

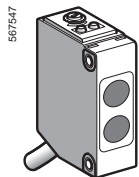
# Photo-electric sensors

OsiSense XU, general purpose, single mode function

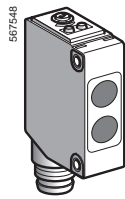
Miniature design, plastic

Three-wire DC, solid-state output

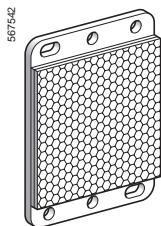
NO/NC configuration switch



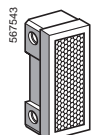
XUM5A●CNL2



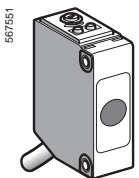
XUM5A●CNM8



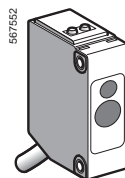
XUZC50



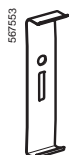
XUZC08



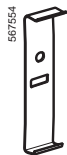
XUM2AKCNL2T



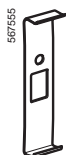
XUM2A●CNL2R



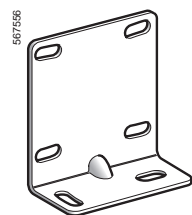
XUZMSV●●



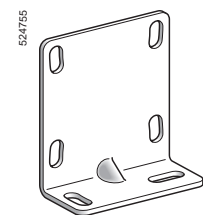
XUZMSH●●



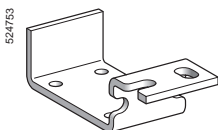
XUZMU01



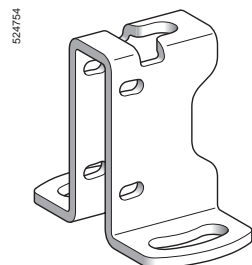
XUZAM01



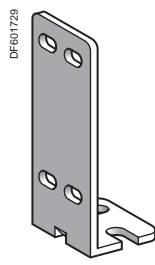
XUZAM04



XUZAM03



XUZAM02



XUZA50

| Sensing distance (Sn)                             | Function                       | Output               | Connection           | Reference  | Weight kg |
|---|--------------------------------|----------------------|----------------------|------------|-----------|
| <b>Diffuse system with adjustable sensitivity</b> |                                |                      |                      |            |           |
| 1 m   | NO/NC, configuration by switch | PNP                  | Pre-cabled (L = 2 m) | XUM5APCNL2 | 0.063     |
|   |                                |                      | M8 connector         | XUM5APCNM8 | 0.010     |
|   | NPN                            | Pre-cabled (L = 2 m) | XUM5ANCNL2           | 0.063      |           |
|   |                                | M8 connector         | XUM5ANCNM8           | 0.010      |           |

| <b>Polarised reflex system with adjustable sensitivity</b> |                                |     |                      |            |       |
|--|--------------------------------|-----|----------------------|------------|-------|
| 5 m with reflector XUZC50                                  | NO/NC, configuration by switch | PNP | Pre-cabled (L = 2 m) | XUM9APCNL2 | 0.063 |
|  |                                |     | M8 connector         | XUM9APCNM8 | 0.010 |
| 2 m with reflector XUZC08                                  | NO/NC, configuration by switch | NPN | Pre-cabled (L = 2 m) | XUM9ANCNL2 | 0.063 |
|  |                                |     | M8 connector         | XUM9ANCNM8 | 0.010 |

| <b>Reflectors</b>               |   |   |  |        |       |
|---------------------------------|---|---|--|--------|-------|
| Universal reflector 50 x 50 mm  | – | – |  | XUZC50 | 0.020 |
| Lateral reflector 8.6 x 29.5 mm | – | – |  | XUZC08 | 0.006 |

| <b>Thru-beam system (transmitter + receiver) with adjustable sensitivity</b> |                                |     |                      |            |       |
|--|--------------------------------|-----|----------------------|------------|-------|
| 15 m   | NO/NC, configuration by switch | PNP | Pre-cabled (L = 2 m) | XUM2APCNL2 | 0.119 |
|  |                                |     | M8 connector         | XUM2APCNM8 | 0.019 |
|  |                                | NPN | Pre-cabled (L = 2 m) | XUM2ANCNL2 | 0.119 |
|  |                                |     | M8 connector         | XUM2ANCNM8 | 0.019 |

| <b>Transmitter only</b> |  |  |                      |             |       |
|-------------------------|--|--|----------------------|-------------|-------|
| 15 m                    |  |  | Pre-cabled (L = 2 m) | XUM2AKCNL2T | 0.063 |
|                         |  |  | M8 connector         | XUM2AKCNM8T | 0.010 |

| <b>Receiver only</b> |                                |     |                      |             |       |
|----------------------|--------------------------------|-----|----------------------|-------------|-------|
| 15 m                 | NO/NC, configuration by switch | PNP | Pre-cabled (L = 2 m) | XUM2APCNL2R | 0.063 |
|                      |                                |     | M8 connector         | XUM2APCNM8R | 0.010 |
|                      |                                | NPN | Pre-cabled (L = 2 m) | XUM2ANCNL2R | 0.063 |
|                      |                                |     | M8 connector         | XUM2ANCNM8R | 0.010 |

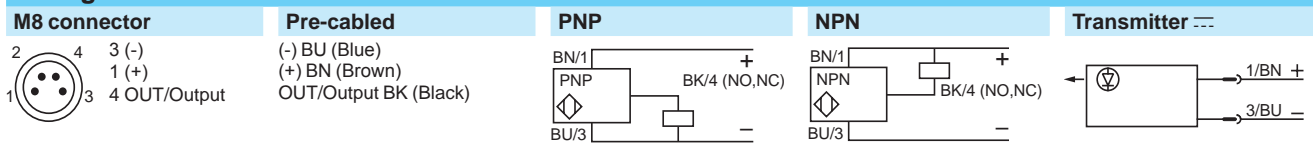
| <b>Accessories for thru-beam system</b>              |               |                    |           |           |  |
|--|---------------|--------------------|-----------|-----------|--|
| Description  | Dimensions mm | Sensing distance m | Reference | Weight kg |  |
| Vertical diaphragm<br><i>Sold in lots of 2</i>       | 0.5 x 6.4     | 1.2                | XUZMSV05  | 0.002     |  |
|  | 1 x 6.4       | 3                  | XUZMSV10  | 0.002     |  |
|  | 1.5 x 6.4     | 4                  | XUZMSV15  | 0.002     |  |
|  | 2 x 6.4       | 5                  | XUZMSV20  | 0.002     |  |
| Horizontal diaphragm<br><i>Sold in lots of 2</i>     | 0.5 x 6.4     | 1.2                | XUZMSH05  | 0.002     |  |
|  | 1 x 6.4       | 3                  | XUZMSH10  | 0.002     |  |
|  | 1.5 x 6.4     | 4                  | XUZMSH15  | 0.002     |  |
|  | 2 x 6.4       | 5                  | XUZMSH20  | 0.002     |  |
| Anti-interference filter<br><i>Sold in lots of 4</i> | –             | 7                  | XUZMU01   | 0.006     |  |

| <b>Fixing accessories</b>                           |           |           |
|---|-----------|-----------|
| Description   | Reference | Weight kg |
| Base mounting fixing bracket                        | XUZAM01   | 0.017     |
| Side mounting fixing bracket                        | XUZAM04   | 0.026     |
| Vertical fixing bracket with protective cover (1)   | XUZAM02   | 0.062     |
| Horizontal fixing bracket with protective cover (1) | XUZAM03   | 0.026     |
| Metal fixing bracket                                | XUZA50    | 0.025     |

