 ⊘ | Alarm |

**Transmitter ⎓**

| M12 | | Terminals | |
|---|---|---|---|
| 1 | ● | 1 ⊘ | + |
| 3 | ● | 2 ⊘ | - |
| 2 | ● | 3 ⊘ | Beam break input *(1)* |

*(1) Input not connected: beam made.*
*Input connected to –: beam broken.*

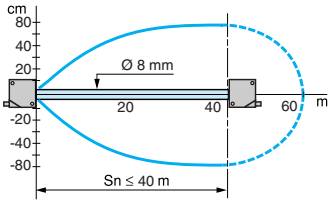
**Transmitter ∿**

| Terminals | |
|---|---|
| 1 | ⊘ ∿ |
| 2 | ⊘ ∿ |

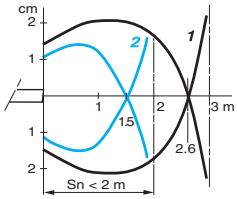
Maximum permissible conductor c.s.a.: 1 x 1.5 mm² (15 AWG) or 1 x 0.75 mm² (18 AWG) with cable end.

## Operating curves

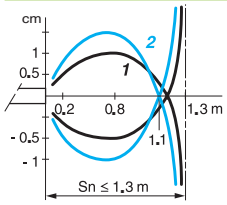
**With thru-beam accessory (thru-beam)**



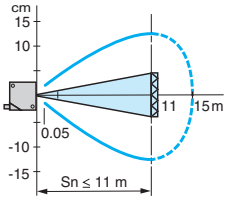

**Without accessory (diffuse)**




**Without accessory (diffuse with background suppression)**




**With reflector (polarized retroreflective)**

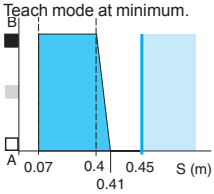



*Object: 10 x 10 cm, **1**: white 90%, **2**: gray 18%*

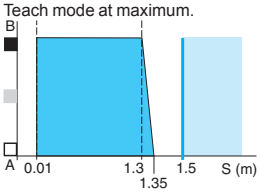
*With reflector XUZC50*

**Variation of usable sensing distance Su (without accessory, with adjustable background suppression)**

Teach mode at minimum.

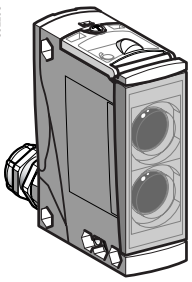



Teach mode at maximum.

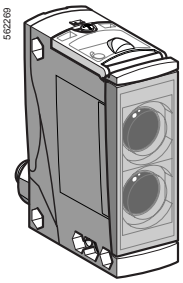



A-B: *object reflection coefficient*
- *Black 6%*
- *Gray 18%*
- *White 90%*
- *Sensing range*
- *Non-sensing zone (matte surfaces)*

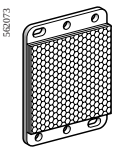
# OsiSense® XU
# Photoelectric sensors
## Single mode function
## Compact design
### Five-wire AC or DC, 1 CO relay output
### Three-wire DC, solid-state output


562268

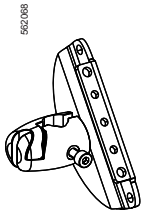
XUX●A●●●T16


562269

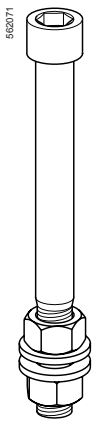
XUX●A●●●M12


562073

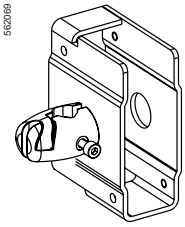
XUZC50


562068

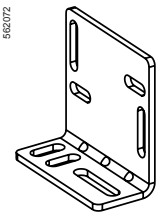
XUZX2003


562071

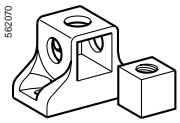
XUZ2001


562069

XUZX2004


562072

XUZX2000


562070

XUZ2003

| Sensing distance Sn, m (ft) | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **Diffuse system** *(1)* | | | | | | |
| **DC** | | | | | | |
| **2.1 (6.89)** | NO | PNP | Screw terminals *(2)* | **XUX5APANT16** | 0.200 | (0.44) |
| | | | M12 connector | **XUX5APANM12** | 0.200 | (0.44) |
| | | NPN | Screw terminals *(2)* | **XUX5ANANT16** | 0.200 | (0.44) |
| | | | M12 connector | **XUX5ANANM12** | 0.200 | (0.44) |
| | NC | PNP | Screw terminals *(2)* | **XUX5APBNT16** | 0.200 | (0.44) |
| | | | M12 connector | **XUX5APBNM12** | 0.200 | (0.44) |
| | | NPN | Screw terminals *(2)* | **XUX5ANBNT16** | 0.200 | (0.44) |
| | | | M12 connector | **XUX5ANBNM12** | 0.200 | (0.44) |
| **AC or DC** | | | | | | |
| **2.1 (6.89)** | NO +NC | Relay | Screw terminals *(2)* | **XUX5ARCNT16** | 0.200 | (0.44) |
| **Polarized retroreflective system** *(1)* | | | | | | |
| **DC** | | | | | | |
| **11 (36.09)** | NO | PNP | Screw terminals *(2)* | **XUX9APANT16** | 0.200 | (0.44) |
| | | | M12 connector | **XUX9APANM12** | 0.200 | (0.44) |
| | | NPN | Screw terminals *(2)* | **XUX9ANANT16** | 0.200 | (0.44) |
| | | | M12 connector | **XUX9ANANM12** | 0.200 | (0.44) |
| | NC | PNP | Screw terminals *(2)* | **XUX9APBNT16** | 0.200 | (0.44) |
| | | | M12 connector | **XUX9APBNM12** | 0.200 | (0.44) |
| | | NPN | Screw terminals *(2)* | **XUX9ANBNT16** | 0.200 | (0.44) |
| | | | M12 connector | **XUX9ANBNM12** | 0.200 | (0.44) |
| **AC or DC** | | | | | | |
| **11 (36.09)** | NO +NC | Relay | Screw terminals *(2)* | **XUX9ARCNT16** | 0.200 | (0.44) |
| **Reflector** 50 x 50 mm *(2)* | – | – | – | **XUZC50** | 0.020 | (0.44) |
| **Retroreflective system** *(1)* | | | | | | |
| **DC** | | | | | | |
| **14 (45.93)** | NO | PNP | Screw terminals *(2)* | **XUX1APANT16** | 0.200 | (0.44) |
| | | | M12 connector | **XUX1APANM12** | 0.200 | (0.44) |
| | | NPN | Screw terminals *(2)* | **XUX1ANANT16** | 0.200 | (0.44) |
| | | | M12 connector | **XUX1ANANM12** | 0.200 | (0.44) |
| | NC | PNP | Screw terminals *(2)* | **XUX1APBNT16** | 0.200 | (0.44) |
| | | | M12 connector | **XUX1APBNM12** | 0.200 | (0.44) |
| | | NPN | Screw terminals *(2)* | **XUX1ANBNT16** | 0.200 | (0.44) |
| | | | M12 connector | **XUX1ANBNM12** | 0.200 | (0.44) |
| **AC or DC** | | | | | | |
| **14 (45.93)** | NO +NC | Relay | Screw terminals *(2)* | **XUX1ARCNT16** | 0.200 | (0.44) |
| **Reflector** 50 x 50 mm *(2)* | – | – | – | **XUZC50** | 0.020 | (0.44) |
| **Thru-beam system** *(1)* | | | | | | |
| **DC** | | | | | | |
| **Transmitter 40 (131.23)** | | | Screw terminals *(2)* | **XUX0AKSAT16T** | 0.200 | (0.44) |
| | | | M12 connector | **XUX0AKSAM12T** | 0.200 | (0.44) |
| **Receiver 40 (131.23)** | NO | PNP | Screw terminals *(2)* | **XUX2APANT16R** | 0.200 | (0.44) |
| | | | M12 connector | **XUX2APANM12R** | 0.200 | (0.44) |
| | | NPN | Screw terminals *(2)* | **XUX2ANANT16R** | 0.200 | (0.44) |
| | | | M12 connector | **XUX2ANANM12R** | 0.200 | (0.44) |
| | NC | PNP | Screw terminals *(2)* | **XUX2APBNT16R** | 0.200 | (0.44) |
| | | | M12 connector | **XUX2APBNM12R** | 0.200 | (0.44) |
| | | NPN | Screw terminals *(2)* | **XUX2ANBNT16R** | 0.200 | (0.44) |
| | | | M12 connector | **XUX2ANBNM12R** | 0.200 | (0.44) |
| **AC or DC** | | | | | | |
| **Transmitter 40 (131.23)** | | | Screw terminals *(2)* | **XUX0ARCTT16T** | 0.200 | (0.44) |
| **Receiver 40 (131.23)** | NO +NC | Relay | Screw terminals *(2)* | **XUX2ARCNT16R** | 0.200 | (0.44) |

## Mounting accessories

| Description | Catalog Number | Weight kg | (lb) |
|---|---|---|---|
| **3D mounting kit** for use on M12 rod, for XUX or XUZC50 | **XUZX2003** | 0.220 | (0.49) |
| **3D mounting kit** for use on M12 rod, with protective cover for XUX | **XUZX2004** | 0.420 | (0.93) |
| **M12 rod** | **XUZ2001** | 0.050 | (0.11) |
| **Support for M12 rod** | **XUZ2003** | 0.150 | (0.33) |
| **Mounting bracket** | **XUZ 2000** | 0.120 | (0.26) |

*(1) With adjustable sensitivity.*
*(2) Screw terminals with ISO 16 cable gland for cable Ø 7 to 10 mm.*

# OsiSense® XU Photoelectric sensors

## Single mode function
## Compact design
### Five-wire AC or DC, 1 CO relay output
### Three-wire DC, solid-state output

## Specifications

| Sensor type | | | XUX●●●●●M12 | XUX ●AN●NT16, ●AP●NT16 | XUX●ARC●T16 |
|---|---|---|---|---|---|
| **Product certifications** | | | UL, CSA, CE | | |
| **Connection** | | | M12 connector | Screw terminals, ISO 16 cable gland | |
| **Sensing distance:** | | | | | |
| **nominal Sn (excess gain = 2)** | | m (ft) | 2.1 / 3 (6.89 / 9.84) diffuse with adjustable sensitivity | | |
| **maximum (excess gain = 1)** | | m (ft) | 11 / 15 (36.09 / 49.21) polarized retroreflective with adjustable sensitivity | | |
| | | m (ft) | 14 / 20 (45.93 / 65.62) retroreflective with adjustable sensitivity | | |
| | | m (ft) | 40 / 60 (131.23 / 196.85) thru-beam with adjustable sensitivity | | |
| **Type of transmission** | | | Infrared, except polarized retroreflective (red) | | |
| **Degree of protection** | Conforming to IEC 60529 | | IP 65, IP 67, double insulation ⧈ | | |
| **Storage temperature** | | °C (°F) | -40 to +70 (-40 to +158) | | |
| **Operating temperature** | | °C (°F) | -25 to +55 (-13 to 131) | | |
| **Materials** | Case | | PBT | | |
| | Lens | | PMMA | | |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | | 7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz) | | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | | 30 gn, duration 11 ms | | |
| **Indicator lights** | Output state | | Yellow LED (transmission present for **XUX0●●●●●●●T** ⎓) | | |
| | Supply on | | Green LED | | |
| **Rated supply voltage** | PNP/NPN | V | 12–24 with protection against reverse polarity | | |
| | Relay output | V | – | | 24–240 ∿ or ⎓ |
| **Voltage limits (including ripple)** | PNP/NPN | V | | | |
| | Relay output | V | – | | 20–264 ∿ or ⎓ |
| **Current consumption, no-load** | PNP/NPN | mA | ≤ 35 (20 for **XUX0●●●●●●●T**) | | |
| **Power consumption** | Relay output | W | – | | 2 ∿ or ⎓ |
| **Switching capacity** | PNP/NPN | mA | ≤ 100 with overload and short-circuit protection | | |
| | Relay output | A | – | | 500 000 operating cycles<br>3 A: cos φ = 1/0.5 A: cos φ = 0.4 |
| **Voltage drop, closed state** | | V | ≤ 1.5 | | |
| **Maximum switching frequency** | PNP/NPN | Hz | 250 | | |
| | Relay output | Hz | – | | 20 |
| **Delays** | First-up | ms | < 15 (PNP/NPN); < 60 (relay output) | | |
| | Response | ms | < 2 (PNP/NPN); < 25 (relay output) | | |
| | Recovery | ms | < 2 (PNP/NPN); < 25 (relay output) | | |

## Wiring diagrams

**M12 connector**


**Relay output ∿**

| Terminals | |
|---|---|
| 1 | ∿ |
| 2 | ∿ |
| 3 | NO |
| 4 | Relay common |
| 5 | NC |

**PNP/NPN ⎓**

| M12 | Terminals | |
|---|---|---|
| 1 | 1 | + |
| 3 | 2 | - |
| 4 | 3 | Output |

**Transmitter ⎓**

| M12 | Terminals | |
|---|---|---|
| 1 | 1 | + |
| 3 | 2 | - |
| 2 | 3 | Beam break input *(1)* |

*(1) Input not connected: beam made.*
*Input connected to –: beam broken.*

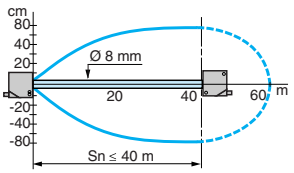
**Transmitter ∿**

| Terminals | |
|---|---|
| 1 | ∿ |
| 2 | ∿ |

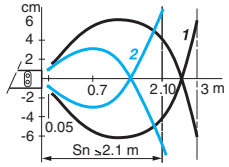
Maximum permissible conductor c.s.a.: 1 x 1.5 mm² (15 AWG) or 1 x 0.75 mm² (18 AWG) with cable end..

## Operating curves

**Thru-beam system**

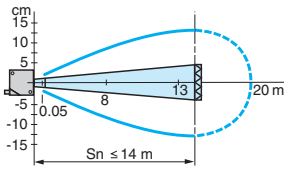



**Diffuse system**



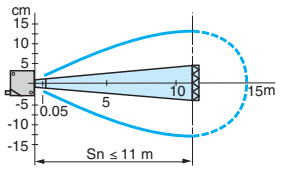

*Object 10 x 10 cm; **1** White 90%; **2** Gray 18%*

**Retroreflective system**




*With reflector XUZC50*

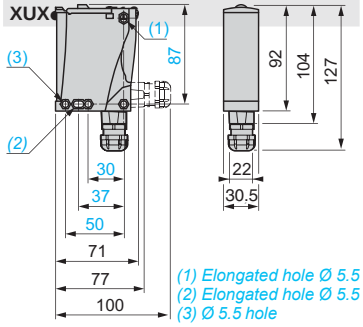
**Polarized retroreflective system**




*With reflector XUZC50*

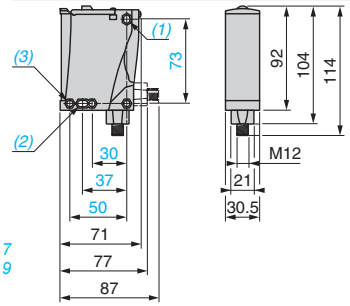
## Dimensions (mm)

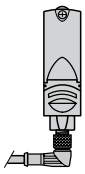
**XUX**

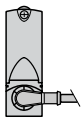



*(1) Elongated hole Ø 5.5 x 7*
*(2) Elongated hole Ø 5.5 x 9*
*(3) Ø 5.5 hole*

**XUX●●●●●M12**





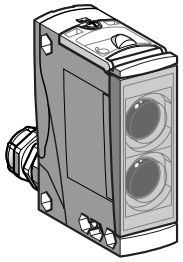
**Possible orientation of elbowed connector**
(rear view)

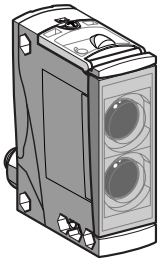
# OsiSense® XU Photoelectric sensors

## Materials handling series

With adjustable background suppression
Five-wire AC or DC 1 NC/NO relay output

**Compact design**





| | | | | |
|---|---|---|---|---|
| **System** | | **Diffuse with adjustable background suppression, long sensing distance with high accuracy** | | |
| **Type of transmission** | | Infrared | | |
| **Nominal sensing distance** (Sn), m (ft) | | **2 (6.56)** | | |
| **Catalog Number** | | | | |
| **5-wire, AC/DC with terminal connections and ISO 16 cable gland** | NO or NC programmable function | **XUX8ARCTT16** | | |
| **3-wire, PNP or NPN programmable** | NO or NC programmable function | | **XUX8AKSAT16** | **XUX8AKSAM12** |
| **Weight, kg (lb)** | | 0.200 (0.44) | 0.200 (0.44) | 0.200 (0.44) |
| **Specifications** | | | | |
| **Product certifications** | | CE, UL, CSA | | |
| **Ambient air temperature** | | For operation: -25 to +55 °C (-13 to +131 °F)<br>For storage: -40 to +70 °C (-40 to +158 °F) | | |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 7 gn (f = 10–55 Hz) | | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 10 gn, duration 11 ms | | |
| **Degree of protection** | Conforming to IEC 60529 | IP 65, IP 67, double insulation (IP 30 with cover open) | | |
| **Materials** | | Case: PC, lenses: PMMA | | |
| **Connection** | | Terminal connections via ISO 16 cable gland (7 to 10 mm cable) | | M12 male connector, 4-pin, can be set at 2 positions |
| **Rated supply voltage** | | ~ or ⎓ 24–240 V | ⎓ 12–24 V with protection against reverse polarity | |
| **Voltage limits** | | ~ or ⎓ 200–264 V (including ripple) | ⎓ 10–0.36 V (including ripple) | |
| **Switching capacity** (sealed) | Relay output | 500,000 operating cycles; 3 A Cos φ = 1; 0.5 A Cos φ = 0.4 | | |
| | PNP/NPN | – | ≤ 100 mA with overload and short-circuit protection | |
| **Indicator lights** | Output state | Yellow LED | | |
| | Supply on | Green LED | | |
| | Instability | Red LED | | |
| **Voltage drop, closed state** | | ≤ 1.5 V | | |
| **Current consumption, no-load** | | 35 mA | | |
| **Maximum switching frequency** | Relay output | 20 Hz | – | |
| | PNP/NPN | – | 150 Hz | |
| **Time delay** | Relay output | 0.02–15 s monostable, on delay or off-delay | | |
| **Delays** | Relay output | First-up: ≤ 200 ms; response: ≤ 25 ms; recovery: ≤ 25 ms | | |
| | PNP/NPN | | | First-up: ≤ 200 ms; response: ≤ 3.5 ms; recovery: ≤ 2.5 ms |

| **Function table** | **Function** | **Diffuse system** | |
|---|---|---|---|
| | | **No object present in the beam** | **Object present in the beam** |
| **Output state (PNP or NPN) indicator: yellow LED** (illuminated when sensor output is ON) | NO |  | |
| | NC |  | |

# OsiSense® XU Photoelectric sensors

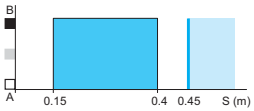
## Materials handling series

With adjustable background suppression
Five-wire AC or DC 1 NC/NO relay output

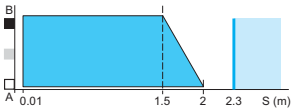
### Detection curves

**Variation of usable sensing distance Su**

Teach mode at minimum




Teach mode at maximum

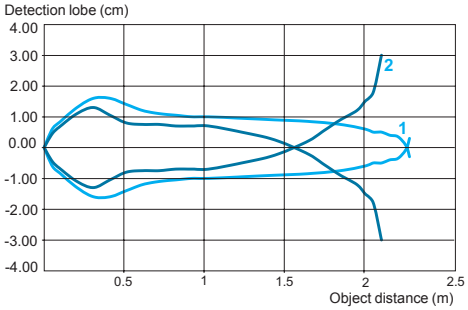



A-B: Object reflection coefficient

- Black 6%
- Gray 18%
- White 90%
- Sensing range
- Non-sensing zone (Matte surfaces)

### Detection curves

Detection lobe (cm)

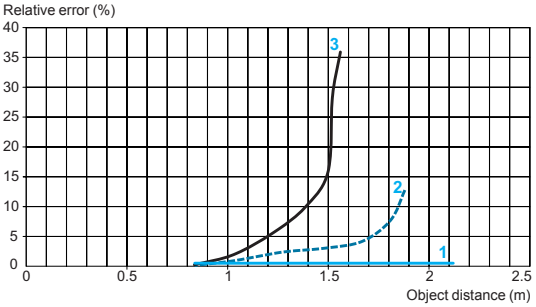



Object: 10 x 10 cm

1 white 90%
2 gray 18%

### Relative difference in sensing distances according to object color

Relative error (%)

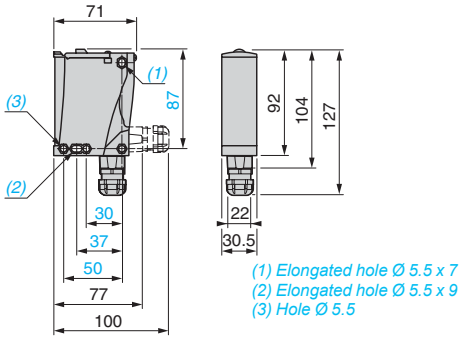



Object: 10 x 10 cm

1 white 90%
2 gray 18%
3 black 6%

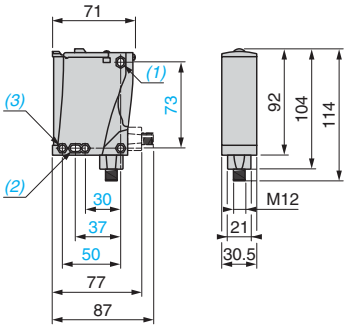
### Dimensions (mm)

**XUX●●●●●T16**

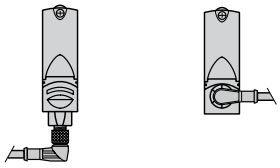



*(1) Elongated hole Ø 5.5 x 7*
*(2) Elongated hole Ø 5.5 x 9*
*(3) Hole Ø 5.5*

**XUX●●●●●M12**




**Possible orientation of elbowed connector** (rear view)



### Wiring diagrams

**M12 connector**


**Relay output ≂**

| Terminals | |
|---|---|
| 1 | ≂ |
| 2 | ≂ |
| 3 | NO |
| 4 | Relay common |
| 5 | NC |

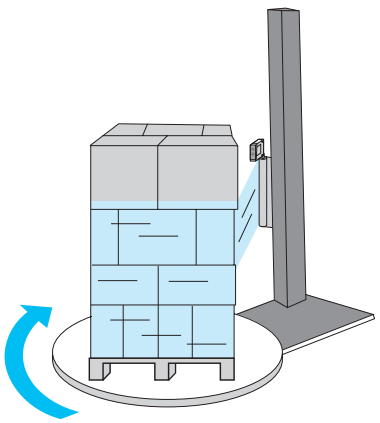
**PNP / NPN ⎓**

| M12 | Terminals | |
|---|---|---|
| 1 | 1 | + |
| 3 | 2 | - |
| 4 | 3 | output |
| 2 | 4 | Alarm inactive |

Maximum permissible conductor c.s.a.: 1 x 1.5 mm² (15 AWG) or 1 x 0.75 mm² (18 AWG) with cable end. with cable end.

### Typical applications

**Wrapping system/outer wrapping of pallets**

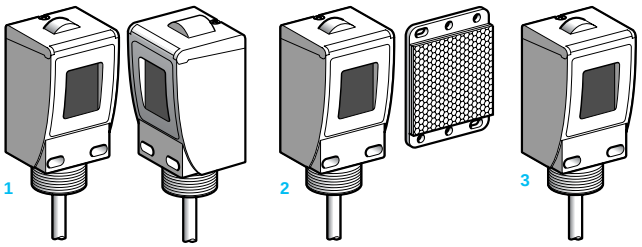


5

# OsiSense® XU Photoelectric sensors

Single mode function,
Compact, Limit switch body style
DC supply. Solid-state output
With stability LED and alarm output *(1)*

**Compact design**



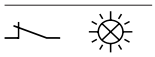
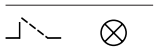
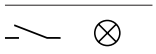
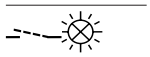
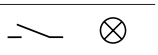
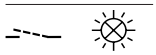
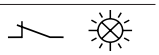
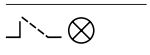

| | | | | |
|---|---|---|---|---|
| **System** | | Thru-beam 1 | Polarized retroreflective 2 | Diffuse with background suppression 3 |
| **Type of transmission** | | Infrared | Red | Infrared |
| **Nominal sensing distance, Sn, m (ft)** / maximum | | **50** (164.04) / 60 (196.85) | **6** (19.68) / 9 (29.53) (with 50 x 50 mm reflector) | **1.2** (3.94) / 1.2 (3.94) |
| **Catalog number of sensors** | | | | |
| **Pre-cabled versions** | | | | |
| **3-wire,** PNP or NPN programmable | NO or NC programmable function | **XUC2AKSAL2** *(2)* | **XUC9AKSAL2** *(3)* | **XUC8AKSNL2** |
| **Weight, kg (lb)** | | 0.520 (1.15) | 0.280 (0.62) | 0.260 (0.57) |
| **Connector versions** | | | | |
| **3-wire,** PNP or NPN programmable | NC or NO programmable function | **XUC2AKSAM12** *(2)* | **XUC9AKSAM12** *(3)* | **XUC8AKSNM12** |
| **Weight, kg (lb)** | | 0.400 (0.88) | 0.220 (0.49) | 0.200 (0.44) |

## Specifications

| | | |
|---|---|---|
| **Product certifications** | | CE, UL, CSA |
| **Ambient air temperature** | For operation | -25 to +55 °C (-13 to +131 °F) |
| | For storage | -40 to +70 °C (-40 to +158 °F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 7 gn (f = 10–55 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 20 gn, duration 11 ms |
| **Degree of protection** | Conforming to IEC 60529 | IP 67 (IP 30 with cover open). NEMA 3, 4, 4X, 6, 6P, 12, 13 |
| **Materials** | | Case: PC, lenses: PMMA, cable: PvR |
| **Connection** | Pre-cabled | Diameter 6 mm cable, length 2 m (4), wire c.s.a.: 5 x 0.34 mm² (22 AWG) |
| | Connector | M12 male connector, 4-pin (suitable female connectors, including pre-wired versions) |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against reverse polarity |
| **Voltage limits** | | ⎓ 10–38 V (including ripple) |
| **Switching capacity** (sealed) | | ≤ 100 mA with overload and short-circuit protection |
| **Voltage drop, closed state** | | ≤ 1.5 V |
| **Current consumption, no-load** | | Thru-beam (transmitter and receiver): ≤ 50 mA, retroreflective and diffuse: 35 mA |
| **Maximum switching frequency** | | 500 Hz |
| **Delays** | | First-up: ≤ 15 ms; response: ≤ 1 ms; recovery: ≤ 1 ms |

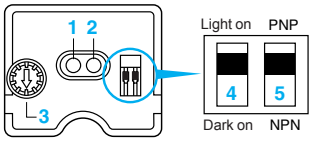
**Function table**

Output state (PNP or NPN) indicator: yellow LED (illuminated when sensor output is ON)

| Function | Thru-beam and retroreflective systems | | Function | Diffuse | |
|---|---|---|---|---|---|
| | No object present in the beam | Object present in the beam | | No object present in the beam | Object present in the beam |
| NC |  |  | NO |  |  |
| NO |  |  | NC |  |  |

*(1) Alarm output Only applicable to thru-beam and retroreflective system sensors.*
*(2) Catalog number for both transmitter and receiver for thru-beam system sensors.*
*(3) 50 x 50 mm reflector included with retroreflective system sensors.*
*(4) Sensors available with 5 m cable. To order, change the catalog suffix **L2** to **L5**.*
*Example: Transmitter +receiver **XUC2AKSAL2** with 2 m cable becomes **XUC2AKSAL5** with 5 m cable.*

## Description




Yellow LED, output
Red LED, stability
Sensing distance adjustment potentiometer
NC/NO programming switch
PNP/NPN programming switch

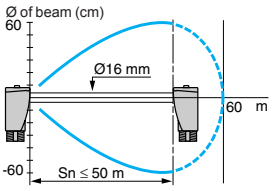
# OsiSense® XU Photoelectric sensors

Single mode function,
Compact, Limit switch body style
DC supply. Solid-state output
With stability LED and alarm output *(1)*

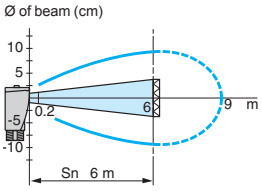
## Operating Curves

### Detection curves

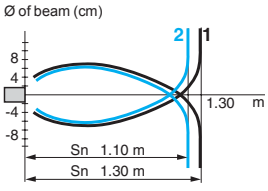
**Thru-beam system**




**Retroreflective system**



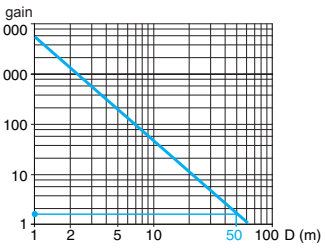

**Diffuse**



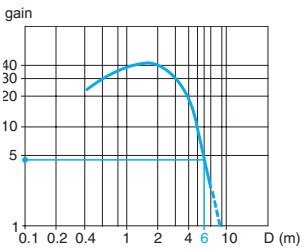

Object 20 x 20 cm **1** White 90% 2 Black 6%

### Excess gain curves (ambient temperature: +25 °C [77 °F])

**Thru-beam system**

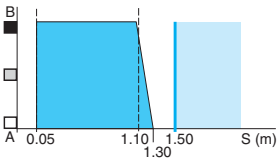



**Retroreflective system**




### Variation of usable sensing distance

**Diffuse with background suppression**

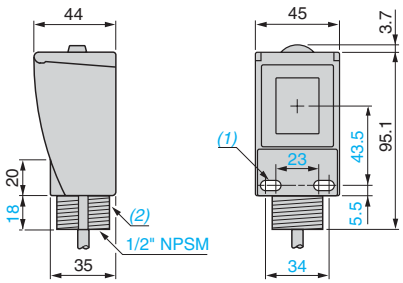



A-B: Object reflection coefficient

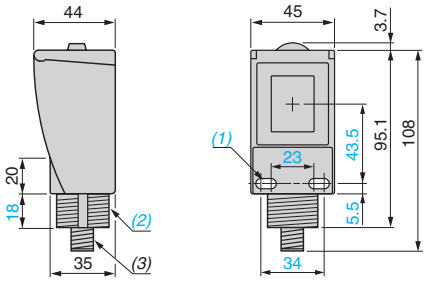
Black 6%
Gray 18%
White 90%
Sensing range
Non-sensing zone

## Dimensions (mm)

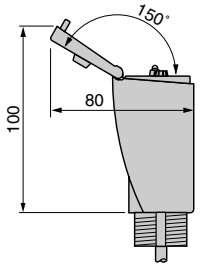
**XUC●AKS●L●**




**XUC●AKS●M12**




Side view, cover hinged open

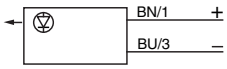



*(1) Two elongated holes Ø 5.5 x 11 for mounting by front face (M5 screws included)*
*(2) M30 x 1.5 threaded boss (and 1/2 NPSM inside for XUC●AKS●L●), for direct mounting. Max. tightening torque: 25 N•m. (221.27 lb-in)*

*(3) M12 connector. Tightening torque ≤ 2 N•m. (17.70 lb-in)*

## Wiring diagrams (3-wire ⎓)

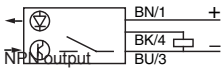
**Transmitter**



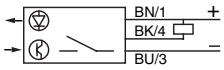

**NO programmed** (no object present)

**Thru-beam receiver and retroreflective**

PNP output

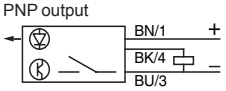



NPN output

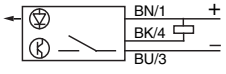



**Diffuse**

PNP output



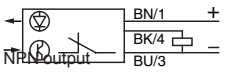

NPN output



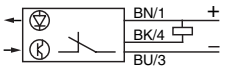

**NC programmed** (no object present)

**Thru-beam receiver and retroreflective**

PNP output

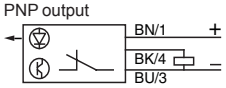



NPN output

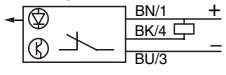



**Diffuse**

PNP output

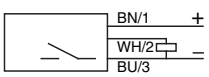



NPN output

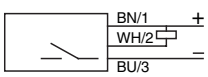


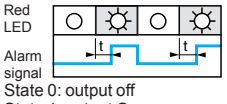

**Alarm output, alarm signal and verification of correct operation** (for thru-beam and retroreflective systems only)

PNP

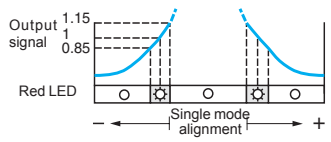



NPN



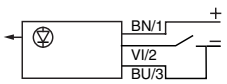

State 0: output off
State 1: output On
t = 160 ms



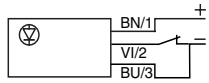

DEL off
DEL on

**Beam break test** (for thru-beam transmitter only)

Beam made




Beam broken



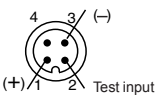

**Cable connections and connector diagrams** (see connections on page)

**XUC●AKS●L●**

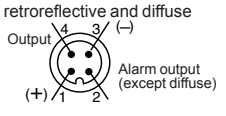
| | | |
|---|---|---|
| (–) | BU | (Blue) |
| (+) | BN | (Brown) |
| (OUT) | BK | (Black) |
| Alarm | WH | (White) |
| Test | VI | (Violet) |

**XUC●AKS●M12**

Thru-beam transmitter




Thru-beam receiver, retroreflective and diffuse

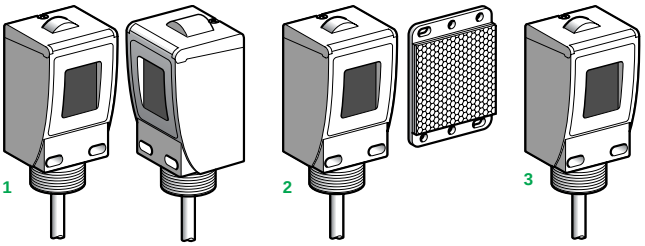



5

# OsiSense® XU Photoelectric sensors

## Single mode function
## Compact, Limit switch body style
### AC or DC supply, 1 CO time delay relay output
### With stability LED

**Compact design**




| | | | |
|---|---|---|---|
| **System** | Thru-beam 1 | Polarized retroreflective 2 | Diffuse with background suppression 3 |
| **Type of transmission** | Infrared | Red | Infrared |
| **Nominal sensing distance Sn, m (ft)** / maximum | **50 (164.04)** / 60 (196.85) | **6 (19.68)** / 9 (29.53) (with 50 x 50 mm reflector) | **1.2 (3.94)** / 1.2 (3.94) |

## Catalog Numbers

**Pre-cabled versions**

| | | | | |
|---|---|---|---|---|
| **5-wire** | NO or NC programmable function | **XUC2ARCTL2** *(1)* | **XUC9ARCTL2** *(2)* | **XUC8ARCTL2** |
| **Weight, kg (lb)** | | 0.520 (1.15) | 0.280 (0.62) | 0.260 (0.57) |

**Connector versions**

| | | | | |
|---|---|---|---|---|
| **5-wire** | NO or NC programmable function | **XUC2ARCTU78** *(1)* | **XUC9ARCTU78** *(2)* | **XUC8ARCTU78** |
| **Weight , kg (lb)** | | 0.400 (0.88) | 0.220 (0.49) | 0.200 (0.44) |

## Specifications

| | | |
|---|---|---|
| **Product certifications** | | CE, UL, CSA |
| **Ambient air temperature** | For operation | -25 to +55 °C (-13 to 131 °F) |
| | For storage | -40 to +70 °C (-40 to +158 °F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 7 gn (f = 10–55 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 20 gn, duration 11 ms |
| **Degree of protection** | Conforming to IEC 60529 | IP 67 (IP 30 with cover open). NEMA 3, 4, 4X, 6, 6P, 12, 13 |
| **Materials** | | Case: PC, lenses: PMMA, cable: PvR |
| **Connection** | Pre-cabled | Diameter 6 mm cable, length 2 m (3), wire c.s.a.: 5 x 0.34 mm² (22 AWG) |
| | Connector | 7/8-16UN male connector, 5-pin (suitable female pre-wired connectors XZ CP1764L●) *(4)* |
| **Rated supply voltage** | | ≂ 24–240 V |
| **Voltage limits** | | ≂ 20–264 V |
| **Switching capacity** | | 3 A (cos φ = 1) for a contact life of 0.5 million operating cycles at an operating rate of 1 operating cycle per second, at 250 V |
| **Maximum voltage on output relay contacts** | | ∼ 250 V |
| **Power consumption** | | 2 W |
| **Maximum switching frequency** | | 20 Hz |
| **Electrical durability** | | > 5 x $10^5$ operating cycles (cos φ = 1) |
| **Time delay** | | Monostable, on-delay or off-delay (programmable). 2 adjustable ranges, covering 0 to 15 seconds |
| **Delays** | | First-up: ≤ 60 ms; response: ≤ 25 ms; recovery: ≤ 25 ms |

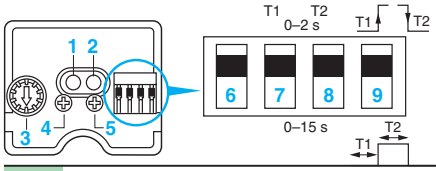
**Function table**

Output state of relay contacts indicator: yellow LED (illuminated when relay energized)

| Function | Thru-beam and retroreflective systems | | Function | Diffuse | |
|---|---|---|---|---|---|
| | No object present in the beam | Object present in the beam | | No object present in the beam | Object present in the beam |
| NC | BK, WH, GY — Relay energized | BK, WH, GY — Relay de-energized | NO | BK, WH, GY — Relay de-energized | BK, WH, GY — Relay energized |
| NO | BK, WH, GY — Relay de-energized | BK, WH, GY — Relay energized | NC | BK, WH, GY — Relay energized | BK, WH, GY — Relay energized |

*(1) Catalog number for both transmitter and receiver for thru-beam system sensors.*
*(2) 50 x 50 mm reflector included with retroreflective system sensors.*
*(3) Sensors available with 5 m cable. To order, change the catalog suffix **L2** to **L5**.*
*Example: Transmitter +receiver **XUC2ARCTL2** with 2 m cable becomes **XUC2ARCTL5** with 5 m cable.*
*(4) To compete the catalog number for a pre-wired female connector with a 2 m, 5 m or 10 m cable, replace the ● by **2**, **5** or **10** respectively. Example, pre-wired connector with 2 m cable: **XZCP1764L2**.*

## Description




**LED**
1 Yellow LED, output
2 Red LED, stability

**Potentiometers**
3 Sensing distance adjustment
4 T1 time delay adjustment
5 T2 time delay adjustment

**Switches**
6 NC/NO programming
7 T1 setting range
8 T2 setting range
9 Normal time delay (on-delay or off-delay) or monostable

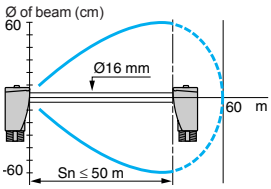
# OsiSense® XU Photoelectric sensors

AC or DC supply
1 CO time delay relay output
With stability LED

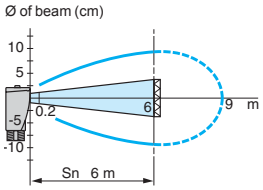
## Operating Curves

### Detection curves

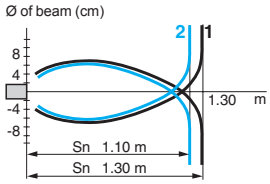
#### Thru-beam system




#### Retroreflective system



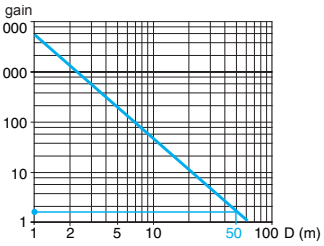

#### Diffuse



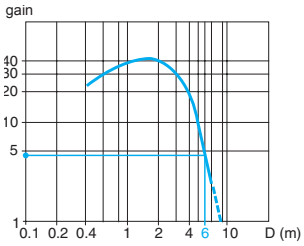

Object 20 x 20 cm **1** White 90% 2 Black 6%

### Excess gain curves (ambient temperature: +25 °C [+77 °F])

#### Thru-beam system

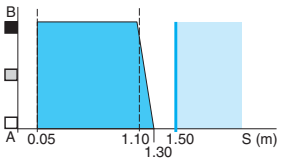



#### Retroreflective system




### Variation of usable sensing distance

#### Diffuse with background suppression

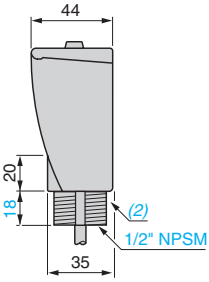


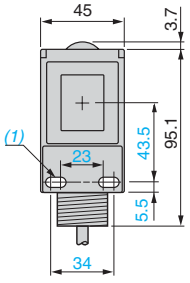

A-B: Object reflection coefficient

Black 6%
Gray 18%
White 90%
Sensing range
Non-sensing zone

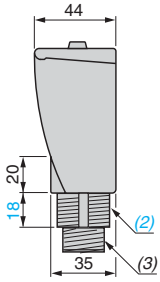
## Dimensions (mm)

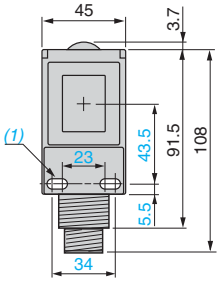
### XUC●ARCTL●



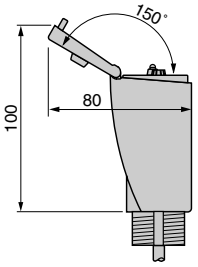




### XUC●ARCTU78




Side view, cover hinged open



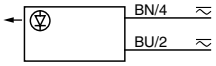

*(1) 2 elongated holes Ø 5.5 x 11 for mounting by front face (M5 screws included)*
*(2) M30 x 1.5 threaded boss (and 1/2 NPSM inside for XUC ●ARCTL●), for direct mounting. Max. tightening torque: 25 N•m. (221.27 lb-in)*

*(3) 7/8 connector.*
Tightening torque ≤ *3 N•m. (26.55 lb-in)*

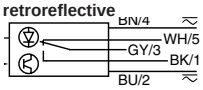
## Wiring diagrams (5-wire ⎓)

**NO programmed** (no object present)

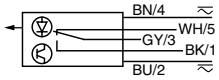
**Transmitter**




**Thru-beam receiver and retroreflective**

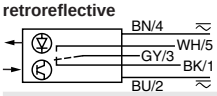



**Diffuse**

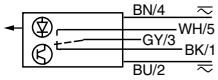



**NC programmed** (no object present)

**Thru-beam receiver and retroreflective**

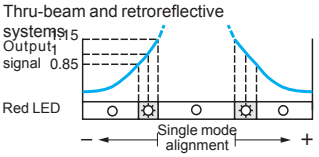



**Diffuse**




### Verification of correct operation

Thru-beam and retroreflective systems




### Cable connections

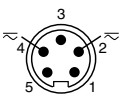
**XUC●ARCTL●**

| | |
|---|---|
| Relay common | BU (Blue) |
| NO contact | BN (Brown) |
| NC contact | GY (Gray) |
| | BK (Black) |
| | WH (White) |

