

OsiSense™ XUM Miniature Photoelectric Sensors

Catalog



Telemecanique
Sensors



OsiSense™ XUM sensors

Sensing to suit your needs

The new **OsiSense XUM** miniature sensors are even more compact and ingenious. They offer a high level of performance, including long sensing distances and resistance to interference and stray light sources, making them one of the best sensing products currently available.

Featuring standard mountings and dimensions, OsiSense XUM sensors are particularly suited to packaging and conveying applications involving small objects. Their performance and accuracy provide a solution that matches your needs.

- > **Optimized installation**
Less electrical consumption for better performance
- > **Full adaptability**
Flexibility for integration into a wide variety of detection environments
- > **Simple detection**
High performance, featuring integrated background or foreground suppression

Contents

| | |
|---|----|
| Customer benefits | 4 |
| Selection guide based on application | 6 |
| OsiSense XUM photoelectric sensors | |
| General purpose single mode function | 8 |
| General purpose multimode function | 12 |
| General purpose with adjustable BGS * and FGS * | 4 |
| For detection of transparent materials | 16 |
| For machine tool applications | 18 |
| Prewired connectors and jumper cables | 22 |

* BGS: background suppression
FGS: foreground suppression

Simply easy!™

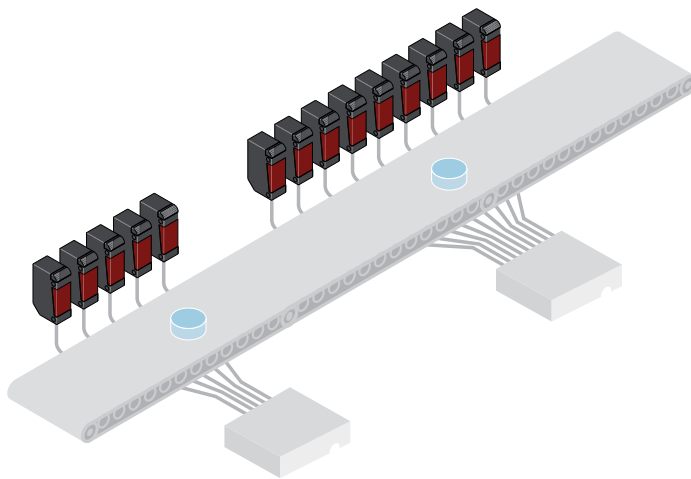


Optimized installation

- The electrical consumption is half that of the old OsiSense XUM sensors, significantly reducing the power requirements of the stabilized supplies for your equipment. That means more savings for you, and it's more environmentally friendly!
- The filter accessory significantly reduces interference between sensors and helps avoid conflicts.
- An output status LED on the front face of the thru-beam receiver assists alignment during installation.
- A robust metal mounting bracket, shaped to form a cover to protect against mechanical shock, is available in addition to the traditional mounting brackets.



50% less
current consumption



Full adaptability

OsiSense XUM sensors offer some of the longest sensing distances on the market: 0.3 m in background suppression mode, 1 m in diffuse mode, 5 m in reflex system mode, and 15 m in thru-beam system mode. Insensitive to stray light sources, they withstand up to 40,000 lux natural light and 10,000 lux incandescent light. The die-cast metal case and window-protected lenses withstand temperatures of -30 to $+60$ °C and offer an IP67 degree of protection for encapsulated models, making them particularly suited to severe environments.



Simple detection

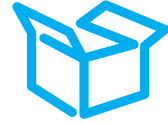
The compact size of the OsiSense XUM sensors offers considerable freedom when installing them on the machine, but also provides numerous functions in the minimum space. Intuitive programming and ergonomic design make them easy to install and set up by users, electricians, or automation engineers. Selection is easy using just a few model numbers to cover all standard requirements.



OsiSense XUM8

controlling your packaging

The OsiSense XUM8 photoelectric sensors are designed to meet the challenging task of detecting a packed product, letter, or parcel on a packaging line while overcoming various interference, such as the movement of operators and other conveyors in the background. With integrated foreground suppression (FGS) or background suppression (BGS), the XUM8 sensors provide an ideal solution for conveying applications within the packaging sector. The XUM8 sensor is intended to meet your needs for all types of packages, sizes, colors, and ambient lighting conditions at a sensing distance from 20 to 300 mm. A visible red beam makes setup easier.



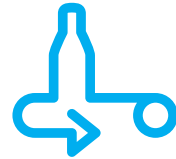
Insensitive
to interference



OsiSense XUMT

the transparent materials specialist

The OsiSense XUMT photoelectric sensor is an ideal choice to detect bottles and other transparent glass or plastic objects on conveyors. A potentiometer simplifies the adjustment of the beam accuracy. It functions without being affected by ambient light. With only 5 model numbers to cover all standard requirements, the OsiSense XUMT sensor is as easy to select as it is to install and set up. Its compact format helps you integrate it into all your machines. An IP67 degree of protection helps ensure interference-free operation even in severe industrial environments.



Specialist
in transparent materials



OsiSense XUZASM001

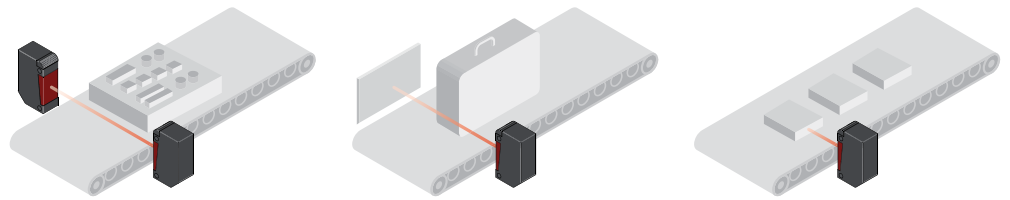
Ø18 mounting adapter for optimum installation

The OsiSense XUM photoelectric sensors have a miniature rectangular format which is a very popular body style throughout the globe. An 18 mm hole for sensor mounting is one of the most popular sized mounting configurations on the planet. With the XUZASM001 accessory and XUM photoelectric sensor we are bringing these two worlds together.



> Selection guide based on application

Standard conveying



Precision, positioning

On small conveyors—
small components in the electronic
industry and small mechanical parts

Flow of large objects

On conveyors of all sizes—
average size objects, brilliance,
colors and complex shapes

Flow of small objects

On conveyors of all sizes—
flow of objects at short distance

Thru-beam

Polarized reflex

Diffuse

Single mode



XUM2



XUM9



XUM5



XUM8

Multimode



XUM0



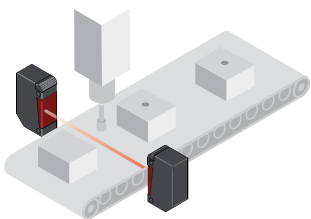
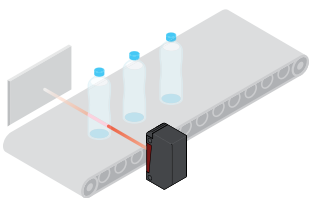
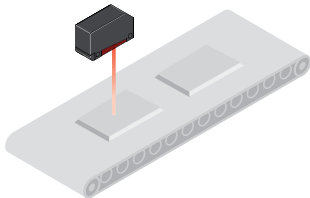
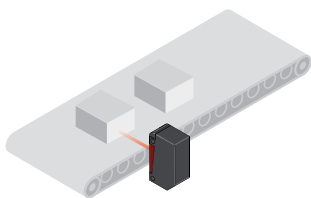
XUM0



XUM0

Conveying-packaging

Machine tools



Background suppression (BGS)

Foreground suppression (FGS)

Transparent materials

Severe environment

Applications with background or foreground suppression for specific applications

Applications involving transparent glass or plastic objects

Machine tool applications in severe industrial conditions

Diffuse with background suppression

Diffuse with foreground suppression

Reflex



XUM8



XUM8



XUMT



Thru-beam
XUM2B



Polarized reflex
XUM5B



Diffuse
XUM9B



XUM0

OsiSense™ XU

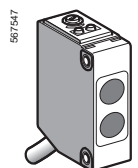
Photoelectric sensors

Single mode

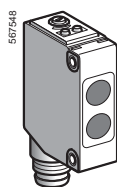
Miniature design, plastic

Three-wire DC solid-state output

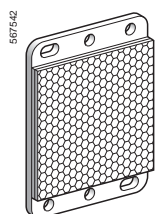
NO/NC configuration switch



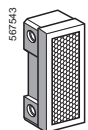
XUM5A●CNL2



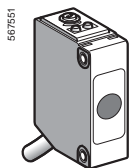
XUM5A●CNM8



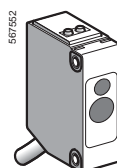
XUZC50



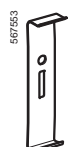
XUZC08



XUM2AKCNL2T



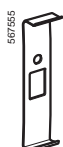
XUM2A●CNL2R



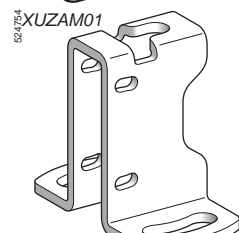
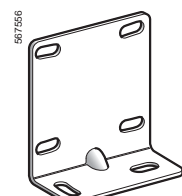
XUZMSV●●