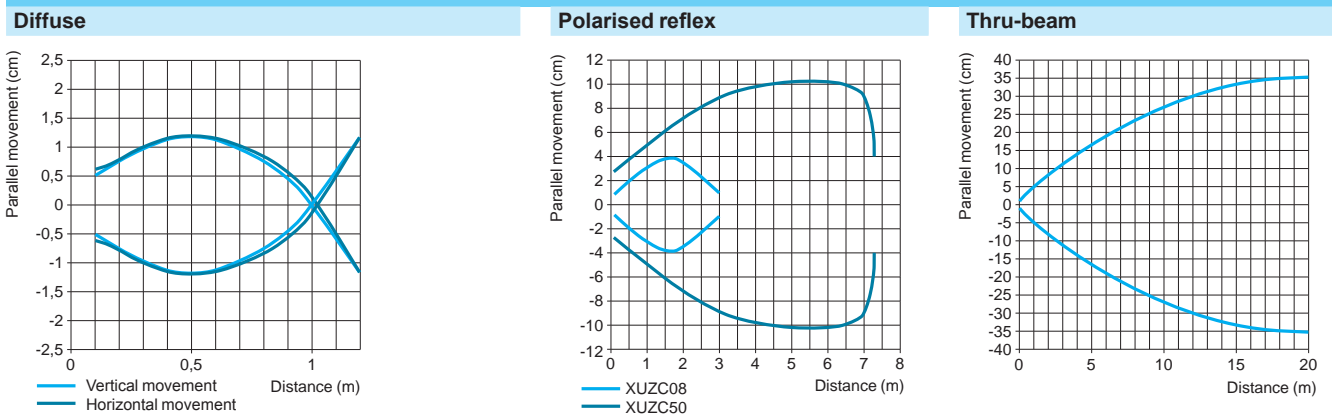
(1) For pre-cabled version

| Characteristics                                  |                              | XUM●A●●●M8   | XUM●A●●●L2   |
|--|------------------------------|--|--|
| Sensor type                                      |                              | XUM●A●●●M8   |  |
| Product certifications                           |                              | CE, cULus, CTick   |  |
| Connection                                       | Connector                    | M8   | –  |
|  | Pre-cabled                   | –  | Length: 2 m  |
| Nominal sensing distance Sn<br>(excess gain = 2) | m                            | 1 diffuse with adjustable sensitivity                                      |  |
|  | m                            | 5 polarised reflex with adjustable sensitivity                             |  |
|  | m                            | 15 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...+70   |  |
| Operating temperature                            |                              | °C -30...+60   |  |
| Materials  | Case                         | PBT  |  |
|  | Lens                         | PMMA   |  |
|  | Cable                        | –  | PVC (black for transmitter, grey 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                             |                              | V $\bar{\bar{}}$ 12...24 with protection against reverse polarity          |  |
| Voltage limits (including ripple)                |                              | V $\bar{\bar{}}$ 10...30   |  |
| Current consumption, no-load                     |                              | mA 16 for XUM5; 13 for XUM9; 11 for transmitter XUM2; 13 for receiver XUM2 |  |
| Switching capacity                               |                              | mA $\leq$ 100 with overload and short-circuit protection                   |  |
| Voltage drop, closed state                       |                              | V $\leq$ $\sqrt{3}$  |  |
| Maximum switching frequency                      |                              | Hz 1000  |  |
| Delays   | First-up                     | ms < 100   |  |
|  | Response                     | ms 0.5   |  |
|  | Recovery                     | ms 0.5   |  |

## Wiring schemes



## Curves



# Photo-electric sensors

OsiSense XU, general purpose, single mode function

Miniature design, plastic

Three-wire DC, solid-state output

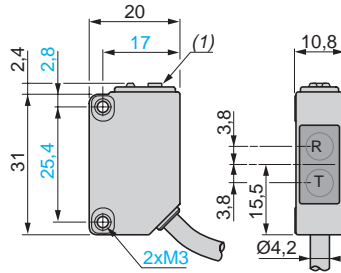
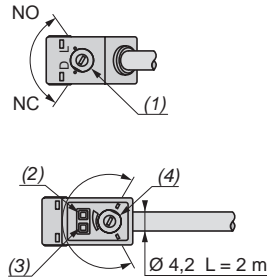
NO/NC configuration switch

## Diffuse system, polarised reflex system

### Pre-cabled version

Description - XUM5A●CNL2, XUM9A●CNL2

Dimensions - XUM5A●CNL2, XUM9A●CNL2



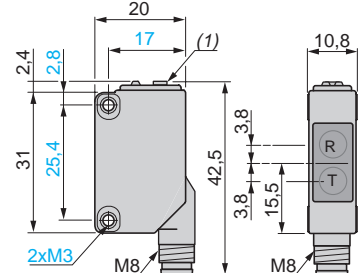
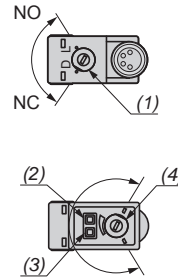
- (1) Configuration switch.
- (2) Output state LED.
- (3) Stability and power on LED.
- (4) Adjustment potentiometer.

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.

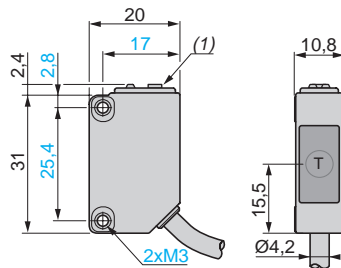
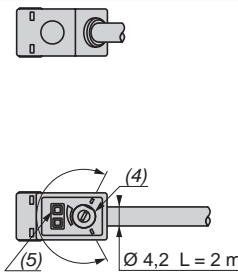
R: Reception, T: Transmission.  
(1) Potentiometer.

## Thru-beam system

### Pre-cabled version

Description - XUM2AKCNL2T

Dimensions - XUM2AKCNL2T

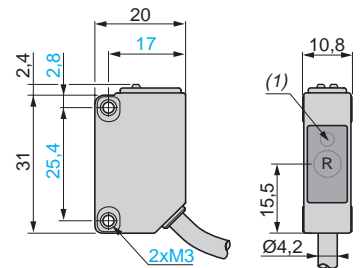
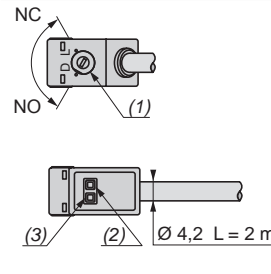


- (4) Adjustment potentiometer.
- (5) Power on LED.

T: Transmission.  
(1) Potentiometer.

Description - XUM2A●CNL2R

Dimensions - XUM2A●CNL2R



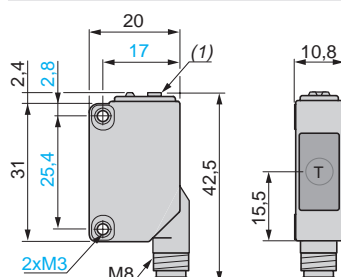
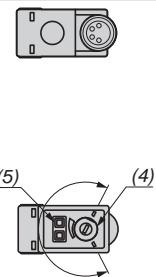
- (1) Configuration switch.
- (2) Output state LED.
- (3) Stability and power on LED.