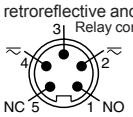
### Connector diagram

**XUC●ARCTU78**

Thru-beam transmitter




Thru-beam receiver, retroreflective and diffuse



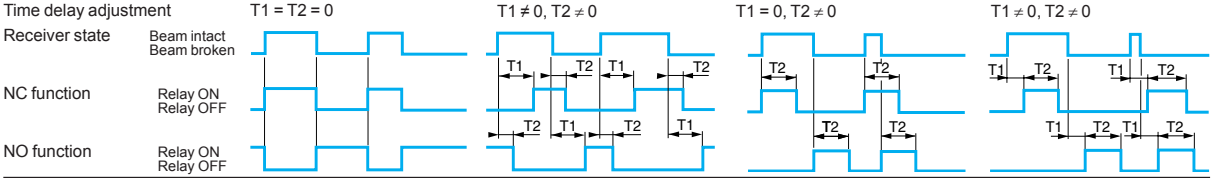

## Time delays

**Normal time delay**

T1 = time delay on trip On-delay
T2 = time delay on reset Off-delay

**Monostable time delay**

T1 = time delay on trip On-delay
T2 = monostable period

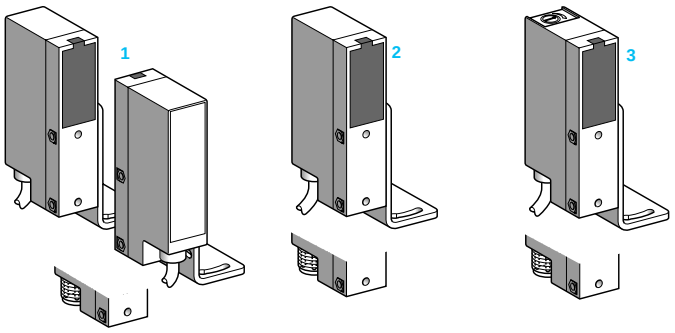


# OsiSense® XU Photoelectric sensors

## Application, conveying series
## Compact design
## 3-wire DC, solid-state output

**Compact design**

**Pre-cabled and connector versions**




| System | | | | Thru-beam 1 | Retroreflective 2 | Polarized retroreflective 2 | Diffuse 3 |
|---|---|---|---|---|---|---|---|
| **Type of transmission** | | | | Infrared | | Red | Infrared |
| **Nominal sensing distance** Sn, m (ft) | | | | **8 (26.25)** | **6** (19.68) (with Ø 80 mm reflector) | **4 (13.12)** (with Ø 80 mm reflector) | **0.7 (2.30)** |
| **Catalog Number** | | | | | | | |
| **3-wire, PNP** | NO or NC programmable function | Connection | Pre-cabled | **XULH083534** | **XULH06353** | **XULH043539** | **XULH703535** |
| | | | Connector | **XULH083534D** | **XULH06353D** | **XULH043539D** | **XULH703535D** |
| **3-wire, NPN** | NO or NC programmable function | Connection | Pre-cabled | **XULJ083534** | **XULJ06353** | **XULJ043539** | **XULJ703535** |
| | | | Connector | **XULJ083534D** | **XULJ06353D** | **XULJ043539D** | **XULJ703535D** |
| **Transmitter** | | Connection | Pre-cabled | **XULK0830** | – | | |
| | | | Connector | **XULK0830D** | – | | |
| **Weight, kg (lb)** | | Connection | Pre-cabled | 0.195 (0.43) | | | |
| | | | Connector | 0.135 (0.30) | | | |

## Specifications

| | | |
|---|---|---|
| **Product certifications** | | CE. Special H7 version: UL, CSA |
| **Ambient air temperature** | For operation | -25 to +55 °C (-13 to +131 °F) |
| | For storage | -40 to +70 °C (-40 to +158 F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 7 gn, amplitude ± 2 mm (f = 10–55 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 20 gn, duration 11 ms |
| **Degree of protection** | Conforming to IEC 60529 | IP 67 |
| | Conforming to NF C 20-010 | IP 671 |
| **Connection** | Pre-cabled | Diameter 6 mm, length 2 m *(1)*<br>Wire c.s.a.: 4 x 0.34 mm² (22 AWG) (2 x 0.34 mm² [22 AWG] for thru-beam transmitter) |
| | Connector | M12 |
| **Materials** | Case | ABS |
| | Lenses | PMMA |
| | Cable | PVC |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against inversion of the 3 wires |
| **Voltage limits** | | ⎓ 10–30 V (including ripple) |
| **Switching capacity** (sealed) | | ≤ 200 mA with overload and short-circuit protection |
| **Voltage drop, closed state** | | ≤ 1.5 V |
| **Current consumption, no-load** | | ≤ 35 mA |
| **Maximum switching frequency** | | 250 Hz |
| **Delays** | First-up | ≤ 15 ms |
| | Response | ≤ 2 ms |
| | Recovery | ≤ 2 ms |

**Function table**

**Output state (PNP or NPN) indicator**
(illuminated when sensor output is ON)

| Function | Thru-beam and retroreflective systems | | | | Function | Diffuse system | | | |
|---|---|---|---|---|---|---|---|---|---|
| | No object present in the beam | | Object present in the beam | | | No object present in the beam | | Object present in the beam | |
| NC | | ⊗ | | ⊗ | NO | | ⊗ | | ⊗ |
| NO | | ⊗ | | ⊗ | NC | | ⊗ | | ⊗ |

*(1) For a sensor with a 5 m long cable add **L05** to the end of the catalog number; for a 10 m long cable add **L10** to the end of the catalog number.*
*Example: sensor **XULH083534** with 5 m cable becomes **XULH083534L05***

# OsiSense® XU Photoelectric sensors

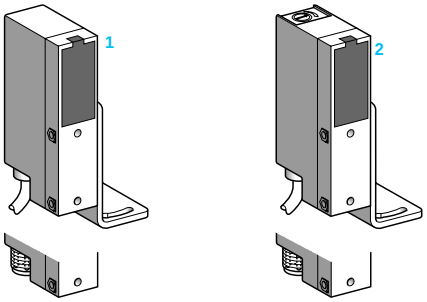
## Application, conveying series

Compact design

2-wire AC, solid-state output

**Compact design**

**Pre-cabled and connector versions**



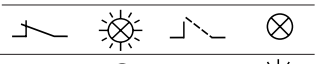
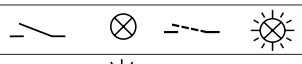
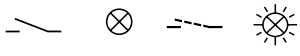
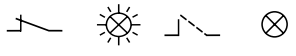

| | | | | | | |
|---|---|---|---|---|---|---|
| **System** | | | | **Retroreflective** 1 | **Polarized retroreflective** 1 | **Diffuse** 2 |
| **Type of transmission** | | | | Infrared | Red | Infrared |
| **Nominal sensing distance** Sn, m (ft) | | | | **6** (19.68) (with Ø 80 mm reflector) | **4 (13.12)** (with Ø 80 mm reflector) | **0.7 (2.30)** |
| **Catalog Number** | | | | | | |
| **2-wire** | NC function | Connection | Pre-cabled | **XULA06021** | **XULA040219** | **XULA700115** |
| | | | Connector | **XULA06021K** | **XULA040219K** | **XULA700115K** |
| | NO function | Connection | Pre-cabled | **XULA06011** | **XULA040119** | **XULA700215** |
| | | | Connector | **XULA06011K** | **XULA040119K** | **XULA700215K** |
| **Weight, kg (lb)** | | Connection | Pre-cabled | 0.195 (0.43) | | |
| | | | Connector | 0.135 (0.30) | | |

## Specifications

| | | |
|---|---|---|
| **Product certifications** | | CE. Special H7 version: UL, CSA |
| **Ambient air temperature** | For operation | -25 to +60 °C (-13 to 140 °F) |
| | For storage | -40 to +80 °C (-40 to +176 °F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 7 gn, amplitude ± 2 mm (f = 10–55 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 20 gn, duration 11 ms |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 |
| | Conforming to NF C 20-010 | IP 651 |
| **Connection** | Pre-cabled | Diameter 6 mm, length 2 m *(1)*, wire c.s.a.: 2 x 0.34 mm² (22 AWG) |
| | Connector | 1/2-20UNF |
| **Materials** | Case | ABS/PC |
| | Lenses | PMMA |
| | Cable | PVC |
| **Rated supply voltage** | | ∼ or ⎓ 24–240 V |
| **Voltage limits** | | ∼ or ⎓ 20–264 V |
| **Switching capacity** *(2)* Sealed | Maximum | ∼ 12 or ⎓ 12 (resistive load): 0.5 A/240 V<br>∼ 140 (inductive load): 0.3 A/240 V<br>⎓ 13 (inductive load): 0.1 A/240 V; 0.2 A/110 V; 0.5 A/48 V |
| | Minimum | 5 mA |
| Inrush | | 3000 mA |
| **Voltage drop, closed state** | | ≤ 3 V (I = 0.1–0.5 A); ≤ 5.5 V (I = 10 mA); ≤ 10 V (I = 5 mA) |
| **Residual current, open state** | | ≤ 1.7 mA (on ∼); ≤ 1.5 mA (on ⎓) |
| **Maximum switching frequency** | | 20 Hz |
| **Delays** | First-up | ≤ 300 ms |
| | Response | ≤ 20 ms |
| | Recovery | ≤ 20 ms |

**Function table**

**Output state indicator**
(illuminated when sensor output is ON)

| Function | Retroreflective system: No object present in the beam | Retroreflective system: Object present in the beam | Function | Diffuse system: No object present in the beam | Diffuse system: Object present in the beam |
|---|---|---|---|---|---|
| NC |  | | NO |  | |
| NO |  | | NC |  | |

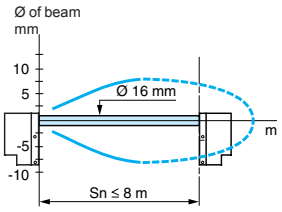
*(1) For a sensor with a 5 m long cable add **L05** to the end of the catalog number; for a 10 m long cable add **L10** to the end of the catalog number.*
*Example: sensor **XULA06021** with 5 m cable becomes **XULA06021L05***
*(2) These sensors do not incorporate overload or short-circuit protection and therefore, a 0.4 A fast-acting fuse must be connected in series with the load.*

# OsiSense® XU Photoelectric sensors

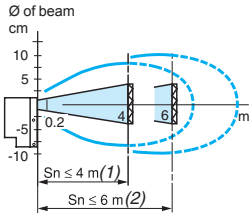
Conveying series
AC and DC supply
Solid-state output
Pre-cabled and connector versions

## Operating curves

### Thru-beam system

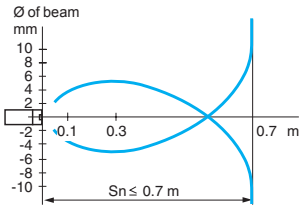



### Retroreflective system




*(1) Polarized*
*(2) Infrared*

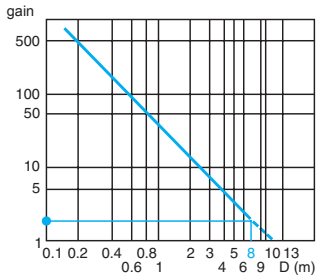
### Diffuse system



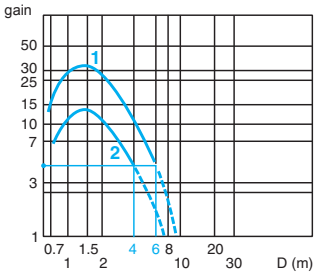

Object 20 x 20 cm
White 90%

## Excess gain curves (ambient temperature: +25 °C [+77°F])

### Thru-beam system

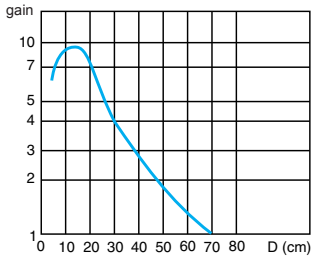



### Retroreflective system

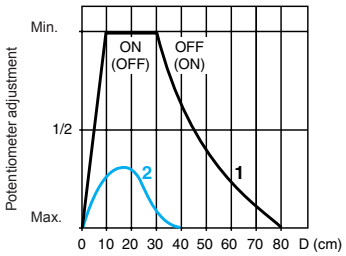



With reflector XUZC80
1 Infrared
2 Polarized

### Diffuse system

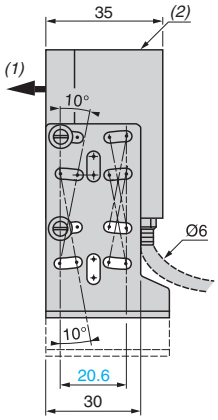


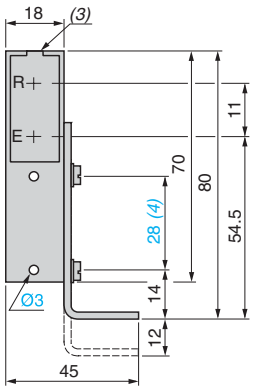

Object 20 x 20 cm
White 90 %

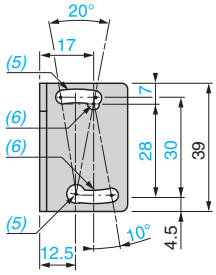



Object 20 x 20 cm
1 White 90 %
2 gray 18 %

## Dimensions (mm)




*(1) Optical axis*
*(2) Sensitivity potentiometer (diffuse model)*
*(3) Output LED indicator*
*(4) Front mounting (Ø 3 screws and inserts included)*
*(5) 1 elongated hole Ø 4.1 x 10 and 1 x Ø 4.1*
*(6) 1 elongated hole Ø 3.1 x 10 and 1 x Ø 3.1*

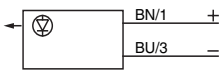
# OsiSense® XU Photoelectric sensors

Application, conveying series
AC and DC supply
Solid-state output
Pre-cabled and connector versions

## Wiring diagrams

### Wiring diagrams (3-wire ⎓)

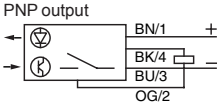
**Transmitter**



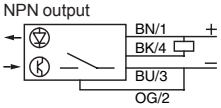

**NO programmed** (no object present)

**Thru-beam receiver and retroreflective**

PNP output

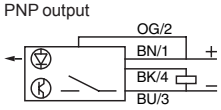



NPN output

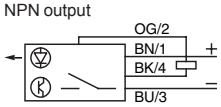



**Diffuse**

PNP output



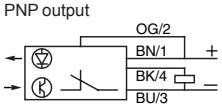

NPN output



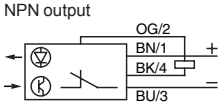

**NC programmed** (no object present)

**Thru-beam receiver and retroreflective**

PNP output

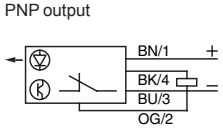



NPN output

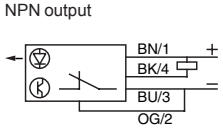



**Diffuse**

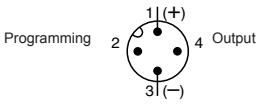
PNP output




NPN output



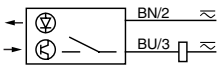

**Connector diagram** (sensor connector pin view)



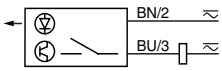

### Wiring diagrams (2-wire ~ or ⎓)

**NO function** (no object present)

**Retroreflective**

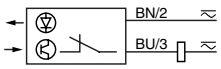



**Diffuse**

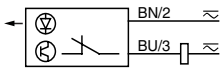



**NC function** (no object present)

**Retroreflective**




**Diffuse**




***Attention:*** *it is essential to connect a load in series with the sensor*

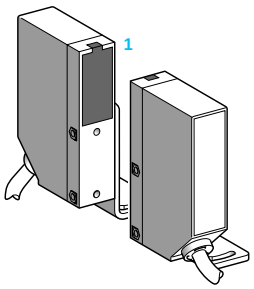
**Connector diagram** (sensor connector pin view)

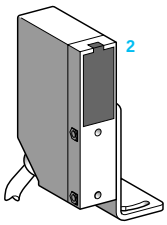
**Solid-state output** (retroreflective and diffuse system)

# OsiSense® XU Photoelectric sensors

## Application, conveying series
## Compact design
## 5-wire AC or DC, 1 CO relay output

**Compact design**




| System | Thru-beam 1 | Retroreflective 2 | Polarized retroreflective 2 | Diffuse with background suppression 2 |
|---|---|---|---|---|
| **Type of transmission** | Infrared | | Red | Infrared |
| **Nominal sensing distance** Sn, m (ft) | **8 (26.25)** | **6 (19.68)** (with Ø 80 mm reflector) | **4 (13.12)** (with Ø 80 mm reflector) | **0.25 (0.82)** (fixed sensing distance) |

## Catalog Number

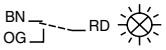
| | | | | | |
|---|---|---|---|---|---|
| **5-wire** | NC function | **XULM080314** | **XULM06031** | **XULM040319** | **XULM300318** |
| **Transmitter** | | **XULM0600** | – | | |
| **Weight, kg (lb)** | | 0.195 (0.43) | | | |

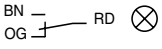
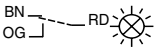
## Specifications

| | | |
|---|---|---|
| **Product certifications** | | CE. Special H7 version: UL, CSA |
| **Ambient air temperature** | For operation | -25 to +55 °C (-13 to +131 °F) |
| | For storage | -40 to +70 °C (-40 to +158 °F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 7 gn, amplitude ± 2 mm (f = 10–55 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 20 gn, duration 11 ms |
| **Degree of protection** | Conforming to IEC 60529 | IP 67 |
| | Conforming to NF C 20-010 | IP 671 |
| **Connection** | | Pre-cabled: diameter 6 mm, length 2 m *(1)*, wire c.s.a.: 5 x 0.34 mm² (22 AWG)<br>(2 x 0.34 mm² [22 AWG] for thru-beam transmitter) |
| **Materials** | Case | ABS |
| | Lenses | PMMA |
| | Cable | PVC |
| **Rated supply voltage** | | ∼ **or** ⎓ **24–240 V** |
| **Voltage limits** | | ∼ or ⎓ 20–264 V |
| **Switching capacity** | | 2000 mA (cos φ = 1), 500 mA (cos φ = 0.4) for a contact life of 0.5 million operating cycles at an operating rate of 1 operating cycle per second, at 250 V |
| **Maximum voltage on output relay contacts** | | 250 V |
| **Current consumption, no-load** | | Transmitter: ≤ 5 mA<br>Receiver: ≤ 40 mA *(2)* ≤ 40 mA *(2)* |
| **Maximum switching frequency** | | 20 Hz |
| **Delays** | First-up | ≤ 60 ms |
| | Response | ≤ 25 ms |
| | Recovery | ≤ 25 ms |

**Function table**

**Output state of relay contact indicator** (illuminated when relay energised)

| Function | Thru-beam and retroreflective systems | |
|---|---|---|
| | No object present in the beam | Object present in the beam |
| NC |  |  Relay de-energised |

| Function | Diffuse system | |
|---|---|---|
| | No object present in the beam | Object present in the beam |
| NO |  Relay de-energised |  Relay energised |

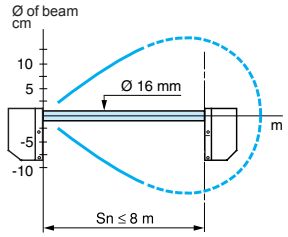
*(1) For a sensor with a 5 m long cable add L05 to the end of the catalog number; for a 10 m long cable add L10 to the end of the catalog number.*
*Example: sensor **XULM080314** with 5 m cable becomes **XULM080314L05***
*(2) No-load current consumption at 220 V: ≤ 25 mA*

# OsiSense® XU Photoelectric sensors

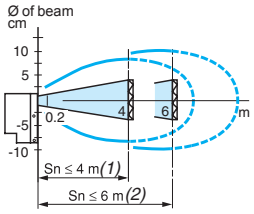
Application, conveying series
Compact design
5-wire AC or DC, 1 CO relay output

## Detection curves

### Thru-beam system

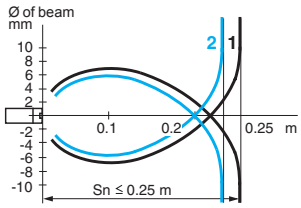



### Retroreflective system ∿ or ⎓




*(1) Polarized*
*(2) Infrared*

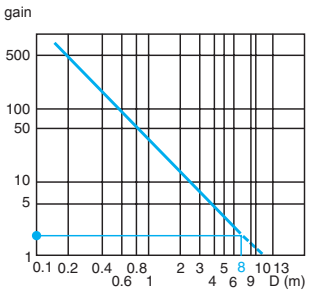
### Diffuse system with background suppression



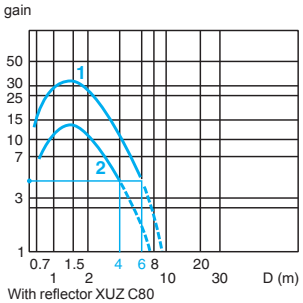

Object 20 x 20 cm
White 90%
2 black 6 %

## Excess gain curves (ambient temperature: +25 °C)

### Thru-beam system



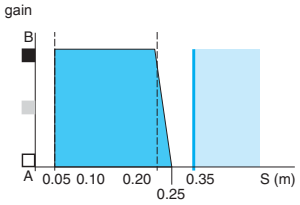

### Retroreflective system ∿ or ⎓




With reflector XUZ C80
1 Polarized
2 Infrared

## Variation of usable sensing distance Su

### Diffuse system with background suppression

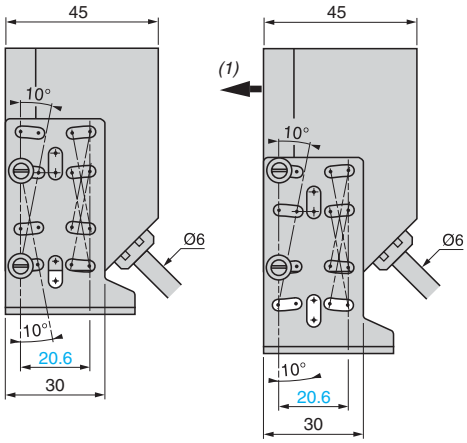


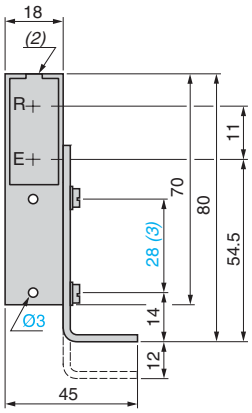

A-B : Object reflection coefficient

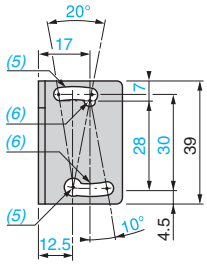
- black 6 %
- Gray 18 %
- White 90 %
- Sensing range
- Non-sensing zone (Matte surfaces)

5

## Dimensions



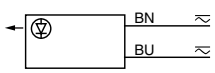




*(1) Optical axis*
*(2) Output LED indicator*
*(3) Front mounting (Ø 3 screws and inserts included)*
*(4) 1 elongated hole Ø 4.1 x 10 and 1 x Ø 4.1*
*(5) 1 elongated hole Ø 3.1 x 10 and 1 x Ø 3.1*

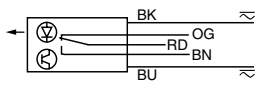
## Diagrams

### Wiring diagrams (5-wire, ∿ or ⎓)

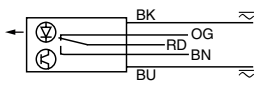
**1 CO output**
**Transmitter**




**NC function** (object present)
**Thru-beam receiver and retroreflective**




**NO function** (no object present)
**Diffuse**

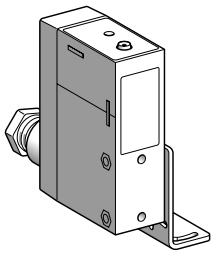


# OsiSense® XU Photoelectric Sensors

## Application, material handling series

With analog output signal 4–20 mA and 0–10 V *(1)*
DC supply. Solid-state output

**Compact design**



| | | |
|---|---|---|
| **System** | | Diffuse |
| **Type of transmission** | | Infrared |
| **Nominal sensing distance Sn, mm (in.)** | | 200–80 (0.79–3.15) |
| **Catalog Number** | | |
| **3-wire** | **PNP** | **XUJK803538** |
| **Weight, kg (lb)** | | 0.200 (0.44) |
| **Specification** | | |
| **Product certifications** | | CE, CSA, UL |
| **Ambient air temperature** | For operation | -25 to +60 °C (-13 to +140 °F) |
| | For storage | -40 to +80 °C (-40 to +176 °F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 7 gn, amplitude ± 1.5 mm (f = 10–55 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 20 gn, duration 11 ms |
| **Degree of protection** | Conforming to IEC 60529 | IP 67 |
| | Conforming to NF C 20-010 | IP 671 |
| **Connection** | | Screw terminals, maximum capacity: 2 x 1.5 $mm^2$ (15 AWG) or 1 x 2.5 $mm^2$ (13 AWG) |
| **Materials** | | Case: PEI *(2)* |
| **Rated supply voltage** | | ⎓ 24 V with protection against reverse polarity |
| **Voltage limits (including ripple)** | | ⎓ 20–30 V |
| **Output current** | Maximum | 20 mA |
| | Minimum | 4 mA |
| **Output voltage (Vs)** | | ⎓ 0–10 V |
| **Output voltage drift in relation to temperature** | | < 10% between -25 and +60 °C (-13 to +140 °F) |
| **Output voltage drift in relation to object color** | | < 10% |
| **Current consumption, no-load** | | ≤ 35 mA |
| **Maximum switching frequency** | | 10 Hz (for an output voltage variation of 1 V) |
| **Delays** | First-up | ≤ 150 ms |
| **Indicator light** | | The brightness of the LED is proportional to the output voltage |

*(1) Applications: position control, monitoring concentricity or eccentricity, closed loop regulation, monitoring displacement, etc.*

*(2) PEI: high quality synthetic resin providing excellent withstand to mechanical shocks, vibration and the effects of external agents frequently encountered in industry: alcohol, salts, petroleum, oils, greases, washing agents (diluted sodium carbonate 4%, nitric acid 2%), formaldehyde vapor, splashing lactic acid, etc.*

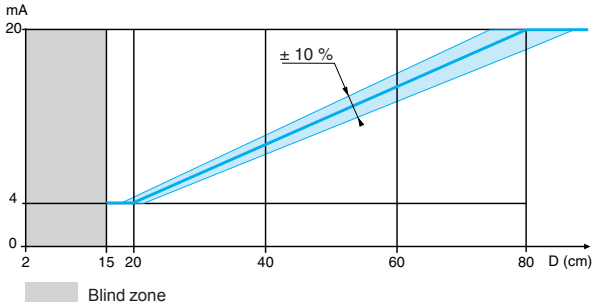
# OsiSense® XU Photoelectric Sensors

Application, material handling series
With analog output signal 4–20 mA and 0–10 V *(1)*
DC supply. Solid-state output

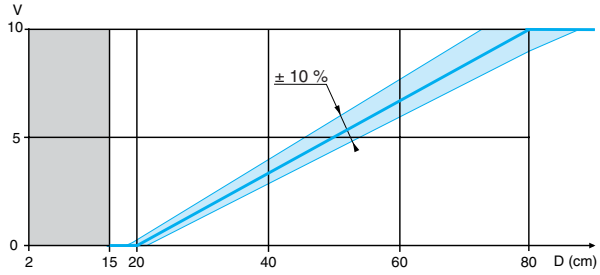
## Operating curves

**Output signal** (related to distance of object). **Test performed with 20 x 20 cm, white 90% object**

**Output current**

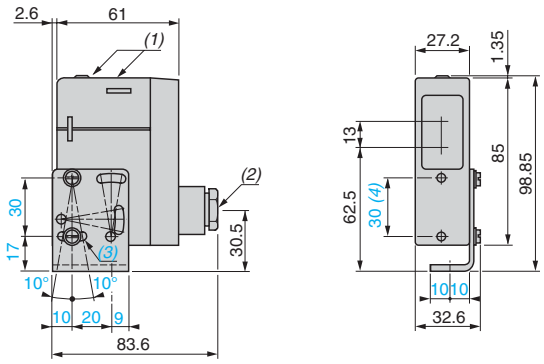



**Output voltage**




## Dimensions (mm)

**XUJK803538**

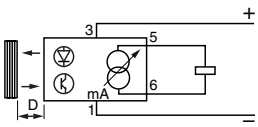



*(1) LED.*
*(2) 11P cable gland.*
*(3) 1 elongated hole Ø 4.2 x 14.*
*(4) Front mounting (Ø 4 screws and inserts included).*

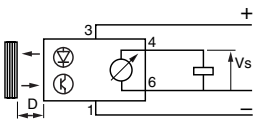
## Wiring diagrams

**Diffuse system**

**Current output**




**Voltage output**




**Load specifications**

- Output current: the output current varies between 4 and 20 mA depending on the distance of the object and therefore, the load must be less than 1 kΩ.
- Voltage output: since the minimum rated output current of the sensor is 10 mA, the load must always have a resistive value of more than 1 kΩ

**Terminal connections**

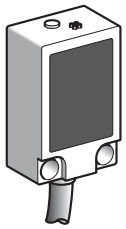
1 ⊘ — (–)
2 ⊘
3 ⊘ — (+)
4 ⊘ — Output voltage
5 ⊘ — Output current
6 ⊘ — (–)

Terminals 1 and 6 connected internally.

# OsiSense® XU Photoelectric sensors

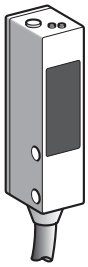
## Application
Conveying and access control series
Miniature design
Four-wire DC, solid-state output

DF524712



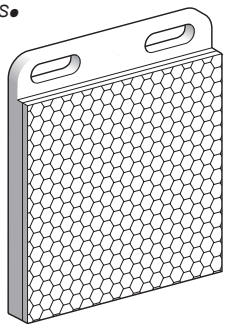
*XUYPS989S●*

DF524713



*XUYB989S●*

DF538427



*XUY1111*

**Diffuse system with background suppression**

| Sensing dist. Sn, m (ft) | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **0.015–0.08 (0.05–0.26)** | NO/NC depending on wiring | PNP | Pre-cabled (L = 2 m) | **XUYPS989SP** | 0.075 | (0.17) |
| | | | M8 connector | **XUYPSCO989SP** | 0.044 | (0.10) |
| | | NPN | Pre-cabled (L = 2 m) | **XUYPS989SN** | 0.075 | (0.17) |
| | | | M8 connector | **XUYPSCO989SN** | 0.044 | (0.10) |

**Diffuse system with adjustable sensitivity**

| Sensing dist. (Sn) m | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **0.03–0.25 (0.10–0.85)** | NO/NC depending on wiring | PNP | Pre-cabled (L = 2 m) | **XUYP989SP** | 0.075 | (0.17) |
| | | | M8 connector | **XUYPCO989SP** | 0.044 | (0.10) |
| | | NPN | Pre-cabled (L = 2 m) | **XUYP989SN** | 0.075 | (0.17) |
| | | | M8 connector | **XUYPCO989SN** | 0.044 | (0.10) |

**Polarized retroreflective system**

| Sensing dist. (Sn) m | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **1 (3.28)** with 50 x 50 mm reflector | NO/NC depending on wiring | PNP | Pre-cabled (L = 2 m) | **XUYB989SP** *(1)* | 0.093 | (0.21) |
| | | | M8 connector | **XUYBCO989SP** *(1)* | 0.061 | (0.13) |
| | | NPN | Pre-cabled (L = 2 m) | **XUYB989SN** *(1)* | 0.093 | (0.21) |
| | | | M8 connector | **XUYBCO989SN** *(1)* | 0.061 | (0.13) |

*(1) 50 x 50 mm reflector (XUY1111) and multi-adjustment mounting bracket included with sensor.*

| Accessory | For use with | | |
|---|---|---|---|
| **Reflector, 50 x 50 mm** | **XUYB989S●** | **XUY1111** | 0.018 |

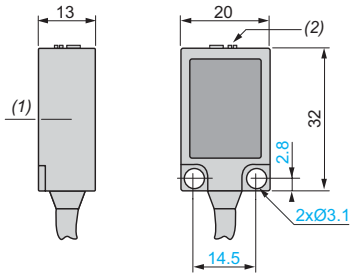
**Thru-beam system**

| Sensing dist. (Sn) m | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **4 (13.12)** (Transmitter) | | – | Pre-cabled (L = 2 m) | **XUYE989** | 0.075 | (0.17) |
| | | | M8 connector | **XUYECO989** | 0.044 | (0.10) |
| **4** (13.12) (Receiver) | NO/NC depending on wiring | PNP | Pre-cabled (L = 2 m) | **XUYR989SP** | 0.075 | (0.17) |
| | | | M8 connector | **XUYRCO989SP** | 0.044 | (0.10) |
| | | NPN | Pre-cabled (L = 2 m) | **XUYR989SN** | 0.075 | (0.17) |
| | | | M8 connector | **XUYRCO989SN** | 0.044 | (0.10) |

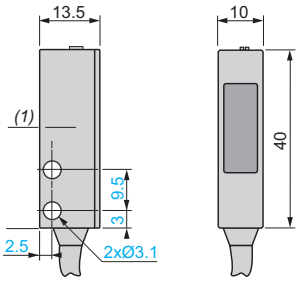
■ Applications:
□ Monitoring position or presence of parts, with background suppression
□ Detection of height of objects on a conveyor
□ Detection of product, pellet, powder levels.

## Dimensions (mm)

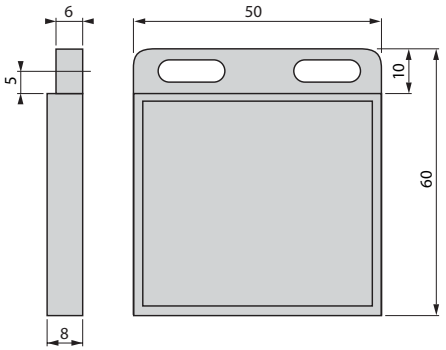
**XUYPS989S●**




**XUYE989 and XUYR989●●**

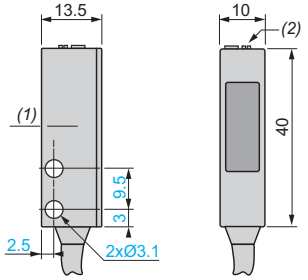



**XUY1111**




**XUY●989S●**

**Transmitter/Receiver**




*(1) Optical axis*
*(2) Accuracy adjustment*

# OsiSense® XU Photoelectric sensors

## Application
Conveying and access control series
Miniature design
Four-wire DC, solid-state output

## Specifications

| Sensor type | | | XUY●●●●● | XUY●CO●●●●● |
|---|---|---|---|---|
| **Product certifications** | | | CE, cULus *(1)* | |
| **Connection** | Connector | | – | M8, 4-pin, on 0.2 m flying lead |
| | Pre-cabled | | Length: 2 m | – |
| **Nominal sensing distance (Sn)** | | **m (ft)** | 0.08 (0.26) diffuse with background suppression | |
| | | **m (ft)** | 0.25 (0.82) diffuse with adjustable sensitivity | |
| | | **m (ft)** | 1 (3.28) polarized retroreflective (with 50 x 50 mm reflector) | |
| | | **m (ft)** | 4 (13.12) thru-beam | |
| **Type of transmission** | LED | | Red, pulsed | |
| | Modulation frequency | | 6 kHz (4 kHz for XUYPS●●989S●) | |
| **Degree of protection** | Conforming to IEC 60529 | | IP 65 and IP 67 | |
| **Ambient air temperature** | For storage | **°C** | -20 to +80 (-4 to +176 °F) | |
| | For operation | **°C** | 0 to +50 (+32 to 122 °F) | |
| **Materials** | Case | | ABS | |
| | Lens | | PMMA | |
| | Cable | | PVC | PUR |
| **Immunity to ambient light** | Natural light | **Lux** | 10,000 (insensitive for XUYPS●●989S●) | |
| | Incandescent bulb | **Lux** | 5,000 (insensitive for XUYPS●●989S●) | |
| **Rated supply voltage** | | **V** | ⎓ 12–24 with protection against reverse polarity | |
| **Voltage limits** (including ripple) | | **V** | ⎓ 10–30 | |
| **Current consumption, no-load** | | **mA** | < 25 | |
| **Switching capacity per output** | | **mA** | 100 with overload and short-circuit protection | |
| **Voltage drop, closed state** | | **V** | At 100 mA: < 2; at 10 mA: < 1 | |
| **Maximum switching frequency** | | **Hz** | **500** | |
| **Delays** | Response and recovery | **ms** | 1 | |

*(1) This product is UL Listed if supplied by a class II or isolated supply delivering ⎓ 30 V max. (isolated transformer for example) and protected by a UL fuse rated at 3 A max.*

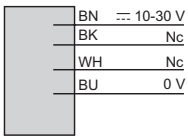
## Wiring diagram - connector

**M8**


**Pin n° - color**

**1 BN:** Brown
**2 WH**: White
**3 BU**: Blue
**4 BK**: Black

**Transmitter**

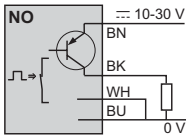



Nc: Not connected

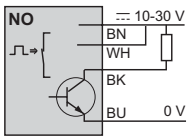
## Wiring diagram - pre-cabled

**Diffuse**

**PNP output**

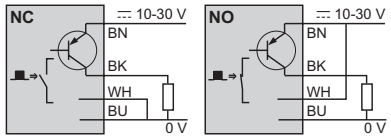



**NPN output**

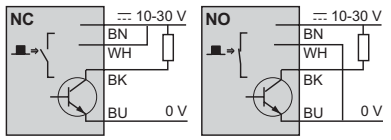



**Polarized retroreflective and thru-beam**

**PNP output**

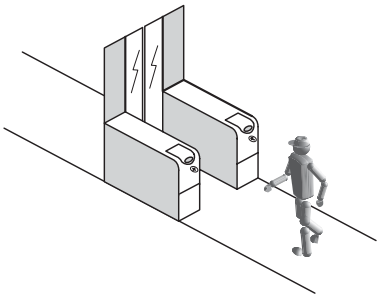



**NPN output**

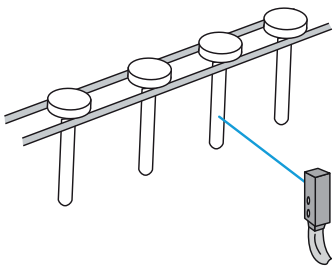



## Application examples

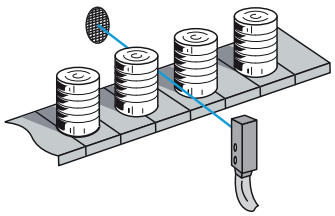
**Access control**



**Monitoring metal rods**



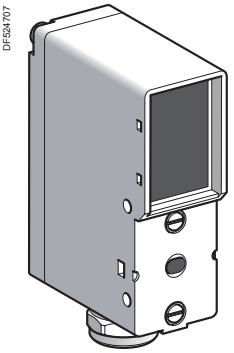
**Detection of tin cans on a conveyor**



# OsiSense® XU Photoelectric sensors

## Application

Conveying and access control series
Compact design with teach mode adjustment
Five-wire AC or DC, 1 CO relay output
Three-wire DC, solid-state output




*XUY●95●●*

| Diffuse system *(1)* | | | | | |
|---|---|---|---|---|---|
| **Sensing distance (Sn) m (ft)** | **Function** | **Output** | **Catalog Number** | **Weight kg** | **(lb)** |
| **DC** | | | | | |
| **1.5 (4.92)** | NO/NC programmable | PNP/NPN | **XUYP954S** | 0.130 | (0.29) |
| **4 (13.12)** | NO/NC programmable | PNP/NPN | **XUYP952S** | 0.130 | (0.29) |
| **AC or DC** | | | | | |
| **1.5 (4.92)** | NO/NC programmable | Relay | **XUYP954R** | 0.150 | (0.33) |
| **4 (13.12)** | NO/NC programmable | Relay | **XUYP952R** | 0.150 | (0.33) |

| Polarized retroreflective system *(2)* | | | | | |
|---|---|---|---|---|---|
| **Sensing distance (Sn) m** | **Function** | **Output** | **Catalog Number** | **Weight kg** | **(lb)** |
| **DC** | | | | | |
| **6 (19.68)** | NO/NC programmable | PNP/NPN | **XUYB954S** | 0.130 | (0.29) |
| **10 (32.81)** | NO/NC programmable | PNP/NPN | **XUYB952S** | 0.130 | (0.29) |
| **AC or DC** | | | | | |
| **6 (19.68)** | NO/NC programmable | Relay | **XUYB954R** | 0.150 | (0.33) |
| **10 (32.81)** | NO/NC programmable | Relay | **XUYB952R** | 0.150 | (0.33) |

*(1) On 300 x 300 mm white paper*
*(2) With Ø 84 mm reflector*

5

## Specifications

| | | | XUY P954S | XUY P954R | XUY P952S | XUY P952R | XUY B954S | XUY B954R | XUY B952S | XUY B952R |
|---|---|---|---|---|---|---|---|---|---|---|
| **Product certifications** | | | CE, cULus for XUYP954S/952S and XUYB954S/952S | | | | | | | |
| **Connection** | | | Screw terminals | | | | | | | |
| **Nominal sensing distance (Sn)** Adjustment using teach (fine or standard mode) | | **m (ft)** | 1.5 (4.92) | | 4 (13.12) | | 6 (19.68) | | 10 (32.81) | |
| **Type of transmission** | LED | | Infrared | | | | Red | | | |
| **Degree of protection** | Conforming to IEC 60529 | | IP 65 and IP 67 | | | | | | | |
| **Ambient air temperature** | For storage | **°C (°F)** | -20 to +80 (-4 to +176) | | | | | | | |
| | For operation | **°C (°F)** | 0 to +60 (+32 to 140) | | | | | | | |
| **Materials** | | | Polycarbonate | | | | | | | |
| **Immunity to ambient light** | Incandescent bulb | **Lux** | 10,000 at 5° to the optical axis | | | | | | | |
| | Natural light | **Lux** | 20,000 at 5° to the optical axis | | | | | | | |
| **Indicator lights** | Green LED | | Output signal | | | | | | | |
| | Red LED | | Dirty optics, limit of detection, alignment assistance, time delay active, time function indicator | | | | | | | |
| **Voltage limits** (including ripple) | ⎓ 10–30 V | | ● | – | ● | – | ● | – | ● | – |
| | ∿/⎓ 20–250 V | **V** | – | ● | – | ● | – | ● | – | ● |
| **Current consumption, no-load** | | **mA** | 50 | – | 50 | – | 50 | – | 50 | – |
| | | **VA** | – | 2 | – | 2 | – | 2 | – | 2 |
| **Type of output** | | | PNP/NPN | Relay | PNP/NPN | Relay | PNP/NPN | Relay | PNP/NPN | Relay |
| **Switching capacity** | PNP/NPN | **mA** | **100 with overload and short-circuit protection** | | | | | | | |
| | Relay | **A** | **3 (max. continuous)** | | | | | | | |
| **Voltage drop, closed state** | PNP/NPN | **V** | At 100 mA: < 2; at 10 mA: < 1 | | | | | | | |
| **Maximum switching frequency** | | **Hz** | **1000** | **25** | **60** | **25** | **1000** | **25** | **60** | **25** |
| **Delays** | Response and recovery | **ms** | 0.5 | 20 | 8 | 20 | 0.5 | 20 | 8 | 20 |
| **Test input** | Active | **V** | < 1.4 | – | < 1.4 | – | < 1.4 | – | < 1.4 | – |
| | Inactive | **V** | > 3 | – | > 3 | – | > 3 | – | > 3 | – |
| **Output time delay** | Type | | Retriggerable: leading edge and/or trailing edge | | | | | | | |
| | Duration of each increment | **ms** | 0 to 11 s in 23 adjustment increments of 50 ms, then 0.5 s per press | | | | | | | |
| **Adjustment** | | | Using teach mode and/or fine manual adjustment | | | | | | | |

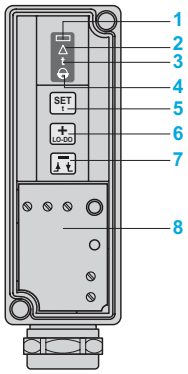
■ Applications
□ Detection of belt breakage
□ Material handling
□ Access control

# OsiSense® XU
# Photoelectric sensors

Application
Conveying and access control series
Compact design with teach mode adjustment
Five-wire AC or DC, 1 CO relay output
Three-wire DC, solid-state output

## Presentation

**Rear view**




**Indicator lights**

1 - Output signal: Green LED
2 - Dirty optics: Red LED
- Limit of detection: Red LED
- Alignment assistance: flashing red LED
3 - Activation/adjustment of time delay: Red LED
4 - Action keypad
- Keypad: Action/Locking

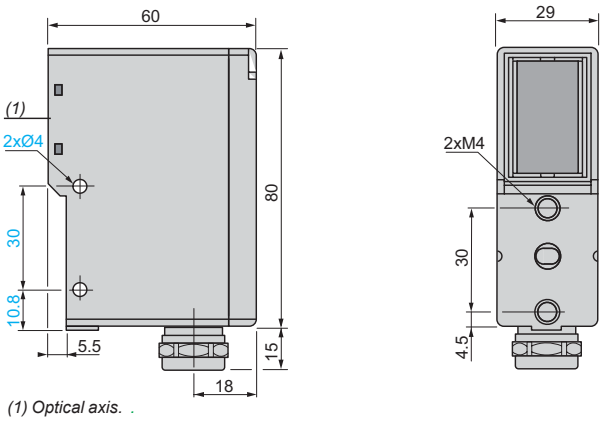
**Controls**

5 - Automatic adjustment of threshold
- Access to special functions
- Zero reset of time delay
6 - Sensitivity increase
- NO/NC programming
- Time delay increase
7 - Sensitivity decrease
- Inversion of time delay setting: On-delay, Off-delay
- Time delay decrease
8 - Access to terminals

***Note:*** *Both the red and green LEDs flash in the event of a short-circuit on the output (for XUYP●95●S/XUYB●95●S versions).*

## Dimensions (mm)

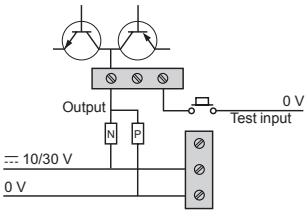
**XUY●95●S/XUY●95●R**



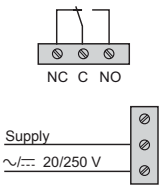

*(1) Optical axis.* .