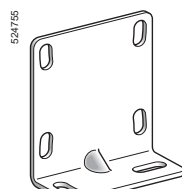
XUZMSH●●



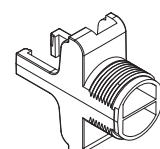
XUZMU01



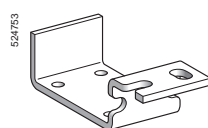
XUZAM02



XUZAM04



XUZAM03



XUZASM001

| 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 | Precabled (2 m) | XUM5APCNL2 | 0.063 (0.14) |
| | | | M8 connector (1) | XUM5APCNM8 | 0.010 (0.02) |
| | | NPN | Precabled (2 m) | XUM5ANCNL2 | 0.063 (0.14) |
| | | | M8 connector (1) | XUM5ANCNM8 | 0.010 (0.02) |

| | | | | | |
|---|----------------------------|-----|------------------|------------|--------------|
| Polarized retroreflective system with adjustable sensitivity | | | | | |
| 5 (16.40) with reflector XUZC50 | NO/NC configuration switch | PNP | Precabled (2 m) | XUM9APCNL2 | 0.063 (0.14) |
| | | | M8 connector (1) | XUM9APCNM8 | 0.010 (0.02) |
| | | NPN | Precabled (2 m) | XUM9ANCNL2 | 0.063 (0.14) |
| | | | M8 connector (1) | 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 | Precabled (2 m) | XUM2APCNL2 | 0.119 (0.26) |
| | | | M8 connector (1) | XUM2APCNM8 | 0.019 (0.04) |
| | | NPN | Precabled (2 m) | XUM2ANCNL2 | 0.119 (0.26) |
| | | | M8 connector (1) | XUM2ANCNM8 | 0.019 (0.04) |

| | | | | | |
|-------------------------|--|--|------------------|-------------|--------------|
| Transmitter only | | | | | |
| 15 (49.21) | | | Precabled (2 m) | XUM2AKCNL2T | 0.063 (0.14) |
| | | | M8 connector (1) | XUM2AKCNM8T | 0.010 (0.02) |

| | | | | | |
|----------------------|----------------------------|-----|------------------|-------------|--------------|
| Receiver only | | | | | |
| 15 (49.21) | NO/NC configuration switch | PNP | Precabled (2 m) | XUM2APCNL2R | 0.063 (0.14) |
| | | | M8 connector (1) | XUM2APCNM8R | 0.010 (0.02) |
| | | NPN | Precabled (2 m) | XUM2ANCNL2R | 0.063 (0.14) |
| | | | M8 connector (1) | XUM2ANCNM8R | 0.010 (0.02) |

| Accessories for thru-beam system | | | | |
|---|------------------|----------------------------|-------------------|----------------------|
| Description | Dimensions mm | Sensing distance m (ft) | Catalog Number | Weight kg lb |
| Vertical diaphragm <i>Sold in lots of 2</i> | 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 <i>Sold in lots of 2</i> | 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 <i>Sold in lots of 4</i> | — | 7 (22.97) | XUZMU01 | 0.006 (0.013) |

| 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) |
| Plastic Ø18 mounting adapter (XUM2, XUM5 and XUM9) | XUZASM001 | 0.080 (0.17) |

(1) For pre-wired connectors (cables), see pages 22 and 23.

OsiSense™ XU Photoelectric sensors

Single mode

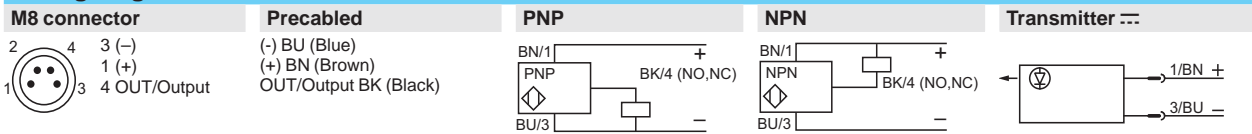
Miniature design, plastic

Three-wire DC solid-state output

NO/NC configuration switch

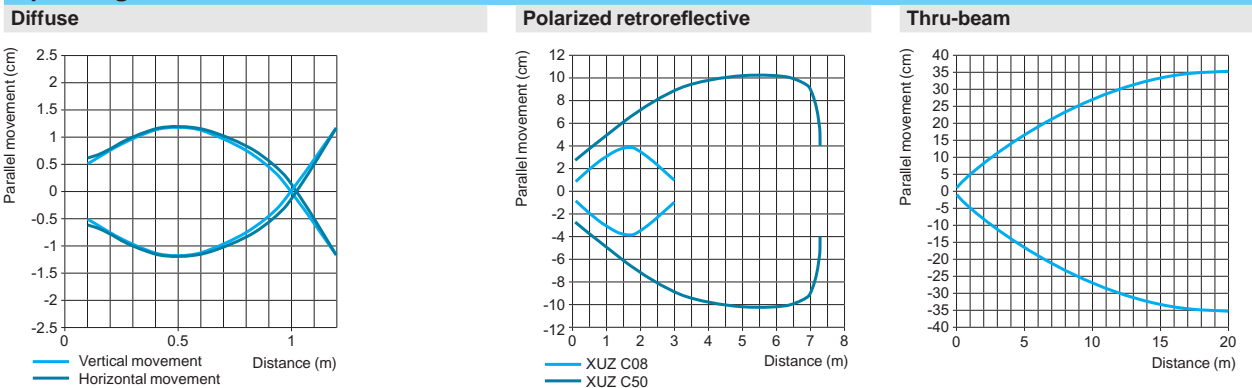
| Specifications | | |
|---|------------------------------|---|
| Sensor type | | XUM●A●●●M8 XUM●A●●●L2 |
| Product certifications | | C€, cULus, CTick |
| Connection | Connector | M8 |
| | Precabled | — 2 m |
| Sensing distance: nominal Sn (excess gain = 2) | | m (ft) 1 (3.28), diffuse system with adjustable 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



(1) For pre-wired connectors (cables), see pages 22 and 23.

Operating curves



OsiSense™ XU Photoelectric sensors

Single mode

Miniature design, plastic

Three-wire DC solid-state output

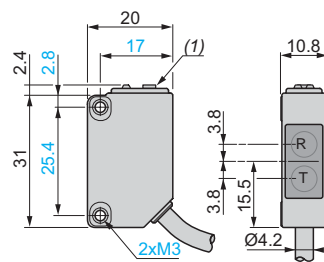
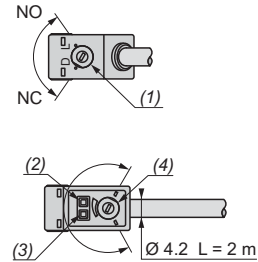
NO/NC configuration switch

Diffuse system, polarized retroreflective system (mm)

Precabled version

Description—XUM5A●CNL2,
XUM9A●CNL2

Dimensions—XUM5A●CNL2,
XUM9A●CNL2



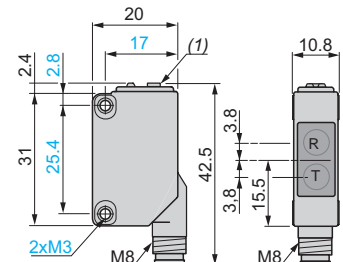
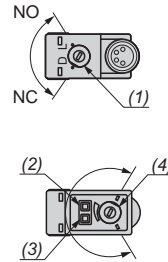
- (1) Configuration switch
(2) Output state LED
(3) Stability and power-on LED
(4) Adjustment potentiometer

R: Reception, T: Transmission
(1) Potentiometer

Connector version

Description—XUM5A●CNM8,
XUM9A●CNM8

Dimensions—XUM5A●CNM8,
XUM9A●CNM8



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

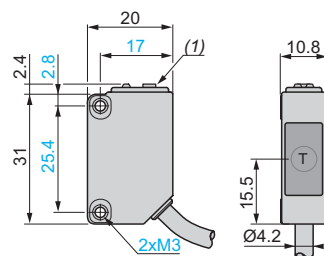
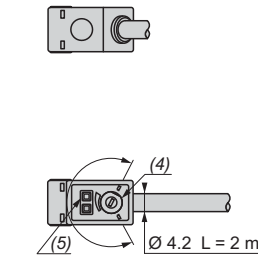
R: Reception, T: Transmission
(1) Potentiometer