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

### Connector version

Description - XUM2AKCNM8T

Dimensions - XUM2AKCNM8T

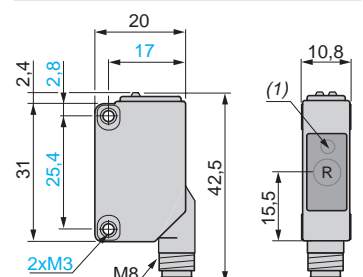
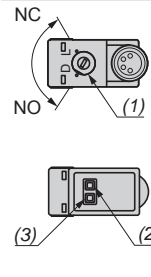


- (4) Adjustment potentiometer.
- (5) Power on LED.

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.

## Accessories

### Diaphragms

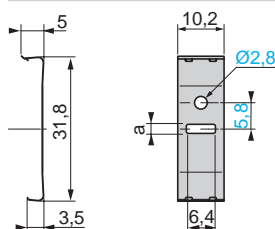
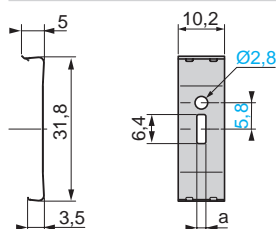
XUZMSV●●

XUZMSH●●

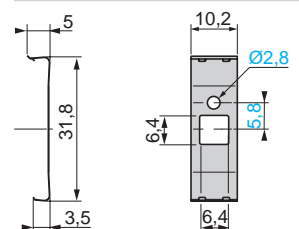
XUZ

### Filter

XUZMU01



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



# Photo-electric sensors

OsiSense XU, general purpose, single mode function

Miniature design, plastic

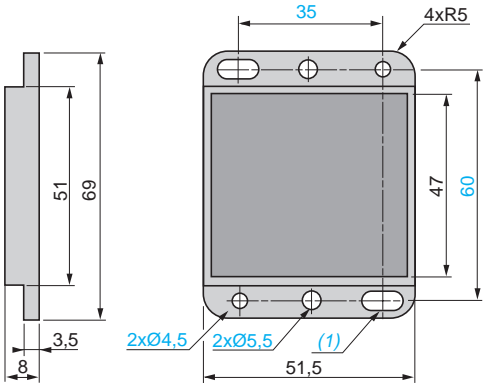
Three-wire DC, solid-state output

NO/NC configuration switch

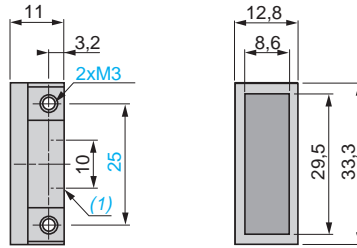
## Accessories

### Reflectors

#### XUZC50



#### XUZC08

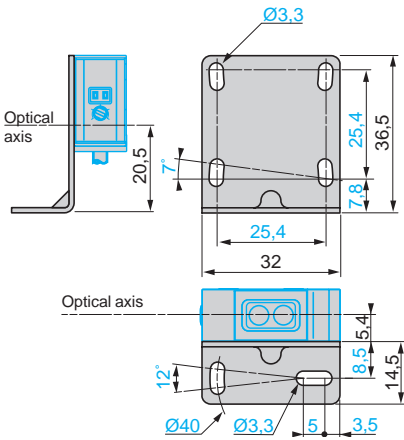


(1) 2 elongated holes Ø 4.5 x 8

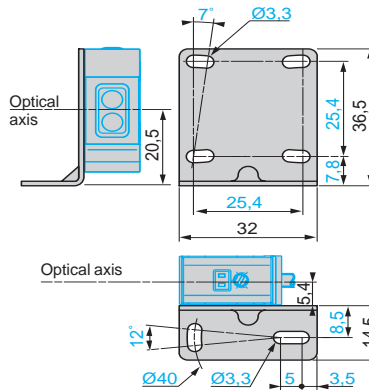
(1) 2 x M3

### Fixing brackets

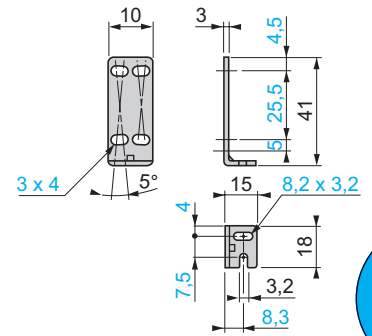
#### XUZAM04



#### XUZAM01

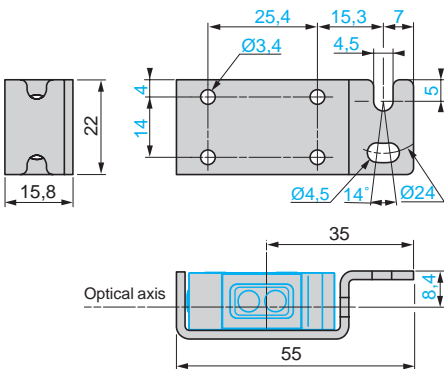


#### XUZA50

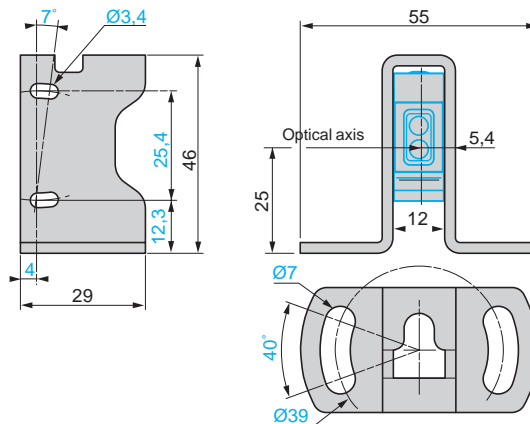


### Fixing bracket with protective cover

#### XUZAM03



#### XUZAM02





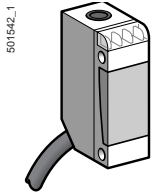
# Photo-electric sensors

OsiSense XU, general purpose

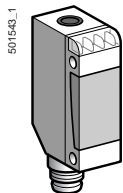
Multimode function

Miniature design

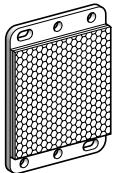
Three-wire DC, solid-state output



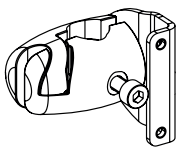
XUM0A●●●L2



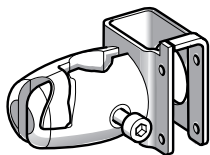
XUM0A●●●M8



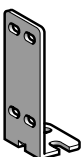
XUZC50



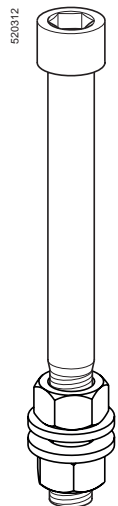
XUZM2003



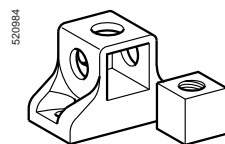
XUZM2004



XUZA50



XUZ2001



XUZ2003

## Miniature design, DC

| Sensing distance (Sn) m                             | Function                 | Output | Connection               | Reference  | Weight kg |
|---|--------------------------|--------|--------------------------|------------|-----------|
| 0...10<br>depending on whether accessories are used | NO or NC, by programming | PNP    | Pre-cabled (L = 2 m) (1) | XUM0APSAL2 | 0.050     |
|   |                          |        | M8 connector             | XUM0APSAM8 | 0.035     |
|   |                          | NPN    | Pre-cabled (L = 2 m) (1) | XUM0ANSAL2 | 0.050     |
|   |                          |        | M8 connector             | XUM0ANSAM8 | 0.035     |