## Wiring diagrams

**XUY●95●S**



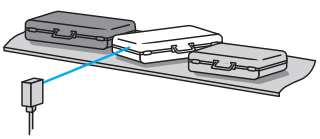

**XUY●95●R**



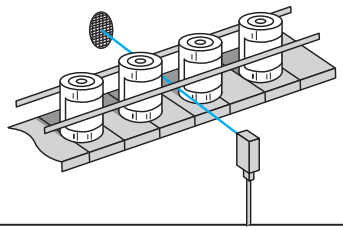

250 V, 1.5 mm$^2$ (15 AWG) terminals.

## Application examples

**Monitoring for blockages on a baggage conveyor**



**Monitoring of gluing, fastening or labelling operations**

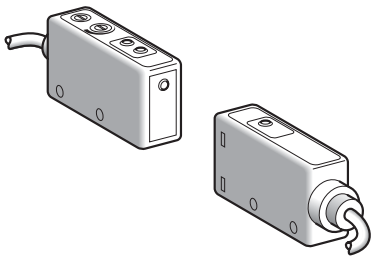


# OsiSense® XU Photoelectric sensors

## Application, packaging series

Thru-beam system for detection of water and aqueous liquids

**Miniature design**



| | |
|---|---|
| **System** | **Thru-beam** |
| **Type of transmission** | Infrared (transmission frequency = 1450 nm) |
| **Nominal sensing distance** Sn, m (ft) | **50** (164.04) (use between 10 and 20 cm, see applications) |

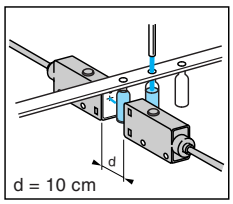
## Catalog Number

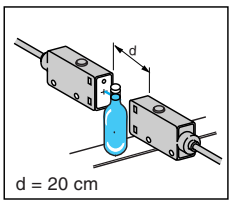
| | |
|---|---|
| **3-wire, PNP and NPN NO or NC programmable function** | **XUMW1KSNL2** *(1)* |
| **Weight, kg (lb)** | 0.155 (0.34) |

## Specifications

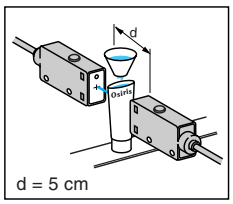
| | | |
|---|---|---|
| **Product certifications** | | CE |
| **Ambient air temperature** | | For operation: 0 to +40 °C (32 to +104 °F). For storage: -5 to +50 °C (+23 to +122 °F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 25 gn, amplitude ± 2 mm (f = 10–55 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 30 gn, duration 11 ms |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 |
| **Connection** | | Pre-cabled, diameter 4 mm, length 2 m, wire c.s.a.: 2 x 0.2 mm² (24 AWG) (transmitter) or 4 x 0.2 mm² (receiver) |
| **Materials** | | Case: PBT, lenses: polycarbonate, cable: PUR |
| **Rated supply voltage** | | ⎓ 10.8–26.4 V with protection against reverse polarity |
| **Voltage limits** | | ⎓ 10–30 V (including ripple) |
| **Solid-state digital output** | Switching capacity (sealed) | ≤ 100 mA with overload and short-circuit protection |
| | Voltage drop, closed state | ≤ 2 V |
| | Maximum switching frequency | 1 kHz |
| | Delays | First-up: ≤ 50 ms; response: ≤ 0.5 ms; recovery: ≤ 0.5 ms |
| **Current consumption, no-load** | | ≤ 45 mA (transmitter +receiver) |
| **Indicator lights** | Transmitter | Green LED, supply on |
| | Receiver | Yellow LED: solid-state output (LED on, output On)<br>Green LED: stability |

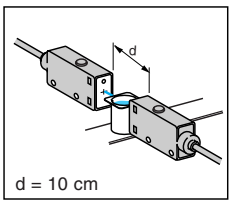
*(1) Catalog number is for both transmitter and receiver for thru-beam system.*
*(2) **Application examples**: detection of the level of aqueous liquids in any transparent or almost opaque container, and any product containing water molecules (adhesives, ice creams, damp fabrics, etc.).*




Transparent containers



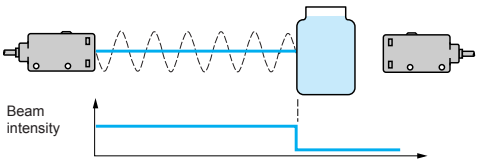

Almost opaque containers

# OsiSense® XU Photoelectric sensors

## Application, packaging series

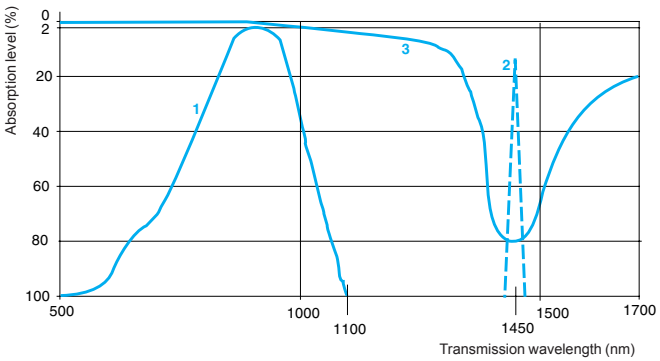
Thru-beam system for detection of water and aqueous liquids

### Detection principle



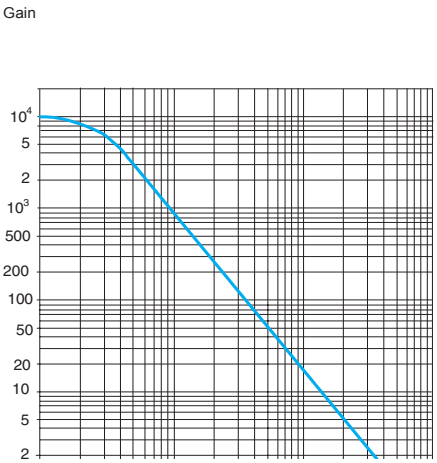

The wave length of the transmitted beam corresponds to the maximum absorption frequency of water molecules.

### Transmission curves

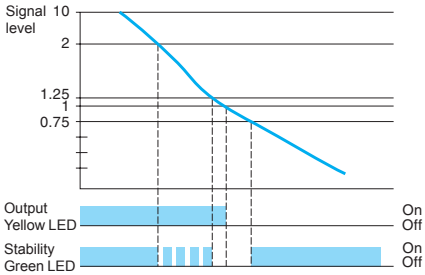



1 Transmission curve of a standard photoelectric sensor
2 Transmission curve of sensor **XUMW1KSNL2**
3 Curve of water absorption against incident beam wave length

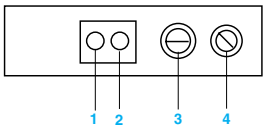
### Excess gain curve




### Stability curve




### Functions

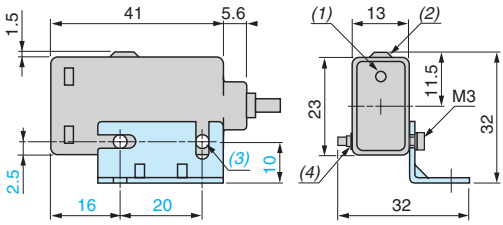



**LED**
1 Yellow LED, output
2 Green LED, stability

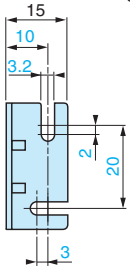
**Potentiometer**
3 Sensitivity adjustment

**Switch**
4 NO/NC programming
NO: detection of object
NC: detection of object absence

### Dimensions (mm)



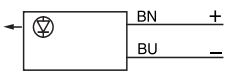

Bracket mounting




*(1) Output LED.*
*(2) Output LED and stability LED.*
*(3) 2 holes Ø 3.2.*
*(4) Locknut plate.*

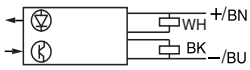
### Wiring diagrams (3-wire ⎓)

Transmitter




BK Receiver. PNP output
WH Receiver. NPN output

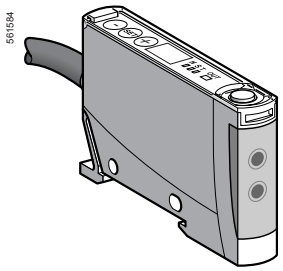
BN (+)
BU (-)




5

# OsiSense® XU Photoelectric sensors

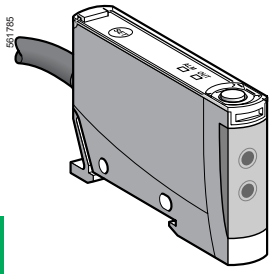
## Application
Fiber design, amplifiers
Three-wire DC, solid-state output
Teach mode




*XUDA2*

### Amplifiers with fine adjustment and 4-digit screen

| Sensing distance (Sn) m | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **Depending on fiber** | NO/NC Programmable | PNP | Pre-cabled | **XUDA2PSML2** | 0.040 | (0.09) |
| | | | M8 connector | **XUDA2PSMM8** | 0.040 | (0.09) |
| | | NPN | Pre-cabled | **XUDA2NSML2** | 0.040 | (0.09) |
| | | | M8 connector | **XUDA2NSMM8** | 0.040 | (0.09) |




*XUDA1*

### Amplifiers using teach mode

| Sensing distance (Sn) m | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **Depending on fiber** | NO/NC Programmable | PNP | Pre-cabled | **XUDA1PSML2** | 0.040 | (0.09) |
| | | | M8 connector | **XUDA1PSMM8** | 0.040 | (0.09) |
| | | NPN | Pre-cabled | **XUDA1NSML2** | 0.040 | (0.09) |
| | | | M8 connector | **XUDA1NSMM8** | 0.040 | (0.09) |

# OsiSense® XU
# Photoelectric sensors
## Application
Fiber design, amplifiers
Three-wire DC, solid-state output
Teach mode

## Specifications

| Sensor type | | | XUDA1●●SMM8, XUDA2●●SMM8 | XUDA1●●SML2, XUDA2●●SML2 |
|---|---|---|---|---|
| **Product certifications** | | | CE, cULus | |
| **Connection** | Connector | | M8 | – |
| | Pre-cabled | | – | Length: 2 m |
| **Sensing distance (Sn)** | | | **Depending on fiber used**,. Sensing distance halved for XUDA2 configured for fast frequency | |
| **Sensitivity adjustment** | | | Teach mode on **XUDA1**,<br>Teach mode and fine adjustment (± button) plus 4-digit screen on **XUDA2** | |
| **Type of transmission** | | | Red | |
| **Degree of protection** | Conforming to IEC 60529 | | IP 65 with Ø 2 mm fiber (IP 64 with Ø 1 mm fiber) | |
| **Storage temperature** | | °C | -30 to +70 (-22 to +158 °F) | |
| **Operating temperature** | | °C | -10 to +55 (14 to 131 °F) | |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | | 7 gn, amplitude ± 0.5 mm (f = 10 to 55 Hz) | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | | 30 gn, duration 11 ms | |
| **Indicator lights** | Output state | | Yellow LED | |
| | Stability | | Red LED for **XUDA1** | |
| | Stability | | Green LED for **XUDA2** | |
| **Signal level** | | | By 7 segment/4-digit display for **XUDA2** | |
| **Rated supply voltage** | | V | ⎓ 12–24 with protection against reverse polarity | |
| **Voltage limits (including ripple)** | | V | ⎓ 10.8–26.4 | |
| **Current consumption, no-load** | | mA | ≤ 50 | |
| **Switching capacity** | | mA | ≤ 100 with overload and short-circuit protection | |
| **Alarm output** | | mA | ≤ 50 for **XUDA2** with overload and short-circuit protection | |
| **Protection against mutual interference** | | | Yes for **XUDA2** | |
| **Voltage drop, closed state** | | V | ≤ 2 for **XUDA●P●●●●**, ≤ 1 for **XUDA●N●●●●●** | |
| **Maximum switching frequency** | | kHz | 1 kHz for **XUDA1**, 1 or 5 kHz configurable for **XUDA2** | |
| **Output time delay** | | ms | 0 or 40 on recovery for **XUDA2** | |
| **Delays** | First-up | ms | < 120 | |
| | Response | ms | < 0.5 (0.1 for **XUDA2** in fast frequency mode) | |
| | Recovery | ms | < 0.5 (0.1 for **XUDA2** in fast frequency mode) | |

## XUDA2 wiring diagrams

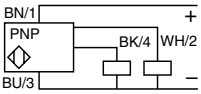
**M8 connector**


1(+)
3 (-)
4 (OUT/output)
2 (alarm)

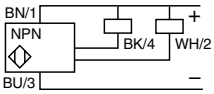
**Pre-cabled**

BN Brown (+)
BU Blue (-)
BK Black(output)
WH White (alarm)
(WH only on **XUDA2**)

**PNP**




**NPN**




## XUDA1 wiring diagrams

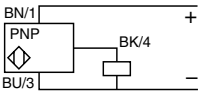
**M8 connector**


1(+)
3 (-)
4 (OUT/output)
2

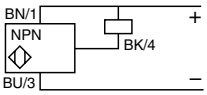
**Pre-cabled**

BN Brown (+)
BU Blue (-)
BK Black (Output)

**PNP**

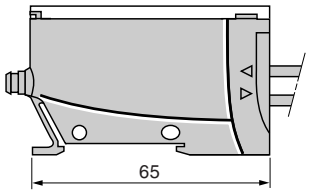



**NPN**



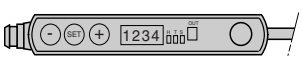

## Dimensions (mm)

**XUDA●**




**XUDA1**

**XUDA2**

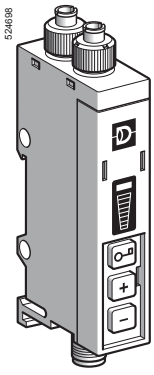



5

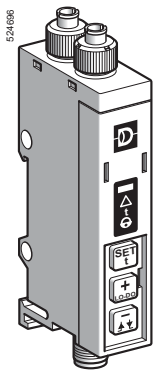
# OsiSense® XU Photoelectric sensors

## Application

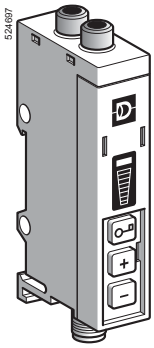
## Amplifiers for plastic or glass fiber optics



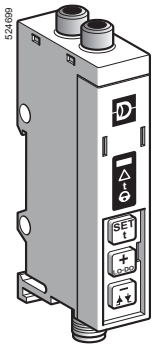

*XUYAFP966S*




*XUYAFP946S*




*XUYAFV966S*




*XUYAFV946S*

### Amplifiers for plastic fiber optics *(1)*

| Sensing distance (Sn) m (ft) | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **Adjustment using ± button** *(2)* | | | | | | |
| **Depending on fiber** | NO/NC dpg. on wiring | PNP/NPN | Pre-cabled | **XUYAFP966S** | 0.124 | (0.27) |
| | | | M8 connector | **XUYAFPCO966S** | 0.056 | (0.12) |
| **Adjustment using teach mode** *(3)* | | | | | | |
| **Depending on fiber** | NO/NC programmable | PNP/NPN | Pre-cabled | **XUYAFP946S** | 0.124 | (0.27) |
| | | | M8 connector | **XUYAFPCO946S** | 0.056 | (0.12) |

### Amplifiers for glass fiber optics

| Sensing distance (Sn) m | Function | Output | Connection | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|---|
| **Adjustment using ± button** *(2)* | | | | | | |
| **Depending on fiber** | NO/NC dpg. on wiring | PNP/NPN | Pre-cabled | **XUYAFV966S** | 0.116 | (0.26) |
| | | | M8 connector | **XUYAFVCO966S** | 0.047 | (0.10) |
| **Adjustment using teach mode** *(3)* | | | | | | |
| **Depending on fiber** | NO/NC programmable | PNP/NPN | Pre-cabled | **XUYAFV946S** | 0.124 | (0.27) |
| | | | M8 connector | **XUYAFVCO946S** | 0.047 | (0.10) |

### Accessories

| Description | Details | Length of cable m | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|
| **Pre-wired M8 connector** | Straight | 2 | **XZCP0941L2** | 0.080 | (0.18) |
| | Elbowed (90°) | 2 | **XZCP1041L2** | 0.080 | (0.18) |
| | Straight | 5 | **XZCP0941L5** | 0.180 | (0.40) |
| | Elbowed (90°) | 5 | **XZCP1041L5** | 0.180 | (0.40) |

*(1) Fiber trimmer included*
*(2) Indication of level by bargraph, adjustment by pressing button*
*(3) Fine mode or standard mode, adjustment using teach*

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### Specifications

| Sensor type | | | XUYAF●9●6S | XUYAFCO9●6S |
|---|---|---|---|---|
| **Product certifications** | | | CE, cULus *(4)* | |
| **Connection** | Connector | | – | M8, 4-pin |
| | Pre-cabled | | Length: 2 m | – |
| **Nominal sensing distance (Sn)** | | | Depending on fiber optic used | |
| **Type of transmission** | LED | | Red LED | |
| | Modulation frequency | | 8 kHz | |
| **Sensitivity adjustment** | | | Using teach (fine mode or standard mode) and/or ± button, depending on model | |
| **Degree of protection** | Conforming to IEC 60529 | | IP 65 | |
| **Ambient air temperature** | For storage | °C (°F) | -20 to +80 (-4 to +176) | |
| | For operation | °C (°F) | 0 to +60 (+32 to 140) | |
| **Materials** | | | Polycarbonate | |
| **Immunity to ambient light** | Incandescent bulb | Lux | 10,000 | |
| | Natural light | Lux | 20,000 | |
| **Rated supply voltage** | | V | ⎓ 12–24 with protection against reverse polarity | |
| **Voltage limits** (including ripple) | | V | ⎓ 10–30 | |
| **Current consumption, no-load** | | mA | < 40 | |
| **Switching capacity** | | mA | 100 with overload and short-circuit protection | |
| **Voltage drop, closed state** | | V | < 2 | |
| **Maximum switching frequency** | | kHz | **< 1** | |
| **External input** *(5)* | Active | V | < 1.4 | |
| | Inactive | V | > 3 | |
| **Delays** | Response and recovery | ms | < 0.5 | |
| **Output time delay** *(5)* | Range | s | 0–5 in 11 adjustment increments | |
| | Duration of each increment | ms | First increment 40 ms then 500 ms for each press | |

*(4) This product is UL Listed if supplied by a class II or isolated supply delivering ⎓ 30 V max. (isolated transformer for example) and protected by a UL fuse rated at 3 A max.*
*(5) Only for models with teach mode.*

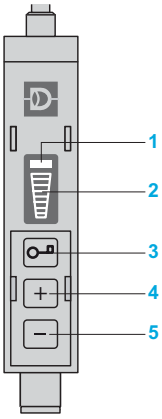
■ **Applications using plastic fiber optics**
□ Monitoring position or presence of parts on an assembly or packing machine
□ Detection of objects on small conveyor
□ Use of fiber optics in vibratory environments (robot arms)
□ Detection of reference and color marks in packaging

■ **Applications with glass fiber optics**
□ Monitoring position or presence of parts on an assembly or packing machine
□ Detection of presence of parts in a plastic mould
□ Detection in aggressive environments
□ Detection of items exiting an oven (high temperature fibers)

# OsiSense® XU
# Photoelectric sensors
## Application
## Amplifiers for plastic or glass fiber optics

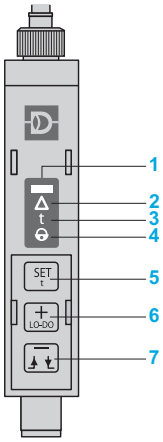
## Presentation

### XUYAF●, adjustment using button




1 Detection
2 Indication of the level of adjustment
3 Keypad locking
4 Sensitivity increase
5 Sensitivity decrease

### XUYAF●, adjustment using teach mode

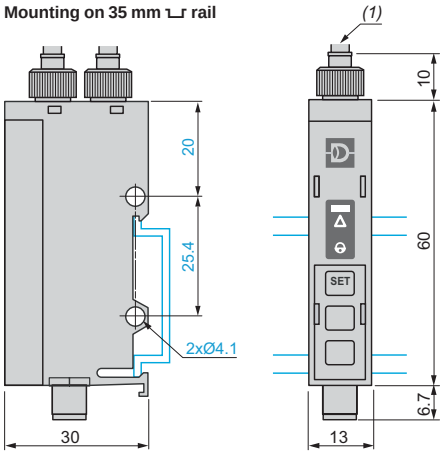



1 Detection
2 Dirty optics, limit of detection, alignment assistance
3 Time delay active
4 Action keypad, keypad locking
5 Automatic adjustment of the threshold, access to special functions
6 Sensitivity increase, direct/inverse output, time delay increase
7 Sensitivity decrease, On-delay, Off-delay inversion, time delay decrease

## Dimensions (mm)

### XUYAFP966S/AFPCO966S

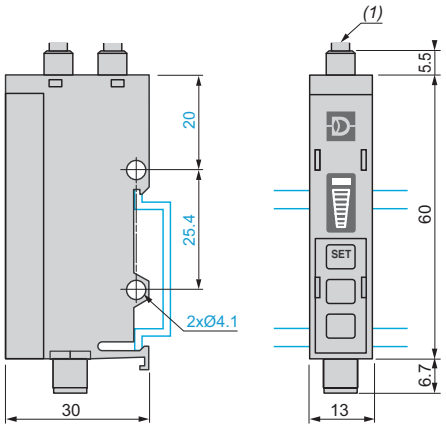
**Mounting on 35 mm ⊥ rail**




*(1) Plastic fiber optic: Ø 2.2 mm*

### XUYAFV966S/AFVCO966S

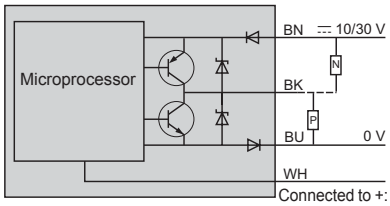
**Mounting on 35 mm ⊥ rail**




*(1) Glass fiber optic: Ø 3 mm*

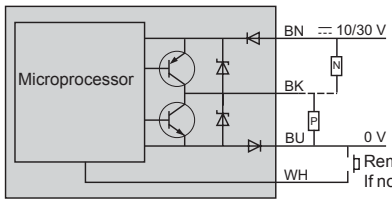
## Wiring diagrams

### XUYAFP966/AFV966




Connected to +: direct function
Connected to –: inverse function

### XUYAFP946/AFV946



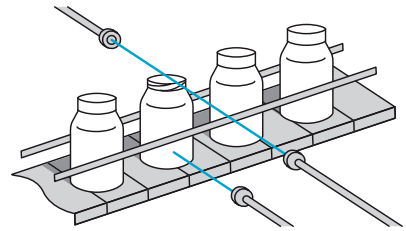

Remote teaching
If not used: connect to +

### M8 connector

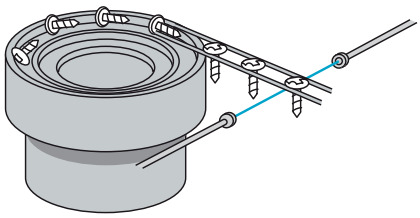

| Pin N° | Color |
|---|---|
| 1 BN | Brown |
| 2 WH | White |
| 3 BU | Blue |
| 4 BK | Black |

## Application examples

### Thru-beam and diffuse system detection



### Thru-beam system detection

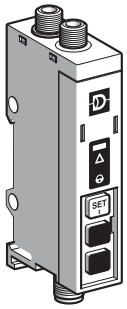


# OsiSense® XU Photoelectric sensors

## Application, packaging series
## Color mark readers
## With teach mode
## DC supply. Solid-state output

**Color mark reading using plastic fiber optic**

Remote reading by coaxial fiber optic



| | | |
|---|---|---|
| **System** | | **Diffuse** |
| **Type of transmission** | | White LED (450 - 650 nm) |
| **Nominal sensing distance Sn, mm (in.)** | | **18 (0.71) with fiber optic XUYFPDC61/101**<br>**4 (0.16) with fiber optic XUYFPDCM861/M8101** |

## Catalog Numbers

| | | |
|---|---|---|
| **4-wire, PNP/NPN output** | NO/NC function | **XUYDCFCO966S** *(1)* |
| **Weight, kg (lb)** | | 0.047 (0.10) |

## Specifications

| | | |
|---|---|---|
| **Product certifications** | | CE |
| **Ambient air temperature** | For operation | 0 to +40 °C (+32 to 104 °F) |
| | For storage | -20 to +80 °C (-4 to +175 °F) |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 |
| **Connection** | | M8 male connector |
| **Materials** | Case | Polyamide |
| | Lens | Polyamide |
| **Rated supply voltage** | | ⎓ **24 V** |
| **Spot diameter** | | 1.5 mm |
| **Modulation frequency** | | 40 kHz |
| **Depth of field** | | FPDC: +7/- 5 mm Black/White, +1/- 3 mm Gray/White<br>FPDCM8: ± 1 mm |
| **Adjustment** | | By teaching background and mark |
| **Voltage limits** (including ripple) | | ⎓ 10–30 V with protection against reverse polarity |
| **Immunity to ambient light** | Incandescent bulb | 10,000 lux |
| | Natural light | 20,000 lux |
| **Switching capacity** | | 100 mA with overload and short-circuit protection |
| **Voltage drop, closed state** | | < 2 V |
| **Current consumption, no-load** | | 50 mA |
| **Maximum switching frequency** | | **20 kHz** |
| **Delays** | Response and recovery | 25 µs |
| **Output state indication** | | LED |

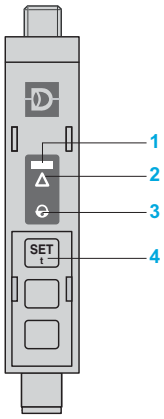
## Accessories

*(1) Sensor XUYDCFCO966S only operates with fibers XUYFPDC●●●● and XUYFPDCM8●●●, to be ordered separately.*

| Description | Details | Length of fiber | Length of cable | Catalog Number | Weight | |
|---|---|---|---|---|---|---|
| | | mm | m | | kg | (lb) |
| **Integrated fiber optic** *to be ordered at the same time as the amplifier* | M18 | 600 | – | **XUYFPDC61** | 0.100 | (0.22) |
| | | 1000 | – | **XUYFPDC101** | 0.115 | (0.25) |
| | M8 | 600 | – | **XUYFPDCM861** | 0.060 | (0.13) |
| | | 1000 | – | **XUYFPDCM8101** | 0.075 | (0.17) |
| **Pre-wired M8 connector** | Straight | – | 2 | **XZCP0941L2** | 0.080 | (0.18) |
| | Elbowed (90°) | – | 2 | **XZCP1041L2** | 0.080 | (0.18) |
| | Straight | – | 5 | **XZCP0941L5** | 0.180 | (0.40) |
| | Elbowed (90°) | – | 5 | **XZCP1041L5** | 0.180 | (0.40) |

# OsiSense® XU
# Photoelectric sensors
## Application, packaging series
## Color mark readers
## With teach mode
## DC supply. Solid-state output

## Presentation




1 Detection of the lightest shade

2 Programming assistance

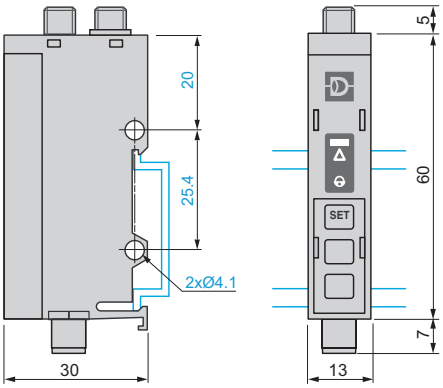
3 Alarm/press button

4 Programming button

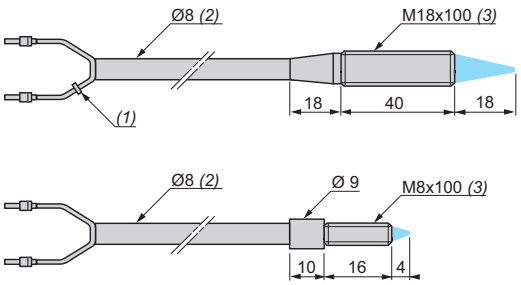
## Dimensions (mm)

### XUYDCFCO966S

**Mounting on 35 mm ⊔ rail**



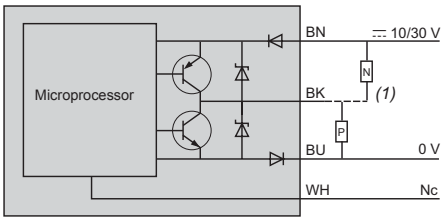

### XUYFPDC●●●●●




*(1) The ring indicates that the fiber is transmitting.*
*(2) Bend radius: 15 mm (0.59 in.).*
*(3) 2 nuts included with fiber optic.*

## Wiring diagram

### Cabling




*(1) High level on first shade taught.*
*Nc: Not connected*

### M8 connector


| Pin n° - color |
|---|
| **1 BN:** Brown |
| **2 WH**: White |
| **3 BU**: Blue |
| **4 BK**: Black |

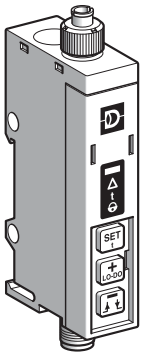
5

# OsiSense® XU Photoelectric sensors

## Application, packaging series

Detection of illumination using plastic fiber optic and teach mode
4-wire DC Solid-state output

**Fiber design**



| | | |
|---|---|---|
| **Nominal sensing distance (Sn)** | | **Depending on fiber optic used** |

## Catalog Number

| | | |
|---|---|---|
| **4-wire, PNP/NPN output** | NO/NC programmable function | **XUYAFLCO966S** |
| **Weight, kg (lb)** | | 0.054 (0.12) |

## Specifications

| | | |
|---|---|---|
| **Product certifications** | | CE |
| **Ambient air temperature** | For operation | 0 to +60 °C (+32 to 140 °F) |
| | For storage | 0 to +80 °C (+32 to 176 °F) |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 |
| **Connection** | | M8, 4-pin male connector |
| **Materials** | Case | Polycarbonate |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against reverse polarity |
| **Voltage limits** (including ripple) | | ⎓ 10–30 V |
| **Switching capacity** | | 100 mA with overload and short-circuit protection |
| **Voltage drop, closed state** | | 2 V |
| **Current consumption, no-load** | | < 40 mA |
| **Maximum switching frequency** | | **< 5 Hz** |
| **External input** | Active | < 1.4 V |
| | Inactive | > 3 V |
| **Delays** | Response and recovery | < 100 ms |
| **Output time delay** | Range | 0–5 s in 11 adjustment increments |
| | Duration of each increment | First increment 40 ms then 500 ms for each press |
| **Indicator lights** | Output signal | Green LED |
| | Limit of detection | Red LED |
| | Time delay active | Red LED |
| **Sensitivity adjustment** | | Using teach (fine mode or standard mode)<br>Adjustment possible using ± button<br>Remote teaching using external input (fine mode) |

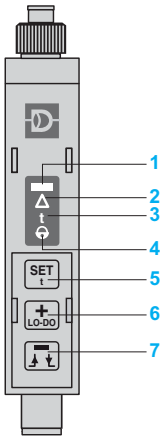
■ Applications
□ Verifying operation of indicator lights on electrical appliances
□ Testing car headlights on production line

## Accessories

| Description | Details | Length of cable | Catalog Number | Weight | |
|---|---|---|---|---|---|
| | | m | | kg | (lb) |
| **Plastic fiber optic** *(1)* | Ø 2.2 mm | 1 | **XUYA005** | 0.007 | (0.02) |
| **Pre-wired M8 connector** | Straight | 2 | **XZCP0941L2** | 0.080 | (0.18) |
| | Elbowed (90°) | 2 | **XZCP1041L2** | 0.080 | (0.18) |
| | Straight | 5 | **XZCP0941L5** | 0.180 | (0.40) |
| | Elbowed (90°) | 5 | **XZCP1041L5** | 0.180 | (0.40) |

# OsiSense® XU
# Photoelectric sensors
## Application, packaging series
Detection of illumination using plastic fiber optic and teach mode
4-wire DC Solid-state output

## Presentation




1 Output signal

2 Limit of detection
Positioning assistance

3 Time delay active

4 Action keypad
Keypad locking

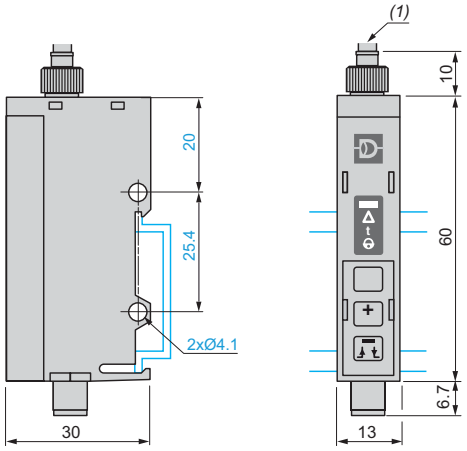
5 Automatic adjustment of threshold
Access to special functions

6 Sensitivity increase
NO/NC output
Time delay increase

7 Sensitivity decrease
On-delay, Off-delay inversion
Time delay decrease

## Dimensions (mm)

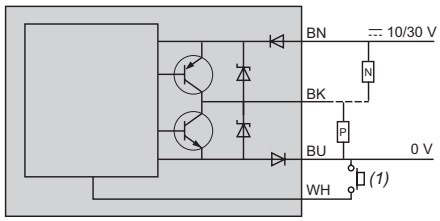
**Mounting on 35 mm ⊥ rail**




*(1) Ø 2.2 mm plastic fiber optic.*

## Wiring diagrams

**diagram**




*(1) Remote teaching. If not used: connect to +.*

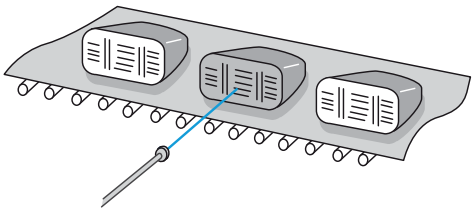
**M8 connector**


**Pin n° - color**

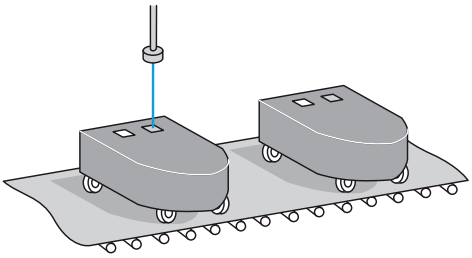
**1 BN:** Brown
**2 WH**: White
**3 BU**: Blue
**4 BK**: Black

## Application examples

**Verifying operation of car headlights on an assembly line**



**Verifying operation of indicator lights on electrical appliances**



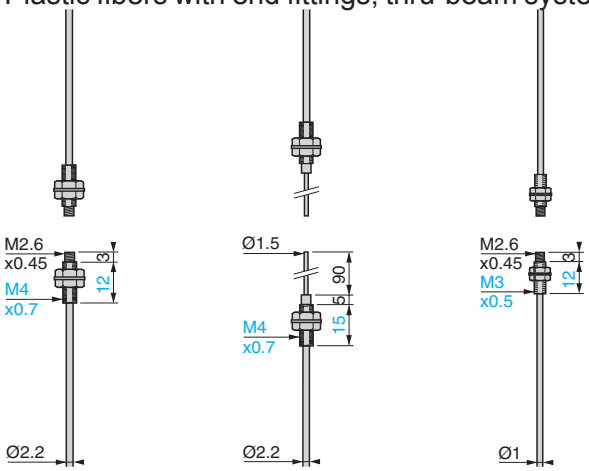
# OsiSense® XU
# Photoelectric sensors

## Application

## Fiber optics for amplifiers

### Plastic fibers with end fittings, thru-beam system

R = minimum bend radius
Fiber of ext. Ø 2.2 mm, R = 25 mm (0.98 in.)
Fiber of ext. Ø 1 mm, R = 10 mm (0.39 in.)
XUFN2S01L●, R = 4 mm (0.16 in.)




| | | | | |
|---|---|---|---|---|
| **Nominal sensing distance** Sn, mm (in.) | With fiber L = 2 m | **200 (7.87)** *(1)* | **180 (7.09)** | **50 (1.97)***(1)* |
| | With lens | **1500 (59.05)** *(2)* | – | **1000 (39.37)** *(2)* |
| **Application, features** | | General purpose | | Accurate positioning |

## Catalog Number (complete assembly - 2 fibers)

| | | | | |
|---|---|---|---|---|
| **With standard end fittings** | L = 2 m | **XUFN12301** | – | **XUFN35301** |
| | L = 10 m | **XUFN12301L10** | – | – |
| **With 90 mm flexible end fittings, L = 2 m** | | – | **XUFN12311** | – |
| **Weight, kg (lb)** | | 0.058 (0.13) (L = 2 m) | 0.030 (0.07) | 0.045 (0.10) |

5

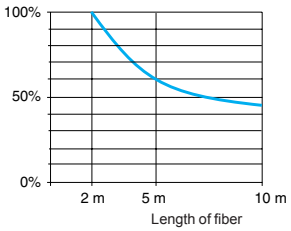
## Specifications

| | | | | |
|---|---|---|---|---|
| **Fiber** (view on sensing face) | | ● | ○ | ● |
| | Core (Ø mm) | 1 x Ø 1 | 1 x Ø 1 | 1 x Ø 0.5 |
| | Trimmable to required length (trimmer XUF Z11 included) | Yes | Yes | Yes |
| **Ambient air temperature** | | For operation:- 25 to +60 °C (-13 to +140 °F). For storage: -40 to +80 °C (-40 to +176 °F) | | |
| **Vibration resistance** | | 7 gn, amplitude ± 1.5 mm (f = 10–55 Hz), conforming to IEC 60068-2-6 | | |
| **Shock resistance** | | 30 gn, duration 11 ms, conforming to IEC 60068-2-27 | | |
| **Degree of protection** | | IP 64 conforming to IEC 60529 and IP 641 conforming to NF C 20-010 | | |
| **Materials** | | Fibers: PMMA; sheath: PE | | |

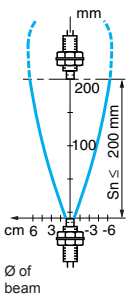
## Operating curves

**XUFN●●●●●L10**

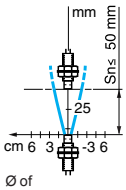
Percentage reduction in sensing distance related to length of fiber




**XUFN12301, N12311**

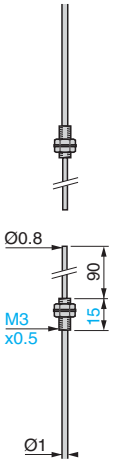


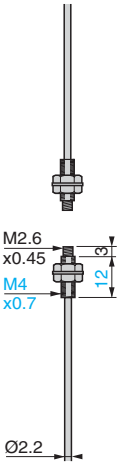

**XUFN35301**

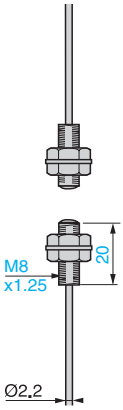


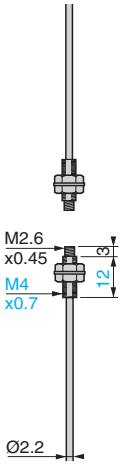

*(1) Can be used with 90° mirror XUFZ02*
*(2) With lens accessory XUFZ01*

# OsiSense® XU
# Photoelectric sensors
## Application
## Fiber optics for amplifiers
### Plastic fibers with end fittings, thru-beam system



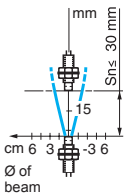



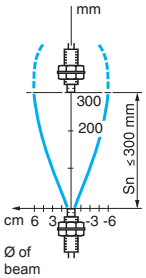




| | | | |
|---|---|---|---|
| **30 (1.18)** | **300 (11.81)** *(1)* | **2500 (98.42)** | **100 (3.94)** *(1)* |
| – | **2000 (78.74)** *(2)* | – | **750 (29.53)** *(2)* |
| Accurate positioning | Long sensing distance fibers | Fibers with integral lens<br>Resistant to accumulation of dirt | Flexible fibers for cyclic movements, areas with restricted access |
| | | | |
| – | **XUFN2P01L2** | **XUFN2L01L2** | **XUFN2S01L2** |
| – | **XUFN2P01L10** | **XUFN2L01L10** | **XUFN2S01L10** |
| **XUFN35311** | – | – | – |
| 0.045 (0.10) | 0.058 (0.13) (L = 2 m) | 0.060 (0.13) (L = 2 m) | 0.062 (0.14) (L = 2 m) |
| | | | |
| 1 x Ø 0.5 | 1 x Ø 1.5 | 1 x Ø 1 | 1 x Ø 1 |
| Yes | Yes | Yes | Yes |
| For operation: - 25 to +60 °C (-13 to +140 °F). For storage: -40 to +80 °C (-40 to +176 °F) | | | |
| 7 gn, amplitude ± 1.5 mm (f = 10–55 Hz), conforming to IEC 60068-2-6 | | | |
| 30 gn, duration 11 ms, conforming to IEC 60068-2-27 | | | |
| IP 64 conforming to IEC 60529 and IP 641 conforming to NF C 20-010 | | | |
| Fibers: PMMA; sheath: PE | | | |

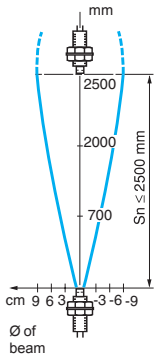
**XUFN35311**



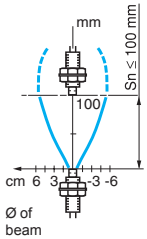

**XUFN2P01L2**




**XUFN2L01L2**




**XUFN2S01L2**

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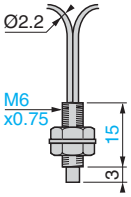
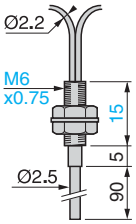
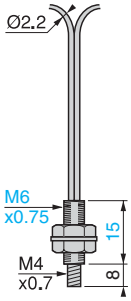
# OsiSense® XU
# Photoelectric sensors
## Application
## Fiber optics for amplifiers
### Plastic fibers with end fittings, diffuse system


R = minimum bend radius
Fiber of ext. Ø 2.2 mm, R = 25 mm (0.98 in.)
Fiber of ext. Ø 1 mm, R = 10 mm (0.39 in.)
XUFN5S01L●, R = 4 mm (0.16 in.)