Thru-beam system (mm)

Precabled version

Description—XUM2AKCNL2T

Dimensions—XUM2AKCNL2T

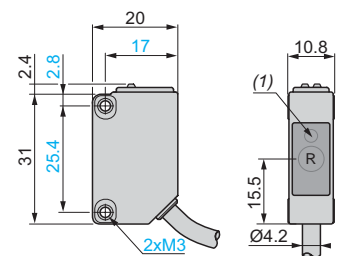
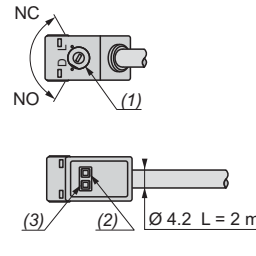


- (4) Adjustment potentiometer
(5) Power-on LED

T: Transmission
(1) Potentiometer

Description—XUM2A●CNL2R

Dimensions—XUM2A●CNL2R



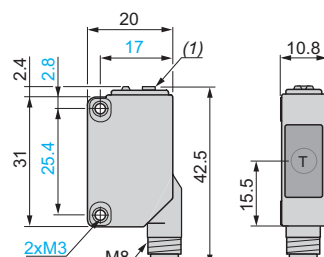
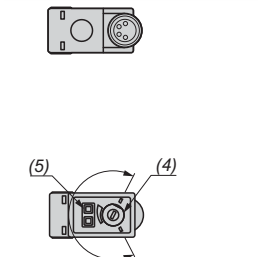
- (1) Configuration switch
(2) Output state LED
(3) Stability and power-on LED

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

Connector version

Description - XUM2AKCNM8T

Dimensions - XUM2AKCNM8T

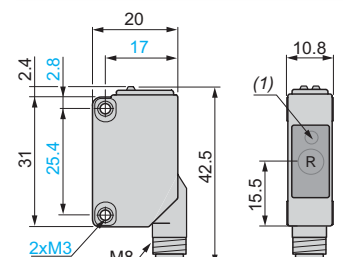
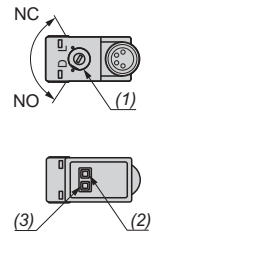


- (4) Adjustment potentiometer
(5) Power-on LED

T: Transmission
(1) Potentiometer

Description - XUM2A●CNM8R

Dimensions - XUM2A●CNM8R



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

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

OsiSense™ XU

Photoelectric sensors

Single mode

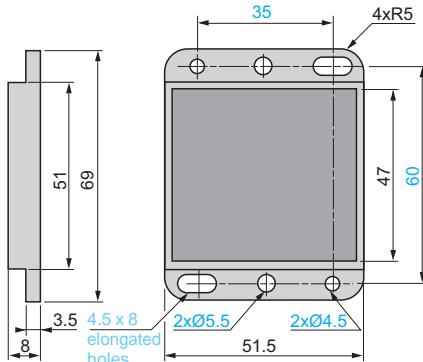
Miniature design, plastic

Three-wire DC solid-state output

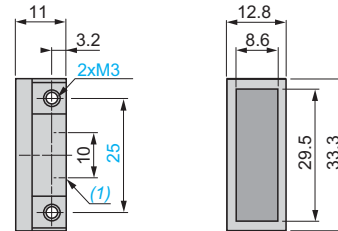
NO/NC configuration switch

Accessories (mm)

Reflectors



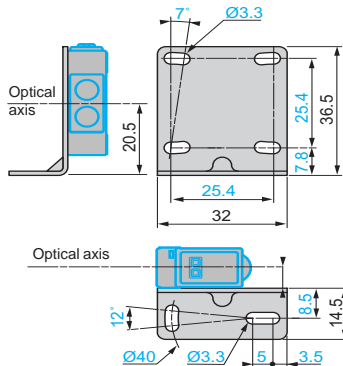
XUZC08



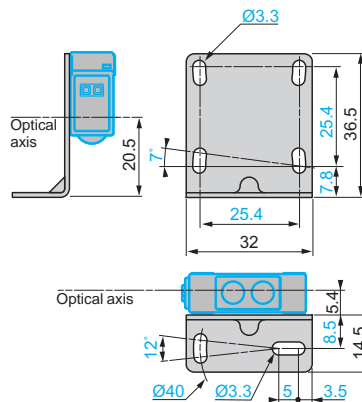
1) 2 x M3

Mounting brackets

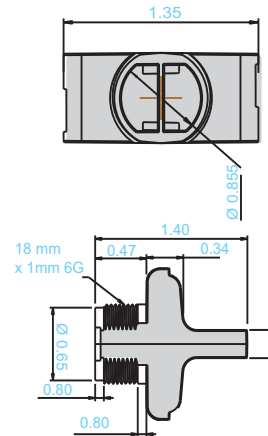
XUZAM01



XUZAM04

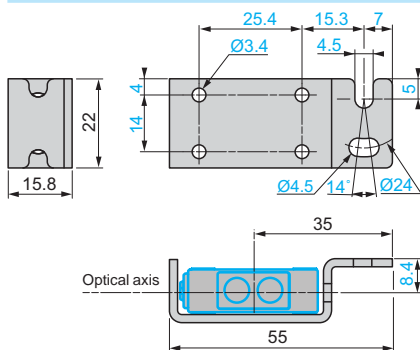


XUZASM001

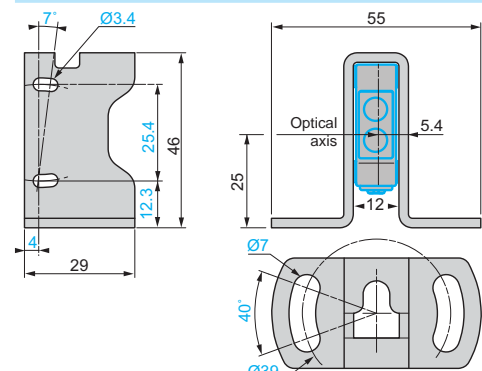


Mounting bracket with protective cover

XUZAM03

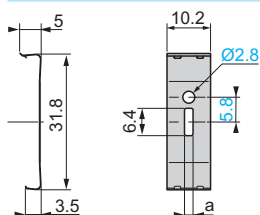


XUZAM02

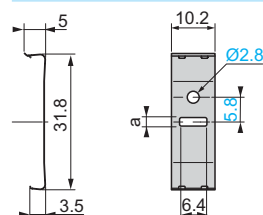


Diaphragms

XUZMSV●●

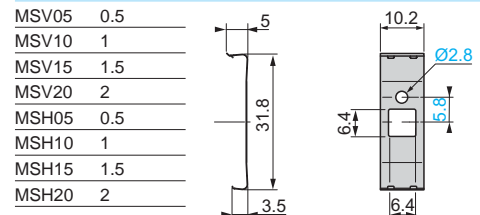


XUZMSH●●



Filter

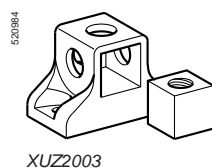
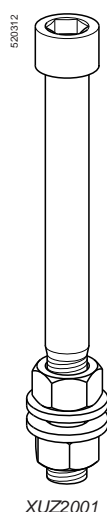
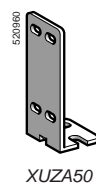
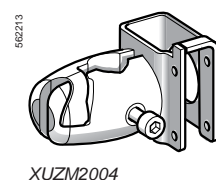
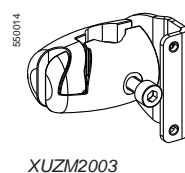
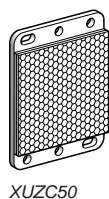
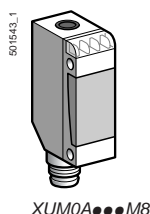
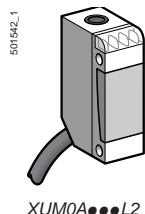
XUZMU01



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

Photoelectric sensors

OsiSense XU, general purpose
Multimode function
Miniature design
Three-wire DC, solid-state output