## Accessories

| Description             | Connection               | Reference   | Weight kg |
|-------------------------|--------------------------|-------------|-----------|
| Thru-beam transmitter   | Pre-cabled (L = 2 m) (1) | XUM0AKSAL2T | 0.050     |
|                         | M8 connector             | XUM0AKSAM8T | 0.035     |
| Reflector<br>50 x 50 mm | –                        | XUZC50      | 0.020     |

## Fixing accessories (2)

| Description   | Reference | Weight kg |
|---|-----------|-----------|
| 3D fixing kit<br>for use on M12 rod, for XUM or XUZC50                | XUZM2003  | 0.140     |
| 3D fixing kit<br>for use on M12 rod and with protective cover for XUM | XUZM2004  | 0.155     |
| M12 rod   | XUZ2001   | 0.050     |
| Support for M12 rod   | XUZ2003   | 0.150     |
| Fixing bracket  | XUZA50    | 0.025     |

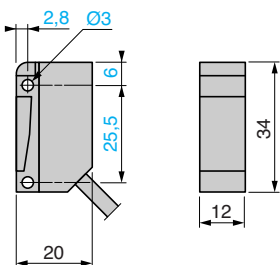
(1) For a 5 m long cable, replace L2 by L5.

Example: XUM0APSAL2 becomes XUM0APSAL5.

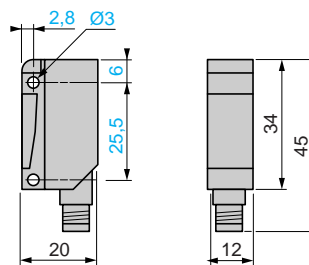
(2) For further information, see page 5/158.

## Dimensions (mm)

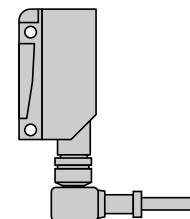
### XUM0A●●●L2



### XUM0A●●●M8


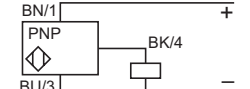
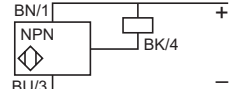
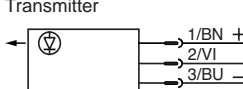


Possible orientation of elbowed connector

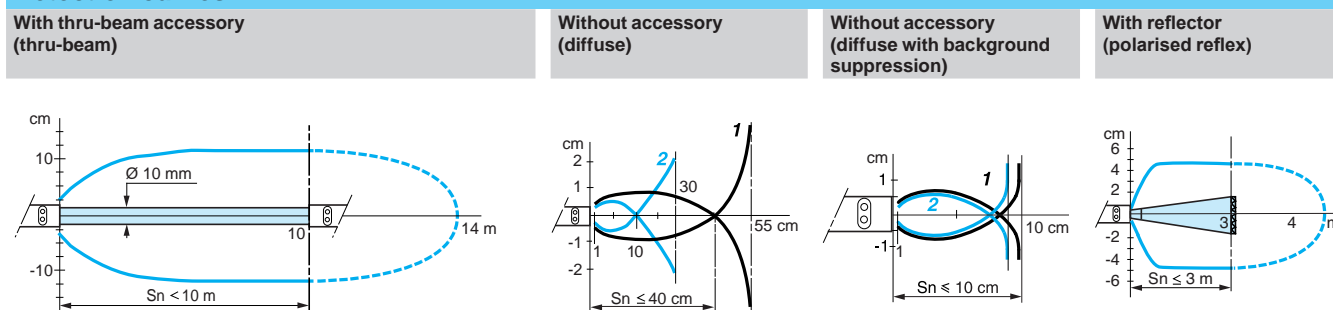


| Characteristics                                     |                              | XUM●●●●●M8  | XUM●●●●●L2  |
|---|------------------------------|---|---|
| Sensor type   |                              |   |   |
| Product certifications                              |                              | UL, CSA, CE   |   |
| Connection  | Connector                    | M8  | —   |
|   | Pre-cabled                   | —   | Length: 2 m   |
| Nominal sensing distance $S_n$<br>(excess gain = 2) | m                            | 0.11 / 0.11 without accessory (diffuse with background suppression) |   |
|   | m                            | 0.4 / 0.55 without accessory (diffuse)                              |   |
|   | m                            | 3 / 4 with reflector (polarised reflex)                             |   |
|   | m                            | 10 / 14 with transmitter for thru-beam function (thru-beam)         |   |
| Type of transmission                                |                              | Infrared, except polarised reflex (red)                             |   |
| Degree of protection                                | Conforming to IEC 60529      | IP 65, IP 67  | IP 65, IP 67, double insulation $\square$           |
| Storage temperature                                 |                              | °C  | -40...+70   |
| Operating temperature                               |                              | °C  | -25...+55   |
| Materials   | Case                         | PBT   |   |
|   | Lens                         | PMMA  |   |
|   | Cable                        | —   | PvR   |
| Vibration resistance                                | Conforming to IEC 60068-2-6  | 7 gn, amplitude $\pm 1.5$ 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/dirty  | Red LED (except for XUM0●●●●●T)                                     |   |
| Rated supply voltage                                | V                            | --- 12...24 with protection against reverse polarity                |   |
| Voltage limits (including ripple)                   | V                            | --- 10...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 schemes

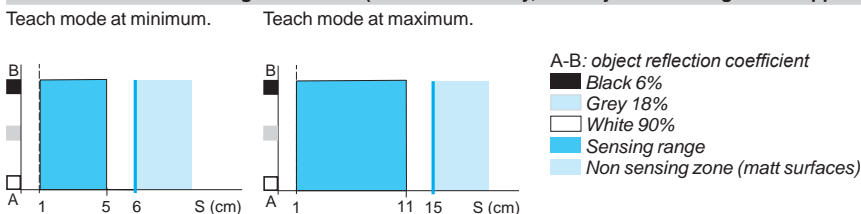
| M8 connector   | Pre-cabled   | Receiver, PNP output  | Receiver, NPN output   | Thru-beam function transmitter  |
|--|--|---|--|---|
|  <p>3 (-)<br/>1 (+)<br/>4 OUT/Output<br/>2 Beam break input (1)</p> | <p>(-) BU (Blue)<br/>(+) BN (Brown)<br/>OUT/Output BK (Black)<br/>Beam break input VI (Violet)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

## Detection curves



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

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



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

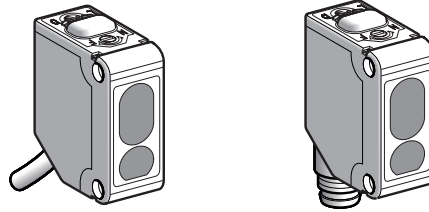
# Photo-electric sensors

OsiSense XU, general purpose

With adjustable background and foreground suppression

DC supply. Solid-state output

## Compact design



|   |   |
|---|---|
| <b>System</b>                                   | Diffuse with adjustable background and foreground suppression, long sensing distance with high accuracy |
| <b>Type of transmission</b>                     | Red   |
| <b>Nominal sensing distance (S<sub>n</sub>)</b> | 20...300 mm   |
| <b>Differential travel</b>                      | 5% or less of the sensing distance  |
| <b>Adjustment</b>                               | Potentiometer with 5 turns  |

## References

|             |                                |            |            |            |            |                |
|-------------|--------------------------------|------------|------------|------------|------------|----------------|
| 3-wire      | NO or NC programmable function | PNP        | NPN        | PNP        | NPN        | PNP            |
|             |                                | XUM8APCNL2 | XUM8ANCNL2 | XUM8APCNM8 | XUM8ANCNM8 | XUM8APCNL03M12 |
| Weight (kg) |                                | 0.065      | 0.065      | 0.020      | 0.020      | 0.035          |