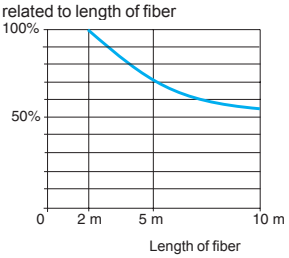




| | | | | |
|---|---|---|---|---|
| **Nominal sensing distance** Sn, mm (in.) | | **70 (2.76)** | **60 (2.36)** | **60 (2.36)** |
| **Application, features** | | General purpose | | Positioning |
| **Catalog Numbers** | | | | |
| **With standard end fittings** | L = 2 m | **XUFN05321** | – | **XUFN05323** |
| | L = 10 m | **XUFN05321L10** | – | – |
| **With 90 mm flexible end fittings, L = 2 m** | | – | **XUFN05331** | – |
| **Weight, kg (lb)** | | 0.058 (0.13) (L = 2 m) | 0.030 (0.07) | 0.060 (0.13) |
| **Specifications** | | | | |
| **Fiber** (view on sensing face) | |  |  |  |
| | Core (Ø mm) | 2 x Ø 1 | 2 x Ø 1 | 1 x Ø 1 +16 x Ø 0.265 |
| | Trimmable to required length (trimmer XUFZ11 included) | Yes | Yes | Yes |
| **Ambient air temperature** | | For operation: - 25 to +60 °C (-13 to +140 °F). For storage: -40 to +80 °C (-40 to +176 °F) | | |
| **Vibration resistance** | | 7 gn, amplitude ± 1.5 mm (f = 10–55 Hz), conforming to IEC 60068-2-27 | | |
| **Shock resistance** | | 30 gn, duration 11 ms, conforming to IEC 60068-2-27 | | |
| **Degree of protection** | | IP 64 conforming to IEC 60529 and IP 641 conforming to NF C 20-010 | | |
| **Materials** | | Fibers: PMMA; sheath: PE | | |

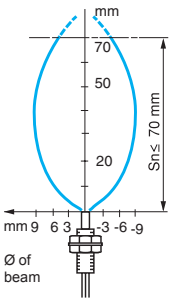
## Operating curves (object 10 x 10 cm, white 90%)

**XUFN●●●●●L10**

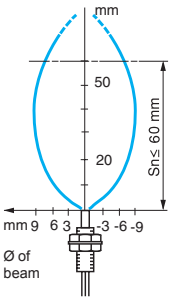
Percentage reduction in sensing distance related to length of fiber




**XUFN05321**

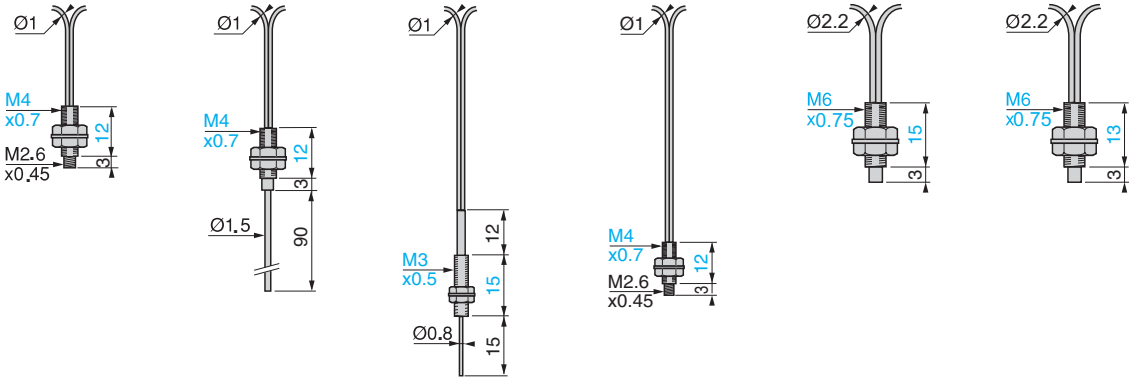



**XUFN05331, XUFN05323**



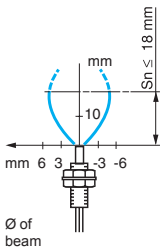

*(1) Mounting clamps included with fiber optic.*

# OsiSense® XU
# Photoelectric sensors
## Application
## Fiber optics for amplifiers
### Plastic fibers with end fittings, diffuse system

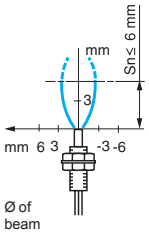



| | | | | | |
|---|---|---|---|---|---|
| **18 (0.71)** | **18 (0.71)** | **6 (0.24)** | **15 (0.59)** | **95** (3.74) | **55 (2.17)** |
| Positioning | Positioning | Areas with restricted access | Positioning | Long sensing distance fibers | Flexible fibers for cyclic movements, areas with restricted access |
| **XUFN01321** | – | **XUFN04331** | **XUFN02323** | **XUFN5P01L2** | **XUFN5S01L2** |
| – | – | – | – | **XUFN5P01L10** | **XUFN5S01L10** |
| – | **XUFN01331** | – | – | – | – |
| 0.045 (0.10) | 0.045 (0.10) | 0.045 (0.10) | 0.040 (0.09) | 0.058 (0.13) (L = 2 m) | 0.062 (0.14) (L = 2 m) |
| 2 x Ø 0.5 | 2 x Ø 0.5 | 2 x Ø 0.265 | 1 x Ø 0.5 +4 x Ø 0.25 | 2 x Ø 1.5 | 2 x Ø 1 |
| Yes | Yes | Yes | Yes | Yes | Yes |
| For operation: -25 to +60 °C (-13 to +140 °F). For storage: -40 to +80 °C (-40 to +176 °F) | | | | | |
| 7 gn, amplitude ± 1.5 mm (f = 10–55 Hz), conforming to IEC 60068-2-27 | | 7 gn, amplitude ± 1.5 mm (f = 10–55 Hz), conforming to IEC 60068-2-6 | | | |
| 30 gn, duration 11 ms, conforming to IEC 60068-2-27 | | | | | |
| IP 64 conforming to IEC 60529 and IP 641 conforming to NF C 20-010 | | | | | |
| Fibers: PMMA; sheath: PE | | | | | |

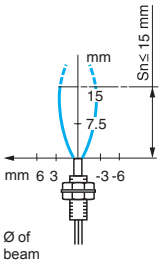
**XUFN01321, N01331**



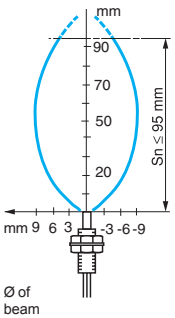

**XUFN04331**



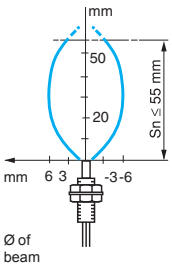

**XUFN02323**




**XUFN5P01L2**



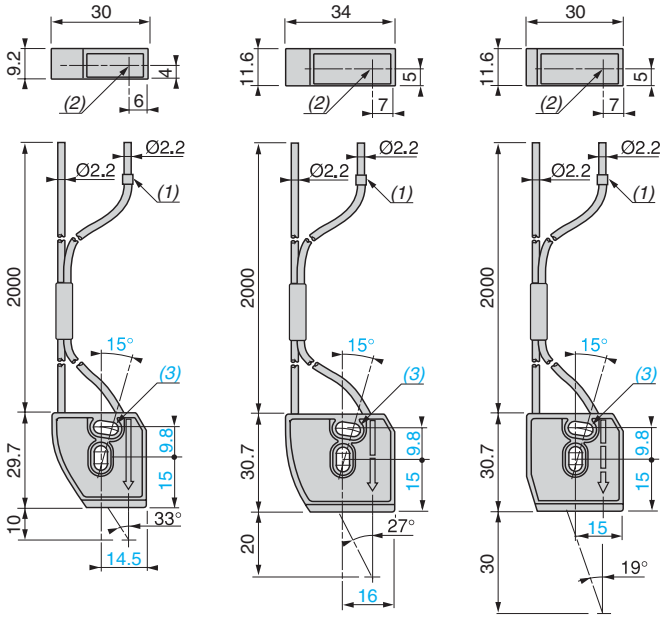

**XUFN5S01L2**




5

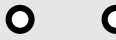
# OsiSense® XU
# Photoelectric sensors
## Application
## Fiber optics for amplifiers Full color
### Plastic fibers with end fittings, diffuse system


R = minimum bend radius
R = 40 mm (1.57 in.)



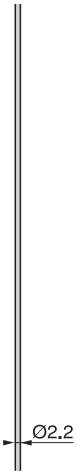

*(1) Fiber reference ring for transmitter*
*(2) Transmitter*
*(3) 2 elongated holes Ø 3.2 x 6.7 for M3 screws*
*Maximum tightening torque: 0.3 N•m (2.66 lb-in)*

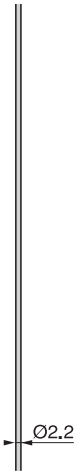
5

| | | | | |
|---|---|---|---|---|
| **Nominal sensing distance** Sn, mm (in.) with fiber L = 2 m | | **10 (0.39)** | **20 (0.79)** | **30 (1.18)** |
| **Application, features** | | Focused fibers, specially suited to OsiSense® XU Full color sensors **XURC4●PML2** | | |
| **Catalog Number** | | | | |
| **With specific end fittings for detection of colors** | L = 2 m | **XUFN5L01L2** | **XUFN5L02L2** | **XUFN5L03L2** |
| **Weight, kg (lb)** | | 0.030 (0.07) | 0.030 (0.07) | 0.030 (0.07) |
| **Specifications** | | | | |
| **Fiber** (view on sensing face) | |  |  |  |
| | Core (Ø mm) | Transmitter: 1 x Ø 1<br>Receiver: 1 x Ø 1.5 | Transmitter: 1 x Ø 1.5<br>Receiver: 1 x Ø 1.5 | Transmitter: 1 x Ø 1.5<br>Receiver: 1 x Ø 1.5 |
| | Trimmable to required length | No | No | No |
| **Spot diameter, mm (in.)** | | 2.5 (0.10) | 5 (0.20) | 8 (0.31) |
| **Ambient air temperature** | | For operation: -10 to +55 °C (+14 to +131 °F). For storage: -20 to +70 °C (-4 to +158 °F) | | |
| **Vibration resistance** | | 7 gn, amplitude ± 1.5 mm (f = 10–55 Hz), conforming to IEC 60068-2-6 | | |
| **Shock resistance** | | 30 gn, duration 11 ms, conforming to IEC 60068-2-27 | | |
| **Degree of protection** | | IP 65 conforming to IEC 60529 and IP 651 conforming to NF C 20-010 | | |
| **Materials** | | Fibers: PMMA; sheath: PE. Head: PA 66, lens: PC | | |

# OsiSense® XU
# Photoelectric sensors
## Application
## Fiber optics for amplifiers
### Plastic fibers without end fittings, thru-beam system

R = minimum bend radius
Fiber of ext. Ø 2.2 mm, R = 25 mm

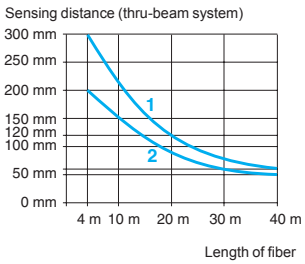



| | | | | |
|---|---|---|---|---|
| **Nominal sensing distance** (Sn) L = 2 m | **See detection curves below** *(1)* | | | |
| **Application** | General purpose | | | |
| **Catalog Number** | | | | |
| **Fiber without end fitting** | **XUFZ910** | **XUFZ920** | **XUFZ911** | **XUFZ921** |
| **Weight, kg (lb)** | 0.020 (0.04) | 0.040 (0.09) | 0.040 (0.09) | 0.080 (0.18) |
| **Specifications** | | | | |
| **Fiber** | ● | | ○ | |
| Core (Ø mm) | 1 x Ø 1 | | 1 x Ø 1.4 | |
| Length | 10 m | 20 m | 10 m | 20 m |
| Trimmable to required length (trimmer XUFZ11 included) | Yes | | Yes | |
| **Ambient air temperature** | For operation: -25 to +60 °C (-13 to +140 °F). For storage: -40 to +80 °C (-40 to +176 °F) | | | |
| **Vibration resistance** | 7 gn, amplitude ± 1.5 mm (f = 10–55 Hz), conforming to IEC 60068-2-6 | | | |
| **Shock resistance** | 30 gn, duration 11 ms, conforming to IEC 60068-2-27 | | | |
| **Degree of protection** | IP 64 conforming to IEC 60529 and IP 641 conforming to NF C 20-010 | | | |
| **Materials** | Fibers: PMMA; sheath: PE | | | |

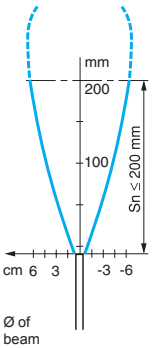
## Operating curves

**XUFZ911, Z921**
**XUFZ910, Z920**

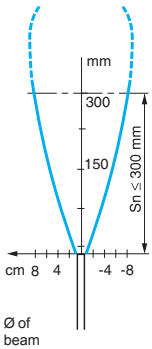



**1 XUFZ911, Z921**
**2 XUFZ910, Z920**
Total length = sum of the 2 strands used to constitute a thru-beam system

**XUFZ910, Z920**




**XUFZ911, Z921**




*(1) It is possible to increase the sensing distance of fibers without end fittings by using mounting clamps with lens (XUFZ03, Z04 or Z05).*

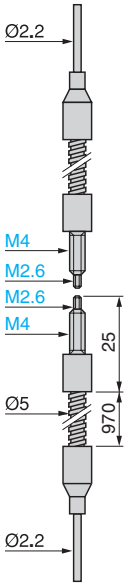
# OsiSense® XU
# Photoelectric sensors

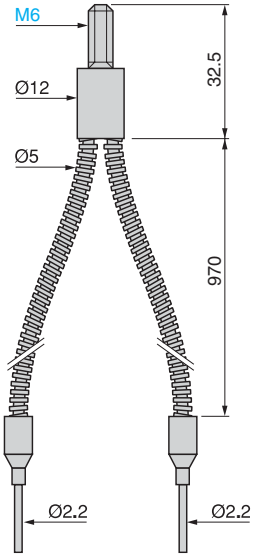
## Application

### Fiber optics for amplifiers

Glass fibers with end fittings, thru-beam and diffuse systems


R = minimum bend radius
Metal sheath, R = 90 mm (3.54 in.)




| System | Thru-beam | Diffuse |
|---|---|---|
| **Nominal sensing distance Sn, mm (in.) with fiber L = 1 m** | **200 (7.87)** *(1)*<br>**1500 (59.05)** *(2)* | **70 (2.76)** |
| **Application** | High temperatures | |

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## Catalog Number (complete assembly - 2 fibers for thru-beam system)

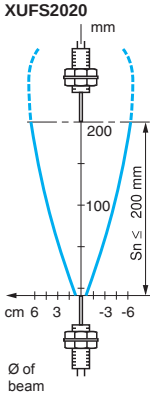
| With standard end fittings L = 1 m | XUFS2020 | XUFS0520 |
|---|---|---|
| **Weight, kg (lb)** | 0.070 (0.15) | 0.075 (0.17) |

## Specifications

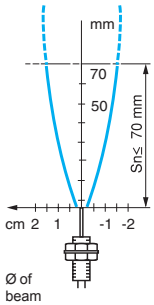
| | | |
|---|---|---|
| **Fiber** (view on sensing face) | | |
| Core (Ø mm) | 1 x Ø 1 | 2 x Ø 1 |
| **Ambient air temperature** | For operation and storage: -40 to +180 °C (-40 to +356 °F) | |
| **Vibration resistance** | 7 gn, amplitude ± 1.5 mm (f = 10–55 Hz), conforming to IEC 60068-2-6 | |
| **Shock resistance** | 30 gn, duration 11 ms, conforming to IEC 60068-2-27 | |
| **Degree of protection** | IP 64 conforming to IEC 60529 and IP 641 conforming to NF C 20-010 | |
| **Materials** | Fibers: glass; sheath: metal | |

## Operating curves

**XUFS2020**




**XUFS0520**




*(1) Can be used with 90° mirror XUFZ02.*
*(2) With lens accessory XUFZ01.*

*Specifications,*
*Catalog Numbers,*
*Dimensions,*
*Operating Curves*

# OsiSense® XU Photoelectric sensors

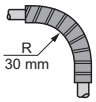
## Application

Fiber optics for amplifier
Glass fibers with end fittings
For diffuse and thru-beam systems

## Glass fiber optics for diffuse system

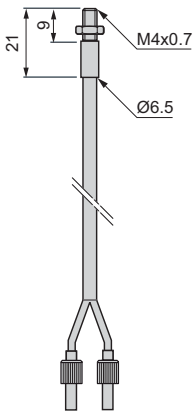

**Standard sheath**
External Ø
XUYFVP: 5 mm
XUYFVER: 3 mm

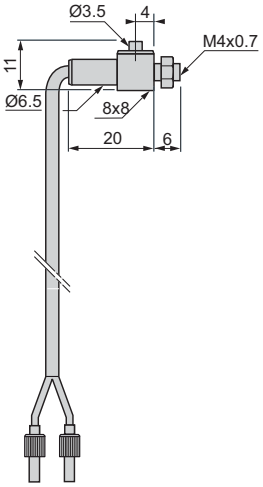

**Metal reinforced sheath**
XUYFVP: 5 mm
XUYFVER: 3.5 mm




**High temperature sheath**
XUYFVP: 5 mm
XUYFVER: 5 mm

R = minimum bend radius




**Applications**
- Detection in high temperature environment (up to 200 °C [392 °F])
- Detection in aggressive environment
- Application requiring high level of performance

## Catalog Number

| Type of end fitting | Straight | | | Lateral | | |
|---|---|---|---|---|---|---|
| **Sheath** | Standard | Metal reinforced | High temperature | Standard | Metal reinforced | High temperature |
| **Catalog number** with 0.60 m long fiber *(1)* | **XUYFVPSD61** | **XUYFVPMD61** | **XUYFVPTD61** | **XUYFVPSL61** | **XUYFVPML61** | **XUYFVPTL61** |
| **Nominal sensing distance Sn, mm (in.)** | 80 (3.15) | 80 (3.15) | 80 (3.15) | 80 (3.15) | 80 (3.15) | 80 (3.15) |
| **Weight, kg (lb)** | 0.040 (0.09) | 0.045 (0.10) | 0.052 (0.11) | 0.042 (0.09) | 0.056 (0.12) | 0.056 (0.12) |

5

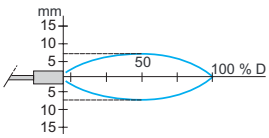
## Specifications

| | | |
|---|---|---|
| **Fiber** | | 400 strands per mm² |
| **Usable diameter of fiber** | | 1.2 mm |
| **Ambient air temperature** | For operation | **Standard**: -25 to +60 °C (-13 to +140 °F)<br>**Metal reinforced**: -25 to +120 °C (-13 to +248 °F)<br>**High temperature** : -25 to +200 °C (-13 to +392 °F) |
| **Detection end fitting** | | Nickel plated brass |
| **Materials** | Fiber | 50 µ glass |
| | Sheath | **Standard**: PVC +thermo polyolefine,<br>**Metal reinforced**: spiralled metal +polyolefine<br>**High temperature**: flexible stainless steel |

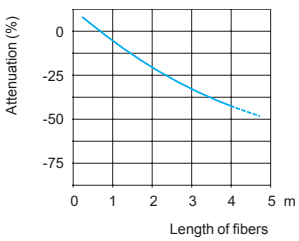
*(1) For 1 m long fiber, replace 61 in the catalog number by **101**. Example: XUYFVPSD61 becomes **XUYFVPSD101** for a 1 m long fiber.*
*For 1.5 m long fiber, replace 61 in the catalog number by **151**. Example: XUYFVPMD61 becomes **XUYFVPMD151** for a 1.5 m long fiber.*
*For 2 m long fiber, replace 61 in the catalog number by **201**. Example: XUYFVPTD61 becomes **XUYFVPTD201** for a 2 m long fiber.*

## Operating and attenuation curves

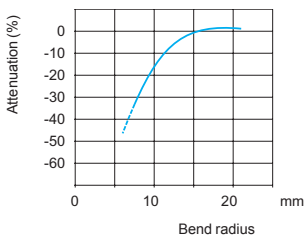
**XUYFVP●●61**



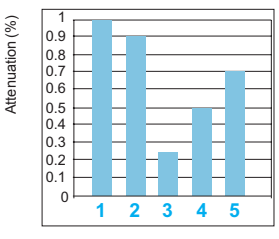

### Attenuation related to length




### Bending influence



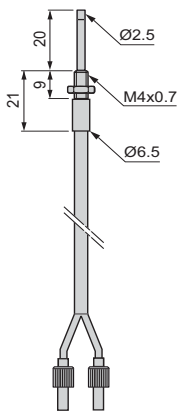

### Material influence

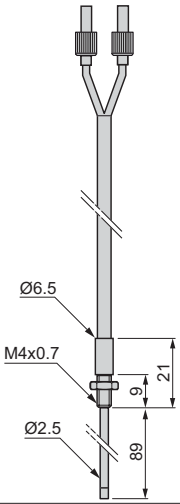



1 White paper
2 Wood, beige cardboard
3 Black paper
4 Raw steel
5 Raw aluminium

# OsiSense® XU
# Photoelectric sensors

## Application
Fiber optics for amplifier
Glass fibers with end fittings
For diffuse and thru-beam systems




| Extended | | | Pliable | | |
|---|---|---|---|---|---|
| Standard | Metal reinforced | High temperature | Standard | Metal reinforced | High temperature |
| **XUYFVPSA61** *(1)* | **XUYFVPMA61** *(1)* | **XUYFVPTA61** *(1)* | **XUYFVPSC61** *(1)* | **XUYFVPMC61** *(1)* | **XUYFVPTC61** *(1)* |
| 80 (3.15) | 80 (3.15) | 80 (3.15) | 80 (3.15) | 80 (3.15) | 80 (3.15) |
| 0.041 (0.09) | 0.046 (0.10) | 0.053 (0.12) | 0.043 (0.09) | 0.057 (0.13) | 0.057 (0.13) |

| |
|---|
| 400 strands per mm² |
| 1.2 mm |
| **Standard**: - 25 to +60 °C (-13 to +140 °F)<br>**Metal reinforced**: - 25 to +120 °C (-13 to +248 °F)<br>**High temperature** :-25 to +200 °C (-13 to +392 °F) |
| Nickel plated brass |
| 50 µ glass |
| **Standard**: PVC +thermo polyolefine,<br>**Metal reinforced**: spiralled metal +polyolefine<br>**High temperature**: flexible stainless steel |

*(1) For 1 m long fiber, replace 61 in the catalog number by **101**. Example: XUYFVPSA61 becomes **XUYFVPSA101** for a 1 m long fiber.*
*For 1.5 m long fiber, replace 61 in the catalog number by **151**. Example: XUYFVPMA61 becomes **XUYFVPMA151** for a 1.5 m long fiber.*
*For 2 m long fiber, replace 61 in the catalog number by **201**. Example: XUYFVPTA61 becomes **XUYFVPTA201** for a 2 m long fiber.*

# OsiSense® XU Photoelectric sensors

## Application
## Fiber optics for amplifier
### Glass fibers with end fittings
### For diffuse and thru-beam systems

## Accessories

**Focusers for diffuse system fiber optics**

| Description | For use with | Nominal sensing distance Sn | Catalog Number | Weight | |
|---|---|---|---|---|---|
| | | mm (in.) | | kg | (lb) |
| **Focusers** for pinpoint reading of reference marks, contrasts, faults, etc. | XUYFVERSD61<br>XUYFVERMD61<br>XUYFVERTD61 | 10 (0.39) | **XUY1120** | 0.003 | (0.01) |
| | | 30 (1.18) | **XUY1125** | 0.004 | (0.01) |

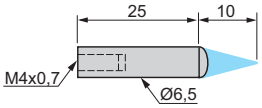
**Focusers for thru-beam system fiber optics**

| Description | For use with | Nominal sensing distance Sn | Catalog Number | Weight | |
|---|---|---|---|---|---|
| | | mm (in.) | | kg | (lb) |
| **Focusers** for increasing sensing distances (sold in lots of 2) | XUYFVERSD61<br>XUYFVERMD61<br>XUYFVERTD61 | 800 (31.50) | **XUY1121** *(1)* | 0.004 | (0.01) |
| | | 3000 (118.11) | **XUY1124** *(2)* | 0.012 | (0.03) |
| | | 800 (31.50) | **XUY1122** *(1)* | 0.006 | (0.01) |

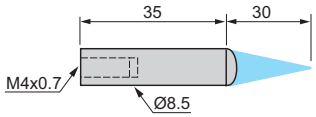
*(1) 70° max.*
*(2) 250° max.*

## Focusers

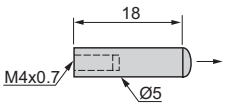
**XUY1120**



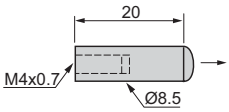

**XUY1125**



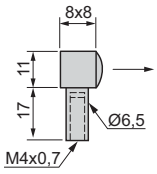

**XUY1121**




**XUY1124**




**XUY1122R**

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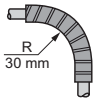
# OsiSense® XU Photoelectric sensors

## Application
Fiber optics for amplifier
Glass fibers with end fittings
For diffuse and thru-beam systems

## Glass fiber optics for thru-beam system

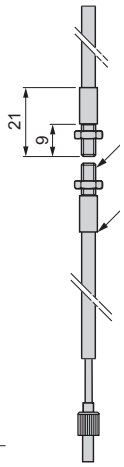

**Standard sheath**
External Ø
XUYFVP: 5 mm
XUYFVER: 3 mm

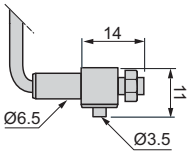

**Metal reinforced sheath**
XUYFVP: 5 mm
XUYFVER: 3.5 mm

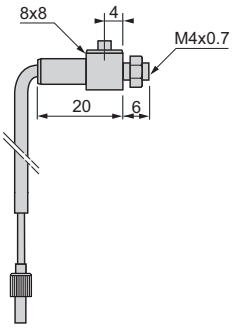



**High temperature sheath**
XUYFVP: 5 mm
XUYFVER: 5 mm

R = minimum bend radius




**Applications**
- Detection in high temperature environment (up to 200 °C)
- Detection in aggressive environment
- Application requiring high level of performance

## Catalog Numbers

| **Type of end fitting** | Straight | | | Lateral | | |
|---|---|---|---|---|---|---|
| **Sheath** | Standard | Metal reinforced | High temperature | Standard | Metal reinforced | High temperature |
| **Catalog Number** with 0.6 m long fiber *(1)* | **XUYFVERSD61** | **XUYFVERMD61** | **XUYFVERTD61** | **XUYFVERSL61** | **XUYFVERML61** | **XUYFVERTL61** |
| **Nominal sensing distance Sn, mm (in.)** | 200 (7.87) | 200 (7.87) | 200 (7.87) | 200 (7.87) | 200 (7.87) | 200 (7.87) |
| **Weight, kg (lb)** | 0.042 (0.09) | 0.046 (0.10) | 0.060 (0.13) | 0.052 (0.11) | 0.061 (0.13) | 0.075 (0.17) |

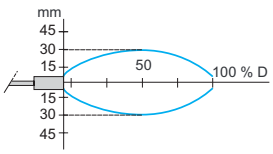
## Specifications

| | | |
|---|---|---|
| **Fiber** | | 400 strands per mm² |
| **Usable diameter of fiber** | | 1.2 mm |
| **Ambient air temperature** | For operation | **Standard**: -25 to +60 °C (-13 to +140 °F)<br>**Metal reinforced**: -25 to +120 °C (-13 to +248 °F)<br>**High temperature** :-25 to +200 °C (-13 to +392 °F) |
| **Detection end fitting** | | Nickel plated brass |
| **Materials** | Fiber | 50 µ glass |
| | Sheath | **Standard**: PVC +thermo polyolefine<br>**Metal reinforced**: spiralled metal +polyolefine<br>**High temperature**: flexible stainless steel |

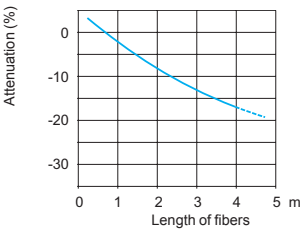
*(1) For 1 m long fiber, replace 61 in the catalog number by **101**. Example: XUYFVERSD61 becomes **XUYFVERSD101** for a 1 m long fiber.*
*For 1.5 m long fiber, replace 61 in the catalog number by **151**. Example: XUYFVERMD61 becomes **XUYFVERMD151** for a 1.5 m long fiber.*
*For 2 m long fiber, replace 61 in the catalog number by **201**. Example: XUYFVERTD61 becomes **XUYFVERTD201** for a 2 m long fiber.*

## Operating and attenuation curves

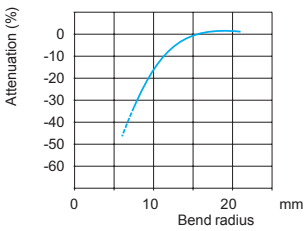
**XUYFVER●●61**



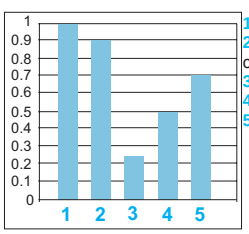

### Attenuation related to length




### Bending influence




### Material influence

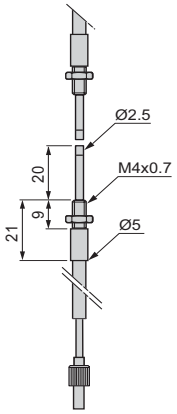


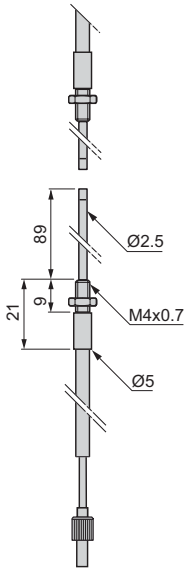

1 White paper
2 Wood, beige cardboard
3 Black paper
4 Raw steel
5 Raw aluminium

# OsiSense® XU Photoelectric sensors

## Application

Fiber optics for amplifier
Glass fibers with end fittings
For diffuse and thru-beam systems




| Extended | | | Pliable | | |
|---|---|---|---|---|---|
| Standard | Metal reinforced | High temperature | Standard | Metal reinforced | High temperature |
| **XUYFVERSA61** *(1)* | **XUYFVERMA61** *(1)* | **XUYFVERTA61** *(1)* | **XUYFVERSC61** *(1)* | **XUYFVERMC61** *(1)* | **XUYFVERTC61** *(1)* |
| 80 (3.15) | 80 (3.15) | 80 (3.15) | 80 (3.15) | 80 (3.15) | 80 (3.15) |
| 0.043 (0.09) | 0.047 (0.10) | 0.061 (0.13) | 0.053 | 0.061 (0.13) | 0.076 (0.17) |

| |
|---|
| 400 strands per $mm^2$ |
| 1.2 mm |
| **Standard**: - 25 to +60 °C (-13 to +140 °F)<br>**Metal reinforced**: - 25 to +120 °C (-13 to +248 °F)<br>**High temperature** :-25 to +200 °C (-13 to +392 °F) |
| Nickel plated brass |
| 50 µ glass |
| **Standard**: PVC +thermo polyolefine<br>**Metal reinforced**: spiralled metal +polyolefine<br>**High temperature**: flexible stainless steel |

*(1) For 1 m long fiber, replace 61 in the catalog number by **101**. Example: XUYFVERSA61 becomes **XUYFVERSA101** for a 1 m long fiber.*
*For 1.5 m long fiber, replace 61 in the catalog number by **151**. Example: XUYFVERMA61 becomes **XUYFVERMA151** for a 1.5 m long fiber.*
*For 2 m long fiber, replace 61 in the catalog number by **201**. Example: XUYFVERTA61 becomes **XUYFVERTA201** for a 2 m long fiber.*

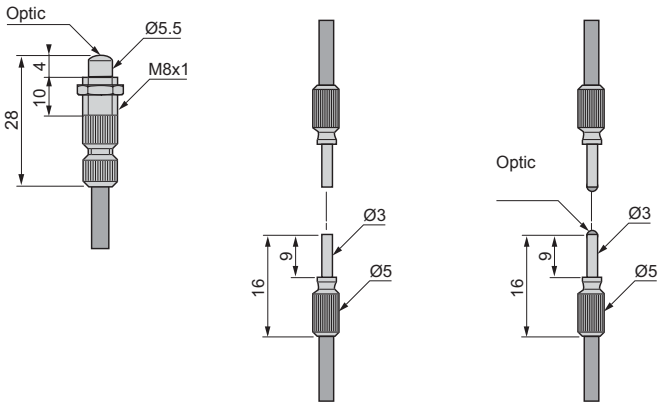
# OsiSense® XU
# Photoelectric sensors
## Application
## Fiber optics for amplifier
Ecofiber system in Plastic for customer assembly

**Ecofiber concept**

Assemble your own fiber optics.

**Fibers without end fitting**


**End fittings**

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### End fittings

| | | | |
|---|---|---|---|
| **Nominal sensing distance Sn, mm (in.)** | 70 (2.76) | 200 (7.87) | 800 (31.50) |
| **Catalog number** | **XUYA110** | **XUYA210** | **XUYA211** |
| **Weight, kg (lb)** | 0.009 (0.02) | 0.004 (0.01) | 0.004 (0.01) |

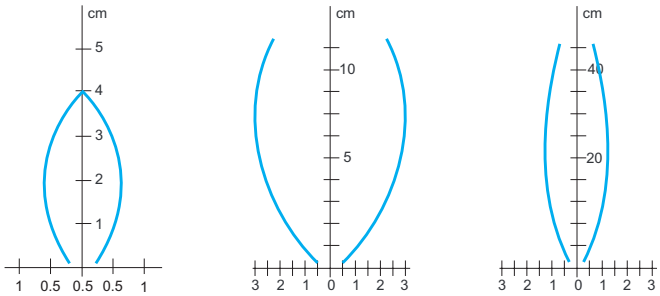
### Fibers without end fitting

**Type of fiber** — **Single fiber, plastic, single strand**

| | | | |
|---|---|---|---|
| **Length (m)** | 1 | 10 | 50 |
| **Usable diameter (mm)** | 1 | 1 | 1 |
| **External diameter (mm)** | 2.2 | 2.2 | 2.2 |
| **Catalog number** | **XUYA005** | **XUYA00510** | **XUYA00550** |
| **Weight, kg (lb)** | 0.006 (0.01) | 0.042 (0.09) | 0.220 (0.49) |

### Operating curves

| **End fittings** | **XUYA110** | **XUYA210** | **XUYA211** |
|---|---|---|---|

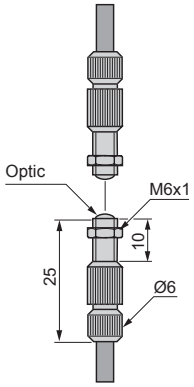


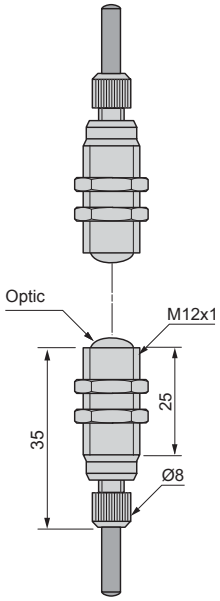
# OsiSense® XU Photoelectric sensors

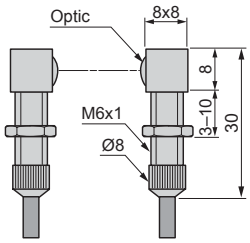
## Application

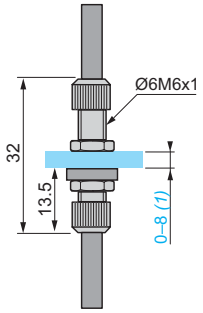
## Fiber optics for amplifier

Ecofiber system in Plastic for customer assembly




End fitting for passing through partition

*(1) Ø 6.2 cut-out*

| | | | |
|---|---|---|---|
| 1200 (47.24) | 4000 (157.48) | 1200 (47.24) | – |
| **XUYA212** | **XUYA213** | **XUYA220** | **XUYA310** |
| 0.011 (0.02) | 0.045 (0.10) | 0.018 (0.04) | 0.017 (0.04) |

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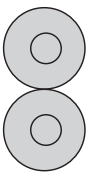
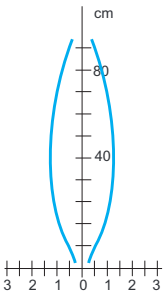
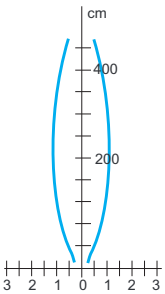
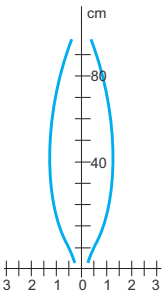
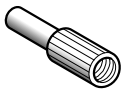
| **Single fiber, plastic, multistrand** | **Dual fiber, plastic, single strand** |
|---|---|
|  |  |
| 1 | 1 |
| 1 | 1 |
| 2.2 | 2.2 |
| **XUYAU005** | **XUYFP2BRINA005B** |
| **0.006 (0.01)** | **0.080 (0.18)** |

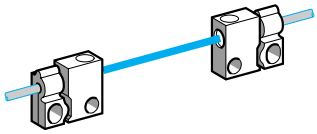
| **XUYA212** | **XUYA213** | **XUYA220** |
|---|---|---|
|  |  |  |

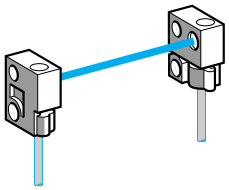
# OsiSense® XU
# Photoelectric sensors
## Application
## Fiber optics for amplifiers
## Accessories

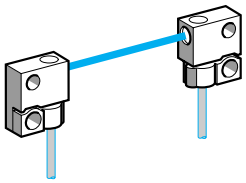

XUFZ02

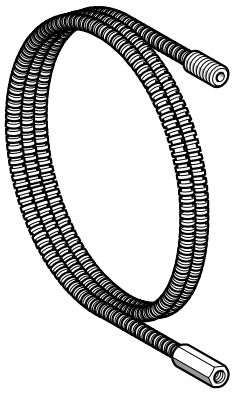

XUFZ01

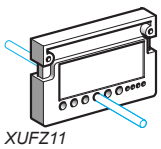

XUFZ06


XUFZ13, XUFZ03


XUFZ14, XUFZ04


XUFZ15, XUFZ05


XUFZ●10


XUFZ11


XUFZ08

### Accessories for fibers with threaded end fittings

| Description | For use with | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|
| **90° mirror** (set of 2) | Fiber optics XUFN1●30●, XUFN35301 and XUFS2020 (thru-beam system) XUFN2●01L●● | **XUFZ02** | 0.005 | (0.01) |
| **Lenses for increasing sensing distance** (set of 2) | Fiber optics XUFN1●30●, XUFN35301 and XUFS2020 (thru-beam system) | **XUFZ01** | 0.005 | (0.01) |
| **Focusing lens** for high precision detection. Detection of 0.5 mm objects at a distance of 7 mm. Also enables detection of objects against a background *(1)* | Fiber optics XUFN02323 (diffuse system) | **XUFZ06** | 0.001 | (0.002) |

### Accessories for plastic fibers without end fittings

| Description | Mounting plane | For use with | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|
| **Mounting clamps** (set of 2) | Axial | Plastic fiber optics XUFZ | **XUFZ13** | 0.002 | (0.004) |
| | Frontal | Plastic fiber optics XUFZ | **XUFZ14** | 0.002 | (0.004) |
| | Lateral | Plastic fiber optics XUFZ | **XUFZ15** | 0.002 | (0.004) |
| **Mounting clamps with lens** (set of 2) | Axial | Plastic fiber optics XUFZ | **XUFZ03** | 0.002 | (0.004) |
| | Frontal | Plastic fiber optics XUFZ | **XUFZ04** | 0.002 | (0.004) |
| | Lateral | Plastic fiber optics XUFZ | **XUFZ05** | 0.002 | (0.004) |

### Protection accessories

| Description | For use with | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|
| **Protective tubing** Length 1 m | Plastic fiber optic light guides with M4 threaded end fittings | **XUFZ210** | 0.040 | (0.09) |
| | Plastic fiber optic light guides with M6 threaded end fittings | **XUFZ310** | 0.065 | (0.14) |

### Other accessories

| Description | Sold in lots of | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|
| **Fiber trimmer** | 1 | **XUFZ11** | 0.006 | (0.01) |
| **Plastic end adapter,** for connecting Ø 1 mm fibers to amplifiers XUD A | 2 | **XUFZ08** | 0.002 | (0.004) |

*(1) Specifications obtained when the fiber is fully screwed into the lens (screwing depth = 4 mm).*

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# OsiSense® XU Photoelectric sensors
Application
Fiber optics for amplifiers
Accessories

## Operating curves for plastic fiber optic light guides with mounting clamps

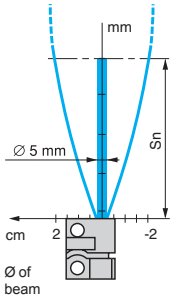
**Sensing distance of fibers XUFZ9●●● fitted with mounting clamps XUFZ●●**

| Fiber type | Clamp type | | | | |
|---|---|---|---|---|---|
| | XUFZ13 | XUFZ14, Z15 | XUFZ03 | XUFZ04, Z05 | Without clamp |
| **XUFZ910, Z920** (2 fibers L = 2 m) **Sn, mm (in.)** | 150 (5.91) | 100 (3.94) | 800 (31.50) | 600 (23.62) | 200 (7.87) |
| **XUFZ911, Z921** (2 fibers L = 2 m) **Sn, mm (in.)** | 220 (8.66) | 150 (5.91) | 1200 (49.24) | 900 (35.43) | 300 (11.81) |

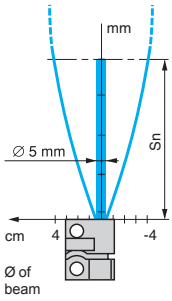
Other fiber lengths:
5 m fibers: reduce the sensing distance by a factor of 0.7.
10 m fibers: reduce the sensing distance by a factor of 0.5.
20 m fibers: reduce the sensing distance by a factor of 0.3.