Miniature design, DC

| Sensing distance (Sn) | Function | Output | Connection | Catalog number | Weight kg (lb) |
|---|-----------------------------|--------|-------------------------------|----------------|------------------|
| 0–10 m (0–32.8 ft) depending on whether accessories are used | NO or NC, by programming | PNP | Precabled (1) 2 m (6.6 ft) | XUM0APSAL2 | 0.050 (0.110) |
| | | | M8 connector (3) | XUM0APSAM8 | 0.035 (0.077) |
| | | NPN | Precabled (1) 2 m (6.6 ft) | XUM0ANSAL2 | 0.050 (0.110) |
| | | | M8 connector (3) | XUM0ANSAM8 | 0.035 (0.077) |

Accessories

| Description | Connection | Catalog number | Weight kg (lb) |
|--|-------------------------------|----------------|------------------|
| Thru-beam transmitter | Precabled (1) 2 m (6.6 ft) | XUM0AKSAL2T | 0.050 (0.110) |
| | M8 connector (3) | XUM0AKSAM8T | 0.035 (0.077) |
| Reflector 50 x 50 mm (1.97 x 1.97 in.) | — | XUZC50 | 0.020 (0.044) |

Mounting accessories (2)

| Description | Catalog number | Weight kg (lb) |
|---|----------------|------------------|
| 3D mounting kit for use on M12 rod, for XUM or XUZC50 | XUZM2003 | 0.140 (0.309) |
| 3D mounting kit for use on M12 rod and with protective cover for XUM | XUZM2004 | 0.155 (0.342) |
| M12 rod | XUZ2001 | 0.050 (0.110) |
| Support for M12 rod | XUZ2003 | 0.150 (0.331) |
| Mounting bracket | XUZA50 | 0.015 (0.033) |

(1) For a 5 m cable (16.4 ft), replace L2 with L5.

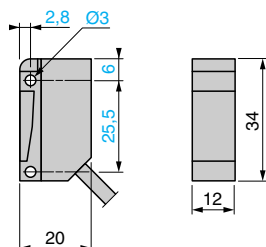
Example: XUM0APSAL2 becomes XUM0APSAL5.

(2) For further information, see the Sensors master catalog, 9006CT1007.

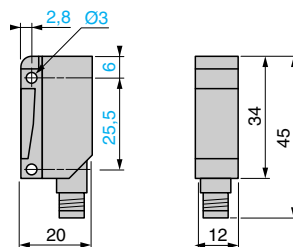
(3) For pre-wired connectors (cables), see pages 22 and 23.

Dimensions (mm)

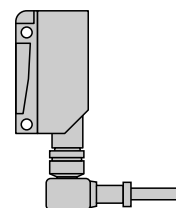
XUM0A...L2



XUM0A...M8



Possible orientation of
elbowed connector



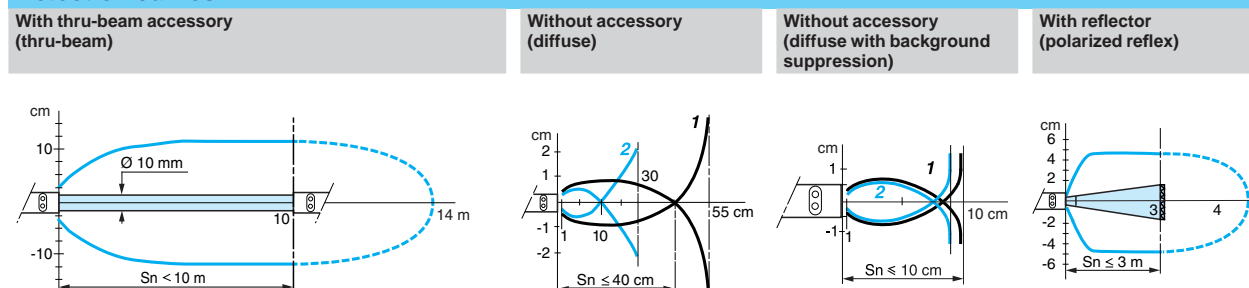
| Specifications | | | |
|---|------------------------------|---|----------------------|
| Sensor type | | XUM●●●●●M8 | XUM●●●●●L2 |
| Product certifications | | UL, CSA, CEC | |
| Connection | Connector | M8 | — |
| | Precabled | — | Length: 2 m (6.6 ft) |
| Nominal sensing distance S_n (excess gain = 2) | | m (ft) 0.11 (0.36) / 0.11 (0.36) without accessory (diffuse with background suppression) m (ft) 0.4 (1.31) / 0.55 (1.80) without accessory (diffuse) m (ft) 3 (9.8) / 4 (13.1) with reflector (polarized reflex) m (ft) 10 (32.8) / 14 (45.93) with transmitter for thru-beam function (thru-beam) | |
| Type of transmission | | Infrared, except polarized reflex (red) | |
| Degree of protection | | Conforming to IEC 60529 | IP65, IP67 |
| Temperature | Storage | °C (°F) -40 to +70 (-40 to +158) | |
| | Operation | °C (°F) -25 to +55 (-13 to +131) | |
| Materials | Case | PBT | |
| | Lens | PMMA | |
| | Cable | — | PvR |
| Vibration resistance | Conforming to IEC 60068-2-6 | 7 gn, amplitude ± 1.5 mm (10–55 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/dirty | Red LED (except for XUM0●●●●●T) | |
| Rated supply voltage | | V $\ddot{=}$ 12 to 24 with protection against reverse polarity | |
| Voltage limits (including ripple) | | V $\ddot{=}$ 10 to 30 | |
| Current consumption, no-load | | mA 35 (20 for XUM0●●●●●T) | |
| Switching capacity | | mA \leq 100 with overload and short-circuit protection | |
| Voltage drop, closed state | | V \leq 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

| M8 connector | Precabled | Receiver, PNP output | Receiver, NPN output | Thru-beam function transmitter |
|--|--|----------------------|----------------------|---|
| <p>3 (-) 1 (+) 4 OUT/Output 2 Beam break input (1)</p> | <p>(-) BU (Blue) (+) BN (Brown) OUT/Output BK (Black) Beam break input VI (Violet) (1)</p> | | | <p>Input 2/VI: - not connected: beam made - connected to -: beam broken</p> |

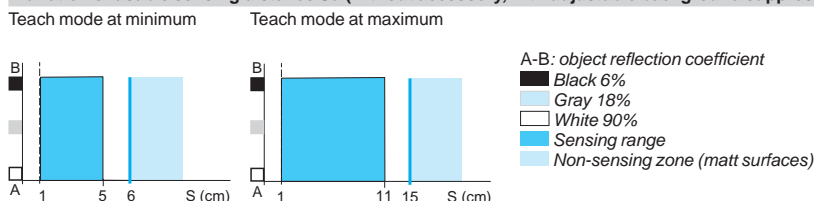
For pre-wired connectors (cables), see pages 22 and 23.

Detection curves



Object: 10 x 10 cm (3.94 x 3.94 in.), 1: white 90%, 2: gray 18%

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

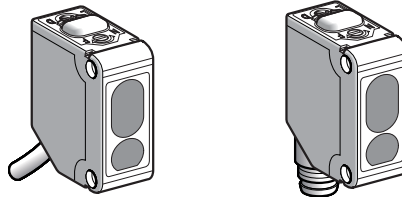


(1) Beam break input on thru-beam transmitter only.

Photoelectric sensors



OsiSense XU, general purpose
With adjustable background suppression and
foreground suppression
DC supply, solid-state output

Compact design



| | | | | | | |
|---------------------------------|--------------------------------|---|---------------|---------------|---------------|----------------|
| System | | Diffuse with adjustable background and foreground suppression, long sensing distance with high accuracy | | | | |
| Type of transmission | | Red | | | | |
| Nominal sensing distance (Sn) | | 20–300 mm (0.8–11.8 in.) | | | | |
| Differential travel | | 5% or less of the sensing distance | | | | |
| Adjustment | | Potentiometer with 5 turns | | | | |
| Catalog numbers | | Precabled | | M8 | | M12 |
| 3-wire, PNP or NPN programmable | NO or NC programmable function | PNP | NPN | PNP | NPN | PNP |
| | | XUM8APCNL2 | XUM8ANCNL2 | XUM8APCNM8 | XUM8ANCNM8 | XUM8APCNL03M12 |
| Weight, kg (lb) | | 0.065 (0.143) | 0.065 (0.143) | 0.020 (0.044) | 0.020 (0.044) | 0.035 (0.077) |