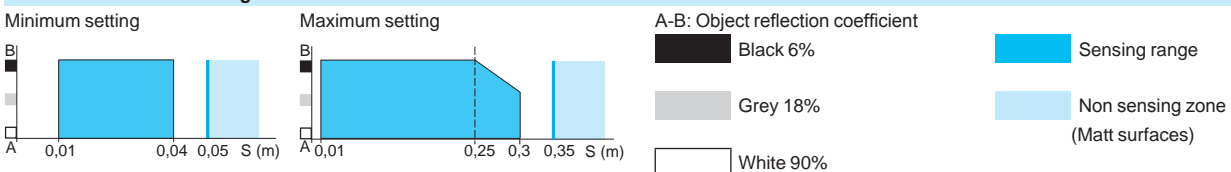
## Characteristics

|                                   |  |   |  |
|-----------------------------------|--|---|--|
| <b>Product certifications</b>     | CE, cURus  |   |  |
| <b>Ambient air temperature</b>    | For operation: -25...+55°C<br>For storage: -30...+70°C                     |   |  |
| <b>Vibration resistance</b>       | Conforming to IEC 60068-2-8  | 20 gn max, amplitude: 3 mm, frequency: 10... 500 Hz |  |
| <b>Shock resistance</b>           | Conforming to IEC 60068-2-27   | 50 gn   |  |
| <b>Degree of protection</b>       | Conforming to IEC 60529  | IP 67   |  |
| <b>Material</b>                   | Case: PBT<br>Lenses: polycarbonate   |   |  |
| <b>Indicator lights</b>           | Output state   | Orange LED  |  |
|                                   | Power on, help with setting  | Green LED   |  |
| <b>Connection</b>                 | 2 m cable<br>Conductor c.s.a.: 0.2 mm <sup>2</sup>                         | M8 4-pin connector                                  | Remote M12 connector, 0.3 m cable<br>Conductor c.s.a.: 0.2 mm <sup>2</sup> |
| <b>Rated supply voltage</b>       | 12...24 V $\overline{\text{---}}$ with protection against reverse polarity |   |  |
| <b>Voltage limits</b>             | 10...30 V $\overline{\text{---}}$ (including ripple)                       |   |  |
| <b>Switching capacity</b>         | $\leq 100$ mA with overload and short-circuit protection                   |   |  |
| <b>Immunity to ambient light</b>  | Natural light  | 3000 lux  |  |
|                                   | Incandescent bulb  | 3000 lux  |  |
| <b>Voltage drop, closed state</b> | $< 2$ V  |   |  |
| <b>Current consumption</b>        | $\leq 20$ mA   |   |  |
| <b>Response time</b>              | $\leq 1$ 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<br>(illuminated when sensor output is ON) | NO (position L) |                               |                            |
|   | NC (position D) |                               |                            |

## Detection curves

### Variation of usable sensing distance



# Photo-electric sensors

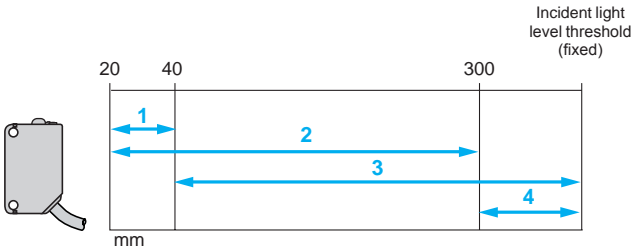
OsiSense XU, general purpose

With adjustable background 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

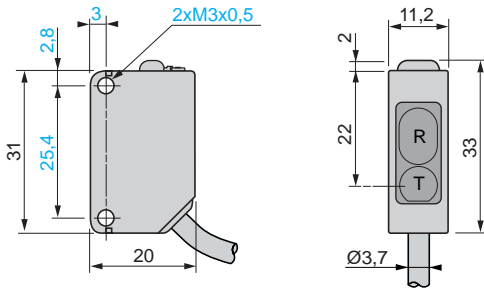
Cabling of pink wire determines the detection mode:

- 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. |

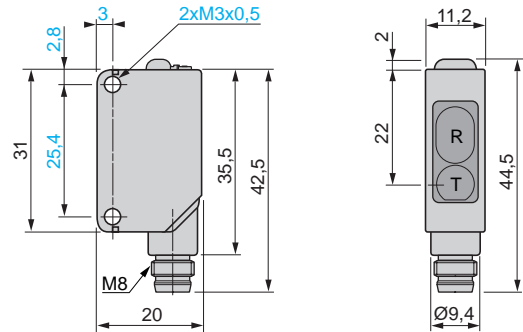
## Dimensions

XUM8APCNL2, XUM8ANCNL2 and XUM8APCNL03M12

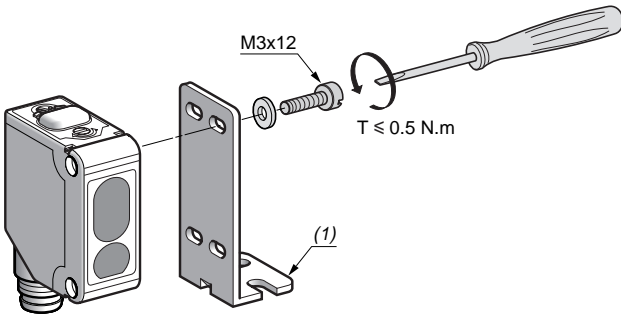


R: Reception, T: Transmission

XUM8APCNM8 and XUM8ANCNM8

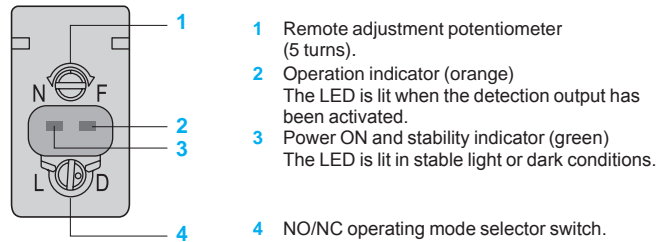


## Mounting



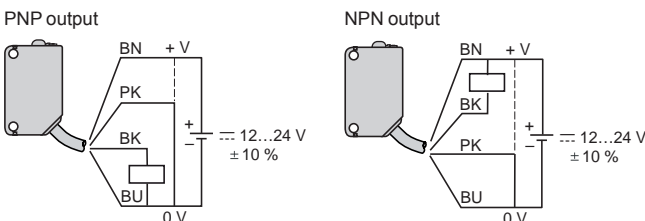
(1) XUZA50, XUZAM02 or XUZAM03 metal bracket (see pages 5/34 and 5/38).

## Functions



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

## Wiring schemes (3-wire ---)



**Note:** These schemes are represented in "background suppression" mode, cabling of pink (PK) wire to 0 V.

## Cable connections

XUM8A●CNL2

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

## Connector schemes

XUM8A●CNM8

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

XUM8APCNL03M12

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

Please refer to our "Cabling accessories OsiSense XZ" catalogue.