### Operating curves with lens

**Mounting clamp XUFZ03, Z04 or Z05 +fiber XUFZ910 or Z920**

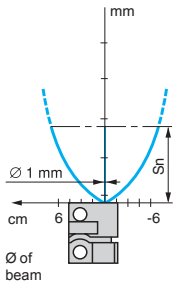



**Mounting clamp XUFZ03, Z04 or Z05 +fiber XUFZ911 or Z921**

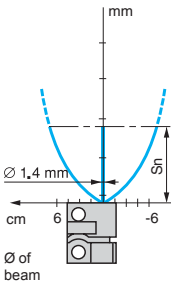



### Operating curves without lens

**Mounting clamp XUFZ13, Z14 or Z15 +fiber XUFZ910 or Z920**




**Mounting clamp XUFZ13, Z14 or Z15 +fiber XUFZ911 or Z921**

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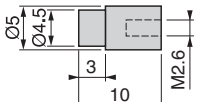
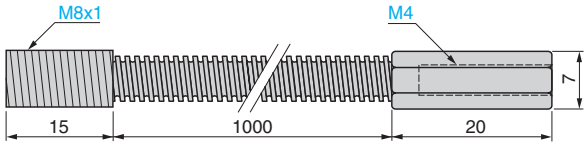
## Dimensions (mm)

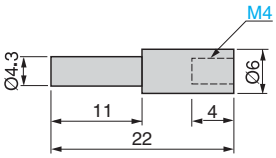
**XUFZ01**



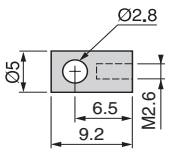

**XUFZ210**



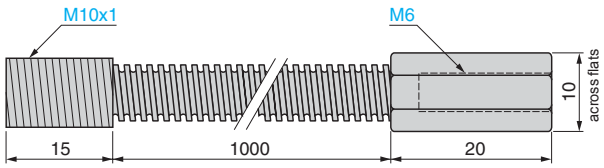

**XUFZ06**




**XUFZ02**

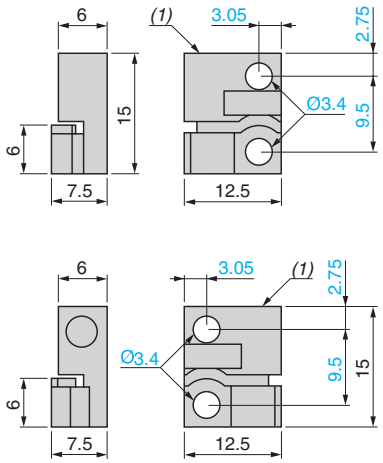



**XUFZ310**

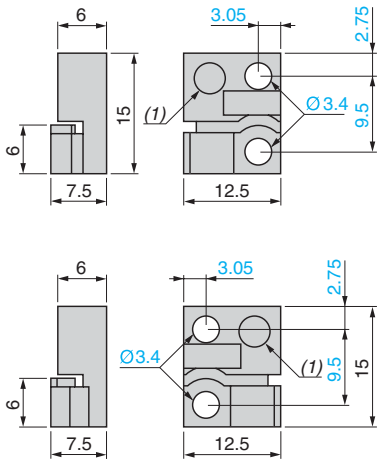


# OsiSense® XU
# Photoelectric sensors
## Application
## Fiber optics for amplifiers
## Accessories

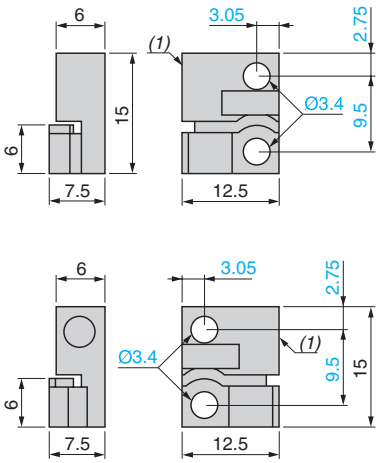
**XUFZ03, XUFZ13**




**XUFZ04, XUFZ14**




**XUFZ05, XUFZ15**




*(1) Light beam window.*

5

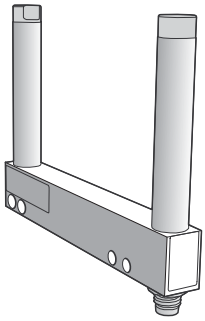
# OsiSense® XU Photoelectric sensors

## Optical fork without adjustment

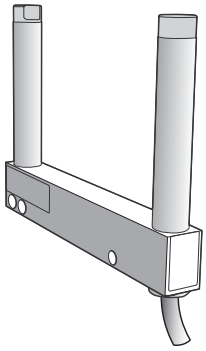
## DC supply. Solid-state output

**Optical fork without adjustment**

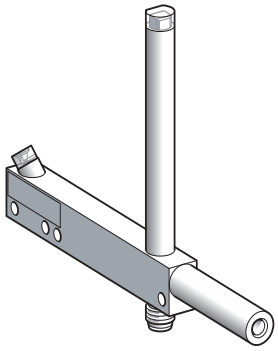
**Connector**



**Pre-cabled**



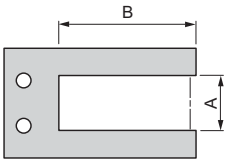
**Angular fork**



| | | | |
|---|---|---|---|
| **System** | | **Thru-beam** | |
| **Type of transmission** | | Red LED, modulated | |
| **Nominal sensing distance Sn, mm (in.)** | | **2–180 (0.08–7.09)** | |
| **Minimum size of object detected, mm (in.)** | Passageway 2–120 mm | **0.8 (0.03)** | **1.2 (0.05)** |
| | Passageway ≥ 150 mm | **1 (0.04)** | **1.5 (0.06)** |
| **Fork type** | | **XUVR●** | **XUVA●** |

## Catalog numbers of forks type XUVR●

**3-wire**
**NO or NC function**
**PNP or NPN output**

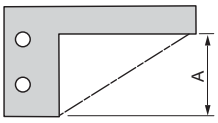



*A = Passageway*
*B = Depth*

| **Passageway (A)** | Function | Output | **Pre-cabled, length 2 m. Depth (B): 40 mm (1.18 in.)** |
|---|---|---|---|
| 30 mm (1.18 in.) | NO | PNP | **XUVR0303PANL2** |
| **Passageway (A)** | Function | Output | **M8 connector, 3-pin. Depth (B): 60 mm (2.36 in.)** |
| 50 mm (1.97 in.) | NO | PNP | **XUVR0605PANM8** |
| | | NPN | **XUVR0605NANM8** |
| | NC | PNP | **XUVR0605PBNM8** |
| | | NPN | **XUVR0605NBNM8** |
| 80 mm (3.15 in.) | NO | PNP | **XUVR0608PANM8** |
| | | NPN | **XUVR0608NANM8** |
| | NC | PNP | **XUVR0608PBNM8** |
| | | NPN | **XUVR0608NBNM8** |
| **Passageway (A)** | Function | Output | **M8 connector, 3-pin. Depth (B): 120 mm (4.72 in.)** |
| 120 mm (4.72 in.) | NO | PNP | **XUVR1212PANM8** |
| | | NPN | **XUVR1212NANM8** |
| | NC | PNP | **XUVR1212PBNM8** |
| | | NPN | **XUVR1212NBNM8** |
| 180 mm (7.09 in.) | NO | PNP | **XUVR1218PANM8** |
| | | NPN | **XUVR1218NANM8** |
| | NC | PNP | **XUVR1218PBNM8** |
| | | NPN | **XUVR1218NBNM8** |
| **Weight kg** | | | 0.080 to 0.190 (0.18 to 0.42 lb) depending on model |

## Catalog numbers of forks type XUVA●

**3-wire**
**NO function, PNP output**




*A = Passageway*

| **Type** | Function | Output | **M8 connector, 3-pin** |
|---|---|---|---|
| 50 mm (1.97 in.) | NO | PNP | **XUVA0505PANM8** |
| 80 mm (3.15 in.) | NO | PNP | **XUVA0808PANM8** |
| 120 mm (4.72 in.) | NO | PNP | **XUVA1212PANM8** |
| 150 mm (5.91 in.) | NO | PNP | **XUVA1515PANM8** |
| **Weight (kg)** | | | 0.100 to 0.195 (0.22 to 0.43 lb) depending on model |

***Other versions: consult the Sensor Competency Center.***

Applications: detection on conveyor, detection on vibrating rail.

## Accessories

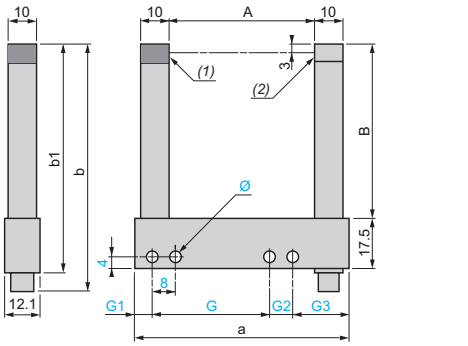
| **Description** | **Details** | **Length of cable (m)** | **Catalog Number** | **Weight kg** | **(lb)** |
|---|---|---|---|---|---|
| **Pre-wired M8 connector** | Straight | 2 | **XZCP0566L2** | 0.060 | (0.13) |
| | Elbowed (90°) | 2 | **XZCP0666L2** | 0.060 | (0.13) |
| | Straight | 5 | **XZCP0566L5** | 0.120 | (0.26) |
| | Elbowed (90°) | 5 | **XZCP0666L5** | 0.120 | (0.26) |

# OsiSense® XU
# Photoelectric sensors
Optical fork without adjustment
DC supply. Solid-state output

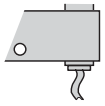
| Specifications | | XUVR● | XUVA |
|---|---|---|---|
| **Product certifications** | | CE, UL, CSA | CE |
| **Ambient air temperature** | For operation | -10 to +60 °C (+14 to 140 °F) | |
| | For storage | -40 to +80 °C (-40 to +176 °F) | |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 and IP 67 | |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 7 gn, amplitude ± 0.75 mm (f = 10 to 55 Hz) | |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 30 gn, duration 11 ms | |
| **Materials** | Case | Painted aluminium and polyamide | |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against reverse polarity | |
| **Voltage limits** (including ripple) | | ⎓ 10–30 V | |
| **Immunity to ambient light** | Natural light | 10,000 lux | |
| | Incandescent bulb | 5,000 lux | |
| **Switching capacity** | | 100 mA with overload and short-circuit protection | |
| **Voltage drop, closed state** | | < 1.5 V | |
| **Current consumption, no-load** | | < 20 mA | |
| **Maximum switching frequency** | | 4000 Hz | |
| **Delays** | First-up | 140 ms max. | |
| | Stability | ± 15 µs | |
| **Indicator lights** | Yellow LED | Output signal | |

## Dimensions (mm)

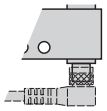
**XUVR●**




XUVR0303● (pre-cabled version detail)



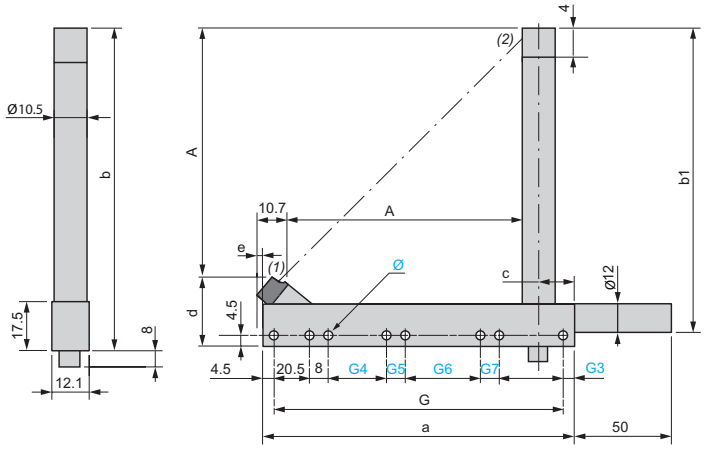
Orientation of elbowed connector



*(1) Transmission LED - (2) Yellow LED: output signal*

| Type XUVR | Passageway A | Depth B | a | b | b1 | G | G1 | G2 | G3 | Ø |
|---|---|---|---|---|---|---|---|---|---|---|
| **XUVR0303●●●●●** | 30 | 40 | 54 | 65.7 | 57.5 | 30 | 17 | – | – | 4 x 4.3 |
| **XUVR0605●●●●●** | 50 | 60 | 74 | 85.7 | 77.5 | 40 | 6.5 | 8 | 19.5 | 4 x 4.3 |
| **XUVR0608●●●●●** | 80 | 60 | 104 | 85.7 | 77.5 | 70 | 6.5 | 8 | 19.5 | 4 x 4.3 |
| **XUVR01212●●●●●** | 120 | 124.3 | 144 | 150.2 | 142 | 100 | 17 | 10 | 17 | 4 x 4.3 |
| **XUVR01218●●●●●** | 180 | 124.3 | 204 | 150.2 | 142 | 152 | 22 | 8 | 22 | 4 x 4.3 |

**XUVA●**




*(1) Transmission LED - (2) Yellow LED: output signal*

| Type XUVA | Type | Depth A | a | b | b1 | G | G1 | G2 | G3 | Ø | G4 | G5 | G6 | G7 | c | d | e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **XUVA0505●●●●●** | 50 | 44.3 | 75 | 83 | 75 | 66 | – | – | 4.5 | 4 x 4.3 | – | – | – | – | 14.75 | 26.41 | 0 |
| **XUVA0808●●●●●** | 80 | 74.3 | 105 | 113 | 105 | 96 | – | – | 4.5 | 4 x 4.3 | – | – | – | – | 14.75 | 26.41 | 0 |
| **XUVA1212●●●●●** | 120 | 112.3 | 145 | 154 | 146 | 136 | – | – | 4.5 | 4 x 4.3 | – | – | – | – | 19.75 | 29.24 | 3 |
| **XUVA1515●●●●●** | 150 | 142.3 | 175 | 184 | 176 | 166 | – | – | 4.5 | 8 x 4.3 | 24 | 8 | 60 | 8 | 19.75 | 29.24 | 3 |

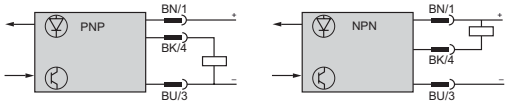
## Wiring diagrams

**M8 connector**


**Pin n° - color**

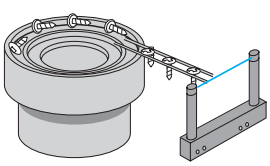
| | |
|---|---|
| **1** | BN |
| **3** | BU |
| **4** | BK |

**Cabling**

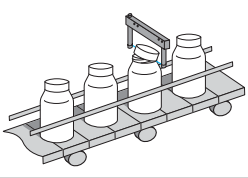



## Application examples

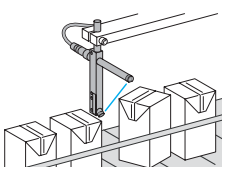
**Vibrating bowl**



**Monitoring height of objects passing on a conveyor**



**Detecting position of object on a conveyor**



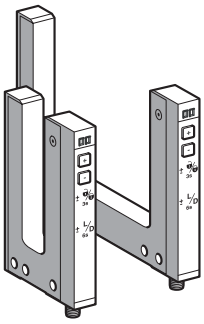
# OsiSense® XU Photoelectric sensors

## Application

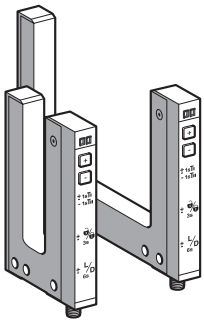
Optical fork with teach mode
DC supply, solid-state output

**Optical fork with teach mode**

**± numeric potentiometer mode**
**Green keypad**



**Teach mode**
**Yellow keypad**

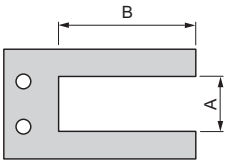


| | | | |
|---|---|---|---|
| **System** | | **Thru-beam** | |
| **Type of transmission** | | Infrared LED, modulated | |
| **Nominal sensing distance (Sn)** | | **2–120 mm (0.08–4.72 in.)** | |
| **Minimum size of object detected** | Passageway 2–120 mm | **0.2 mm (0.008 in.)** | |
| **Fork type** | | **XUYFNEP●** | **XUYFANEP●** |

## Catalog Number

**4-wire, PNP/NPN independent outputs**

NO/NC function, selectable




A = Passageway
B = Depth

| Passageway (A) | Depth (B) | | | Depth (B) | | |
|---|---|---|---|---|---|---|
| mm (in.) | 42 (1.65) | 59 (2.32) | 95 (3.74) | 42 (1.65) | 59 (2.32) | 95 (3.74) |
| 2 (0.08) | **XUY FNEP40002** | **XUY FNEP60002** | **XUY FNEP100002** | **XUY FANEP40002** | **XUY FANEP60002** | **XUY FANEP100002** |
| 5 (0.12) | **XUY FNEP40005** | **XUY FNEP60005** | **XUY FNEP100005** | **XUY FANEP40005** | **XUY FANEP60005** | **XUY FANEP100005** |
| 15 (0.59) | **XUY FNEP40015** | **XUY FNEP60015** | **XUY FNEP100015** | **XUY FANEP40015** | **XUY FANEP60015** | **XUY FANEP100015** |
| 30 (1.18) | **XUY FNEP40030** | **XUY FNEP60030** | **XUY FNEP100030** | **XUY FANEP40030** | **XUY FANEP60030** | **XUY FANEP100030** |
| 50 (1.97) | **XUY FNEP40050** | **XUY FNEP60050** | **XUY FNEP100050** | **XUY FANEP40050** | **XUY FANEP60050** | **XUY FANEP100050** |
| 80 (3.15) | **XUY FNEP40080** | **XUY FNEP60080** | **XUY FNEP100080** | **XUY FANEP40080** | **XUY FANEP60080** | **XUY FANEP100080** |
| 120 (4.72 | **XUY FNEP40120** | **XUY FNEP60120** | **XUY FNEP100120** | **XUY FANEP40120** | **XUY FANEP60120** | **XUY FANEP100120** |

| | |
|---|---|
| **Weight, kg (lb)** | 0.055 to 0.128 (0.12 to 0.28) depending on model |

## Specifications

| | | |
|---|---|---|
| **Product certifications** | | CE, cULus. This product is UL Listed if supplied by a class II or isolated supply delivering c 30 V max. (isolated transformer for example) and protected by a UL fuse rated at 3 A max. |
| **Ambient air temperature** | For operation | -20 to +60 °C (-4 to +140 °F) |
| | For storage | -30 to+80 °C (-22 to +176°F) |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 |
| **Connection** | | M8, 4-pin male connector (for 3-pin version, consult the Sensor Competency Center) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 7 gn, amplitude ± 0.75 mm (f = 10 to 55 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 30 gn, duration 11 ms |
| **Materials** | Case | Painted aluminium and polyamide/glass |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against reverse polarity |
| **Voltage limits** (including ripple) | | ⎓ 10–30 V |
| **Immunity to ambient light** | Natural light | 10,000 Lux |
| | Incandescent bulb | 5,000 Lux |
| **Outputs** | PNP and NPN | By independent wire |
| | NO/NC | By programming |
| **Switching capacity** | | 100 mA with overload and short-circuit protection |
| **Voltage drop, closed state** | | < 2 V |
| **Current consumption, no-load** | | 40 mA |
| **Permissible capacitive load** | | 330 nF |
| **Maximum switching frequency** | | **10 kHz** |
| **Response time** | Stability | ±20 µs |
| **Indicator lights** | Yellow LED | Output signal |
| | Red LED | Adjustment mode and keypad locking |

*Application: Detection of labels, detection of double sheet, detection of reference marks, detection on conveyor, detection on vibrating rail.*

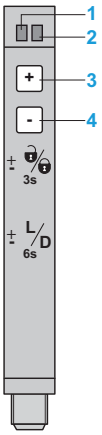
## Accessories

| Description | Details | Length of cable (m) | Catalog Number | Weight kg (lb) |
|---|---|---|---|---|
| **Pre-wired M8 connector** | Straight | 2 | **XZCP0941L2** | 0.080 (0.18) |
| | Elbowed (90°) | 2 | **XZCP1041L2** | 0.080 (0.18) |
| | Straight | 5 | **XZCP0941L5** | 0.180 (0.40) |
| | Elbowed (90°) | 5 | **XZCP1041L5** | 0.180 (0.40) |

# OsiSense® XU
# Photoelectric sensors
## Application
Optical fork with teach mode
DC supply, solid-state output

## Presentation

**XUYFNEP●●●**




1 Yellow LED On: Output activated

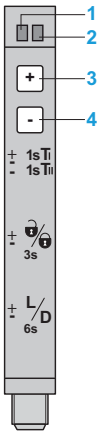
2 Red LED On: Adjustments and keypad locking

3, 4 Sensitivity adjustment

3 +4 Keypad locking (3 s ⩽ press time < 6 s)

3 +4 NO/NC (press time ⩾ 6 s)

**XUYFANEP●●●**




1 Yellow LED On: Output activated

2 Red LED On: Adjustments and keypad locking

3, 4 Sensitivity adjustment

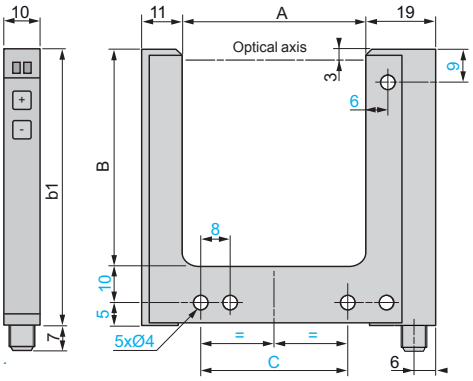
3 +4 Teach mode and automatic adjustment of sensitivity (press time < 3 seconds)

3 +4 Keypad locking (3 s ⩽ press time < 6 s)

3 +4 NO/NC (press time ⩾ 6 s)

## Dimensions (mm)

**XUYFNEP●●● / XUYFANEP●●●**



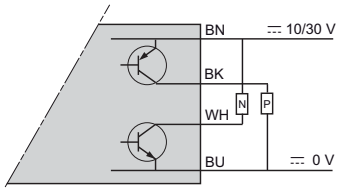

| XUY | Passageway | Depth | | |
|---|---|---|---|---|
| | A | B (mm) | b1 (mm) | C |
| **FNEP/FANEP●002** | 2 (0.08 in.) | 42, 59, 95 (1.65, 2.32, 3.74 in.) | 57, 74, 110 (2.24, 2.91, 4.33 in.) | 14 |
| **FNEP/FANEP●005** | 5 (0.20 in.) | 42, 59, 95 (1.65, 2.32, 3.74 in.) | 57, 74, 110 (2.24, 2.91, 4.33 in.) | 14 |
| **FNEP/FANEP●015** | 15 (0.59 in.) | 42, 59, 95 (1.65, 2.32, 3.74 in.) | 57, 74, 110 (2.24, 2.91, 4.33 in.) | 27 |
| **FNEP/FANEP●030** | 30 (1.18 in.) | 42, 59, 95 (1.65, 2.32, 3.74 in.) | 57, 74, 110 (2.24, 2.91, 4.33 in.) | 42 |
| **FNEP/FANEP●050** | 50 (1.97 in.) | 42, 59, 95 (1.65, 2.32, 3.74 in.) | 57, 74, 110 (2.24, 2.91, 4.33 in.) | 40 |
| **FNEP/FANEP●080** | 80 (3.15 in.) | 42, 59, 95 (1.65, 2.32, 3.74 in.) | 57, 74, 110 (2.24, 2.91, 4.33 in.) | 70 |
| **FNEP/FANEP●120** | 120 (4.72 in.) | 42, 59, 95 (1.65, 2.32, 3.74 in.) | 57, 74, 110 (2.24, 2.91, 4.33 in.) | 110 |

## Wiring diagrams

**Cabling**


| Pin n° - color |
|---|
| **1 BN**: Brown |
| **2 WH**: White |
| **3 BU**: Blue |
| **4 BK**: Black |

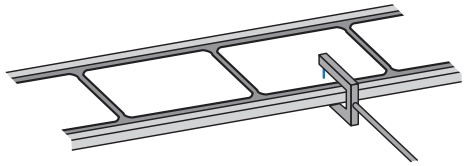
**M8 connector**




## Application examples

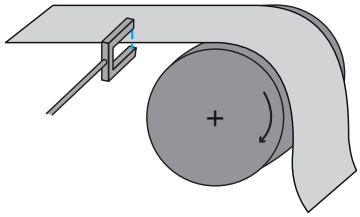
**Green keypad: Potentiometer mode**

**Detection of labels on belt**



**Yellow keypad: Teach mode**

**Detection of sheet feed on printing machine**



# OsiSense® XU
# Photoelectric sensors

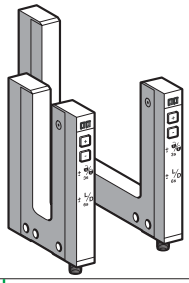
## Application

Optical fork with laser transmission, with teach mode
DC supply, solid-state output

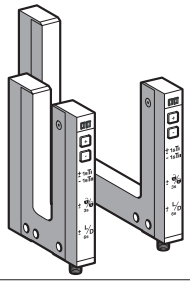
**High sensitivity fork range**


Laser class 1, conforming to IEC 825-1

**± numeric potentiometer mode**
**Green keypad**



**Teach mode**
**Yellow keypad**

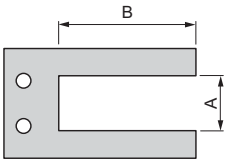


| | | | |
|---|---|---|---|
| **System** | | **Thru-beam** | |
| **Type of transmission** | | **Red laser, modulated, class 1,** wavelength: 670 m (2198 ft) | |
| **Nominal sensing distance (Sn)** | | **2–120 mm (0.0804.72 in.)** | |
| **Minimum size of object detected** | Passageway 2–120 mm | **0.05 mm (0.002 in.)** (repeat accuracy 0.01 mm (0.0004 in.) | |
| **Fork type** | | **XUYFLNEP●** | **XUYFALNEP●** |

## Catalog Numbers

**4-wire, PNP/NPN independent outputs**

NO/NC function, selectable




A = Passageway
B = Depth

| **Passageway (A)** | **Depth (B)** | | | **Depth (B)** | | |
|---|---|---|---|---|---|---|
| mm (in.) | 42 (1.65) | 59 (2.32) | 95 (3.74) | 42 (1.65) | 59 (2.32) | 95 (3.74) |
| 2 (0.08) | **XUY FLNEP40002** | **XUY FLNEP60002** | **XUY FLNEP100002** | **XUY FALNEP40002** | **XUY FALNEP60002** | **XUY FALNEP100002** |
| 5 (0.20) | **XUY FLNEP40005** | **XUY FLNEP60005** | **XUY FLNEP100005** | **XUY FALNEP40005** | **XUY FALNEP60005** | **XUY FALNEP100005** |
| 15 (0.59) | **XUY FLNEP40015** | **XUY FLNEP60015** | **XUY FLNEP100015** | **XUY FALNEP40015** | **XUY FALNEP60015** | **XUY FALNEP100015** |
| 30 (1.18) | **XUY FLNEP40030** | **XUY FLNEP60030** | **XUY FLNEP100030** | **XUY FALNEP40030** | **XUY FALNEP60030** | **XUY FALNEP100030** |
| 50 (1.97) | **XUY FLNEP40050** | **XUY FLNEP60050** | **XUY FLNEP100050** | **XUY FALNEP40050** | **XUY FALNEP60050** | **XUY FALNEP100050** |
| 80 (3.15) | **XUY FLNEP40080** | **XUY FLNEP60080** | **XUY FLNEP100080** | **XUY FALNEP40080** | **XUY FALNEP60080** | **XUY FALNEP100080** |
| 120 (4.72) | **XUY FLNEP40120** | **XUY FLNEP60120** | **XUY FLNEP100120** | **XUY FALNEP40120** | **XUY FALNEP60120** | **XUY FALNEP100120** |

| | | |
|---|---|---|
| **Weight, kg (lb)** | | 0.055 to 0.128 (0.12 to 0.28) depending on model |

## Specifications

| | | |
|---|---|---|
| **Product certifications** | | CE, cULus. This product is UL Listed if supplied by a class II or isolated supply delivering c 30 V max. (isolated transformer for example) and protected by a UL fuse rated at 3 A max. |
| **Ambient air temperature** | For operation | -20 to +50 °C (-4 to +122 °F) |
| | For storage | - 30 to +80 °C (-22 to +176 °F) |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 |
| **Connection** | | M8, 4-pin male connector |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | 7 gn, amplitude ± 0.75 mm (f = 10 to 55 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 30 gn, duration 11 ms |
| **Materials** | Case | Painted aluminium and polyamide/glass |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against reverse polarity |
| **Voltage limits** (including ripple) | | ⎓ 10–30 V |
| **Immunity to ambient light** | Natural light | 10,000 Lux |
| | Incandescent bulb | 5,000 Lux |
| **Outputs** | PNP/NPN | By wiring |
| | NO/NC | Using teach |
| **Switching capacity** | | 100 mA with overload and short-circuit protection |
| **Voltage drop, closed state** | | < 2 V |
| **Current consumption, no-load** | | < 40 mA |
| **Permissible capacitive load** | | 330 nF |
| **Maximum switching frequency** | | **10 kHz** |
| **Response time** | Stability | ±20 µs |
| **Indicator lights** | | Yellow LED: output signal; red LED: keypad locking and adjustments. |

■ Applications: Detection of reference marks, detection on conveyor, detection on vibrating rail, detection of transparent object.

## Accessories

| **Description** | **Details** | **Length of cable (m)** | **Catalog Number** | **Weight kg (lb)** |
|---|---|---|---|---|
| **Pre-wired M8 connector** | Straight | 2 | **XZCP0941L2** | 0.080 (0.18) |
| | Elbowed (90°) | 2 | **XZCP1041L2** | 0.080 (0.18) |
| | Straight | 5 | **XZCP0941L5** | 0.180 (0.40) |
| | Elbowed (90°) | 5 | **XZCP1041L5** | 0.180 (0.40) |

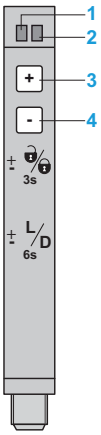
# OsiSense® XU
# Photoelectric sensors

## Application

Optical fork with laser transmission, with teach mode
DC supply, solid-state output

## Presentation

### XUYFLNEP●




1 Yellow LED On: Output activated

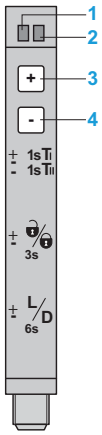
2 Red LED On: Adjustments and keypad locking

3, 4 Sensitivity adjustment

3 +4 Keypad locking (3 s ≤ press time < 6 s)

3 +4 NO/NC (press time ≥ 6 s)

### XUYFALNEP●




1 Yellow LED On: Output activated

2 Red LED On: Adjustments and keypad locking

3, 4 Sensitivity adjustment

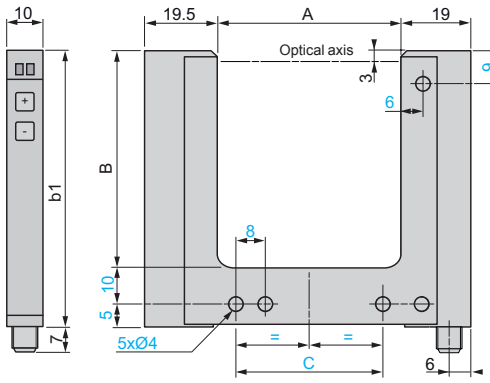
3 +4 Teach mode and automatic adjustment of sensitivity (press time < 3 seconds)

3 +4 Keypad locking (3 s ≤ press time < 6 s)

3 +4 NO/NC (press time ≥ 6 s)

## Dimensions (mm)

### XUYFLNEP● / XUYFALNEP●



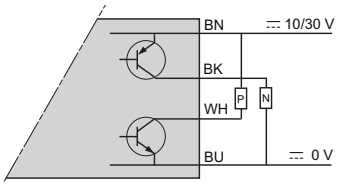

| XUY | Passageway A | Depth B | b1 | C |
|---|---|---|---|---|
| **FLNEP/FALNEP●2** | 2 (0.08 in.) | 42, 59, 95 (1.65, 2.32, 3.74 in.) | 57, 74, 110 (2.24, 2.91, 4.33 in.) | 14 |
| **FLNEP/FALNEP●5** | 5 (0.20 in.) | 42, 59, 95 (1.65, 2.32, 3.74 in.) | 57, 74, 110 (2.24, 2.91, 4.33 in.) | 14 |
| **FLNEP/FALNEP●15** | 15 (0.59 in.) | 42, 59, 95 (1.65, 2.32, 3.74 in.) | 57, 74, 110 (2.24, 2.91, 4.33 in.) | 27 |
| **FLNEP/FALNEP●30** | 30 (1.18 in.) | 42, 59, 95 (1.65, 2.32, 3.74 in.) | 57, 74, 110 (2.24, 2.91, 4.33 in.) | 42 |
| **FLNEP/FALNEP●50** | 50 (1.97 in.) | 42, 59, 95 (1.65, 2.32, 3.74 in.) | 57, 74, 110 (2.24, 2.91, 4.33 in.) | 40 |
| **FLNEP/FALNEP●80** | 80 (3.15 in.) | 42, 59, 95 (1.65, 2.32, 3.74 in.) | 57, 74, 110 (2.24, 2.91, 4.33 in.) | 70 |
| **FLNEP/FALNEP●120** | 120 (4.72 in.) | 42, 59, 95 (1.65, 2.32, 3.74 in.) | 57, 74, 110 (2.24, 2.91, 4.33 in.) | 110 |

## Wiring diagrams

### Cabling


| Pin n° - color |
|---|
| **1 BN:** Brown |
| **2 WH**: White |
| **3 BU**: Blue |
| **4 BK**: Black |

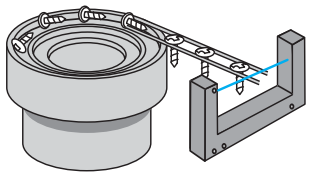
### M8 connector




## Application examples

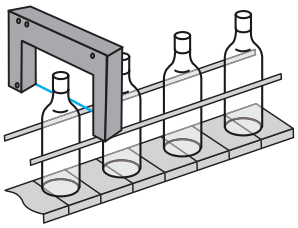
### Green keypad: Potentiometer mode

**Detection of an object exiting a vibrating bowl**



### Yellow keypad: Teach mode

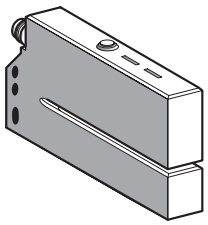
**Detection of transparent bottles (glass, PET…)**



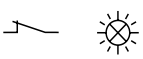
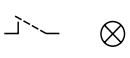
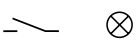
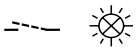
# OsiSense® XU Photoelectric sensors

## Application, packaging series
Optical fork with teach mode
For detection of labels
DC supply. Solid-state output

**Fork design**



| | | | |
|---|---|---|---|
| **System** | | Thru-beam | |
| **Type of transmission** | | Infrared, continuous | |
| **Nominal sensing distance Sn, mm (in.)** | (Passageway) | 3 (0.12) | 5 (0.20) |
| **Catalog Number** | | | |
| **4-wire, PNP and NPN** | NO or NC programmable function *(1)* Automatic adjustment using teach mode | **XUYFA983003COS** | **XUYFA983005COS** |
| **Weight, kg (lb)** | | 0.07 (0.15) | 0.07 (0.15) |
| **Specifications** | | | |
| **Product certifications** | | CE, cULus | |
| **Ambient air temperature** | For operation | -20 to +60 °C (-40 to +140 °F) | |
| | For storage | -30 to +80 °C (-22 to +176 °F) | |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 | |
| **Connection** | | M8, 4-pin connector (for pre-cabled version, consult the Sensor Competency Center) | |
| **Materials** | | Anodised aluminium | |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against reverse polarity | |
| **Voltage limits** (including ripple) | | ⎓ 10–30 V | |
| **Switching capacity** (sealed) | | ≤ 100 mA with overload and short-circuit protection | |
| **Immunity to ambient light** | Natural light | 3,000 lux | |
| | Incandescent bulb | 3,000 lux | |
| **Voltage drop, closed state** | | < 2 V | |
| **Current consumption, no-load** | | 40 mA | |
| **Maximum switching frequency** | | **10 kHz** | |
| **Delays** | | Response: 50 µs; recovery: 50 µs | |
| **Indicator lights** | | Green LED: no object present<br>Red LED: keypad locking and adjustments. | |

| **Function table** | **Function** | **Thru-beam system** | |
|---|---|---|---|
| | | **No label present in the beam** | **Label present in the beam** |
| **Output state (PNP or NPN) indicator: green LED** (illuminated when sensor output is ON) | NC |  |  |
| | NO |  |  |

*(1) By reversing supply connections.*

5

# OsiSense® XU
# Photoelectric sensors

Application, packaging series
Optical fork with teach mode
For detection of labels
DC supply. Solid-state output

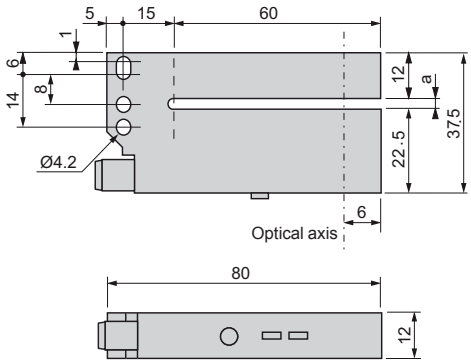
## Presentation (adjustment and indicators)


Teaching is performed on the item to which the label is affixed

1 Teach mode button
- 1 press: standard teaching (red LED flashes for 2 s)
- 2 presses: fine teaching (green LED flashes for 2 s)
- 1 prolonged press: keypad locking (red LED on)

2 Red LED and green LED flash: short-circuit or object too opaque.

## Dimensions (mm)



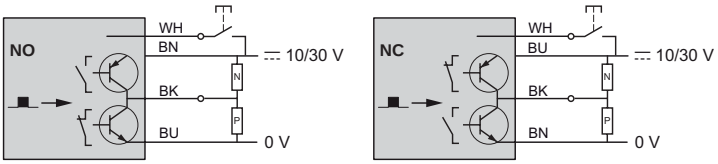

| XUY | **a** (passageway) |
|---|---|
| **FA98●●●3COS** | 2 |
| **FA98●●●5COS** | 5 |

## Wiring diagrams (sensor connector pin view)

**Connector**


**Pin n° - color**

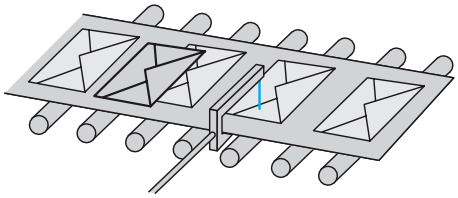
**1 BN:** Brown
**2 WH:** White (input)
**3 BU:** Blue
**4 BK:** Black (PNP and NPN outputs)



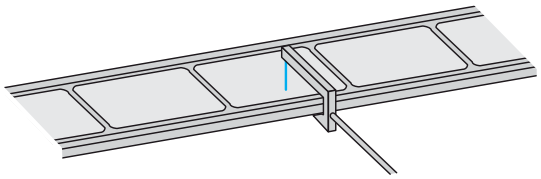

*Object detected*
*If the white wire is not used, connect to 0 V.*

## Application examples

**Detection of overlapping envelopes**



**Detection of labels on belt**



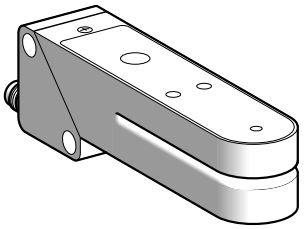
# OsiSense® XU Photoelectric sensors

## Application, packaging series

For detection of labels *(1)*

DC supply, solid-state output

### Fork design



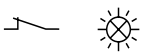
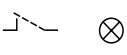
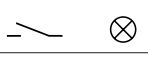
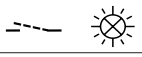
| | | | |
|---|---|---|---|
| **System** | | **Thru-beam** | |
| **Type of transmission** | | Infrared | Red/green |
| **Nominal sensing distance** (Sn) | | **2 mm (0.26 in.)** | |

## Catalog Numbers

| | | | |
|---|---|---|---|
| **3-wire, PNP and NPN** | Light or dark programmable switching *(2)* | **XUVK0252S** | **XUVK0252VS** |
| **Weight,** kg (lbs) | | 0.120 (0.26) | |

## Specifications

| | | |
|---|---|---|
| **Product certifications** | | CE |
| **Ambient air temperature** | | For operation: 0 to +55 °C (+32 to +131 °F) For storage: -20 to +70 °C (-4 to +158 °F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | Amplitude ± 1.5 mm up to 55 Hz, 7 gn (f = 10–55 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 30 gn, duration 11 ms |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 |
| **Connection** | | M8 connector (suitable female connectors) |
| **Materials** | | Case: zinc alloy; lens: glass |
| **Rated supply voltage** | | ⎓ 12–24 V with protection against reverse polarity |
| **Voltage limits** | | ⎓ 10–30 V (including ripple) |
| **Switching capacity** (sealed) | | ⩽ 100 mA with overload and short-circuit protection |
| **Voltage drop, closed state** | | ⩽ 1.5 V |
| **Output clamping resistor** | | 10 kΩ |
| **Current consumption, no-load** | | ⩽ 50 mA |
| **Maximum switching frequency** | | 25 kHz |
| **Delays** | | First-up: ⩽ 30 ms; response: < 100 µs; recovery: < 100 µs |
| **Indicator lights** | Output state | Yellow LED |
| | Sensor ready | Green LED |
| | Read error | Red LED |

| **Function table** | **Function** | **Thru-beam system** | |
|---|---|---|---|
| | | **No label present in the path** | **Label present in the path** |
| **Output state (PNP or NPN) indicator: yellow LED** (illuminated when sensor output is on) | Light switching |  |  |
| | Dark switching |  |  |

*(1) Applications: the infrared transmission beam sensor **XUVK0252S** is suitable for the detection of all types of opaque legends; the red/green transmission sensor **XUVK0252VS** is suitable for the detection of all types of legends of different colors.*

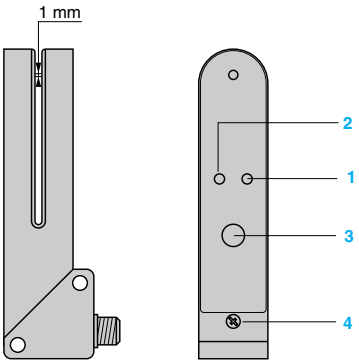
*(2) This sensor is adjustable using teach mode: the light or dark switching function is selected when performing the first stage of teaching for setting up the sensor (see Programming using teach mode on page).*

5

# OsiSense® XU Photoelectric sensors

## Application, packaging series
For detection of labels
DC supply, solid-state output

### Presentation

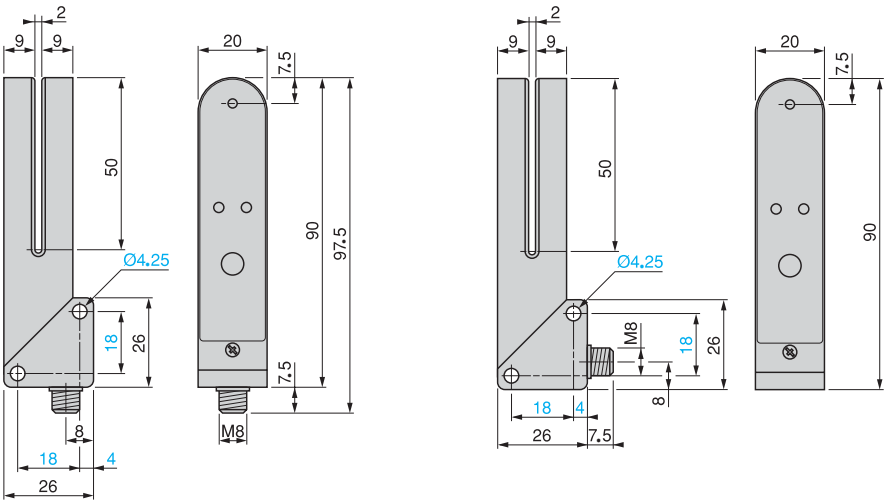



### Programming using teach mode

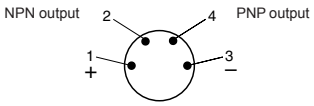
■ Place the label to be detected in the beam of the optical fork. Press the Set button and hold down until the green LED 2 goes out.
■ When the green LED 2 flashes, the detector has learned the label. Following this, place the item to which the label is affixed in the beam of the optical fork. Press the Set button and hold down until the green LED 2 goes out.
■ When the green LED 2 illuminates as a steady light, teaching is completed and the sensor is ready for operation.