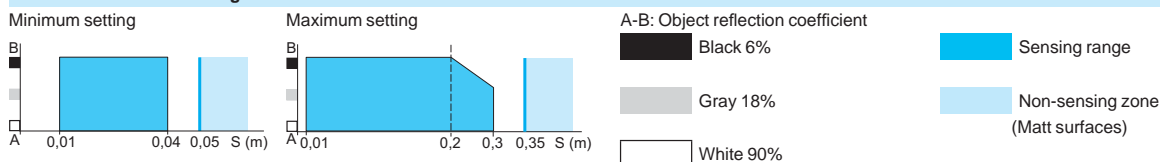
Specifications

| | | | | |
|----------------------------|------------------------------|--|--------------------|---|
| Product certifications | | CE, cURus | | |
| Ambient air temperature | | Operation: −25 to +55 °C (−13 to +131) Storage: −30 to +70 °C (+9 to +158) | | |
| Vibration resistance | Conforming to IEC 60068-2-8 | 20 gn max, amplitude: 3 mm, frequency: 10–500 Hz | | |
| Shock resistance | Conforming to IEC 60068-2-27 | 50 gn | | |
| Degree of protection | Conforming to IEC 60529 | IP67 | | |
| Material | | Case: PBT Lenses: polycarbonate | | |
| Indicator lights | Output state | Orange LED | | |
| | Power on, setup indication | Green LED | | |
| Connection | | 2 m (6.6 ft) cable Conductor c.s.a.: 0.2 mm ² | M8 4-pin connector | M12 connector offset by 0.3 m (1.0 ft) Conductor c.s.a.: 0.2 mm ² |
| Rated supply voltage | | 12–24 V  with protection against reverse polarity | | |
| Voltage limits | | 10–30 V  (including ripple) | | |
| Switching capacity | | ≤ 100 mA with overload and short-circuit protection | | |
| Immunity to ambient light | Natural light | 3000 lux | | |
| | Incandescent bulb | 3000 lux | | |
| Voltage drop, closed state | | < 2 V | | |
| Current consumption | | ≤ 20 mA | | |
| Response time | | ≤ 1 ms | | |

| Function table | | Diffuse system | | | |
|--|--------------------|-------------------------------|--|----------------------------|--|
| | | No object present in the beam | | Object present in the beam | |
| State of output (PNP or NPN) and orange LED (illuminated when sensor output is on) | NO (position L) | | | | |
| | NC (position D) | | | | |

Detection curves

Variation of usable sensing distance



Photoelectric sensors

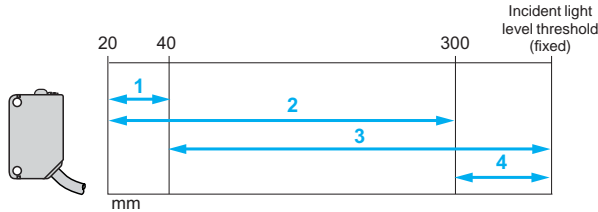
OsiSense XU, general purpose

With adjustable background suppression and
foreground suppression

DC supply, solid-state output

Detection curves

Adjustment ranges in background or foreground suppression mode



- 1 Background suppression (on minimum setting)
- 2 Background suppression (on maximum setting)
- 3 Foreground suppression (on minimum setting)
- 4 Foreground suppression (on maximum setting)

Adjustment in background or foreground suppression mode

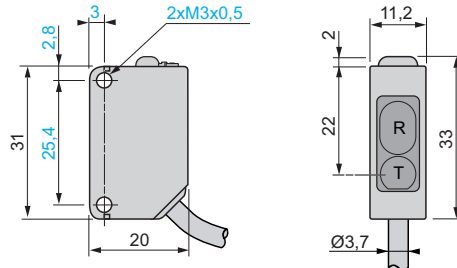
Cabling of pink wire determines the detection mode:

- Background detection mode, pink wire not connected to 0 V (blue wire)
- Foreground detection mode, pink wire connected to +V (brown wire)

| Function | Cabling | Application |
|------------------------|------------------|---|
| Background suppression | Pink wire to 0 V | To detect the object when it is detached from the background. |
| Foreground suppression | Pink wire to +V | To detect the object when it is in contact with the background or to suppress a foreground. |

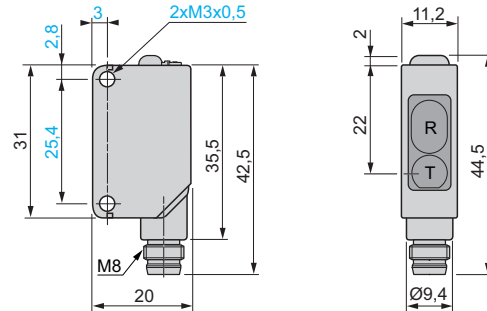
Dimensions

XUM8APCNL2, XUM8ANCNL2, and XUM8APCNL03M12

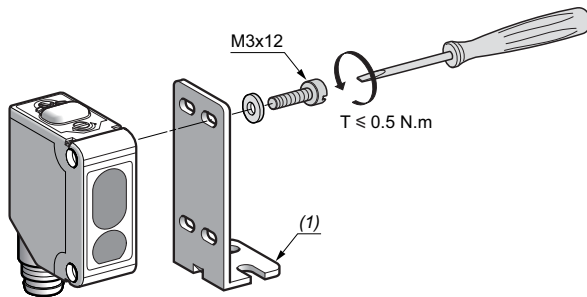


R: Reception, T: Transmission

XUM8APCNM8 and XUM8ANCNM8

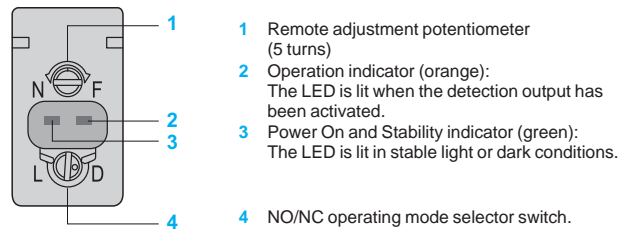


Mounting



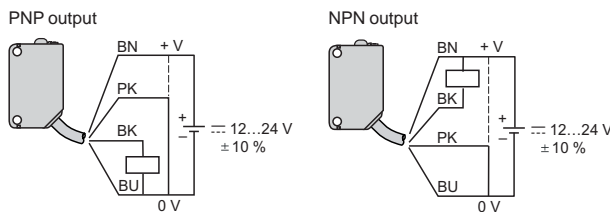
(1) XUZA50, XUZA02, or XUZA03 metal bracket
(see pages 8 and 12).

Functions



| Selector switch | Function | Description |
|-----------------|----------|--|
| L (position L) | NO | The NO output is activated when the selector switch is turned fully clockwise (position L). |
| D (position D) | NC | The NC output is activated when the selector switch is turned fully counterclockwise (position D). |

Wiring diagrams (3-wire ---)



Note: These wiring diagrams are represented in Background Suppression mode, with cabling of the pink wire (PK) to 0 V.

Cable connections

XUM8A●CNL2

(-) BU (Blue)
(+) BN (Brown)
(OUT) BK (Black)
(MODE) PK (Pink)

Connector diagrams

XUM8A●CNM8

M8 connector
2 4 3 (-)
1 1 (+)
3 4 Output
1 2 Mode/Input

XUM8APCNL03M12

M12 connector
4 3 3 (-)
1 1 (+)
4 4 Output
1 2 Mode/Input

For pre-wired connectors (cables), see pages 22 and 23.

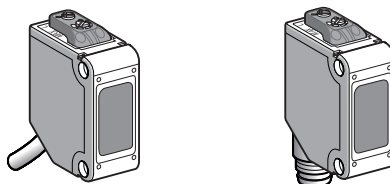
Photoelectric sensors

OsiSense XU, Application, packaging series

For detection of transparent materials



DC supply, solid-state output

Compact design



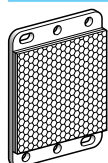
| | | | | | |
|---------------------------------|--|-------------------|-------------------|-------------------|-------------------|
| System | Reflex | | | | |
| Type of transmission | Infrared | | | | |
| Nominal sensing distance (Sn) | 0.1–1 m (0.3–3.3 ft) with reflector XUZC50CR (1) 0.8–2 m (2.6–6.6 ft) with reflector XUZC50 (1) | | | | |
| Adjustment | 270° potentiometer | | | | |
| Catalog numbers | | Precabled | | M8 | M12 |
| 3-wire, PNP or NPN programmable | NO or NC programmable function | PNP XUMTAPCNL2 | NPN XUMTANCNL2 | PNP XUMTAPCNM8 | NPN XUMTANCNM8 |
| Weight, kg (lb) | | 0.155 (0.342) | 0.155 (0.342) | 0.055 (0.121) | 0.055 (0.121) |