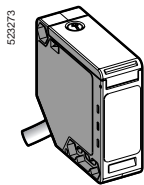
# Photo-electric sensors

OsiSense XU, general purpose, single mode function

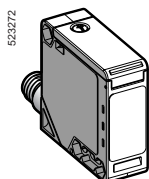
Compact design, 50 x 50

Five-wire AC or DC, 1 CO relay output

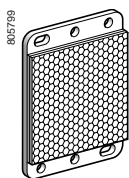
Three-wire DC, solid-state output



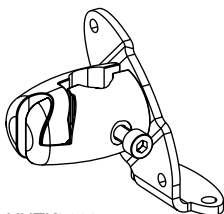
XUK●A●●●L2



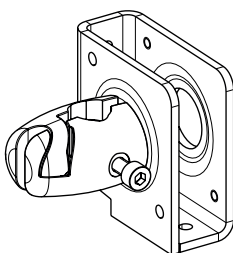
XUK●A●●●M12



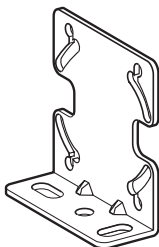
XUZC50



XUZK2003



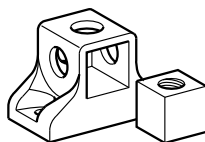
XUZK2004



XUZA51



XUZ2001



XUZ2003

| Sensing distance (Sn) m                           | Function | Output                   | Connection               | Reference   | Weight kg |
|---|----------|--------------------------|--------------------------|-------------|-----------|
| <b>Diffuse system with adjustable sensitivity</b> |          |                          |                          |             |           |
| <b>DC</b>   |          |                          |                          |             |           |
| 1   | NO       | PNP                      | Pre-cabled (L = 2 m) (1) | XUK5APANL2  | 0.190     |
|   |          |                          | M12 connector            | XUK5APANM12 | 0.070     |
|   | NPN      | PNP                      | Pre-cabled (L = 2 m) (1) | XUK5ANANL2  | 0.190     |
|   |          |                          | M12 connector            | XUK5ANANM12 | 0.070     |
|   | NC       | PNP                      | Pre-cabled (L = 2 m) (1) | XUK5APBNL2  | 0.190     |
|   |          |                          | M12 connector            | XUK5APBNM12 | 0.070     |
| NPN   | PNP      | Pre-cabled (L = 2 m) (1) | XUK5ANBNL2               | 0.190       |           |
|   |          | M12 connector            | XUK5ANBNM12              | 0.070       |           |

| <b>AC or DC</b> |         |       |                          |            |       |
|-----------------|---------|-------|--------------------------|------------|-------|
| 1               | NO + NC | Relay | Pre-cabled (L = 2 m) (1) | XUK5ARCNL2 | 0.190 |

| <b>Polarised reflex system</b> |     |                          |                          |             |       |
|--------------------------------|-----|--------------------------|--------------------------|-------------|-------|
| <b>DC</b>                      |     |                          |                          |             |       |
| 6                              | NO  | PNP                      | Pre-cabled (L = 2 m) (1) | XUK9APANL2  | 0.190 |
|                                |     |                          | M12 connector            | XUK9APANM12 | 0.070 |
|                                | NPN | PNP                      | Pre-cabled (L = 2 m) (1) | XUK9ANANL2  | 0.190 |
|                                |     |                          | M12 connector            | XUK9ANANM12 | 0.070 |
|                                | NC  | PNP                      | Pre-cabled (L = 2 m) (1) | XUK9APBNL2  | 0.190 |
|                                |     |                          | M12 connector            | XUK9APBNM12 | 0.070 |
| NPN                            | PNP | Pre-cabled (L = 2 m) (1) | XUK9ANBNL2               | 0.190       |       |
|                                |     | M12 connector            | XUK9ANBNM12              | 0.070       |       |

| <b>DC or AC</b> |                          |       |                          |            |       |
|-----------------|--------------------------|-------|--------------------------|------------|-------|
| 6               | NO + NC                  | Relay | Pre-cabled (L = 2 m) (1) | XUK9ARCNL2 | 0.190 |
|                 | Reflector 50 x 50 mm (2) | -     | -                        | XUZC50     | 0.020 |

| <b>Reflex system</b> |     |                          |                          |             |       |
|----------------------|-----|--------------------------|--------------------------|-------------|-------|
| <b>DC</b>            |     |                          |                          |             |       |
| 7                    | NO  | PNP                      | Pre-cabled (L = 2 m) (1) | XUK1APANL2  | 0.070 |
|                      |     |                          | M12 connector            | XUK1APANM12 | 0.070 |
|                      | NPN | PNP                      | Pre-cabled (L = 2 m) (1) | XUK1ANANL2  | 0.070 |
|                      |     |                          | M12 connector            | XUK1ANANM12 | 0.070 |
|                      | NC  | PNP                      | Pre-cabled (L = 2 m) (1) | XUK1APBNL2  | 0.070 |
|                      |     |                          | M12 connector            | XUK1APBNM12 | 0.070 |
| NPN                  | PNP | Pre-cabled (L = 2 m) (1) | XUK1ANBNL2               | 0.070       |       |
|                      |     | M12 connector            | XUK1ANBNM12              | 0.070       |       |

| <b>AC or DC</b> |                          |       |                          |            |       |
|-----------------|--------------------------|-------|--------------------------|------------|-------|
| 7               | NO + NC                  | Relay | Pre-cabled (L = 2 m) (1) | XUK1ARCNL2 | 0.175 |
|                 | Reflector 50 x 50 mm (2) | -     | -                        | XUZC50     | 0.020 |

| <b>Thru-beam system</b> |     |                          |                          |              |       |
|-------------------------|-----|--------------------------|--------------------------|--------------|-------|
| <b>DC</b>               |     |                          |                          |              |       |
| Transmitter 30          | -   | -                        | Pre-cabled (L = 2 m) (1) | XUK2AKSNL2T  | 0.190 |
|                         | -   | -                        | M12 connector            | XUK2AKSNM12T | 0.070 |
| Receiver 30             | NO  | PNP                      | Pre-cabled (L = 2 m) (1) | XUK2APANL2R  | 0.140 |
|                         |     |                          | M12 connector            | XUK2APANM12R | 0.075 |
|                         | NPN | PNP                      | Pre-cabled (L = 2 m) (1) | XUK2ANANL2R  | 0.140 |
|                         |     |                          | M12 connector            | XUK2ANANM12R | 0.075 |
|                         | NC  | PNP                      | Pre-cabled (L = 2 m) (1) | XUK2APBNL2R  | 0.140 |
|                         |     |                          | M12 connector            | XUK2APBNM12R | 0.075 |
| NPN                     | PNP | Pre-cabled (L = 2 m) (1) | XUK2ANBNL2R              | 0.140        |       |
|                         |     | M12 connector            | XUK2ANBNM12R             | 0.075        |       |

| <b>AC or DC</b> |         |       |                          |             |       |
|-----------------|---------|-------|--------------------------|-------------|-------|
| Transmitter, 30 | -       | -     | Pre-cabled (L = 2 m) (1) | XUK2ARCNL2T | 0.140 |
| Receiver, 30    | NO + NC | Relay | Pre-cabled (L = 2 m) (1) | XUK2ARCNL2R | 0.070 |

| <b>Fixing accessories (2)</b>                                   |           |           |  |  |  |
|---|-----------|-----------|--|--|--|
| Description   | Reference | Weight kg |  |  |  |
| 3D fixing kit for use on M12 rod, for XUK or XUZC50             | XUZK2003  | 0.170     |  |  |  |
| 3D fixing kit for use on M12 rod, with protective cover for XUK | XUZK2004  | 0.270     |  |  |  |
| M12 rod   | XUZ2001   | 0.050     |  |  |  |
| Support for M12 rod   | XUZ2003   | 0.150     |  |  |  |
| Fixing bracket  | XUZA51    | 0.050     |  |  |  |

(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, please consult our Customer Care Centre.