1 Yellow LED, output state indicator
2 Dual color green/red LED, Ready/Error
3 Teach mode programming Set button
4 Locking screw

### Dimensions (mm)




### Connector diagram (sensor connector pin view)

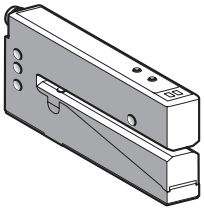



5

# OsiSense® XX Ultrasonic sensor

Application, packaging series
For detection of transparent labels
DC supply, solid-state output

## Fork design



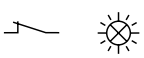
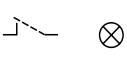
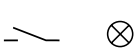
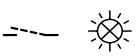
| | | |
|---|---|---|
| **System** | | Thru-beam |
| **Type of transmission** | | Ultrasonic |
| **Nominal sensing distance Sn, mm (in.)** | | 3 (0.12 ) |

## Catalog Number

| | | |
|---|---|---|
| **4-wire, PNP and NPN** | Light switching (NC) or dark switching (NO) programmable | **XUVU06M3KCNM8** |
| **Adjustment** | | By numerical potentiometer (± buttons) and red LED |
| **Protection of settings** | | By locking keypad |
| **Weight,** kg (lb) | | 0.130 (0.29) |

## Specifications

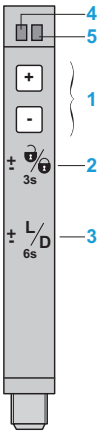
| | | |
|---|---|---|
| **Product certifications** | | CE, IEC 60947-5-2, CSA, cULus. This product is UL listed if supplied by a class II or isolated supply delivering ⎓ 30 V max. (isolated transformer for example) and protected by a UL fuse rated 3 A max. |
| **Materials** | | Aluminium case |
| **Connection** | | M8 4-pin connector |
| **Detection performance** | Minimum length of label | 2 mm (0.08 in.) |
| | Minimum distance between 2 labels | 2 mm (0.08 in.) |
| | Maximum flow rate | 120 m/min |
| | Detection accuracy | ± 0.16 mm (0.52 in.) at 60 m/min<br>± 0.30 mm (0.98 in.) at 120 m/min |
| **Power supply** | Rated supply voltage | ⎓ 12–24 V with protection against reverse polarity |
| | Voltage limits | ⎓ 10–30 V (including ripple) |
| | Current consumption, no-load | 40 mA |
| | Residual voltage | |
| | At 100 mA | < 2 V |
| | At 10 mA | < 1 V |
| **Output** | Type | NPN and PNP |
| | Function | Light switching (NC) or dark switching (NO), to be programmed |
| | Maximum rated current | 100 mA with overload and short-circuit protection |
| | Maximum switching frequency | **500 Hz** |
| | LED indicators | |
| | Output state | Yellow LED |
| | Delay | On and Off: 500 µs |
| **Environment** | Operating temperature | +5 to +55 °C (+41 to +131 °F) |
| | Storage temperature | -20 to +70 °C (-4 to +158 °F) |
| | Degree of protection | IP 65 |

| **Function table** | **Function** | **Thru-beam system** | |
|---|---|---|---|
| | | **No label present in the beam (output inactive)** | **Label present in the beam (output active)** |
| **Output state (PNP or NPN) yellow LED** (illuminated when sensor output is on) | Light switching (NC) |  |  |
| | Dark switching (NO) |  |  |

5

# OsiSense® XX
# Ultrasonic sensor
## Application, packaging series
## For detection of transparent labels
## DC supply, solid-state output

## Presentation (adjustment and display)




1 Tripping threshold adjustment using ± buttons

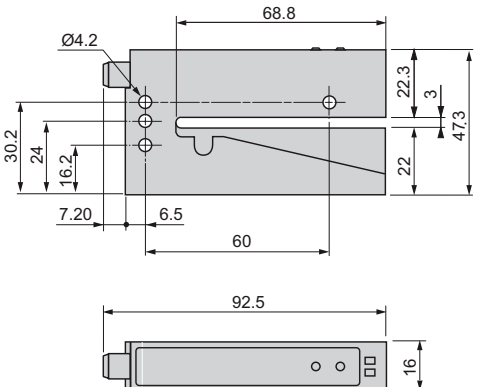
2 Locking of keypad by simultaneously pressing ± buttons and holding down for 3 s

3 Selection of output type (NO or NC) by simultaneously pressing ± buttons and holding down for 6 s

4 Yellow LED: On when outputs active (current established)
Yellow LED: Flashes slowly in event of output short-circuit

5 Red LED: On each time the ± buttons are pressed
Red LED: Permanently On when keypad locked
Red LED: Off when keypad unlocked

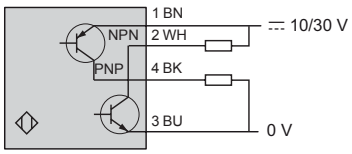
## Dimensions (mm)




## Wiring diagram (sensor connector pin view)

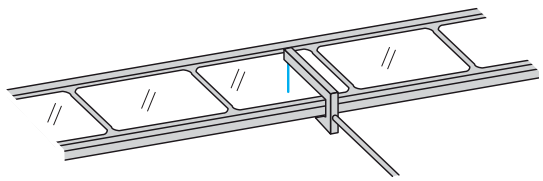
**Connector**


| | | |
|---|---|---|
| 1 | Brown | ⎓ +10... 30 V |
| 2 | White | NPN output |
| 3 | Blue | ⎓ 0 V |
| 4 | Black | PNP output |




## Application example

**Detection of transparent labels on transparent or opaque strip**

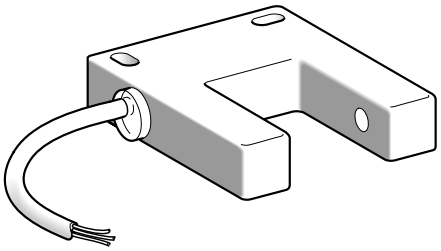


# OsiSense® XU Photoelectric sensors

## Application, material handling series

Optical fork with integrated amplifier
DC supply. Solid-state output

**Fork design**



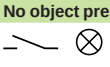
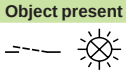
| | | |
|---|---|---|
| **System** | | **Thru-beam** |
| **Type of transmission** | | Infrared |
| **Nominal sensing distance Sn, mm (in.)** | | **30 (1.18)** |

## Catalog Number

| | | |
|---|---|---|
| **3-wire, PNP** | NO function | **XUVH0312** |
| **3-wire, NPN** | NO function | **XUVJ0312** |
| **Weight, kg (lb)** | | 0.130 (0.29) |

## Specifications

| | | |
|---|---|---|
| **Product certifications** | | CE |
| **Ambient air temperature** | For operation | -5 to +55 °C (+23 to 131°F) |
| | For storage | -20 to +70 °C (-4 to +158 °F) |
| **Vibration resistance** | Conforming to IEC 60068-2-6 | Amplitude ±1 mm up to 42 Hz, 7 gn (f = 10–42 Hz) |
| **Shock resistance** | Conforming to IEC 60068-2-27 | 30 gn, duration 11 ms |
| **Degree of protection** | Conforming to IEC 60529 | IP 54 |
| **Connection** | | Pre-cabled: diameter 5 mm, length 2 m, wire c.s.a.: 3 x 0.34 mm² (22 AWG) |
| **Materials** | Case | PC/ABS |
| | Lenses | PMMA |
| | Cable | PvR |
| **Rated supply voltage** | | ⎓ **24 V with protection against reverse polarity** |
| **Voltage limits** | | ⎓ 19–38 V (including ripple) |
| **Switching capacity** (sealed) | | ≤**150 mA with overload and short-circuit protection** |
| **Voltage drop, closed state** | | ≤ 1.5 V |
| **Current consumption, no-load** | | ≤ 20 mA |
| **Maximum switching frequency** | | 1000 Hz |
| **Delays** | First-up | ≤ 30 ms |
| | Response | 500 µs |
| | Recovery | 500 µs |

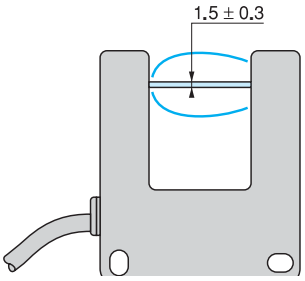
| **Function table** | **Function** | **Thru-beam system** | |
|---|---|---|---|
| **NO function** | | **No object present in the beam** | **Object present in the beam** |
| **Output state (PNP or NPN) indicator: red LED** (illuminated when sensor output is ON) | NO |  |  |

5

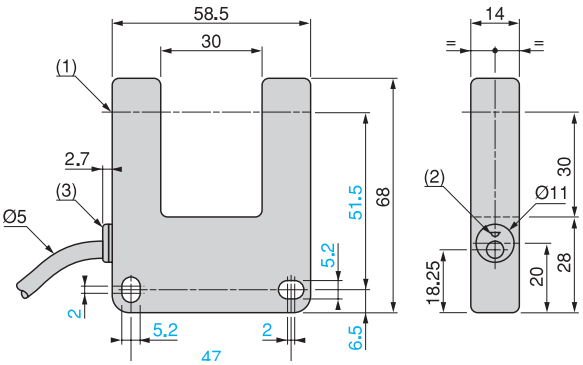
# OsiSense® XU
# Photoelectric sensors

Application, material handling series
Optical fork with integrated amplifier
DC supply. Solid-state output

## Operating curve




## Dimensions (mm)

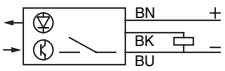



*(1) Optical axis*
*(2) Red LED*
*(3) Diffuser*
*Max. tightening torque of mounting screws: 3 N•m (26.55 lb-in)*

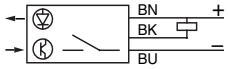
## Wiring diagrams (3-wire ⎓)

### NO function

**PNP output**




**NPN output**

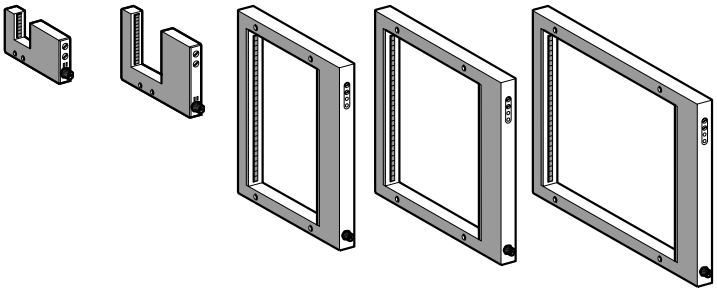


# OsiSense® XU Photoelectric sensors

## Application, assembly series

Dynamic detection of passage of objects, counting parts *(1)*

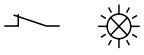
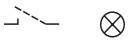
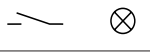
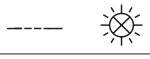
DC supply, solid-state output



| | | | | | | |
|---|---|---|---|---|---|---|
| **System** | | **Thru-beam** | | | | |
| **Type of transmission** | | **Infrared** | | | | |
| **Passageway dimensions, mm (in.)** | | **30 x 30 (1.18 x 1.18)** | **60 x 60 (2.36 x 2.36)** | **200 x 120 (7.87 x 4.72)** | **200 x 180 (7.87 x 7.08)** | **200 x 250 (7.87 x 9.87)** |
| **Minimum size of object to be detected, mm (in.)** | | Ø 2 mm (0.08) | | Ø 4 mm (0.016) | | |
| **Catalog Number** | | | | | | |
| **3-wire, PNP and NPN** Output function On or Off on passage of object, programmable | Minimum size of object detected | – | – | – | – | – |
| | Ø 2 mm (0.08 in.) | **XUVF30M8** | **XUVF60M8** | – | – | – |
| | Ø 4 mm (0.16 in.) | – | – | **XUVF120M12** | **XUVF180M12** | **XUVF250M12** |
| | Ø 10 mm (0.39 in.) | – | – | **XUYFRS120S** | **XUYFRS180S** | **XUYFRS250S** |
| **Weight, kg (lb)** | | 0.080 (0.18) | 0.140 (0.31) | 1.060 (2.34) | 1.200 (2.65) | 1.320 (2.91) |

## Specifications

| | | | |
|---|---|---|---|
| **Product certifications** | | CE, cULus | |
| **Ambient air temperature** | | For operation: 0 to +60 °C (+32 to +140 °F). For storage: -20 to +80 °C (-4 to +176 °F) | |
| **Vibration resistance** | | 25 gn, amplitude ± 2 mm (f = 10–55 Hz), conforming to IEC 60068-2-6 | |
| **Shock resistance** | | 30 gn, duration 11 ms, conforming to IEC 60068-2-27 | |
| **Degree of protection** | Conforming to IEC 60529 | IP 65 | |
| **Connection** | | M8 connector (suitable female connectors, including pre-wired versions) | M12 connector (suitable female connectors, including pre-wired versions) |
| **Materials** | Case | Painted aluminium | |
| | Lenses | Polycarbonate | Altuglass |
| **Immunity to ambient light** | | Sunlight: 4,000 lux max., incandescent light: 400 lux max. | |
| **Passing speed of object** | | Min.: 10 cm/s, max.: 15 m/s (Ø 2 mm object) | Min.: 10 cm/s, max.: 15 m/s (Ø 4 mm object) |
| **Rated supply voltage** | | **⎓ 24 V with protection against reverse polarity** | |
| **Voltage limits** | | ⎓ 18–30 Vdc (including ripple) | |
| **Switching capacity** (sealed) | | **≤ 100 mA with overload and short-circuit protection** | |
| **Voltage drop, closed state** | | < 2 Vdc | |
| **Current consumption, no-load** | | ≤ 120 mA | ≤ 400 mA |
| **Maximum switching frequency** | | 500 Hz | |
| **Delays** | | First-up: ≤ 100 ms; response: < 1 ms; recovery: < 1 ms | |
| **Time delay** | | Off-delay (reset): adjustable between 0 and 5 seconds | |

| **Function table** | **Function** | **Thru-beam system** | |
|---|---|---|---|
| | | **No object present in the path** | **Passage of object through the path** |
| **Output state (PNP or NPN) indicator: green LED** (illuminated when sensor output is On) | Output Off on passage of object |  |  |
| | Output On on passage of object |  |  |

*(1)* ***XUVF*** *sensors are suitable for detecting the passage of all types of objects (metal or plastic, of any shape or color), provided that the flow is dynamic. Applications: counting parts, flow control of injection machine parts, etc.*

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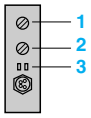
# OsiSense® XU Photoelectric sensors

## Application, assembly series

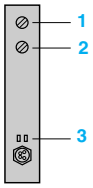
Dynamic detection of passage of objects, counting parts
DC supply, solid-state output

## Presentation

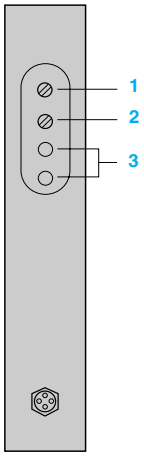
**XUVF30M8**




**XUV F60M8**



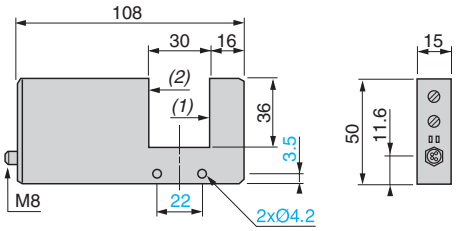

**XUVF●●0M12, XUYFRS●●0S**



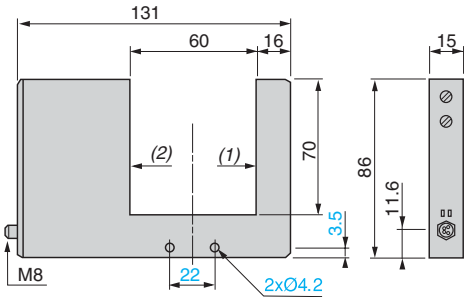

1 Sensitivity adjustment potentiometer.
2 Time delay adjustment potentiometer.
3 Indicators:
Green LED: output
Red LED: alarm
Notes:
- In the event of a supply malfunction, the red LED flashes.
- In the event of a short-circuit on the output, both the red and green LEDs flash.

## Dimensions (mm)

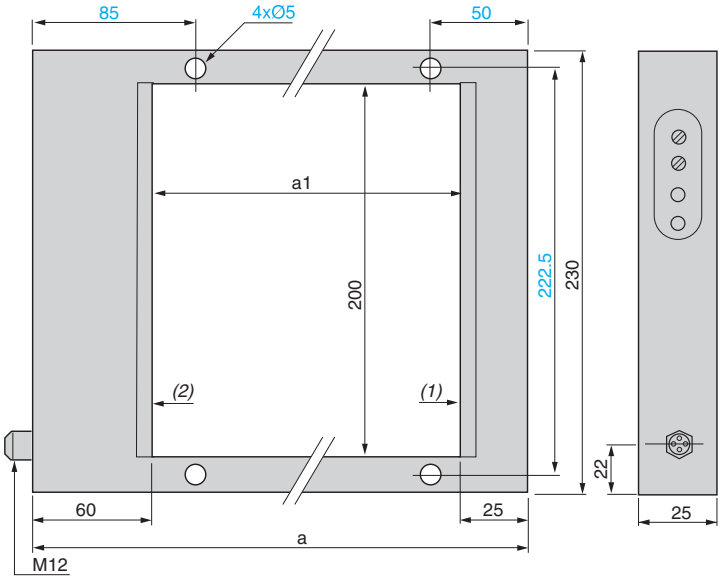
**XUVF30M8**




**XUVF60M8**




**XUVF●●0M12, XUYFRS●●0S**




| XUV | XUY | a | a1 |
|---|---|---|---|
| F120M12 | FRS120S | 205 | 120 (4.72 in.) |
| F180M12 | FRS180S | 265 | 180 (7.08 in.) |
| F250M12 | FRS250S | 335 | 250 (9.84 in.) |

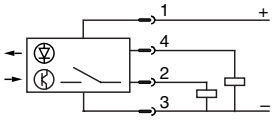
*(1) Transmitting face.*
*(2) Reception face.*

## Wiring diagrams

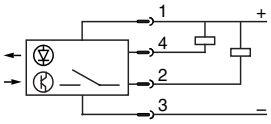
**Wiring diagrams (3-wire ⎓)**

**Output On on passage of object programmed** *(1)*

**PNP output**



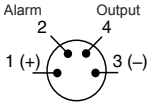

**NPN output**



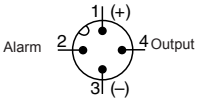

**Connector diagram (sensor connector pin view)**

**Output On on passage of object programmed** *(1)*

**XUVF●0M8**




**XUVF●●0M12, XUYFRS●●0S**




***Note:*** *the alarm (2) triggers in the event of an object stopping within the beam.*

*(1) To program the sensor for Output Off on passage of object, connect contact 3 to (+) and contact 1 to (–).*

# OsiSense® XU
# Photoelectric sensors
## Accessories


XUZB2003

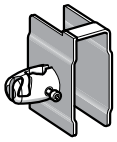

XUZM2003


XUZK2003


XUZX2003

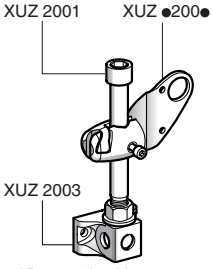

XUZM2004


XUZK2004


XUZX2004

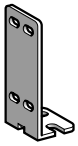

XUZ2001


XUZ2003

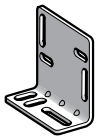


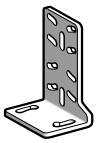
3D mounting kit example

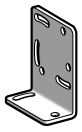

XUZA118

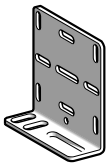

XUZA50


XUZA51


XUZX2000


XULZ41


XUZA41


XUZA49

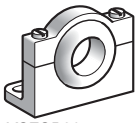

XUZA218


XUZA318


XSAZ1●●


XSZB1●●


XUZB2005


XSZSB30

### 3D mounting kit (1)

| Description | For use with sensor type | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|
| **Ball-joint mounted bracket** for mounting on M12 rod | XUB or XUZC50 | **XUZB2003** | 0.170 | (0.37) |
| | XUM0 or XUZC50 | **XUZM2003** | 0.140 | (0.31) |
| | XUK or XUZC50 | **XUZK2003** | 0.170 | (0.37) |
| | XUX or XUZC50 | **XUZX2003** | 0.220 | (0.49) |
| **Ball-joint mounted bracket with protective cover** for mounting on M12 rod | XUM0 | **XUZM2004** | 0.155 | (0.34) |
| | XUK | **XUZK2004** | 0.270 | (0.60) |
| | XUX | **XUZX2004** | 0.420 | (0.93) |
| **Support for M12 rod** | – | **XUZ2003** | 0.150 | (0.33) |
| **M12 rod** (adjustment possible over complete height) | – | **XUZ2001** | 0.050 | (0.11) |

*(1) To obtain a 3D mounting kit, order:*
- ***XUZ2003*** *rod support*
- ***XUZ2001*** *M12 rod*
- ***XUZ●200●*** *ball-joint mounted bracket*

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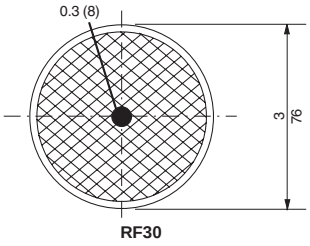
### Mounting accessories

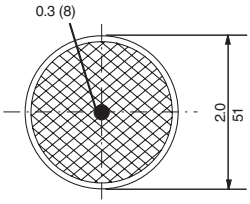
| Description | For use with sensor type | | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|
| **Stainless steel mounting bracket** | XUB | | **XUZA118** | 0.045 | (0.10) |
| **Metal mounting brackets** | XUM | | **XUZA50** | 0.025 | (0.06) |
| | XUK | | **XUZA51** | 0.050 | (0.11) |
| | XUX | | **XUZX2000** | 0.065 | (0.14) |
| | XUL | | **XULZ41** | 0.050 | (0.11) |
| | XUJ | | **XUZA41** | 0.050 | (0.11) |
| | XUJ B | | **XUZA49** | 0.120 | (0.26) |
| **Plastic mounting bracket** with adjustable ball-joint | XU● (Ø 18 mm) | | **XUZA218** | 0.035 | (0.08) |
| | XUC | | **XSZSB30** | 0.068 | (0.15) |
| **Precision mounting bracket** with micrometric adjustment | XU2 (Ø 18 mm) with laser transmission | | **XUZA318** | 0.170 | (0.37) |
| **Plastic mounting clamps** with locking screw | XUA (Ø 8 mm) | | **XSAZ108** | 0.007 | (0.02) |
| | | | **XSZB108** | 0.006 | (0.01) |
| | XU● (Ø 18 mm) | With lug | **XSAZ118** | 0.020 | (0.04) |
| | | With indexing pin | **XSZB118** | 0.010 | (0.02) |
| | | With 24.1 mm ctrs. | **XUZB2005** | 0.007 | (0.02) |
| | Glass fiber optics XUFS0810 | | **XSAZ145** | 0.005 | (0.01) |
| | Fiber optics XUFS2510 | | **XSAZ155** | 0.005 | (0.01) |
| | Fiber optics XUFS0210 | | **XSAZ185** | 0.005 | (0.01) |
| **Set of 2 plastic nuts** | XU● (Ø 18 mm) | | **XSZE218** | 0.004 | (0.01) |
| **Set of 2 metal nuts** | XU● (Ø 18 mm) | | **XSZE118** | 0.015 | (0.03) |
| **Set of 2 stainless steel nuts** | XU● (Ø 18 mm) | | **XSZE318** | 0.015 | (0.03) |

# OsiSense® XU Photoelectric sensors

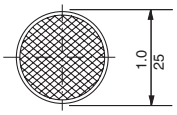
## Accessories



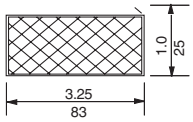

**RF30**



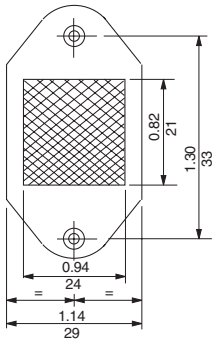

**RF20**



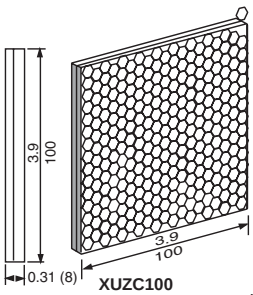

**RF10**




**RF13**




**XUZC24**




**XUZC100**

in.
mm

Corner cube reflectors used with retroreflective photoelectric sensors provide a high degree of reliability, since they return the light to its source even if the reflector and the sensor are significantly skewed with respect to one another. Corner cube reflectors also have the only reflective surface that works with polarized photoelectric sensors.

The nominal sensing distance for every retroreflective sensor model in this catalog was established using a 3 in. (76 mm) RF30 reflector. Smaller reflectors will result in shorter sensing distances. These reflectors are used to detect smaller targets comparable with their dimension. The standard reflectors present a blind spot at about 10% of the sensing distance. Special reflectors XUZC24/50 are designed to eliminate this inconvenience and even allow the reflector to touch the sensor lenses.

RF30 and RF20 models can be mounted with a bolt. The RF10 model can be mounted by using a bezel or plate (not provided) or by using their own adhesive tape.

Rectangular reflectors increase sensing precision. They are also easier to mount side by side to increase the reflective surface.

Retroreflective tape can be used to cover unusually shaped targets. Reflector tape not a corner cube reflective. Only Super-reflective tape is a corner cube reflective. Super-reflective tape can be used with both polarized and non-polarized retroreflective sensors.

### Reflectors

| Description | Reflectivity | Temperature Range | Catalog Number |
|---|---|---|---|
| 76 mm (3 in.) diameter, acrylic lens | 4000X | 65 °C (150 °F) | **RF30** |
| 51 mm (2 in.) diameter, acrylic lens | 4000X | 65 °C (150 °F) | **RF20** |
| 25 mm (1 in.) diameter, acrylic lens | 4000X | 65 °C (150 °F) | **RF10** |
| 83 x 38 mm (3.25 x 1.5 in.), acrylic lens (orange) | 4000X | 65 °C (150 °F) | **RF13** |
| 102 x 102 mm (4 x 4 in.) diameter, acrylic lens | 4000X | 65 °C (150 °F) | **XUZC100** |
| 33 x 28 mm (1.3 x 1.1 in.) close proximity—acrylic *(1)* | 6000X | 65 °C (150 °F) | **XUZC24** |
| 51 x 51 mm (2 x 2 in.) close proximity—acrylic *(1)* | 6000X | 65 °C (150 °F) | **XUZC50** |
| 16 mm (0.63 in.) | 4000X | 65 °C (150 °F) | **XUZC16** |
| 21 mm (0.83 in.) | 4000X | 65 °C (150 °F) | **XUZC21** |
| 31 mm (1.22 in.) | 4000X | 65 °C (150 °F) | **XUZC31** |
| 39 mm (1.53 in.) | 4000X | 65 °C (150 °F) | **XUZC39** |
| 80 mm (3.15 in.) | 4000X | 65 °C (150 °F) | **XUZC80** |

(1) XUZC24/50 reflectors must always be mounted in the vertical plane with respect to the optical axis of the sensor.

### Retroreflective Tape

| Description | Typical Luminance Factor *(2)* | Temperature | Catalog Number |
|---|---|---|---|
| **Photoelectric grade sheeting with adhesive backing** *(3)* | | | |
| 76 mm (3 in.) wide, 0.3 m (1 ft) long (4) | 200X | 93.4 °C (200 °F) | **RF7590** |
| **High intensity sheeting with adhesive backing—vinyl sealed** *(3)* | | | |
| 76 mm (3 in.) wide, 0.3 m (1 ft) long (4) | 670X | 65.6 °C (150 °F) | **RF3870** |
| **High gain sheeting with adhesive backing—porous surface** *(3)* | | | |
| 51 mm (2 in.) wide, 0.3 m (1 ft) long (4) | 900X | 79.5 °C (175 °F) | **RF7610** |

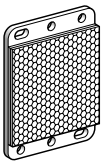
### Super Reflective Tape—corner cube type, adhesive backing
### Can be used with polarized retroreflective systems

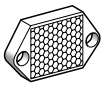
| Description | Typical Luminance Factor *(2)* | Temperature | Catalog Number |
|---|---|---|---|
| 1 in. (25 mm) wide, 3 ft (1 m) long | 2000X | 60 °C (140 °F) | **XUZB11** |
| 1 in. (25 mm) wide, 16 ft (5 m) long | 2000X | 60 °C (140 °F) | **XUZB15** |

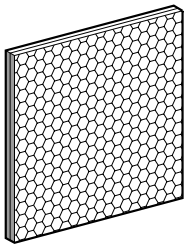
(2) Perpendicular reading. Expressed as times brighter than a perfectly diffusing, white surface.
(3) Not suitable for polarized models.
(4) Also available in 3 m (10 ft), 15 m (50 ft) and 30 m (100 ft) lengths.

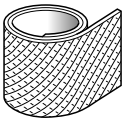
# OsiSense® XU Photoelectric sensors
## Accessories

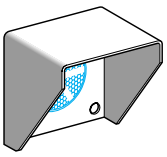

XUZC●●

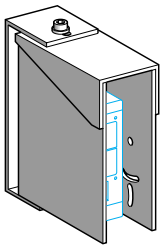

XUZC50

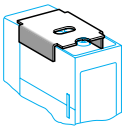

XUZC24

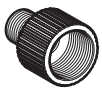

XUZC100


XUZB0●

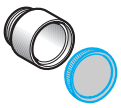

XUZD15

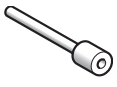

XUZD25


XUJZ01


XUZX2001


XURZ01


XURZ02


XUFZ08

## Reflectors

| Description | Dimensions (mm) | Length (m) | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|
| **Standard reflectors** | Ø 16 | – | **XUZC16** | 0.002 | (0.002) |
| | Ø 21 | – | **XUZC21** | 0.002 | (0.002) |
| | Ø 31 | – | **XUZC31** | 0.005 | (0.010) |
| | Ø 39 | – | **XUZC39** | 0.008 | (0.020) |
| | Ø 80 | – | **XUZC80** | 0.029 | (0.060) |
| **Universal reflector** (without blind zone) | 50 x 50 | – | **XUZC50** | 0.020 | (0.040) |
| **Reflector for short sensing distances** | 24 x 21 | – | **XUZC24** | 0.007 | (0.020) |
| **Reflector for long sensing distances** | 100 x 100 | – | **XUZC100** | 0.062 | (0.140) |
| **Standard reflective adhesive tape** *(1)* | Width: 22 Thickness: 0.4 | 1 | **XUZB01** | 0.015 | (0.030) |
| | | 5 | **XUZB05** | 0.075 | (0.170) |
| **Reflective adhesive tape** *(1)* (specifically for polarized retroreflective systems) | Width: 22 Thickness: 0.4 | 1 | **XUZB11** | 0.020 | (0.040) |
| | | 5 | **XUZB15** | 0.085 | (0.190) |

## Protective covers

| Description | For use with | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|
| **Protective covers** | Sensors XUX and XUJ | **XUZD25** | 0.920 | (2.030) |
| | Reflectors XUZC80 or XUZC24 | **XUZD15** | 0.270 | (0.600) |
| **Potentiometer protective cover** | Sensors XUJ | **XUJZ01** | 0.015 | (0.030) |

5

## Cabling accessories

| Description | Catalog Number | Weight kg | (lb) |
|---|---|---|---|
| **Adapter, ISO 16 - 1/2 NPT** | **XUZX2001** | 0.050 | (0.110) |
| **Adapter, ISO 16 - ISO 20** | **XUZX2002** | 0.050 | (0.110) |

## Lenses

| Description | For use with | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|
| **Lens for spot enlargement** | Sensors XUR | **XURZ01** | 0.010 | (0.020) |
| **Lens accessory for spot reduction** | Sensors XUR | **XURZ02** | 0.015 | (0.030) |

## Spare parts

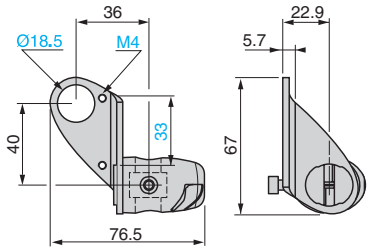
| Description | For use with | Sold in lots of | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|
| **Plastic end adapter** for connecting Ø 1 mm fiber optics | Amplifiers XUD A | 2 | **XUFZ08** | 0.002 | (0.002) |

## Protection fuses

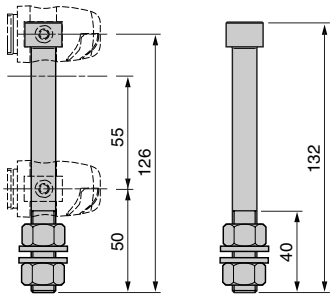
| Description | For use with | Sold in lots of | Catalog Number | Weight kg | (lb) |
|---|---|---|---|---|---|
| **Cartridge fuse** 5 x 20 0.4 A fast-acting | Sensors without short-circuit protection | 10 | **XUZE04** | 0.001 | (0.001) |
| **Fuse terminal block** | Cartridge fuses XUZE0● | 50 | **AB1FU10135U** | 0.040 | (0.010) |

*(1) Suitable for use at maximum ambient temperature of +50 °C (122 °F).*

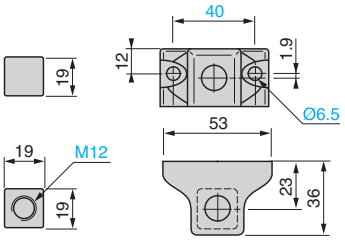
### XUZB2003
Ball-joint mounted bracket for XUB or XUZC50



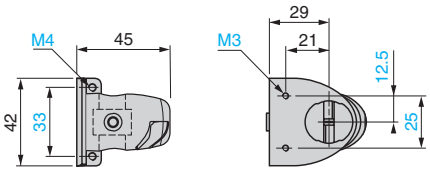

### XUZ2001
M12 rod



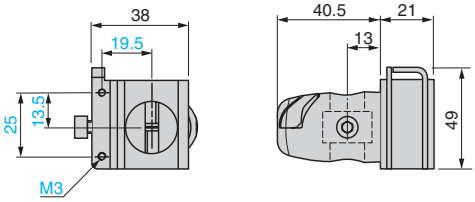

### XUZ2003
Support for M12 rod



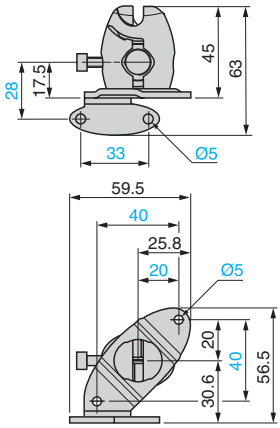

### XUZM2003
Ball-joint mounted bracket for XUM *(1)* or XUZC50



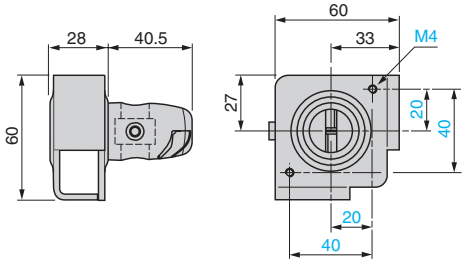

### XUZM2004
Ball-joint mounted bracket with protective cover for XUM *(1)*



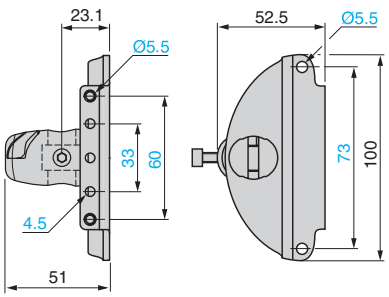

### XUZK2003
Ball-joint mounted bracket for XUK *(1)* or XUZC50



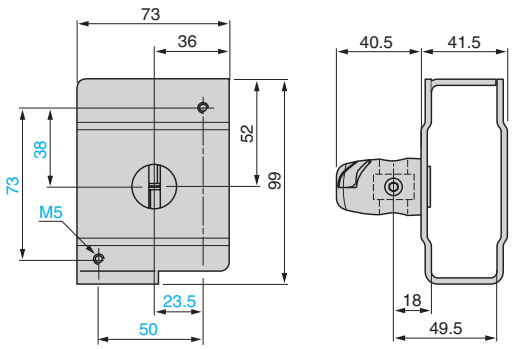

### XUZK2004
Ball-joint mounted bracket with protective cover for XUK *(1)*




### XUZX2003
Ball-joint mounted bracket for XUX *(1)* or XUZC50




### XUZX2004
Ball-joint mounted bracket with protective cover for XUX *(1)*




*(1) Accessory mounting screws included.*

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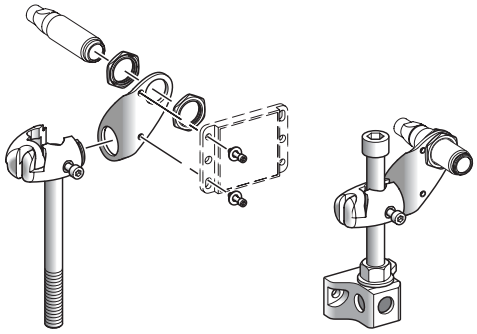
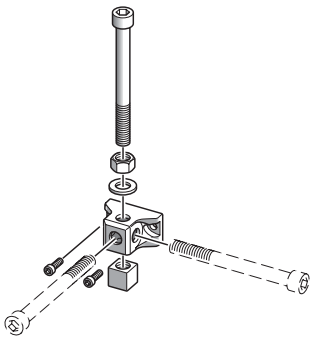
# OsiSense® XU Photoelectric sensors
Accessories

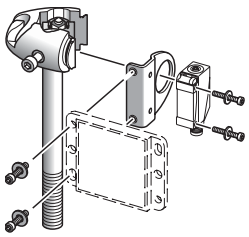
**XUZB2003 +XUZ2001 +XUZ2003**
3D mounting kit for XUB or reflector XUZC50



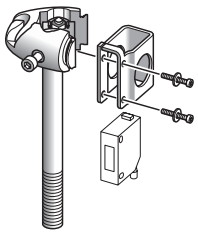
**XUZ2001 +XUZ2003**
M12 rod +rod support



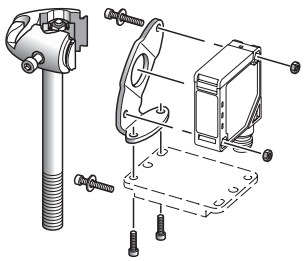
**XUZM2003 +XUZ2001**
3D mounting kit for XUM or reflector XUZC50



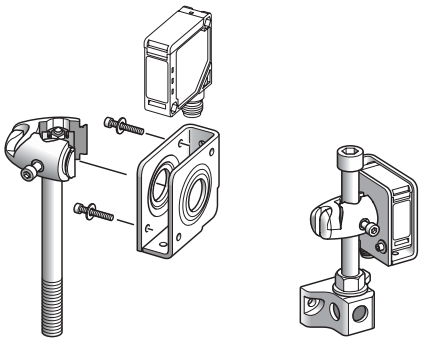
**XUZM2004 +XUZ2001**
3D mounting kit with protective cover for XUM



**XUZK2003 +XUZ2001**
3D mounting kit for XUK or reflector XUZC50

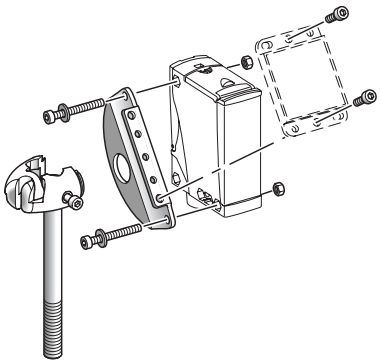


**XUZK2004 +XUZ2001 +XUZ2003**
3D mounting kit with protective cover for XUK

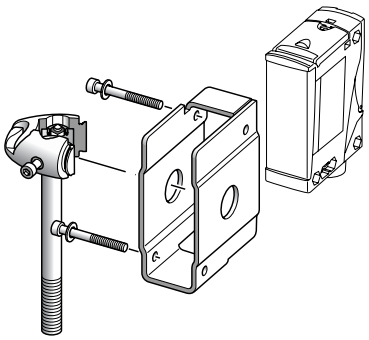


*Mounting example*

**XUZX2003 +XUZ2001**
3D mounting kit for XUX or reflector XUZC50

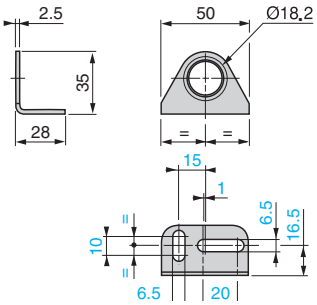


**XUZX2004 +XUZ2001**
3D mounting kit with protective cover for XUX

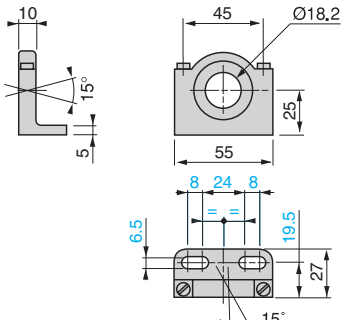


# OsiSense® XU Photoelectric sensors
Accessories

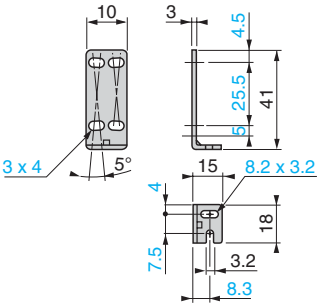
## XUZA118
Mounting bracket for XUB (Ø 18)