Specifications

| | | | | |
|----------------------------|------------------------------|--|--------------------|--|
| Product certifications | | CE, cURus | | |
| Ambient air temperature | | Operation: −25 to +55 °C (−13 to 131 °F) Storage: −30 to +70 °C (−22 to 158 °F) | | |
| Vibration resistance | Conforming to IEC 60068-2-8 | 20 gn max., amplitude: 3 mm, frequency: 10–500 Hz | | |
| Shock resistance | Conforming to IEC 60068-2-27 | 50 gn | | |
| Degree of protection | Conforming to IEC 60529 | IP67 | | |
| Material | | Case: PBT Lenses: polycarbonate | | |
| Indicator lights | Output state | Orange LED | | |
| | Power on, setup indication | Green LED | | |
| Connection | | Cable: 2 m Conductor c.s.a.: 0.2 mm² | M8 4-pin connector | M12 connector offset by 0.3 m Conductor c.s.a.: 0.2 mm² |
| Rated supply voltage | | 12–24 V  with protection against reverse polarity | | |
| Voltage limits | | 10–30 V  (including ripple) | | |
| Switching capacity | | ≤ 100 mA with overload and short-circuit protection | | |
| Immunity to ambient light | Natural light | 3000 lux | | |
| | Incandescent bulb | 3000 lux | | |
| Voltage drop, closed state | | < 2 V | | |
| Current consumption | | ≤ 10 mA | | |
| Response time | | ≤ 1 ms | | |

| Function table | Function | Diffuse system | |
|--|-----------------|-------------------------------|----------------------------|
| | | No object present in the beam | Object present in the beam |
| State of output (PNP or NPN) and orange LED (illuminated when sensor output is ON) | NO (position D) | | |
| | NC (position L) | | |

Accessories



XUZC50/XUZC50CR

| Description | Dimensions | Catalog number | Weight kg (lb) |
|--|------------|-----------------|------------------|
| Standard reflector Reflector distance from the product: 0.8–2 m (2.6–6.6 ft) | 50 x 50 mm | XUZC50 | 0.020 (0.044) |
| Application reflector Reflector distance from the product: 0.2–1 m (0.7–3.3 ft) | 50 x 50 mm | XUZC50CR | 0.020 (0.044) |

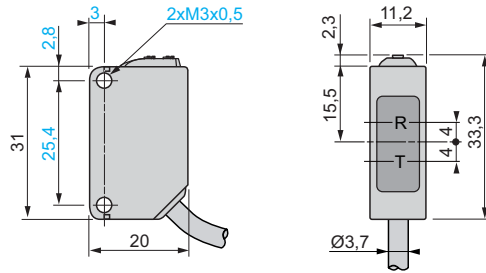
(1) Reflector must be ordered separately.

Photoelectric sensors

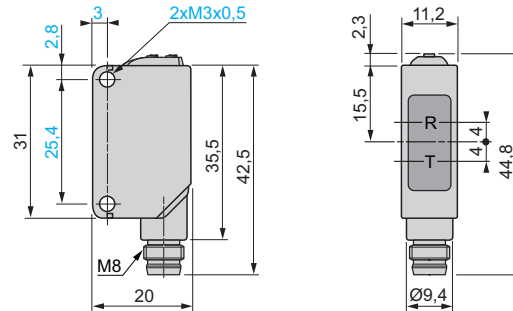
OsiSense XU, Application, packaging series
For detection of transparent materials
DC supply, solid-state output

Dimensions

XUMTAPCNL2, XUMTANCNL2, and XUMTAPCNL03M12

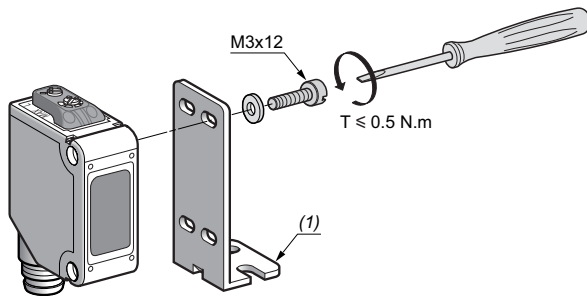


XUMTAPCNM8 and XUMTANCNM8



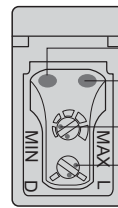
R: Reception, T: Transmission

Mounting



(1) XUZA50, XUZAM02, or XUZAM03 metal bracket (see pages 8 and 12).

Functions



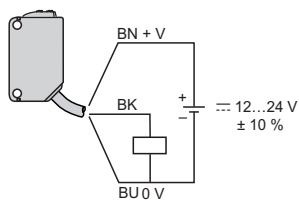
- 1 Stability indicator (green): LED lit in stable detection conditions (NO or NC)
- 2 Change indicator (orange): LED lit when the detection output has been activated
- 3 Sensitivity adjustment potentiometer
- 4 NO/NC operating mode selector switch

| NO/NC selector switch | Function | Details |
|-----------------------|-----------------|--|
| | NC (position L) | The NC output is activated when the selector switch is turned fully clockwise (position L). |
| | NO (position D) | The NO output is activated when the selector switch is turned fully counterclockwise (position D). |

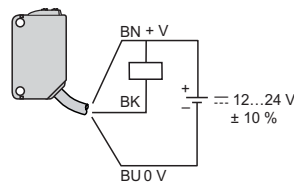
Connections

Wiring diagrams (3-wire ---)

PNP output



NPN output



Cable connections

XUMTA•CNL2

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

Connector diagrams

XUMTA•CNM8

M8 connector
2 4 3 (-)
1 (+)
3 4 Output
2 Not connected

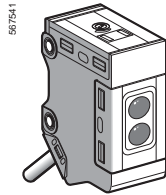
XUMTAPCNL03M12

M12 connector
4 3 (-)
1 (+)
4 Output
2 Not connected

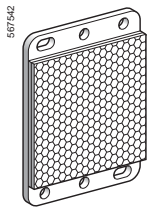
For pre-wired connectors (cables), see pages 22 and 23..

Photoelectric sensors

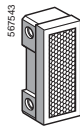
OsiSense XU Application, packaging and machine tool series
Miniature design, metal
Three-wire DC, solid-state output



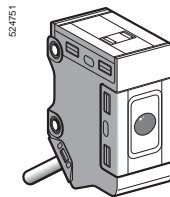
XUM5B●NL2



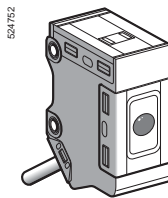
XUZC50



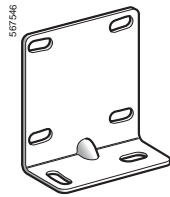
XUZC08



XUM2B2KCL2T



XUM2B●NL2R



XUZAM81

| Sensing distance (Sn) | Function | Output | Connection | Catalog number | Weight, kg (lb) |
|---|----------|--------|-------------------------|-------------------|-----------------|
| Diffuse system with adjustable sensitivity | | | | | |
| 0.77 m (2.53 ft) | NO | PNP | Precabled, 2 m (6.6 ft) | XUM5BPANL2 | 0.128 (0.282) |
| | | NPN | Precabled, 2 m (6.6 ft) | XUM5BNANL2 | 0.128 (0.282) |
| | NC | PNP | Precabled, 2 m (6.6 ft) | XUM5BPBNL2 | 0.128 (0.282) |
| | | NPN | Precabled, 2 m (6.6 ft) | XUM5BNBNL2 | 0.128 (0.282) |

| | | | | | |
|------------------------------------|----|-----|-------------------------|-------------------|---------------|
| Polarized reflex system | | | | | |
| 5 m (16.4) with reflector XUZC50 | NO | PNP | Precabled, 2 m (6.6 ft) | XUM9BPANL2 | 0.128 (0.282) |
| | | NPN | Precabled, 2 m (6.6 ft) | XUM9BNANL2 | 0.128 (0.282) |
| 2 m (6.6 ft) with reflector XUZC08 | NC | PNP | Precabled, 2 m (6.6 ft) | XUM9BPBNL2 | 0.128 (0.282) |
| | | NPN | Precabled, 2 m (6.6 ft) | XUM9BNBNL2 | 0.128 (0.282) |

| | | | | | |
|---|---|---|--|---------------|---------------|
| Reflectors | | | | | |
| Universal reflector 50 x 50 mm (1.97 x 1.97 in.) | — | — | | XUZC50 | 0.020 (0.044) |
| Lateral reflector 8.6 x 29.5 mm (0.34 x 1.16 in.) | — | — | | XUZC08 | 0.006 (0.013) |