(2) For further information, see page 5/158.

# Photo-electric sensors

OsiSense XU, general purpose, single mode function

Compact design, 50 x 50

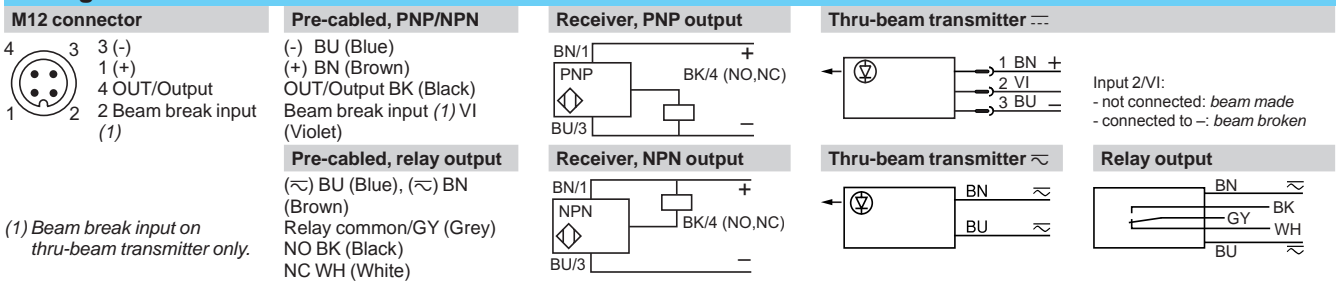
Five-wire AC or DC, 1 CO relay output

Three-wire DC, solid-state output

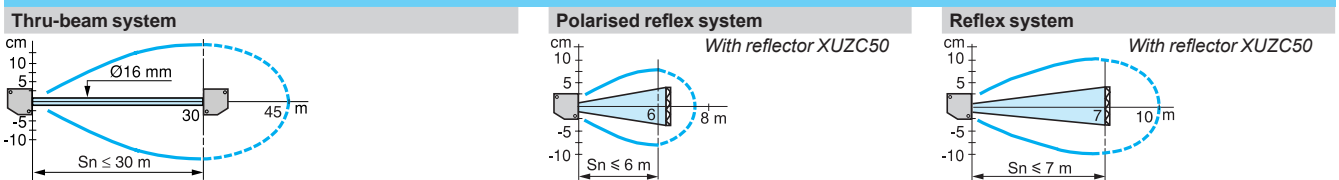
## Characteristics

| Sensor type  |              | XUK●●●●M12   | XUK●●●●L2   |
|--|--------------|--|---|
| Product certifications   |              | UL, CSA, CE  |   |
| Connection   |              | M12 connector  | Pre-cabled, length: 2 m                               |
| Sensing distance<br>nominal $S_n$ / maximum<br>(excess gain = 2) (excess gain = 1) | m            | PNP/NPN or relay output 1 / 1.5 diffuse                                    |   |
|  | m            | PNP/NPN or relay output 6 / 8 polarised reflex                             |   |
|  | m            | PNP/NPN or relay output 7 / 10 reflex                                      |   |
|  | m            | PNP/NPN or relay output 30 / 45 thru-beam                                  |   |
| Type of transmission   |              | Infrared, except polarised reflex (red)                                    |   |
| Degree of protection   |              | Conforming to IEC 60529 IP 65, double insulation II                        |   |
| Storage temperature  |              | °C - 40...+ 70   |   |
| Operating temperature  |              | °C - 25...+ 55   |   |
| Materials  | Case         | PBT  |   |
|  | Lens         | PMMA   |   |
|  | Cable        | -  | PVC   |
| Vibration resistance   |              | Conforming to IEC 60068-2-6 7 gn, amplitude $\pm 1.5$ 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  | - $\approx 24...240$                                  |
| Voltage limits (including ripple)  | PNP/NPN      | V  | $\approx 10...36$                                     |
|  | Relay output | V  | - $\approx 20...264$                                  |
| Current consumption, no-load   |              | mA   | $\leq 35$   |
| Power consumption  |              | W  | - $\approx 2$   |
| Switching capacity   | PNP/NPN      | mA   | $\leq 100$ with overload and short-circuit protection |
|  | Relay output | A  | - $\approx 3$   |
| Voltage drop, closed state   |              | V  | $\leq 1.5$  |
| 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)                    |

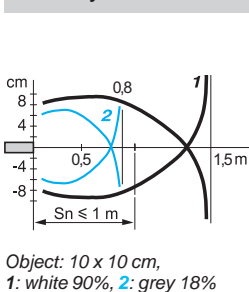
## Wiring schemes



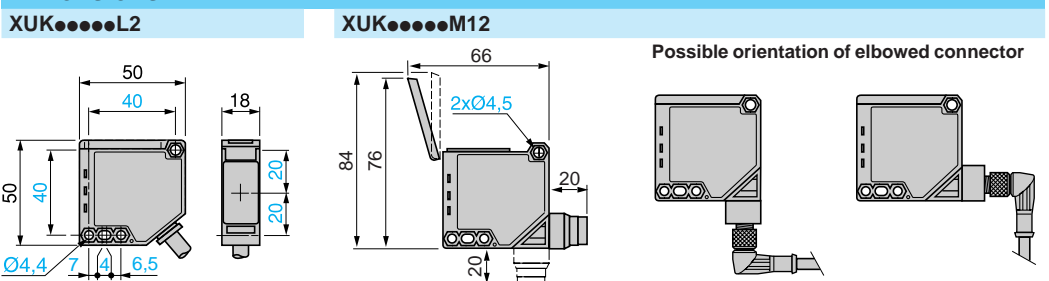
## Detection curves



## Diffuse system



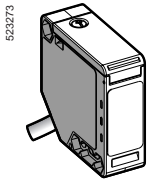
## Dimensions



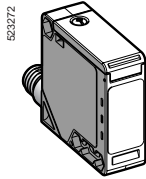


# Photo-electric sensors

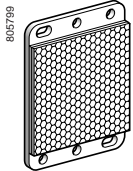
OsiSense XU, general purpose, multimode function. Compact design 50 x 50  
Five-wire AC or DC, 1 CO relay output  
Three-wire DC, solid-state output



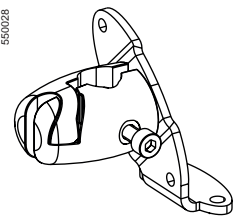
XUK0AKSAL2



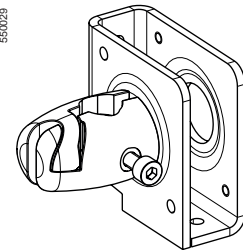
XUK0AKSAM12



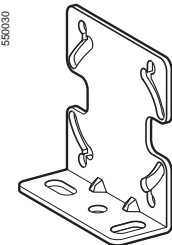
XUZC50



XUZK2003



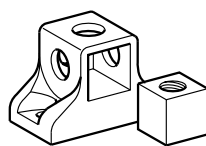
XUZK2004



XUZA51



XUZ2001



XUZ2003

## References

### DC

| Sensing distance (Sn) m                             | Function                 | Output            | Connection                                | Reference                 | Weight kg      |
|---|--------------------------|-------------------|---|---------------------------|----------------|
| 0...30<br>depending on whether accessories are used | NO or NC, by programming | Time delay output | Pre-cabled (L = 2 m) (1)<br>M12 connector | XUK0AKSAL2<br>XUK0AKSAM12 | 0.175<br>0.090 |