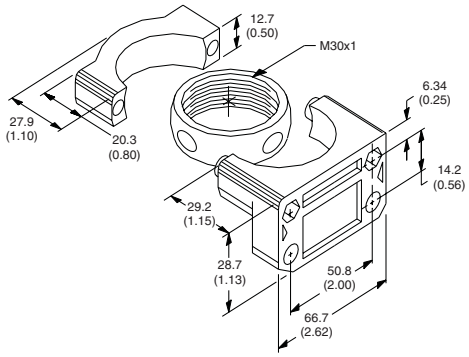

## XUZA218
Mounting bracket with adjustable ball-joint for XU● (Ø 18)



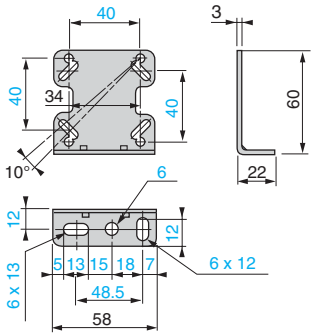

## XUZA50
Mounting bracket for XUM *(2)*



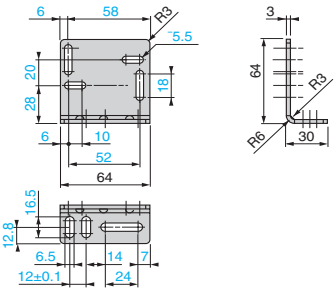

## XSZSB30
Mounting bracket for XUC *(2)*



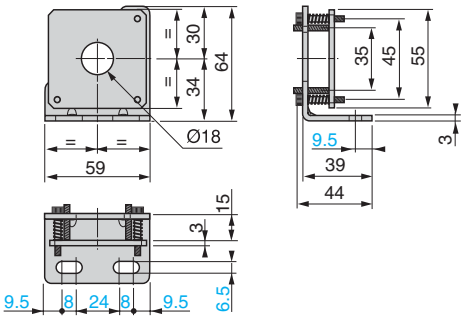

## XUZA51
Mounting bracket for XUK *(2)*



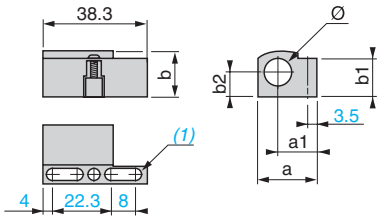

## XUZX2000
Mounting bracket for XUX *(2)*




## XUZA318
Mounting bracket with micrometric adjustment for XU2 (Ø 18) with laser transmission



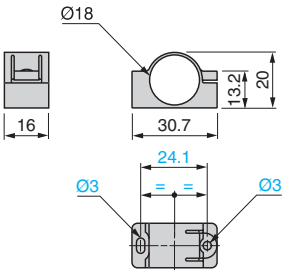

## XSZB108, XSZB118
Mounting clamps for XUA and XU● (Ø 18)




| XCZ | a | a1 | b | b1 | b2 | Ø |
|---|---|---|---|---|---|---|
| **B108** | 21.1 | 14.5 | 14.2 | 12.8 | 7.5 | 8 |
| **B118** | 26 | 15.7 | 22.3 | 20.1 | 11.5 | 18 |

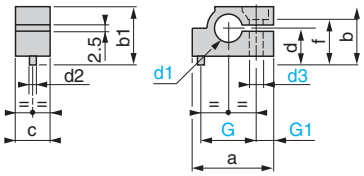
*(1) 2 elongated holes Ø 4 x 8.*

## XUZB2005
Mounting clamps with 24.1 mm centers for XU● (Ø 18)



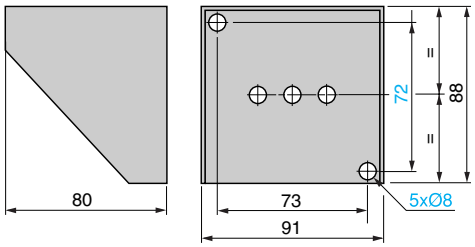

*(2) Accessory mounting screws included.*

## XSAZ1●●
Mounting clamps for XUA, XU● (Ø 18), XUF

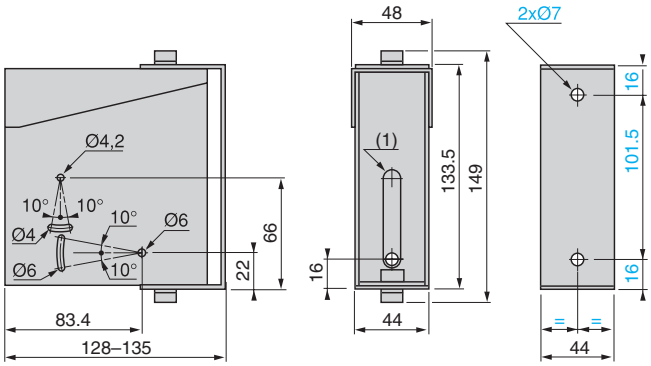



| XSA | a | b | b1 | c | d | Ød1 | Ød2 | Ød3 | f | G | G1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Z108** | 23.5 | 14.2 | 16.7 | 10 | 8 | 8.1 | 2 | 4 | 10.5 | 16 | 5 |
| **Z118** | 41 | 30 | 33 | 17 | 18 | 18.1 | 3.9 | 6 | 24 | 30 | 7 |
| **Z145** | 23.5 | 14.2 | 16.7 | 10 | 8 | 4.7 | 2 | 4 | 10.5 | 16 | 5 |
| **Z155** | 23.5 | 14.2 | 16.7 | 10 | 8 | 5.7 | 2 | 4 | 10.5 | 16 | 5 |
| **Z185** | 23.5 | 14.2 | 16.7 | 10 | 8 | 8.6 | 2 | 4 | 10.5 | 16 | 5 |

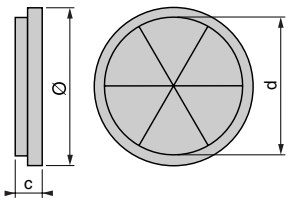
### XUZD15
Protective cover for XUZC80 or XUZC24




### XUZD25
Protective cover for XUX or XUJ

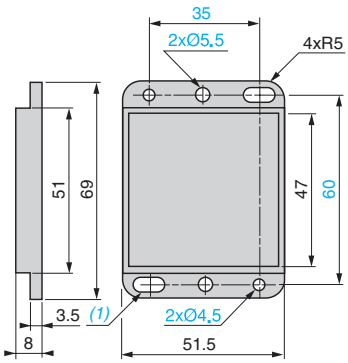



### XUZC●●



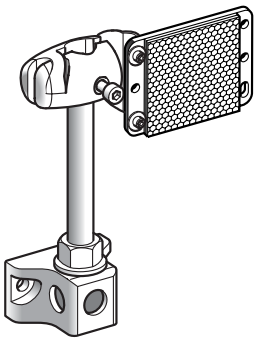

| XUZ | Ø | c | d |
|---|---|---|---|
| **C16** | 21 | 5.5 | 17 |
| **C21** | 25.5 | 6 | 20.5 |
| **C31** | 35 | 7.5 | 30.5 |
| **C39** | 46 | 6.5 | 37 |

### XUZC50

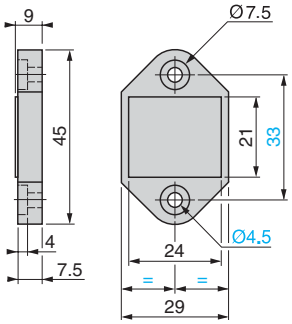



*(1) 2 elongated holes Ø 4.5 x 8*

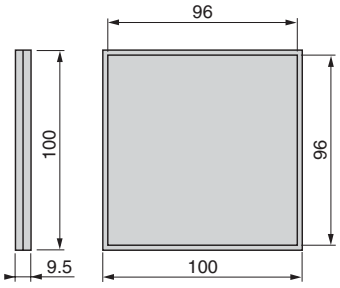
### XUZM2003 +XUZ2001 +XUZ2003 +XUZC50
Mounting example



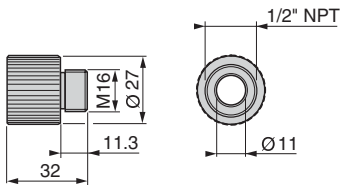
### XUZC24



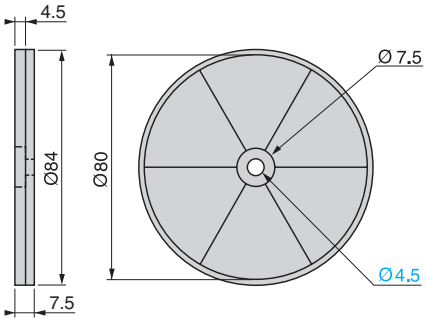

### XUZC100



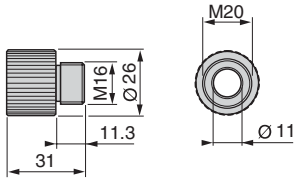

### XUZX2001




### XUZC80




### XUZX2002




5

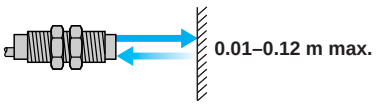
# OsiSense® XU Photoelectric sensors

## XUB0 Multimode function

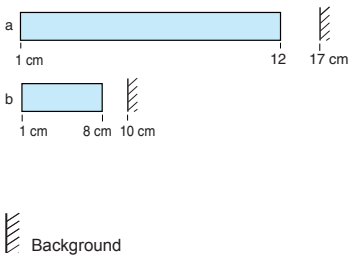
with line of sight along case axis

## Sensing distance and operating margin

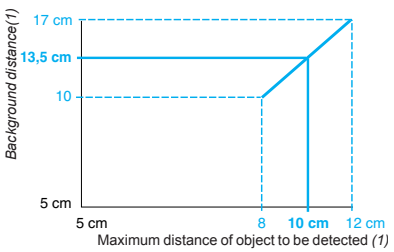
### Background suppression mode




Without accessory



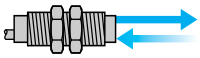

a: with background teaching at maximum recommended distance.
b: with background teaching at minimum recommended distance.



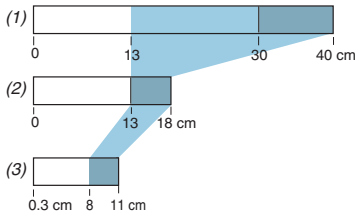

Example: teaching against a background located at 13.5 cm enables detection of an object at 1 to 10 cm.

*(1) From white 90% to black 6%.*

### Diffuse mode

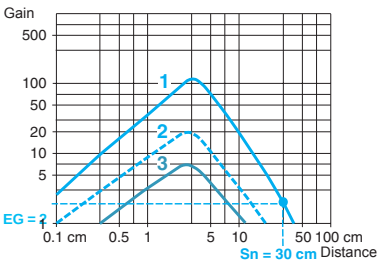



Without accessory




*(1) White 90%. (2) Gray 18%. (3) Black 6%.*

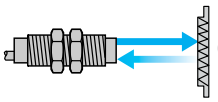
Object teaching zone



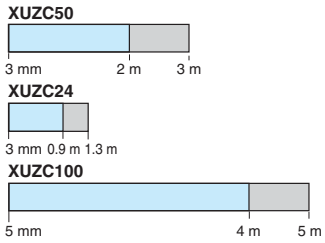

1 White object
2 Gray object
3 Black object

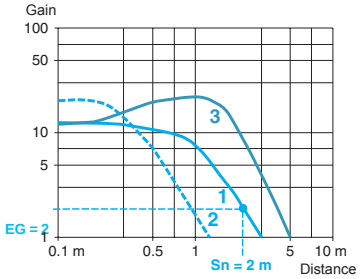
In diffuse mode, teaching of the position of the object to be detected, located between 0 and 12 cm, automatically configures the product to background suppression mode. This provides a constant usable sensing distance, whatever the color of the object.

### Polarized retroreflective mode



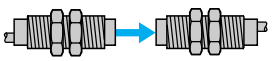

With reflector



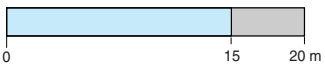



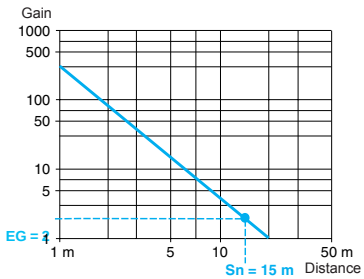

1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

### Thru-beam mode




With thru-beam accessory




Nominal sensing distance. EG ≥ 2.

Maximum sensing distance. The maximum sensing distances indicated are average values.

EG: Excess gain, operating margin.

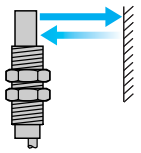
# OsiSense® XU Photoelectric sensors

## XUB0 Multimode function

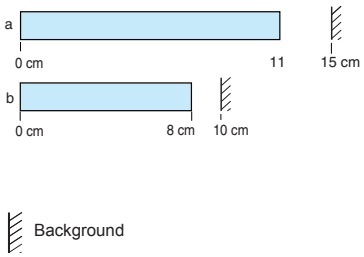
with line of sight 90° to case axis

## Sensing distance and operating margin

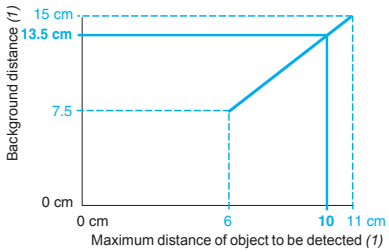
### Background suppression mode




Without accessory

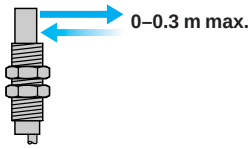



a: with background teaching at maximum recommended distance.
b: with background teaching at minimum recommended distance.

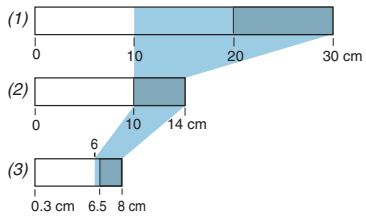



Example: teaching against a background located at 13.5 cm enables detection of an object at 0 to 10 cm.
*(1) From white 90% to black 6%.*

### Diffuse mode

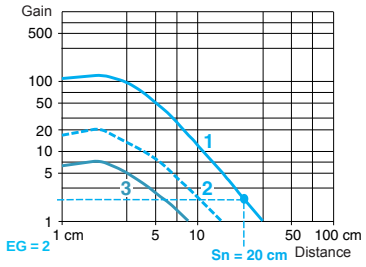



Without accessory




*(1) White 90%. (2) Gray 18%. (3) Black 6%.*

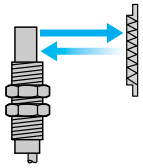
Object teaching zone



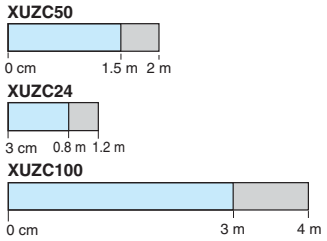

1 White object
2 Gray object
3 Black object

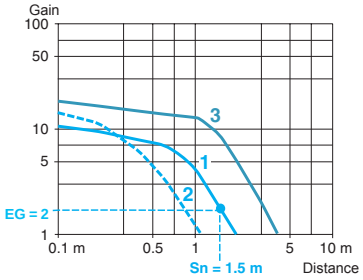
In diffuse mode, teaching of the position of the object to be detected, located between 0 and 11 cm, automatically configures the product to background suppression mode. This provides a constant usable sensing distance, whatever the color of the object.

### Polarized retroreflective mode



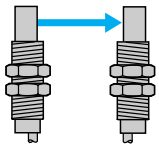

With reflector



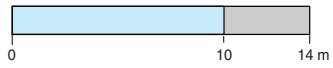



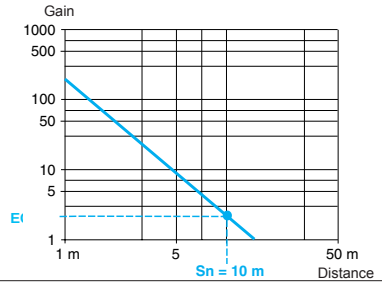

1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

### Thru-beam mode




With thru-beam accessory




Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.
EG: Excess gain, operating margin.

5

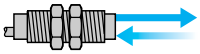
# OsiSense® XU Photoelectric Sensors

## Single mode function

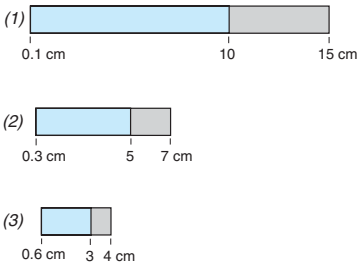
**XUB●●●●●** with line of sight along or at 90° to case axis

## Sensing distance and operating margin

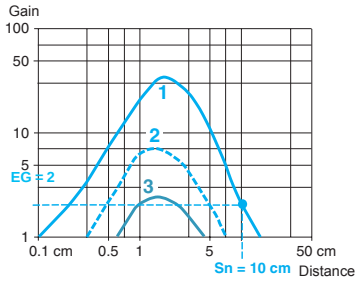
### Diffuse sensor XUB4●●●●●●● with line of sight along case axis



**0.001–0.15 m max.**

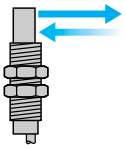



*(1) White 90%. (2) Gray 18%. (3) Black 6%.*

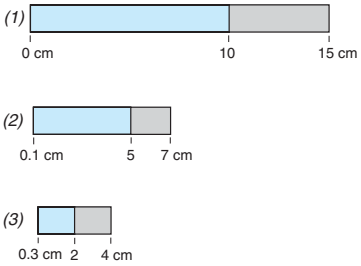



**1** White object
**2** Gray object
**3** Black object

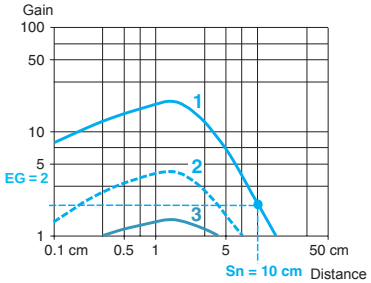
### Diffuse sensor XUB4●●●●●●● with line of sight 90° to case axis



**0–0.15 m max.**

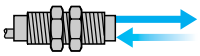



*(1) White 90%. (2) Gray 18%. (3) Black 6%.*

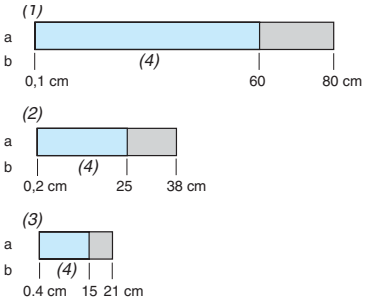



**1** White object
**2** Gray object
**3** Black object

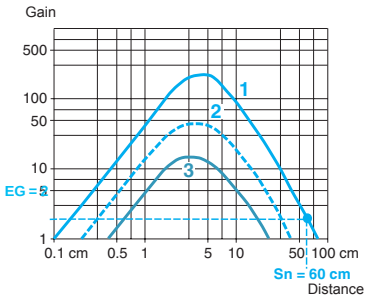
### Diffuse sensor XUB5●●●●●●● with line of sight along or at 90° to case axis



**0.001–0.8 m max.**




*(1) White 90%. (2) Gray 18%. (3) Black 6%.*
*(4) No detection.*




**1** White object
**2** Gray object
**3** Black object

Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

EG: Excess gain, operating margin.
a: Potentiometer set at maximum.
b: Potentiometer set at minimum.

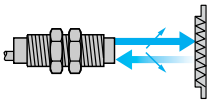
# OsiSense® XU Photoelectric Sensors

## Single mode function

**XUB●●●●●** with line of sight along or at 90° to case axis

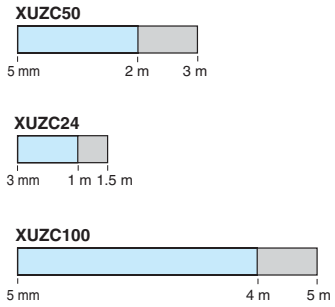
## Sensing distance and operating margin

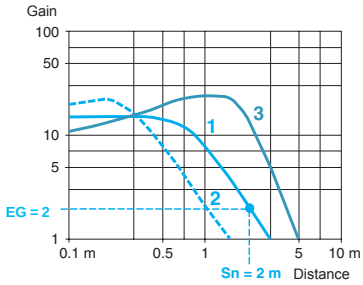
### Polarized retroreflective sensor XUB9●●●●●●● with line of sight along or at 90° to case axis



**0.003–5 m max.**

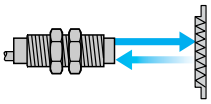
**With reflector**



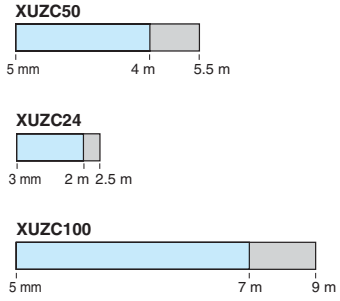

1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

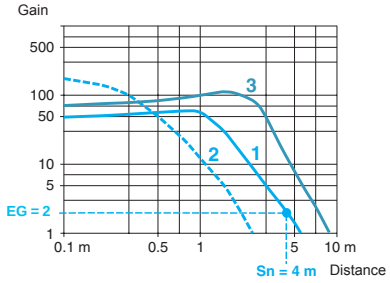
### Retroreflective sensor XUB1●●●●●●● with line of sight along or at 90° to case axis



**0.003–9 m max.**

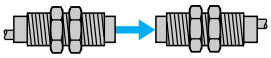
**With reflector**



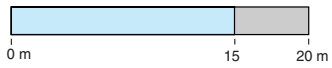



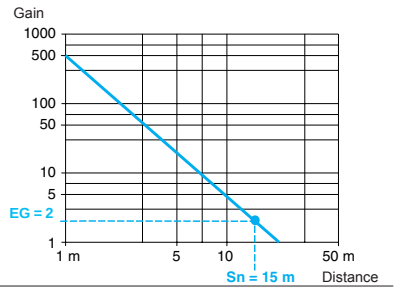

1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

### Thru-beam sensor XUB2●●●●●●● with line of sight along or at 90° to case axis



**0–20 m max.**




**With thru-beam accessory**

Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

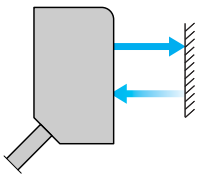
EG: Excess gain, operating margin.

5

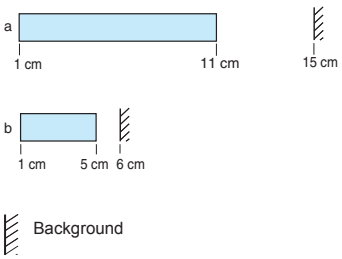
# OsiSense® XU Photoelectric sensors
**XUM0** multimode function

## Sensing distance and operating margin

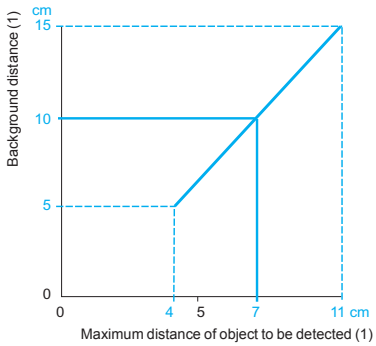
### Background suppression mode




**Without accessory**



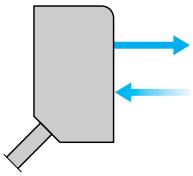

a: with background teaching at maximum recommended distance.
b: with background teaching at minimum recommended distance.



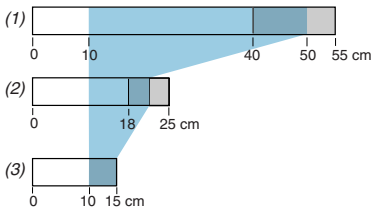

Example: teaching against a background located at 10 cm enables detection of an object at 1 to 7 cm.

*(1) From white 90% to black 6%.*

### Diffuse mode

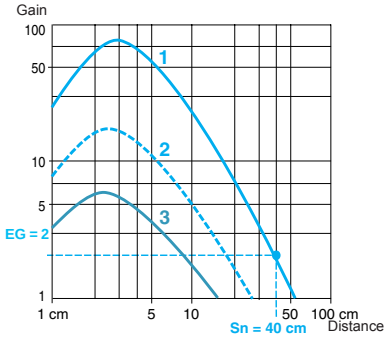



**Without accessory**




*(1) White 90%. (2) Gray 18%. (3) Black 6%.*

Object teaching zone




1 White object
2 Gray object
3 Black object

In diffuse mode, teaching of the position of the object to be detected, located between 0 and 10 cm, automatically configures the product to background suppression mode. This provides a constant usable sensing distance, whatever the color of the object.

Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

EG: Excess gain, operating margin.

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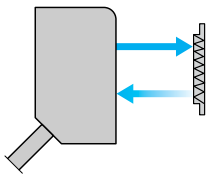
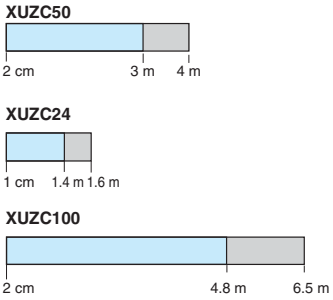
## Sensing distance and operating margin *(continued)*

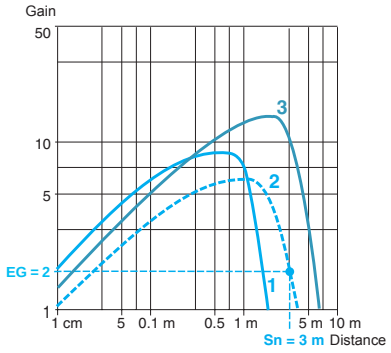
### Polarized retroreflective mode



**0.02–6.5 m max.**

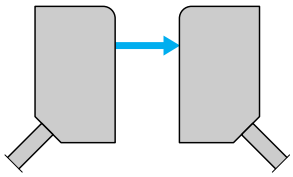
**With reflector**



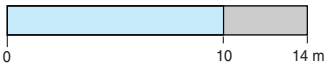

1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

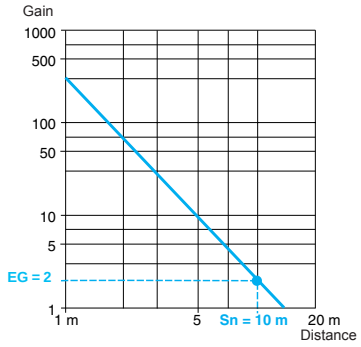
### Thru-beam mode



**0–14 m max.**

**With thru-beam accessory**




Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

EG: Excess gain, operating margin.

5

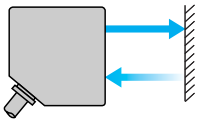
# OsiSense® XU Photoelectric sensors

Multimode function

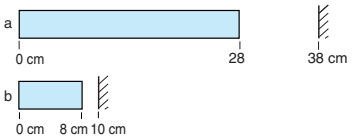
**XUK0**

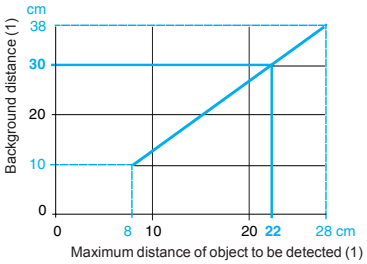
## Sensing distance and operating margin

### Background suppression mode



**0–28 cm max.**




**Without accessory**

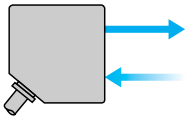
Background

a: with background teaching at maximum recommended distance.
b: with background teaching at minimum recommended distance.

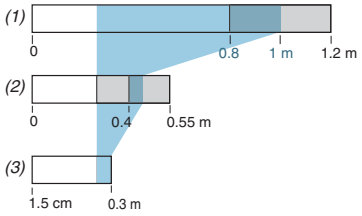
Example: teaching against a background located at 30 cm enables detection of an object at 0 to 22 cm.

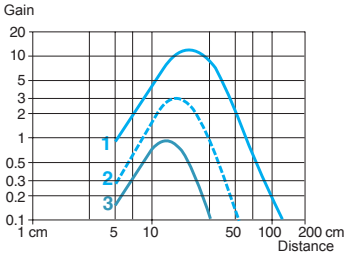
*(1) From white 90% to black 6%.*

### Diffuse mode



**0–1.2 m max.**




**Without accessory**

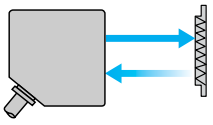
*(1) White 90%. (2) Gray 18%. (3) Black 6%.*

Object teaching zone

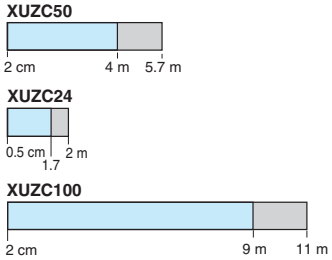
1 White object
2 Gray object
3 Black object

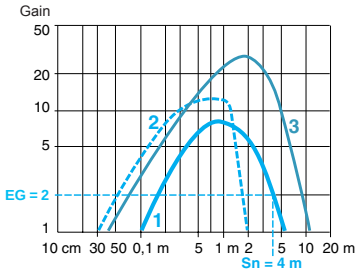
In diffuse mode, teaching of the position of the object to be detected, located between 0 and 0.3 m, automatically configures the product to background suppression mode. This provides a constant usable sensing distance, whatever the color of the object.

### Polarized retroreflective mode



**0.02–11 m max.**

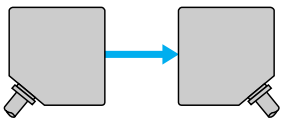


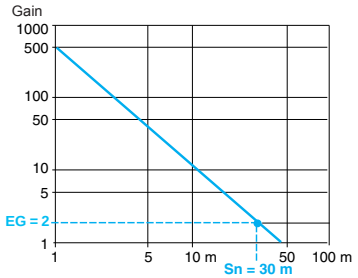

**With reflector**

1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

### Thru-beam mode



**0–45 m max.**


**With thru-beam accessory**

Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.
EG: Excess gain, operating margin.

5

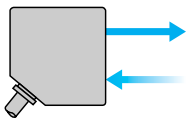
# OsiSense® XU Photoelectric sensors

Multimode function

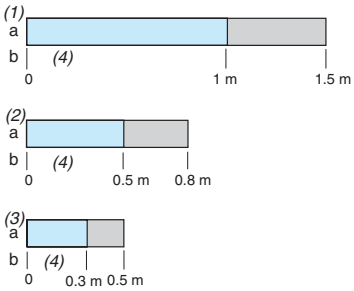
**XUK●A●●●**

## Sensing distance and operating margin

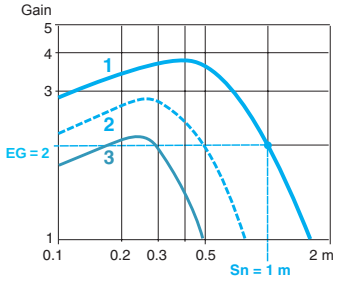
### Diffuse sensor XUK5A●●●




Without accessory

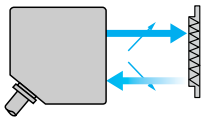



*(1) White 90%. (2) Gray 18%. (3) Black 6%.*
*(4) No detection.*

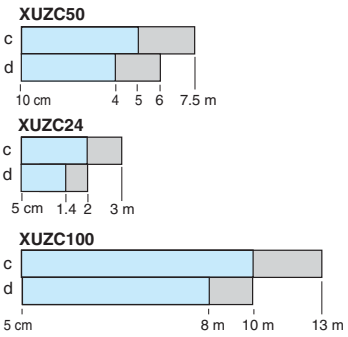


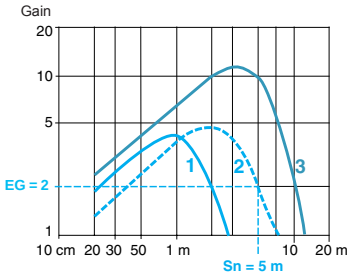

1 White object
2 Gray object
3 Black object

### Polarized retroreflective sensor XUK9A●●●



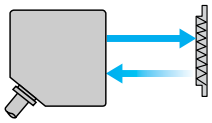

With reflector



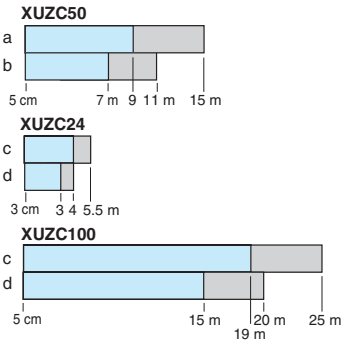



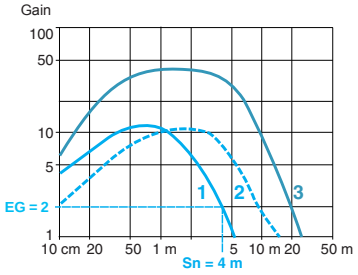

1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

### Retroreflective sensor XUK1A●●●



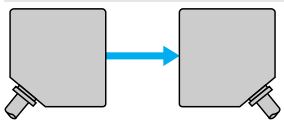

With reflector



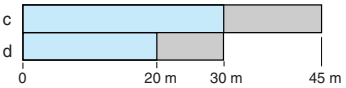



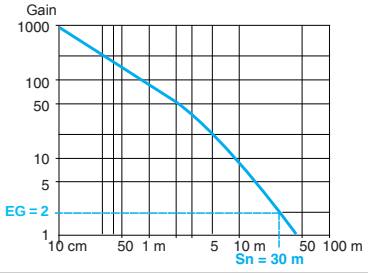

1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

### Thru-beam sensor XUK2A●●●




With thru-beam accessory




Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

a: Potentiometer set at maximum.
b: Potentiometer set at minimum.
EG: Excess gain, operating margin.

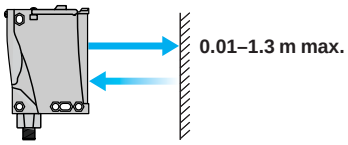
c: XUK●AP●●●● or XUK●AN●●●●, DC solid-state output version.
d: XUK●AR●●●●, AC/DC relay output version.

5

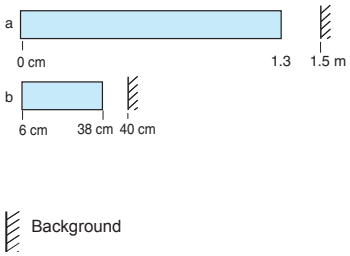
# OsiSense® XU Photoelectric sensors
Multimode function
**XUX0**

## Sensing distance and operating margin

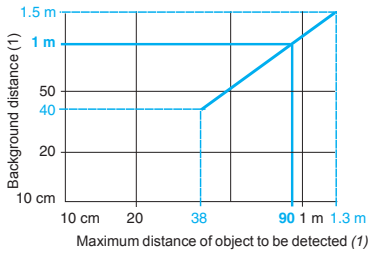
### Background suppression mode




**Without accessory**



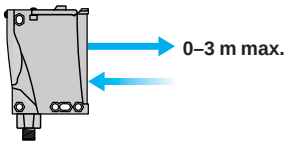

a: with background teaching at maximum recommended distance.
b: with background teaching at minimum recommended distance.



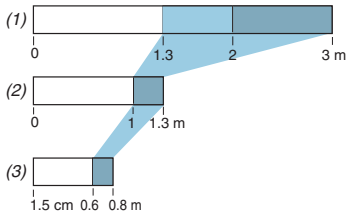

Example: teaching against a background located at 1 m enables detection of an object at 0 to 90 cm.

*(1) From white 90% to black 6%.*

### Diffuse mode

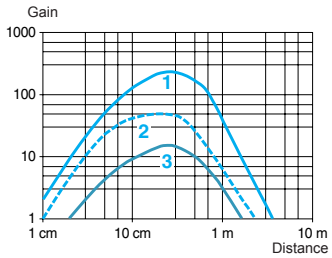



**Without accessory**




*(1) White 90%. (2) Gray 18%. (3) Black 6%.*

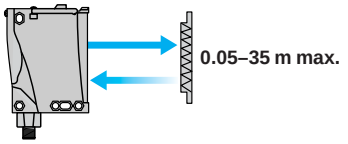
Object teaching zone



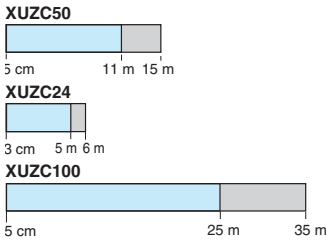

1 White object
2 Gray object
3 Black object

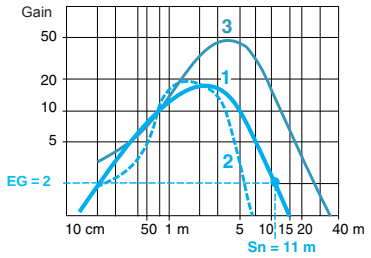
In diffuse mode, teaching of the position of the object to be detected, located between 0 and 1.3 m, automatically configures the product to background suppression mode. This provides a constant usable sensing distance, whatever the color of the object.

### Polarized retroreflective mode



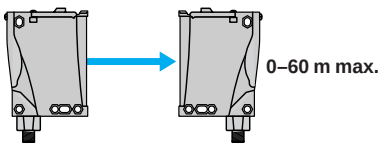

**With reflector**



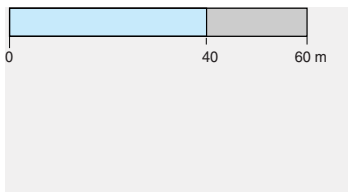



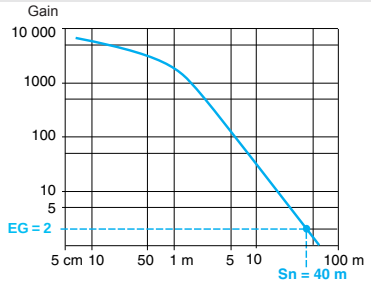

1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

### Thru-beam mode




**With thru-beam accessory**




Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

EG: Excess gain, operating margin.

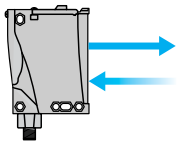
# OsiSense® XU Photoelectric sensors

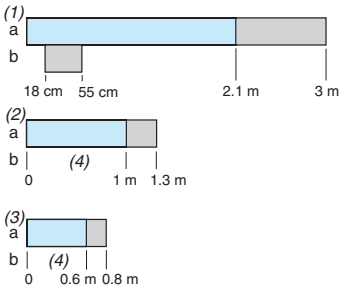
## Single mode function

## XUX●A●●●

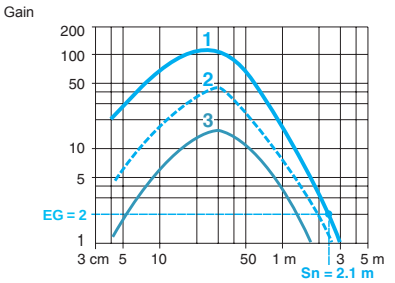
### Sensing distance and operating margin

**Diffuse sensor XUX5A●●●●●●**



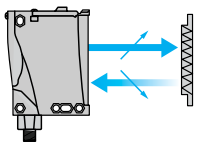




*(1) White 90%. (2) Gray 18%. (3) Black 6%.*
*(4) No detection.*

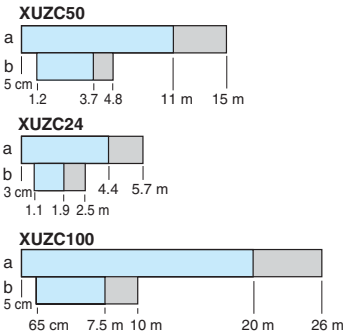


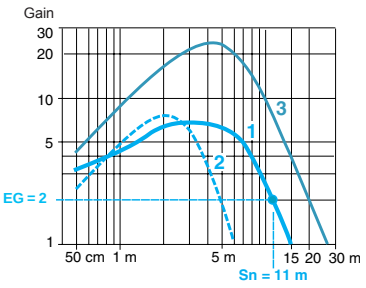

1 White object
2 Gray object
3 Black object

**Polarized retroreflective sensor XUX9A●●●●●●**



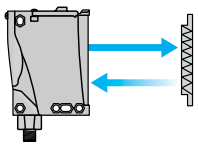

**With reflector**



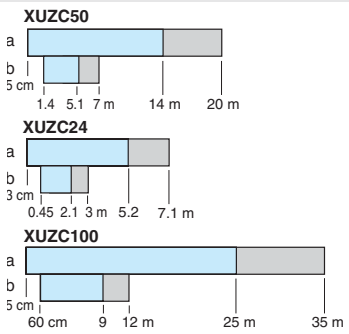



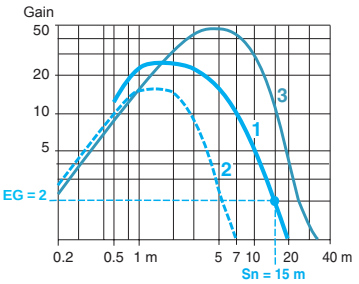

1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

**Retroreflective sensor XUX1A●●●●●●**



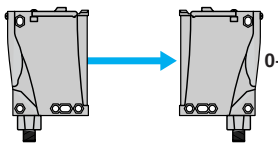

**With reflector**



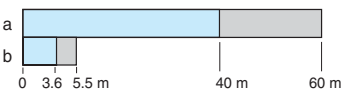



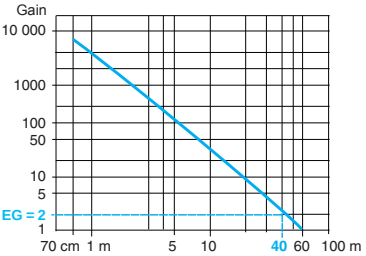

1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

**Thru-beam sensor XUX2A●●●●●●**




**With thru-beam accessory**




Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

a: Potentiometer set at maximum.
b: Potentiometer set at minimum.

EG: Excess gain, operating margin.