| | | | | | |
|--|----|-----|-------------------------|-------------------|---------------|
| Thru-beam system (transmitter + receiver) | | | | | |
| 15 m (49.2 ft) | NO | PNP | Precabled, 2 m (6.6 ft) | XUM2BPANL2 | 0.237 (0.522) |
| | | NPN | Precabled, 2 m (6.6 ft) | XUM2BNANL2 | 0.237 (0.522) |
| | NC | PNP | Precabled, 2 m (6.6 ft) | XUM2BPBNL2 | 0.237 (0.522) |
| | | NPN | Precabled, 2 m (6.6 ft) | XUM2BNBNL2 | 0.237 (0.522) |

| | | | | | |
|-------------------------|--|--|-------------------------|--------------------|---------------|
| Transmitter only | | | | | |
| 15 m (49.2 ft) | | | Precabled, 2 m (6.6 ft) | XUM2BKCNL2T | 0.128 (0.282) |

| | | | | | |
|----------------------|----|-----|-------------------------|--------------------|---------------|
| Receiver only | | | | | |
| 15 m (49.2 ft) | NO | PNP | Precabled, 2 m (6.6 ft) | XUM2BPANL2R | 0.128 (0.282) |
| | | NPN | Precabled, 2 m (6.6 ft) | XUM2BNANL2R | 0.128 (0.282) |
| | NC | PNP | Precabled, 2 m (6.6 ft) | XUM2BPBNL2R | 0.128 (0.282) |
| | | NPN | Precabled, 2 m (6.6 ft) | XUM2BNBNL2R | 0.128 (0.282) |

| Mounting accessory | | | | | |
|---------------------------|--|--|--|----------------|-----------------|
| Description | | | | Catalog number | Weight, kg (lb) |
| Base-mounting bracket | | | | XUZAM81 | 0.020 (0.044) |

Specifications

| | | |
|--|------------------------------|---|
| Sensor type | | XUM•B••NL2 |
| Product certifications | | CE, cULus, CTick |
| Connection | Precabled | 2 m (6.6. ft) |
| Sensing distance | | 0.77 (2.5), diffuse system with adjustable sensitivity |
| nominal Sn (excess gain = 2) | m (ft) | 5 (16.4), polarized reflex |
| maximum (excess gain = 1) | m (ft) | 15 (49.2), thru-beam |
| Type of transmission | | Infrared, except polarized reflex system (red) |
| Degree of protection | | IP65, IP67 |
| | | IP69K |
| Temperature | | °C (°F) |
| Storage | | –40 to +70 (–40 to +158) |
| Operation | | –30 to +60 (–22 to +140) |
| Materials | | Zamack and stainless steel |
| Case | | Glass |
| Lens | | — |
| 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 | | Orange LED (excluding transmitter) |
| Stability | | Green LED |
| Transmitter | | Orange LED: supply on |
| Receiver | | Red LED: light received; green LED: supply on |
| Rated supply voltage | | V 12–24 with protection against reverse polarity |
| Voltage limits (including ripple) | | V 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 | | ms < 100 |
| First-up | | ms 0.5 |
| Response | | ms 0.5 |
| Recovery | | ms 0.5 |

Wiring diagrams

| Precabled | PNP | NPN | Transmitter --- |
|--|-----|-----|-----------------|
| (-) BU (Blue) (+) BN (Brown) OUT/Output BK (Black) | | | |

Curves

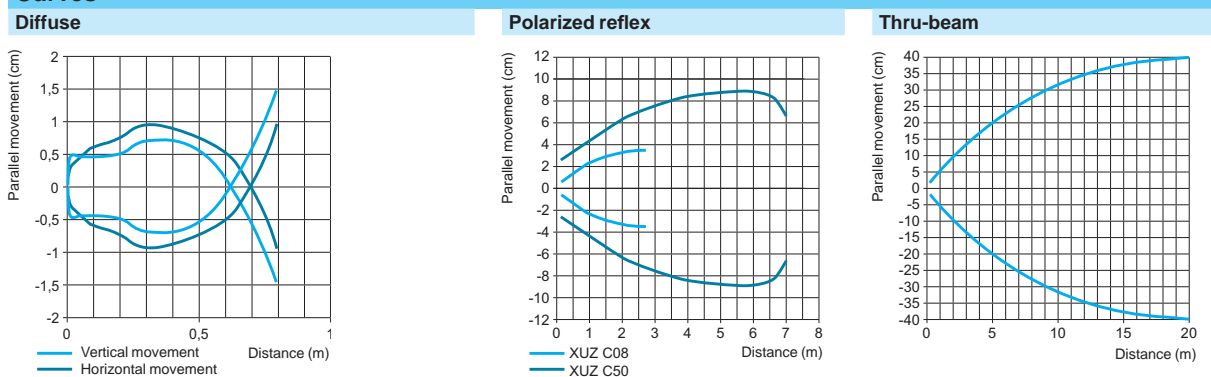


Photo-electric sensors

OsiSense XU Application, packaging and machine tool series

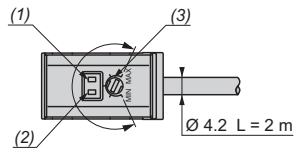
Miniature design, metal

Three-wire DC, solid-state output

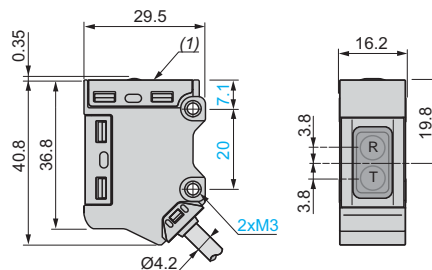
Diffuse system

XUM5B●●NL2

Description



Dimensions



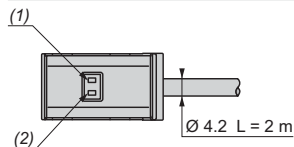
- (1) Output state LED.
(2) Stability and Power On LED.
(3) Adjustment potentiometer.

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

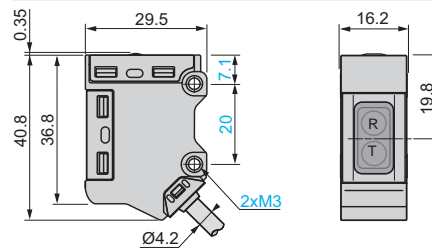
Polarized reflex system

XUM9B●●NL2

Description



Dimensions



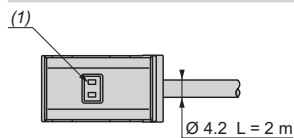
- (1) Output state LED.
(2) Stability and Power On LED.

- R: Reception, T: Transmission.

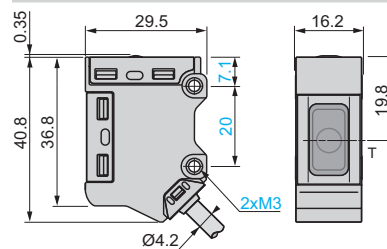
Thru-beam system

XUM2BKCNL2T

Description



Dimensions

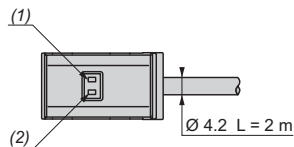


- (1) Output state LED.

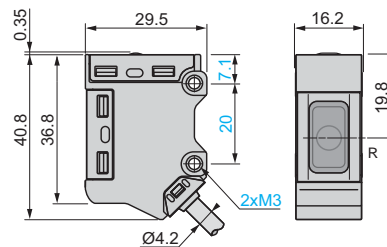
- T: Transmission.

XUM2B●●NL2R

Description



Dimensions



- (1) Output state LED.
(2) Stability and Power On LED.

- R: Reception

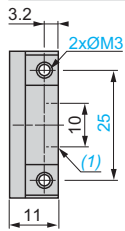
Photo-electric sensors

OsiSense XU Application, packaging and machine tool series
Miniature design, metal
Three-wire DC, solid-state output

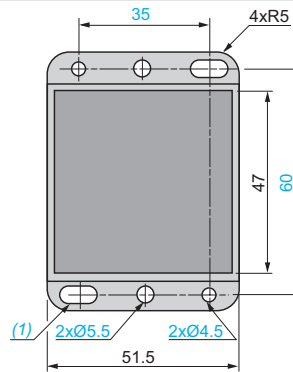
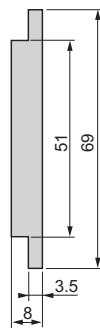
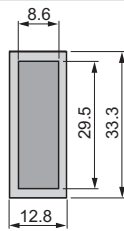
Accessories

Reflectors

XUZC08



XUZC50

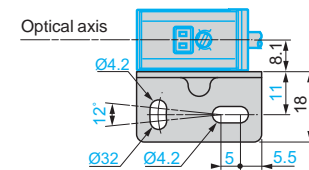
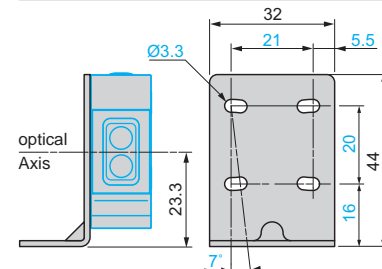


(1) 2 x M3

(1) Elongated holes $\varnothing 4.5 \times 8$

Mounting bracket

XUZAM81

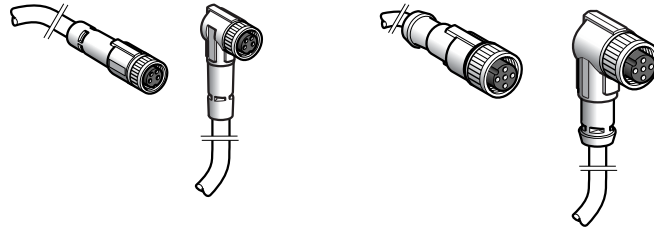


Machine cabling accessories

OsiSense XZ

Pre-wired connectors M8 and M12

PUR cable



| Connector type | Female, M8, straight | Female, M8, elbow | Female, M12, straight | Female, M12, elbow |
|----------------|----------------------|-------------------|-----------------------|--------------------|
| Number of pins | 4 | | | |

Catalog numbers

| | | | | | |
|-----------------|----------------|---------------|-------------|---------------|-------------|
| PUR cable | 2 m (6.6 ft) | XZCP0941L2 | XZCP1041L2 | XZCP1141L2 | XZCP1241L2 |
| | 5 m (16.4 ft) | XZCP0941L5 | XZCP1041L5 | XZCP1141L5 | XZCP1241L5 |
| | 10 m (32.8 ft) | XZCP0941L10 | XZCP1041L10 | XZCP1141L10 | XZCP1241L10 |
| Weight, kg (lb) | 2 m (6.6 ft) | 0.080 (0.176) | | 0.090 (0.198) | |
| | 5 m (16.4 ft) | 0.180 (0.397) | | 0.190 (0.419) | |
| | 10 m (32.8 ft) | 0.360 (0.794) | | 0.370 (0.816) | |

Specifications

| | | | |
|-------------------------|---------------|---|---|
| Certifications | | UL | UL |
| Connection type | | Screw threaded (metal clamping ring) | Screw threaded (metal clamping ring) |
| Degree of protection | | IP67 (with clamping ring correctly tightened) | IP67 (with clamping ring correctly tightened) |
| Ambiant air temperature | Static cable | −35 to +90 °C (-31 to 194 °F) | −35 to +90 °C (-31 to 194 °F) |
| | Flexing cable | −5 to +90 °C (23 to 194 °F) | −5 to +90 °C (23 to 194 °F) |
| Cabling | | Ø 5.2 mm cable, conductor c.s.a.: 4 x 0.34 mm ² | Ø 5.2 mm cable, conductor c.s.a.: 4 x 0.34 mm ² |
| LED indicators | | — | — |
| Nominal voltage | | ~ 60 V, --- 75 V | ~ 60 V, --- 75 V |
| Nominal current | | 4 A | 4 A |
| Insulation resistance | | > 10 ⁹ Ω | > 10 ⁹ Ω |
| Contact resistance | | ≤ 5 m Ω | ≤ 5 m Ω |

Dimensions

| XZCP0941L● | XZCP1041L● | XZCP1141L● | XZCP1241L● |
|------------|------------|------------|------------|
| | | | |

Length = 2 m (6.6 ft), 5 m (16.4 ft), or 10 m (32.8 ft)

Connections

| XZCP0941L● and XZCP1041L● | XZCP1141L● and XZCP1241L● |
|---------------------------|---------------------------|
| | |

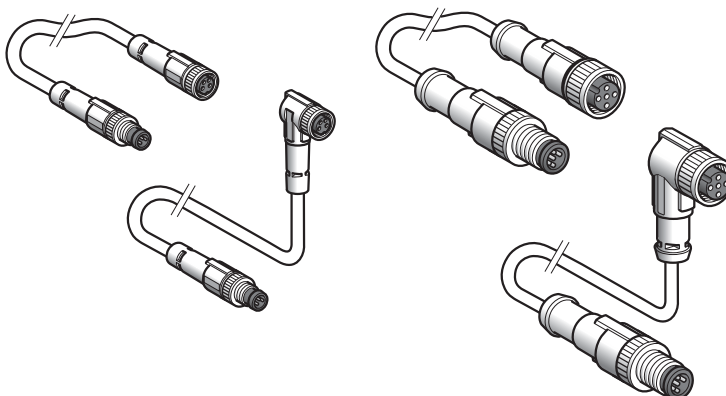
For additional connection options, such as M8 and M12 PVC cables, see the Machine Cabling section of the Sensors master catalog, 9006CT1007.

Machine cabling accessories

OsiSense XZ

Jumper cables, M8-M8 and M12-M12

PUR cable



| | | | | |
|-----------------------|---------------------|--------------------|----------------------|---------------------|
| Male connector type | M8, 3-pin, straight | | M12, 4-pin, straight | |
| Female connector type | M8, 4-pin, straight | M8, 4-pin, elbowed | M12, 4-pin, straight | M12, 4-pin, elbowed |
| Number of conductors | 3 | | 4 | |

| Catalog numbers | | | | | |
|-----------------|--------------|---------------|---------------|---------------|---------------|
| PUR cable | 1 m (3.3 ft) | XZCR2709037S1 | XZCR2710037S1 | XZCR1511041C1 | XZCR1512041C1 |
| | 2 m (6.6 ft) | XZCR2709037S2 | XZCR2710037S2 | XZCR1511041C2 | XZCR1512041C2 |
| Weight, kg (lb) | 1 m (3.3 ft) | 0.060 (0.132) | | 0.065 (0.143) | |
| | 2 m (6.6 ft) | 0.090 (0.198) | | 0.095 (0.209) | |

| Specifications | | | |
|-------------------------|---------------|--|---------------------------------|
| Certifications | | UL | UL |
| Connection type | | Male: screw threaded and clip Female: srew threaded. Metal clamping ring. | Male and female: screw threaded |
| Degree of protection | | IP67 | IP67 |
| Ambiant air temperature | Static cable | −35 to +90 °C (−31 to +194) | −35 to +90 °C (−31 to +194) |
| | Flexing cable | −5 to +90 °C (+23 to +194) | −5 to +90 °C (+23 to +194) |
| Conductor c.s.a. | | 3 x 0.34 mm ² | 4 x 0.34 mm ² |
| Cable diameter | | 5.2 mm | 5.2 mm |
| Nominal voltage | | ~ 60 V, ~ 45 V | ~ 250 V, ~ 300 V |
| Nominal current | | 4 A | 4 A |
| Insulation resistance | | > 10 ⁹ Ω | > 10 ⁹ Ω |
| Contact resistance | | ≤ 5 mΩ | ≤ 5 mΩ |

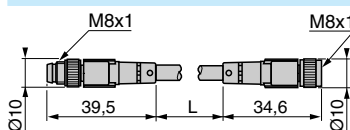
Connections

XZCR2709037S● and XZCR2710037S●

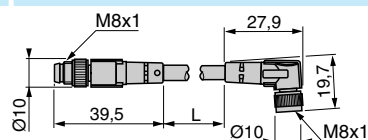


Dimensions

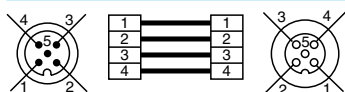
XZCR2709037S●



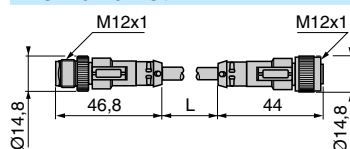
XZCR2710037S●



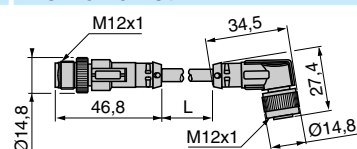
XZCR1511041C● and XZCR1512041C●



XZCR1511041C●



XZCR1512041C●



Length = 1 or 2 m (3.3 or 6.6 ft)

For additional connection options, such as M8 and M12 PVC cables, see the Machine Cabling section of the Sensors master catalog, 9006CT1007.

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