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# OsiSense® XU Photoelectric sensors

| Old sensor | New OsiSense® XU sensor |
|---|---|
| **Diameter 18 mm sensors** | |
| XU1B18NP340 | **XUB0ANSNL2+XUZC50** *(1)* |
| XU1B18NP340D | **XUB0ANSNM12+XUZC50** *(1)* |
| XU1B18PP340 | **XUB0APSNL2+XUZC50** *(1)* |
| XU1B18PP340D | **XUB0APSNM12+XUZC50** *(1)* |
| XU1N18NP340 | **XUB1BNANL2+XUZC50** *(2)* |
| | **XUB1BNBNL2+XUZC50** *(3)* |
| XU1N18NP340D | **XUB1BNANM12+XUZC50** *(2)* |
| | **XUB1BNBNM12+XUZC50** *(3)* |
| XU1N18NP340L5 | **XUB1BNANL5+XUZC50** *(2)* |
| | **XUB1BNBNL5+XUZC50** *(3)* |
| XU1N18NP340W | **XUB1BNAWL2+XUZC50** *(2)* |
| | **XUB1BNBWL2+XUZC50** *(3)* |
| XU1N18NP340WD | **XUB1BNAWM12+XUZC50** *(2)* |
| | **XUB1BNBWM12+XUZC50** *(3)* |
| XU1N18PP340 | **XUB1BPANL2+XUZC50** *(4)* |
| | **XUB1BPBNL2+XUZC50** *(5)* |
| XU1N18PP340D | **XUB1BPANM12+XUZC50** *(4)* |
| | **XUB1BPBNM12+XUZC50** *(5)* |
| XU1N18PP340L5 | **XUB1BPANL5+XUZC50** *(4)* |
| | **XUB1BPBNL5+XUZC50** *(5)* |
| XU1N18PP340W | **XUB1BPAWL2+XUZC50** *(4)* |
| | **XUB1BPBWL2+XUZC50** *(5)* |
| XU1N18PP340WD | **XUB1BPAWM12+XUZC50** *(4)* |
| | **XUB1BPBWM12+XUZC50** *(5)* |
| XU1N18PP340WL5 | **XUB1BPAWL5+XUZC50** *(4)* |
| | **XUB1BPBWL5+XUZC50** *(5)* |
| XU1P18NP340 | **XUB1ANANL2+XUZC50** *(2)* |
| | **XUB1ANBNL2+XUZC50** *(3)* |
| XU1P18NP340D | **XUB1ANANM12+XUZC50** *(2)* |
| | **XUB1ANBNM12+XUZC50** *(3)* |
| XU1P18NP340L5 | **XUB1ANANL5+XUZC50** *(2)* |
| | **XUB1ANBNL5+XUZC50** *(3)* |
| XU1P18NP340W | **XUB1ANAWL2+XUZC50** *(2)* |
| | **XUB1ANBWL2+XUZC50** *(3)* |
| XU1P18NP340WD | **XUB1ANAWM12+XUZC50** *(2)* |
| | **XUB1ANBWM12+XUZC50** *(3)* |
| XU1P18PP340 | **XUB1APANL2+XUZC50** *(4)* |
| | **XUB1APBNL2+XUZC50** *(5)* |
| XU1P18PP340D | **XUB1APANM12+XUZC50** *(4)* |
| | **XUB1APBNM12+XUZC50** *(5)* |
| XU1P18PP340L5 | **XUB1APANL5+XUZC50** *(4)* |
| | **XUB1APBNL5+XUZC50** *(5)* |
| XU1P18PP340W | **XUB1APAWL2+XUZC50** *(4)* |
| | **XUB1APBWL2+XUZC50** *(5)* |
| XU1P18PP340WD | **XUB1APAWM12+XUZC50** *(4)* |
| | **XUB1APBWM12+XUZC50** *(5)* |
| XU1P18PP340WL5 | **XUB1APAWL5+XUZC50** *(4)* |
| | **XUB1APBWL5+XUZC50** *(5)* |
| XU2B18NP340 | **XUB0ANSNL2 +XUB0AKSNL2T** |
| XU2B18NP340D | **XUB0ANSNM12 +XUB0AKSNM12T** |
| XU2B18PP340 | **XUB0APSNL2 +XUB0AKSNL2T** |
| XU2B18PP340D | **XUB0APSNM12 +XUB0AKSNM12T** |
| XU2M18NP340 | **XUB0BNSNL2 +XUB0BKSNL2T** *(6)* |
| XU2M18NP340D | **XUB0BNSNM12 +XUB0BKSNM12T** *(6)* |
| XU2M18NP340WD | **XUB2BNAWM12R +XUB2BKSWM12T** *(2) (6)* |
| | **XUB2BNBWM12R +XUB2BKSWM12T** *(3) (6)* |
| XU2M18PP340 | **XUB0BPSNL2 +XUB0BKSNL2T** *(6)* |
| XU2M18PP340D | **XUB0BPSNM12 +XUB0BKSNM12T** *(6)* |
| XU2M18PP340L10 | **XUB0BPSNM12 +XUB0BKSNM12T +XZCP1141L10 (6)** *(7)* |
| XU2M18PP340L5 | **XUB0BPSNL5 +XUB0BKSNL5T** *(6)* |
| XU2M18PP340W | **XUB2BPAWL2R +XUB2BKSWL2T** *(4) (6)* |
| | **XUB2BPBWL2R +XUB2BKSWL2T** *(5) (6)* |
| XU2M18PP340WD | **XUB2BPAWM12R +XUB2BKSWM12T** *(4) (6)* |
| | **XUB2BPBWM12R +XUB2BKSWM12T (**5*) (6)* |
| XU2M18PP340WL5 | **XUB2BPAWL5R +XUB2BKSWL5T** *(4) (6)* |
| | **XUB2BPBWL5R +XUB2BKSWL5T** *(5) (6)* |
| XU2N18NP340 | **XUB2BNANL2R +XUB2BKSNL2T** *(2)* |
| | **XUB2BNBNL2R +XUB2BKSNL2T** *(3)* |
| XU2N18NP340D | **XUB2BNANM12R +XUB2BKSNM12T** *(2)* |
| | **XUB2BNBNM12R +XUB2BKSNM12T** *(3)* |
| XU2N18NP340WD | **XUB2BNAWM12R +XUB2BKSWM12T** *(2)* |
| | **XUB2BNBWM12R +XUB2BKSWM12T** *(3)* |
| XU2N18PP340 | **XUB2BPANL2R +XUB2BKSNL2T** *(4)* |
| | **XUB2BPBNL2R +XUB2BKSNL2T** *(5)* |
| XU2N18PP340D | **XUB2BPANM12R +XUB2BKSNM12T** *(4)* |
| | **XUB2BPBNM12R +XUB2BKSNM12T** *(5)* |
| XU2N18PP340L5 | **XUB2BPANL5R +XUB2BKSNL5T** *(4)* |
| | **XUB2BPBNL5R +XUB2BKSNL5T** *(5)* |
| XU2N18PP340W | **XUB2BPAWL2R +XUB2BKSWL2T** *(4)* |
| | **XUB2BPBWL2R +XUB2BKSWL2T** *(5)* |
| XU2N18PP340WD | **XUB2BPAWM12R +XUB2BKAWM12T** *(4)* |
| | **XUB2BPBWM12R +XUB2BKAWM12T** *(5)* |
| XU2N18PP340WL5 | **XUB2BPAWL5R +XUB2BKSWL5T** *(4)* |
| | **XUB2BPBWL5R +XUB2BKSWL5T** *(5)* |
| XU2P18NP340 | **XUB2ANANL2R +XUB2AKSNL2T** *(2)* |
| | **XUB2ANBNL2R +XUB2AKSNL2T** *(3)* |
| XU2P18NP340D | **XUB2ANANM12R +XUB2AKSNM12T** *(2)* |
| | **XUB2ANBNM12R +XUB2AKSNM12T** *(3)* |
| XU2P18NP340W | **XUB2ANAWL2R +XUB2AKSWL2T** *(2)* |
| | **XUB2ANBWL2R +XUB2AKSWL2T** *(3)* |
| XU2P18NP340WD | **XUB2ANAWM12R +XUB2AKSWM12T** *(2)* |
| | **XUB2ANBWM12R +XUB2AKSWM12T** *(3)* |
| XU2P18PP340 | **XUB2APANL2R +XUB2AKSNL2T** *(4)* |
| | **XUB2APBNL2R +XUB2AKSNL2T** *(5)* |
| XU2P18PP340D | **XUB2APANM12R +XUB2AKSNM12T** *(4)* |
| | **XUB2APBNM12R +XUB2AKSNM12T** *(5)* |
| XU2P18PP340L10 | **XUB0APSNM12 +XUB0AKSNM12T +XZCP1141L10** *(6) (7)* |
| XU2P18PP340L5 | **XUB2APANL5R +XUB2AKSNL5T** *(4)* |
| | **XUB2APBNL5R +XUB2AKSNL5T** *(5)* |
| XU2P18PP340W | **XUB2APAWL2R +XUB2AKSWL2T** *(4)* |
| | **XUB2APBWL2R +XUB2AKSWL2T** *(5)* |
| XU2P18PP340WD | **XUB2APAWM12R +XUB2AKSWM12T** *(4)* |
| | **XUB2APBWM12R +XUB2AKSWM12T** *(5)* |
| XU5B18NP340 | **XUB0ANSNL2** *(8)* |
| XU5B18NP340D | **XUB0ANSNM12** *(8)* |
| XU5B18PP340 | **XUB0APSNL2** *(8)* |
| XU5B18PP340D | **XUB0APSNM12** *(8)* |
| XU5B18PP340L5 | **XUB0APSNL5** *(8)* |
| XU5M18NP340 | **XUB0BNSNL2** *(8)* |
| XU5M18NP340D | **XUB0BNSNM12** *(8)* |
| XU5M18NP340L5 | **XUB0BNSNL5** *(8)* |
| XU5M18NP340W | **XUB5BNAWL2** *(2)* |
| | **XUB5BNBWL2** *(3)* |
| XU5M18NP340WL5 | **XUB5BNAWL5** *(2)* |
| | **XUB5BNBWL5** *(3)* |
| XU5M18PP340 | **XUB0BPSNL2** *(8)* |
| XU5M18PP340D | **XUB0BPSNM12** *(8)* |

**Note: XUZC50 is a 50 x 50 mm reflector, XUZA5● and XUZX2000 are metal mounting brackets and XUZX2001 is an M16 to 1/2 NPT adapter.**

*(1) Sn = 2 m instead of 4 m.*
*(2) Sensor output NO, PNP connection.*
*(3) Sensor output NC, NPN connection.*
*(4) Sensor output NO, PNP connection.*
*(5) Sensor output NC, PNP connection.*
*(6) M18 threaded length = 44 mm instead of 50/55 mm.*
*(7) For a cable length = 10 m, the use of an M12 connector version sensor combined with an XZCP1141L10 jumper cable (M12 with 10 m cable) is recommended.*
*(8) Sn = 0.3 m instead of 0.4 m. For a sensing distance Sn greater than 0.3 m, see catalog number XUB5●●●●●● on page*

# OsiSense® XU Photoelectric sensors

| Old sensor | New OsiSense® XU sensor |
|---|---|
| **Diameter 18 mm sensors** *(continued)* | |
| *XU5M18PP340L5* | **XUB0BPSNL5** *(8)* |
| *XU5M18PP340W* | **XUB5BPAWL2** *(4)* |
| | **XUB5BPBWL2** *(5)* |
| *XU5M18PP340WD* | **XUB5BPAWM12** *(4)* |
| | **XUB5BPBWM12** *(5)* |
| *XU5M18PP340WL5* | **XUB5BPAWL5** *(4)* |
| | **XUB5BPBWL5** *(5)* |
| *XU5N18NP340* | **XUB4BNANL2** *(2)* |
| | **XUB4BNBNL2** *(3)* |
| *XU5N18NP340D* | **XUB4BNANM12** *(2)* |
| | **XUB4BNBNM12** *(3)* |
| *XU5N18NP340L5* | **XUB4BNANL5** *(2)* |
| | **XUB4BNBNL5** *(3)* |
| *XU5N18NP340W* | **XUB4BNAWL2** *(2)* |
| | **XUB4BNBWL2** *(3)* |
| *XU5N18NP340WD* | **XUB4BNAWM12** *(2)* |
| | **XUB4BNBWM12** *(3)* |
| *XU5N18NP340WL5* | **XUB4BNANL5** *(2)* |
| | **XUB4BNBNL5** *(3)* |
| *XU5N18PP340* | **XUB4BPANL2** *(4)* |
| | **XUB4BPBNL2** *(5)* |
| *XU5N18PP340D* | **XUB4BPANM12** *(4)* |
| | **XUB4BPBNM12** *(5)* |
| *XU5N18PP340L5* | **XUB4BPANL5** *(4)* |
| | **XUB4BPBNL5** *(5)* |
| *XU5N18PP340W* | **XUB4BPAWL2** *(4)* |
| | **XUB4BPBWL2** *(5)* |
| *XU5N18PP340WD* | **XUB4BPAWM12** *(4)* |
| | **XUB4BPBWM12** *(5)* |
| *XU5N18PP340WL5* | **XUB4BPANL5** *(4)* |
| | **XUB4BPBNL5** *(5)* |
| *XU5P18NP340* | **XUB4ANANL2** *(2)* |
| | **XUB4ANBNL2** *(3)* |
| *XU5P18NP340D* | **XUB4ANANM12** *(2)* |
| | **XUB4ANBNM12** *(3)* |
| *XU5P18NP340L5* | **XUB4ANANL5** *(2)* |
| | **XUB4ANBNL5** *(3)* |
| *XU5P18NP340W* | **XUB4ANAWL2** *(2)* |
| | **XUB4ANBWL2** *(3)* |
| *XU5P18NP340WD* | **XUB4ANAWM12** *(2)* |
| | **XUB4ANBWM12** *(3)* |
| *XU5P18PP340* | **XUB4APANL2** *(2)* |
| | **XUB4APBNL2** *(3)* |
| *XU5P18PP340D* | **XUB4APANM12** *(2)* |
| | **XUB4APBNM12** *(3)* |
| *XU5P18PP340L10* | **XUB4APANM12 +XZCP1141L10** *(4) (7)* |
| | **XUB4APBNM12 +XZCP1141L10** *(5) (7)* |
| *XU5P18PP340L5* | **XUB4APANL5** *(4)* |
| | **XUB4APBNL5** *(5)* |
| *XU5P18PP340W* | **XUB4APAWL2** *(4)* |
| | **XUB4APBWL2** *(5)* |
| *XU5P18PP340WD* | **XUB4APAWM12** *(4)* |
| | **XUB4APBWM12** *(5)* |
| *XU5P18PP340WL5* | **XUB4APAWL5** *(4)* |
| | **XUB4APBWL5** *(5)* |
| *XU8B18NP340* | **XUB0ANSNL2** |
| *XU8B18NP340D* | **XUB0ANSNM12** |
| *XU8B18PP340* | **XUB0APSNL2** |
| *XU8B18PP340D* | **XUB0APSNM12** |
| *XU8B18PP340L10* | **XUB0APSNM12 +XZCP1141L10** *(7)* |
| *XU8M18NP340* | **XUB0BNSNL2** *(6)* |
| *XU8M18NP340D* | **XUB0BNSNM12** *(6)* |
| *XU8M18NP340L5* | **XUB0BNSNL5** *(6)* |
| *XU8M18NP340W* | **XUB0BNSWL2** *(6)* |
| *XU8M18NP340WD* | **XUB0BNSWM12** *(6)* |
| *XU8M18PP340* | **XUB0BPSNL2** *(6)* |
| *XU8M18PP340D* | **XUB0BPSNM12** *(6)* |
| *XU8M18PP340L5* | **XUB0BPSNL5** *(6)* |
| *XU8M18PP340W* | **XUB0BPSWL2** *(6)* |
| *XU8M18PP340WD* | **XUB0BPSWM12** *(6)* |
| *XU9B18NP340* | **XUB0ANSNL2+XUZC50** |
| *XU9B18NP340D* | **XUB0ANSNM12+XUZC50** |
| *XU9B18PP340* | **XUB0APSNL2+XUZC50** |
| *XU9B18PP340D* | **XUB0APSNM12+XUZC50** |
| *XU9B18PP340L5* | **XUB0APSNL5+XUZC50** |
| *XU9M18NP340* | **XUB0BNSNL2+XUZC50** *(6)* |
| *XU9M18NP340D* | **XUB0BNSNM12+XUZC50** *(6)* |
| *XU9M18NP340L5* | **XUB0BNSNL5+XUZC50** *(6)* |
| *XU9M18NP340W* | **XUB9BNAWL2+XUZC50** *(2) (9)* |
| | **XUB9BNBWL2+XUZC50** *(3) (9)* |
| *XU9M18PP340* | **XUB0BPSNL2+XUZC50** *(6)* |
| *XU9M18PP340D* | **XUB0BPSNM12+XUZC50** *(6)* |
| *XU9M18PP340L5* | **XUB0BPSNL5+XUZC50** *(6)* |
| *XU9M18PP340W* | **XUB9BPAWL2+XUZC50** *(4) (9)* |
| | **XUB9BPBWL2+XUZC50** *(5) (9)* |
| *XU9M18PP340WD* | **XUB9BPAWM12+XUZC50** *(4) (9)* |
| | **XUB9BPBWM12+XUZC50** *(5) (9)* |
| *XU9M18PP340WL5* | **XUB9BPAWL5+XUZC50** *(4) (9)* |
| | **XUB9BPBWL5+XUZC50** *(5) (9)* |
| *XU9N18NP340* | **XUB0BNSNL2+XUZC50** *(6)* |
| *XU9N18NP340D* | **XUB0BNSNM12+XUZC50** *(6)* |
| *XU9N18NP340L5* | **XUB0BNSNL5+XUZC50** *(6)* |
| *XU9N18NP340W* | **XUB0BNSWL2+XUZC50** *(6)* |
| *XU9N18NP340WD* | **XUB0BNSWM12+XUZC50** *(6)* |
| *XU9N18PP340* | **XUB0BPSNL2+XUZC50** *(6)* |
| *XU9N18PP340D* | **XUB0BPSNM12+XUZC50** *(6)* |
| *XU9N18PP340L5* | **XUB0BPSNL5+XUZC50** *(6)* |
| *XU9N18PP340W* | **XUB0BPSWL2+XUZC50** *(6)* |
| *XU9N18PP340WD* | **XUB0BPSWM12+XUZC50** *(6)* |
| *XU9N18PP340WL5* | **XUB0BPSWL5+XUZC50** *(6)* |
| *XU9P18NP340* | **XUB0ANSNL2+XUZC50** *(6)* |
| *XU9P18NP340D* | **XUB0ANSNM12+XUZC50** *(6)* |
| *XU9P18NP340L5* | **XUB0ANSNL5+XUZC50** *(6)* |
| *XU9P18NP340W* | **XUB0ANSWL2+XUZC50** *(6)* |
| *XU9P18NP340WD* | **XUB0ANSWM12+XUZC50** *(6)* |
| *XU9P18PP340* | **XUB0APSNL2+XUZC50** *(6)* |
| *XU9P18PP340D* | **XUB0APSNM12+XUZC50** *(6)* |
| *XU9P18PP340W* | **XUB0APSWL2+XUZC50** *(6)* |
| *XU9P18PP340WD* | **XUB0APSWM12+XUZC50** *(6)* |
| *XU9P18PP340WL5* | **XUB0APSWL5+XUZC50** *(6)* |
| **Amplifiers for fiber optics** | |
| *XUDH003537* | **XUDA1PSML2** |
| *XUDH003537S* | **XUDA1PSMM8** |
| *XUDH003937* | **XUDA2PSML2** |
| *XUDH003937S* | **XUDA2PSMM8** |
| *XUDJ003537* | **XUDA1NSML2** |
| *XUDJ003537S* | **XUDA1NSMM8** |
| *XUDJ003937* | **XUDA2NSML2** |
| *XUDJ003937S* | **XUDA2NSMM8** |
| **Compact design sensors type XUE** | |
| *XUEF010315* | **XUX0ARCTT16+XUZX2000** *(10)* |
| *XUEF010315H7* | **XUX0ARCTT16 +XUZX2000+XUZX2001** |
| *XUEF080319* | **XUX0ARCTT16+XUZX2000 +XUZC50** *(10)* |
| *XUEF080319H4* | **XUX0ARCTT16 +XUZX2000 +XUZX2001+XUZC50** |
| *XUEF10031* | **XUX0ARCTT16+XUZX2000 +XUZC50 (10)** *(11)* |
| *XUEF10031H7* | **XUX0ARCTT16 +XUZX2000 +XUZX2001+XUZC50** *(11)* |
| *XUEF300314* | **XUX0ARCTT16+XUZX2000** *(10) (12)* |
| *XUEF300314H7* | **XUX0ARCTT16+XUZX2000 +XUZX2001** *(12)* |
| *XUEH017535* | **XUX0AKSAT16+XUZX2000** *(10) (13)* |
| *XUEH017535H7* | **XUX0AKSAT16+XUZX2000 +XUZX2001** *(13)* |
| *XUEH10753* | **XUX0AKSAT16+XUZX2000** *(10) (13)* |
| *XUEH10753H7* | **XUX0AKSAT16+XUZX2000 +XUZX2001** *(13)* |
| *XUEH3000* | **XUX0ARCTT16T+XUZX2000** *(10) (12)* |
| *XUEH3000H7* | **XUX0ARCTT16T+XUZX2000 +XUZX2001 (***12)* |
| *XUEH307534* | **XUX0AKSAT16+XUZX2000** *(10) (12) (13)* |
| *XUEH307534H7* | **XUX0AKSAT16+XUZX2000 +XUZX2001** *(12) (13)* |
| *XUEH753538* | **XUX8AKSAT16+XUZX2000** *(10) (13)* |
| *XUEH753538H4* | **XUX8AKSAT16+XUZX2000 +XUZX2001** *(13)* |
| *XUET010315* | **XUX0ARCTT16+XUZX2000** *(10) (14)* |

**Note: XUZC50 is a 50 x 50 mm reflector, XUZA5● and XUZX2000 are metal mounting brackets and XUZX2001 is an M16 to 1/2 NPT adapter**

*(2) Sensor output NO, PNP connection.*
*(3) Sensor output NC, NPN connection.*
*(4) Sensor output NO, PNP connection.*
*(5) Sensor output NC, PNP connection.*
*(6) M18 threaded length = 44 mm instead of 50/55 mm.*
*(7) For a cable length = 10 m, the use of an M12 connector version sensor combined with an XZCP1141L10 jumper cable (M12 with 10 m cable) is recommended.*
*(8) Sn = 0.3 m instead of 0.4 m. For a sensing distance Sn greater than 0.3 m, see catalog number XUB5●●●●●.*
*(9) M18 threaded length = 28 mm instead of 55 mm.*
*(10) Sensor with M16 threaded cable entry instead of Pg 13.5.*
*(11) Sn = 11 m instead of 15 m.*
*(12) Sn = 40 m instead of 50 m.*
*(13) Output current switching capacity = 100 mA instead of 200 mA*
*(14) Time delay relay output 0.02–15 s instead of 0.03–60 s.*

# OsiSense® XU Photoelectric sensors

| Old sensor | New OsiSense® XU sensor |
|---|---|
| **Compact design sensors type XUE (continued)** | |
| XUET010315H7 | **XUX0ARCTT16 +XUZX2000 +XUZX2001** *(14)* |
| XUET080319 | **XUX0ARCTT16+XUZX2000 +XUZC50** *(10) (14)* |
| XUET080319H4 | **XUX0ARCTT16 +XUZX2000 +XUZX2001+XUZC50** *(14)* |
| XUET10031 | **XUX0ARCTT16+XUZX2000 +XUZC50** *(10) (11) (14)* |
| XUET10031H7 | **XUX0ARCTT16 +XUZX2000 +XUZX2001+XUZC50** *(11) (14)* |
| XUET300314 | **XUX0ARCTT16+XUZX2000** *(10) (12) (14)* |
| XUET300314H7 | **XUX0ARCTT16+XUZX2000 +XUZX2001** *(12) (14)* |
| **Compact design sensors type XUJ** | |
| XUJK06353 | **XUX0AKSAT16+XUZX2000 +XUZC50** *(13) (15)* |
| XUJK063539 | **XUX0AKSAT16+XUZX2000 +XUZC50** *(13) (15)* |
| XUJK063539D1 | **XUX0AKSAM12+XUZX2000 +XUZC50***(13)* |
| XUJK063539D2 | **XUX0AKSAM12+XUZX2000 +XUZC50***(13)* |
| XUJK063539H7 | **XUX0AKSAT16+XUZX2000 +XUZC50 +XUZX2001** *(13)* |
| XUJK063539P9 | **XUX0AKSAT16+XUZX2000 +XUZC50** *(13) (16)* |
| XUJK06353D1 | **XUX0AKSAM12+XUZX2000 +XUZC50***(13)* |
| XUJK06353D2 | **XUX0AKSAM12+XUZX2000 +XUZC50***(13)* |
| XUJK06353H7 | **XUX0AKSAT16+XUZX2000 +XUZC50 +XUZX2001** *(13)* |
| XUJK06353P9 | **XUX0AKSAT16+XUZX2000 +XUZC50** *(13) (16)* |
| XUJK103534 | **XUX0AKSAT16+XUZX2000** *(13) (15)* |
| XUJK103534D1 | **XUX0AKSAM12+XUZX2000** *(13)* |
| XUJK103534D2 | **XUX0AKSAM12+XUZX2000** *(13)* |
| XUJK103534H7 | **XUX0AKSAT16+XUZX2000 +XUZX2001** *(13)* |
| XUJK103534P9 | **XUX0AKSAT16+XUZX2000** *(13) (16)* |
| XUJK123538 | **XUX8AKSAT16+XUZX2000** *(13) (15)* |
| XUJK123538D1 | **XUX8AKSAM12+XUZX2000** *(13)* |
| XUJK123538D2 | **XUX8AKSAM12+XUZX2000** *(13)* |
| XUJK123538H7 | **XUX8AKSAT16+XUZX2000 +XUZX2001** *(13)* |
| XUJK123538P9 | **XUX8AKSAT16+XUZX2000** *(13) (16)* |
| XUJK703538 | **XUX8AKSAT16+XUZX2000** *(13) (15)* |
| XUJK703538D1 | **XUX8AKSAM12+XUZX2000** *(13)* |
| XUJK703538D2 | **XUX8AKSAM12+XUZX2000** *(13)* |
| XUJK703538H7 | **XUX8AKSAT16+XUZX2000 +XUZX2001 (***13)* |
| XUJK703538P9 | **XUX8AKSAT16+XUZX2000** *(13) (16)* |
| XUJLM0619 | **XUX9ARCNT16+XUZX2000 +XUZC50** *(15)* |
| XUJLM0619H7 | **XUX9ARCNT16+XUZX2000 +XUZX2001 +XUZC50** |
| XUJLM0619P9 | **XUX9ARCNT16+XUZX2000 +XUZC50** *(16)* |
| XUJLM0811 | **XUX1ARCNT16+XUZX2000 +XUZC50** *(15)* |
| XUJLM0811H7 | **XUX1ARCNT16+XUZX2000 +XUZX2001 +XUZC50** |
| XUJLM0811P9 | **XUX1ARCNT16+XUZX2000 +XUZC50** *(16)* |
| XUJLM1503 | **XUX0ARCTT16T+XUZX2000** *(15)* |
| XUJLM1503H7 | **XUX0ARCTT16T+XUZX2000 +XUZX2001** |
| XUJLM1503P9 | **XUX0ARCTT16T +XUZX2000** *(16)* |
| XUJLM1514 | **XUX2ARCNT16R+XUZX2000** *(15)* |
| XUJLM1514H7 | **XUX2ARCNT16R+XUZX2000 +XUZX2001** |
| XUJLM1514P9 | **XUX2ARCNT16R+XUZX2000** *(16)* |
| XUJM06031 | **XUX1ARCNT16+XUZX2000 +XUZC50** *(15)* |
| XUJM060319 | **XUX9ARCNT16+XUZX2000 +XUZC50** *(16)* |
| XUJM060319D1 | **XUX9ARCNT16+XUZX2000 +XUZC50** |
| XUJM060319D2 | **XUX9ARCNT16+XUZX2000 +XUZC50** |
| XUJM060319H7 | **XUX9ARCNT16+XUZX2000 +XUZX2001+XUZC50** |
| XUJM060319P9 | **XUX9ARCNT16+XUZX2000 +XUZC50** *(16)* |
| XUJM06031D1 | **XUX1ARCNT16+XUZX2000 +XUZC50** |
| XUJM06031D2 | **XUX1ARCNT16+XUZX2000 +XUZC50** |
| XUJM06031H7 | **XUX1ARCNT16+XUZX2000 +XUZX2001 +XUZC50** |
| XUJM06031P9 | **XUX1ARCNT16+XUZX2000 +XUZC50** *(16)* |
| XUJM1000 | **XUX0AKSAT16T+XUZX2000** *(15)* |
| XUJM1000D1 | **XUX0AKSAM12T+XUZX2000** |
| XUJM1000D2 | **XUX0AKSAM12T+XUZX2000** |
| XUJM1000H7 | **XUX0AKSAT16T+XUZX2000 +XUZX2001** |
| XUJM1000P9 | **XUX0AKSAT16T+XUZX2000** *(16)* |
| XUJM100314 | **XUX0ARCTT16+XUZX2000** *(15)* |
| XUJM100314D1 | **XUX0ARCTT16+XUZX2000** |
| XUJM100314D2 | **XUX0ARCTT16+XUZX2000** |
| XUJM100314H7 | **XUX0ARCTT16+XUZX2000 +XUZX2001** |
| XUJM100314P9 | **XUX0ARCTT16+XUZX2000** *(16)* |
| XUJM120318 | **XUX8ARCTT16+XUZX2000** *(15)* |
| XUJM120318D1 | **XUX8ARCTT16+XUZX2000** |
| XUJM120318D2 | **XUX8ARCTT16+XUZX2000** |
| XUJM120318H7 | **XUX8ARCTT16+XUZX2000 +XUZX2001** |
| XUJM120318P9 | **XUX8ARCTT16+XUZX2000** *(16)* |
| XUJM700318 | **XUX8ARCTT16+XUZX2000** *(15)* |
| XUJM700318D1 | **XUX8ARCTT16+XUZX2000** |
| XUJM700318D2 | **XUX8ARCTT16+XUZX2000** |
| XUJM700318H7 | **XUX8ARCTT16+XUZX2000 +XUZX2001** |
| XUJM700318P9 | **XUX8ARCTT16+XUZX2000** *(16)* |
| XUJT06031 | **XUX0ARCTT16+XUZX2000 +XUZC50** *(15)* |
| XUJT060319 | **XUX0ARCTT16+XUZX2000 +XUZC50** *(15)* |
| XUJT060319D1 | **XUX0ARCTT16+XUZX2000 +XUZC50** |
| XUJT060319D2 | **XUX0ARCTT16+XUZX2000 +XUZC50** |
| XUJT060319H7 | **XUX0ARCTT16+XUZX2000 +XUZC50+XUZX2001** |
| XUJT060319P9 | **XUX0ARCTT16+XUZX2000 +XUZC50** *(16)* |
| XUJT06031D1 | **XUX0ARCTT16+XUZX2000 +XUZC50** |
| XUJT06031D2 | **XUX0ARCTT16+XUZX2000 +XUZC50** |
| XUJT06031H7 | **XUX0ARCTT16+XUZX2000 +XUZC50+XUZX2001** |
| XUJT06031P9 | **XUX0ARCTT16+XUZX2000 +XUZC50** *(16)* |
| XUJT100314 | **XUX0ARCTT16+XUZX2000** *(15)* |
| XUJT100314D1 | **XUX0ARCTT16+XUZX2000** |
| XUJT100314D2 | **XUX0ARCTT16+XUZX2000** |
| XUJT100314H7 | **XUX0ARCTT16+XUZX2000 +XUZX2001** |
| XUJT100314P9 | **XUX0ARCTT16+XUZX2000** *(16)* |
| XUJT120318 | **XUX8ARCTT16+XUZX2000** *(15)* |
| XUJT120318D1 | **XUX8ARCTT16+XUZX2000** |
| XUJT120318D2 | **XUX8ARCTT16+XUZX2000** |
| XUJT120318H7 | **XUX8ARCTT16+XUZX2000 +XUZX2001** |
| XUJT120318P9 | **XUX8ARCTT16+XUZX2000** *(16)* |
| XUJT700318 | **XUX8ARCTT16+XUZX2000** *(15)* |
| XUJT700318D1 | **XUX8ARCTT16+XUZX2000** |
| XUJT700318D2 | **XUX8ARCTT16+XUZX2000** |
| XUJT700318H7 | **XUX8ARCTT16+XUZX2000 +XUZX2001** |
| XUJT700318P9 | **XUX8ARCTT16+XUZX2000** *(16)* |
| **Compact design sensors type XUK** | |
| XUK1ARCTL10 | **XUK1ARCNL10+XUZA51 +XUZC50** |
| XUK1ARCTL2 | **XUK1ARCNL2+XUZA51 +XUZC50** |
| XUK2AKSAL10 | **XUK2APANL10R +XUK0AKSNL10T +2 x XUZA51** *(4)* |
| | **XUK2APBNL10R +XUK0AKSNL10T +2 x XUZA51** *(5)* |
| | **XUK2ANANL10R +XUK0AKSNL10T +2 x XUZA51** *(2)* |
| | **XUK2ANBNL10R +XUK0AKSNL10T +2 x XUZA51** *(3)* |

**Note: XUZC50 is a 50 x 50 mm reflector, XUZA5● and XUZX2000 are metal mounting brackets and XUZX2001 is an M16 to 1/2 NPT adapter.**

*(2) Sensor output NO, PNP connection.*
*(3) Sensor output NC, NPN connection.*
*(4) Sensor output NO, PNP connection.*
*(5) Sensor output NC, PNP connection.*
*(10) Sensor with M16 threaded cable entry instead of Pg 13.*
*(11) Sn = 11 m instead of 15 m.*
*(12) Sn = 40 m instead of 50 m.*
*(13) Output current switching capacity = 100 mA instead of 200 mA.*
*(14) Time delay relay output 0.02...15 s instead of 0.03…60 s.*
*(15) Sensor with M16 threaded cable entry instead of Pg 11.*
*(16) Sensor with M16 threaded cable entry instead of Pg 9.*

# OsiSense® XU Photoelectric sensors

| Old sensor | New OsiSense® XU sensor |
|---|---|
| **Compact design sensors type XUK (continued)** | |
| *XUK2AKSAL2* | **XUK2APANL2R +XUK0AKSNL2T +2 x XUZA51** *(4)* |
| | **XUK2APBNL2R +XUK0AKSNL2T +2 x XUZA51** *(5)* |
| | **XUK2ANANL2R +XUK0AKSNL2T +2 x XUZA51** *(2)* |
| | **XUK2ANBNL2R +XUK0AKSNL2T +2 x XUZA51** *(3)* |
| *XUK2AKSAM12* | **XUK2APANM12R +XUK0AKSNM12T +2 x XUZA51** *(4)* |
| | **XUK2APBNM12R +XUK0AKSNM12T +2 x XUZA51** *(5)* |
| | **XUK2ANANM12R +XUK0AKSNM12T +2 x XUZA51** *(2)* |
| | **XUK2ANBNM12R +XUK0AKSNM12T +2 x XUZA51** *(3)* |
| *XUK2ARCTL10* | **XUK0ARCTL10 +XUK0ARCTL10T +2 x XUZA51** |
| *XUK2ARCTL2* | **XUK0ARCTL2 +XUK0ARCTL2T +2 x XUZA51** |
| *XUK5AKSAL10* | **XUK5APANL10+XUZA51** *(4)* |
| | **XUK5APBNL10+XUZA51** *(5)* |
| | **XUK5ANANL10+XUZA51** *(2)* |
| | **XUK5ANBNL10+XUZA51** *(3)* |
| *XUK5AKSAL2* | **XUK5APANL2+XUZA51** *(4)* |
| | **XUK5APBNL2+XUZA51** *(5)* |
| | **XUK5ANANL2+XUZA51** *(2)* |
| | **XUK5ANBNL2+XUZA51** *(3)* |
| *XUK5AKSAM12* | **XUK5APANM12+XUZA51** *(4)* |
| | **XUK5APBNM12+XUZA51** *(5)* |
| | **XUK5ANANM12+XUZA51** *(2)* |
| | **XUK5ANBNM12+XUZA51** *(3)* |
| *XUK5ARCTL10* | **XUK5ARCNL10+XUZA51** |
| *XUK5ARCTL2* | **XUK5ARCNL2+XUZA51** |
| *XUK9AKSAL10* | **XUK9APANL10+XUZA51 +XUZC50** *(4)* |
| | **XUK9APBNL10+XUZA51 +XUZC50** *(5)* |
| | **XUK9ANANL10+XUZA51 +XUZC50** *(2)* |
| | **XUK9ANBNL10+XUZA51 +XUZC50** *(3)* |
| *XUK9AKSAL2* | **XUK9APANL2+XUZA51 +XUZC50** *(4)* |
| | **XUK9APBNL2+XUZA51 +XUZC50** *(5)* |
| | **XUK9ANANL2+XUZA51 +XUZC50** *(2)* |
| | **XUK9ANBNL2+XUZA51 +XUZC50** *(3)* |
| *XUK9AKSAM12* | **XUK9APANM12+XUZA51 +XUZC50 (4)** |
| | **XUK9APBNM12+XUZA51 +XUZC50 (5)** |
| | **XUK9ANANM12+XUZA51 +XUZC50 (2)** |
| | **XUK9ANBNM12+XUZA51 +XUZC50 (3)** |
| *XUK9ARCTL10* | **XUK9ARCNL10+XUZA51 +XUZC50** |
| *XUK9ARCTL2* | **XUK9ARCNL2+XUZA51 +XUZC50** |
| **Compact design sensors type XUL** | |
| *XULH153538* | **XUK8AKSNL2+XUZA51** *(13)* |
| *XULH153538D* | **XUK8AKSNM12+XUZA51** *(13)* |
| *XULH153538H7* | **XUK8AKSNM12+XUZA51** *(13)* |
| *XULH153538L05* | **XUK8AKSNL5+XUZA51** *(13)* |
| *XULH153538L10* | **XUK8AKSNL10+XUZA51** *(13)* |
| *XULH303538* | **XUK8AKSNL2+XUZA51** *(13)* |
| *XULH303538D* | **XUK8AKSNM12+XUZA51** *(13)* |
| *XULH303538DH7* | **XUK8AKSNM12+XUZA51** *(13)* |
| *XULH303538L05* | **XUK8AKSNL5+XUZA51** *(13)* |
| *XULH303538L10* | **XUK8AKSNL10+XUZA51** *(13)* |
| *XULJ153538* | **XUK8AKSNL2+XUZA51** *(13)* |
| *XULJ153538D* | **XUK8AKSNM12+XUZA51** *(13)* |
| *XULJ153538H7* | **XUK8AKSNM12+XUZA51** *(13)* |
| *XULJ153538L05* | **XUK8AKSNL5+XUZA51** *(13)* |
| *XULJ303538* | **XUK8AKSNL2+XUZA51** *(13)* |
| *XULJ303538D* | **XUK8AKSNM12+XUZA51** *(13)* |
| *XULJ303538L05* | **XUK8AKSNL5+XUZA51** *(13)* |
| **Compact design sensors type XUM** | |
| *XUM1ANANL2* | **XUM9ANCNL2** *(17)* |
| *XUM1ANANL5* | **XUM9ANCNM8+XZCP0941L5** *(17)* |
| *XUM1ANANM8* | **XUM9ANCNM8** *(17)* |
| *XUM1ANBNL2* | **XUM9ANCNL2** *(17)* |
| *XUM1ANBNM8* | **XUM9ANCNM8** *(17)* |
| *XUM1APANL10* | **XUM9APCNM8+XZCP0941L10** *(17)* |
| *XUM1APANL2* | **XUM9APCNL2** *(17)* |
| *XUM1APANL5* | **XUM9APCNM8+XZCP0941L5** *(17)* |
| *XUM1APANM8* | **XUM9APCNM8** *(17)* |
| *XUM1APBNL10* | **XUM9APCNM8+XZCP0941L10** *(17)* |
| *XUM1APBNL2* | **XUM9APCNL2** *(17)* |
| *XUM1APBNL5* | **XUM9APCNM8+XZCP0941L5** *(17)* |
| *XUM1APBNM8* | **XUM9APCNM8** *(17)* |
| *XUM2AKSNL2T* | **XUM2AKCNL2T** *(17)* |
| *XUM2AKSNL5T* | **XUM2AKCNM8T+XZCP0941L5** *(17)* |
| *XUM2AKSNM8T* | **XUM2AKCNM8T** *(17)* |
| *XUM2ANANL2R* | **XUM2ANCNL2R** *(17)* |
| *XUM2ANANL5R* | **XUM2ANCNM8R+XZCP0941L5** *(17)* |
| *XUM2ANANM8R* | **XUM2ANCNM8R** *(17)* |
| *XUM2ANBNL2R* | **XUM2ANCNL2R** *(17)* |
| *XUM2ANBNM8R* | **XUM2ANCNM8R** *(17)* |
| *XUM2APANL2R* | **XUM2APCNL2R** *(17)* |
| *XUM2APANL5R* | **XUM2APCNM8R+XZCP0941L5** *(17)* |
| *XUM2APANM8R* | **XUM2APCNM8R** *(17)* |
| *XUM2APBNL2R* | **XUM2APCNL2R** *(17)* |
| *XUM2APBNL5R* | **XUM2APCNM8R+XZCP0941L5** *(17)* |
| *XUM2APBNM8R* | **XUM2APCNM8R** *(17)* |
| *XUM5ANANL2* | **XUM5ANCNL2** *(17)* |
| *XUM5ANANM8* | **XUM5ANCNM8** *(17)* |
| *XUM5ANBNL2* | **XUM5ANCNL2** *(17)* |
| *XUM5ANBNM8* | **XUM5ANCNM8** *(17)* |
| *XUM5APANL2* | **XUM5APCNL2** *(17)* |
| *XUM5APANL5* | **XUM5APCNM8+XZCP0941L5** *(17)* |
| *XUM5APANM8* | **XUM5APCNM8** *(17)* |
| *XUM5APBNL2* | **XUM5APCNL2** *(17)* |
| *XUM5APBNL5* | **XUM5APCNM8+XZCP0941L5** *(17)* |
| *XUM5APBNM8* | **XUM5APCNM8** *(17)* |
| *XUM6ANANL2* | **XUM5ANCNL2** *(17)* |
| *XUM6ANANM8* | **XUM5ANCNM8** *(17)* |
| *XUM6ANBNL2* | **XUM5ANCNL2** *(17)* |
| *XUM6ANBNM8* | **XUM5ANCNM8** *(17)* |
| *XUM6APANL2* | **XUM5APCNL2** *(17)* |
| *XUM6APANL5* | **XUM5APCNM8+XZCP0941L5** *(17)* |
| *XUM6APANM8* | **XUM5APCNM8** *(17)* |
| *XUM6APBNL2* | **XUM5APCNL2** *(17)* |
| *XUM6APBNL5* | **XUM5APCNM8+XZCP0941L5** *(17)* |
| *XUM6APBNM8* | **XUM5APCNM8** *(17)* |
| *XUM9ANANL2* | **XUM9ANCNL2** *(17)* |
| *XUM9ANANL5* | **XUM9ANCNM8+XZCP0941L5** *(17)* |
| *XUM9ANANM8* | **XUM9ANCNM8** *(17)* |
| *XUM9ANBNL2* | **XUM9ANCNL2** *(17)* |
| *XUM9ANBNM8* | **XUM9ANCNM8** *(17)* |
| *XUM9APANL2* | **XUM9APCNL2** *(17)* |
| *XUM9APANL5* | **XUM9APCNM8+XZCP0941L5** *(17)* |
| *XUM9APANM8* | **XUM9APCNM8** *(17)* |
| *XUM9APBNL2* | **XUM9APCNL2** *(17)* |
| *XUM9APBNL5* | **XUM9APCNM8+XZCP0941L5** *(17)* |
| *XUM9APBNM8* | **XUM9APCNM8** *(17)* |

**Note: XUZC50 is a 50 x 50 mm reflector, XUZA5● and XUZX2000 are metal mounting brackets and XUZX2001 is an M16 to 1/2 NPT adapter.**

*(2) Sensor output NO, PNP connection.*
*(3) Sensor output NC, NPN connection.*
*(4) Sensor output NO, PNP connection.*
*(5) Sensor output NC, PNP connection.*
*(13) Output current switching capacity = 100 mA instead of 200 mA.*
*(17) Sensor with NO/NC outputs.*