### Accessories

| Description                        | Connection                                | Reference                   | Weight kg      |
|------------------------------------|---|-----------------------------|----------------|
| Transmitter for thru-beam function | Pre-cabled (L = 2 m) (1)<br>M12 connector | XUK0AKSAL2T<br>XUK0AKSAM12T | 0.140<br>0.090 |
| Reflector 50 x 50 mm (2)           | -   | XUZC50                      | 0.020          |

### AC or DC

| Sensing distance (Sn) m                             | Function                 | Output           | Connection               | Reference  | Weight kg |
|---|--------------------------|------------------|--------------------------|------------|-----------|
| 0...30<br>depending on whether accessories are used | NO or NC, by programming | Time delay relay | Pre-cabled (L = 2 m) (1) | XUK0ARCTL2 | 0.175     |

### Accessories

| Description                        | Connection               | Reference   | Weight kg |
|------------------------------------|--------------------------|-------------|-----------|
| Transmitter for thru-beam function | Pre-cabled (L = 2 m) (1) | XUK0ARCTL2T | 0.140     |
| Reflector 50 x 50 mm (2)           | -                        | XUZC50      | 0.020     |

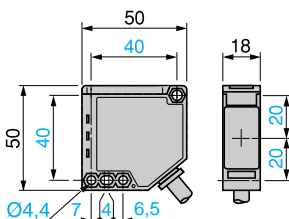
### Fixing accessories (2)

| Description   | Reference | Weight kg |
|---|-----------|-----------|
| 3D fixing kit for use on M12 rod, for XUK or XUZC50             | XUZK2003  | 0.170     |
| 3D fixing kit for use on M12 rod, with protective cover for XUK | XUZK2004  | 0.270     |
| M12 rod   | XUZ2001   | 0.050     |
| Support for M12 rod   | XUZ2003   | 0.150     |
| Fixing bracket  | XUZA51    | 0.050     |

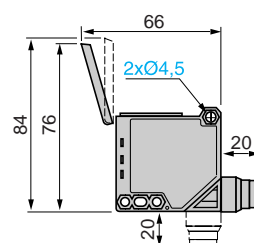
(1) For a 5 m long cable replace L2 by L5; for a 10 m long cable replace L2 by L10.  
Example: XUK0AKSAL2 becomes XUK0AKSAL5 or XUK0AKSAL10.  
(2) For further information, see page 5/158.

## Dimensions (mm)

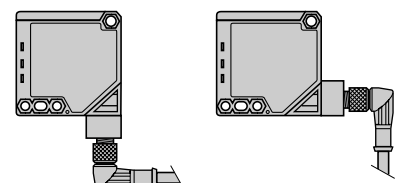
### XUK0A●●L2



### XUK0A●●M12



### Possible orientation of elbowed connector





# Photo-electric sensors

OsiSense XU, general purpose, multimode function. Compact design 50 x 50  
Five-wire AC or DC, 1 CO relay output  
Three-wire DC, solid state output

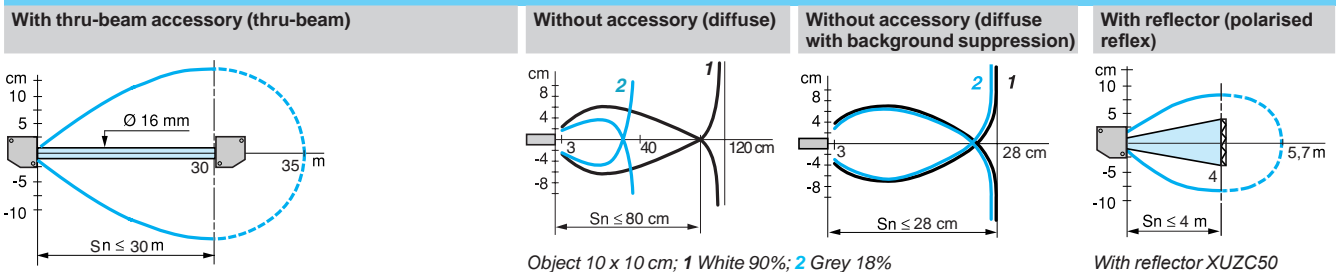
## Characteristics

| Sensor type                         |  | XUK●●●●●M12  | XUK●●●●●L2  |
|-------------------------------------|--|--|---|
| Product certifications              |  | UL, CSA, CE  |   |
| Connection                          |  | M12 connector  | Pre-cabled, length: 2 m   |
| Sensing distance                    |  | m 0.28 / 0.28 without accessory (diffuse with background suppression)  |   |
| nominal Sn / maximum                |  | m 0.8 / 1.2 without accessory (diffuse)                                |   |
| (excess gain = 2) (excess gain = 1) |  | m 4 / 5.7 with reflector (polarised reflex)                            |   |
|                                     |  | m 30 / 35 with transmitter for thru-beam function (thru-beam)          |   |
| Type of transmission                |  | Infrared, except polarised reflex (red)                                |   |
| Degree of protection                |  | Conforming to IEC 60529 IP 65, double insulation □                     |   |
| Storage temperature                 |  | °C -40...+70   |   |
| Operating temperature               |  | °C -25...+55   |   |
| 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                          |  | 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) |

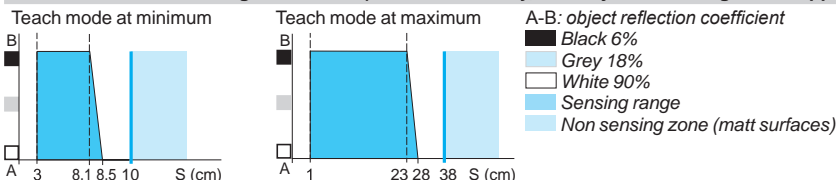
## Wiring schemes

| M12 connector   | Pre-cabled   | Receiver, PNP output           | Thru-beam transmitter ---  |
|---|--|--------------------------------|--|
| <p>4 3 (-)<br/>3 1 (+)<br/>1 2 4 OUT/Output<br/>2 Alarm or beam break input (1)</p> | <p>(-) BU (Blue)<br/>(+) BN (Brown)<br/>OUT/Output BK (Black)<br/>Alarm/WH (White)<br/>Beam break input (1)VI (Violet)</p> | <p>BN/1 PNP BK/4 WH/2 BU/3</p> | <p>Transmitter<br/>1/BN +<br/>2/VI<br/>3/BU -</p> <p>Input 2VI:<br/>- not connected: beam made<br/>- connected to -: beam broken</p> |
| Pre-cabled, relay output  | Receiver, NPN output   | Thru-beam transmitter ~        | Relay output   |
| <p>(1) Beam break input on thru-beam transmitter only.</p>                          | <p>(-) BU (Blue)<br/>(~) BN (Brown)<br/>Relay common/GY (Grey)<br/>NO BK (Black)<br/>NC WH (White)</p>                     | <p>BN/1 NPN BK/4 WH/2 BU/3</p> | <p>Transmitter<br/>BN ~<br/>BU ~</p> <p>Relay output<br/>BN ~<br/>BK ~<br/>GY ~<br/>WH ~<br/>BU ~</p>                                |

## Detection curves



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



# Photo-electric sensors

OsiSense XU, general purpose

With adjustable background suppression

Mechanical display of setting

DC supply. Solid-state output

## Compact design



|                                      |   |
|--------------------------------------|---|
| <b>System</b>                        | Diffuse with adjustable background suppression, long sensing distance with high accuracy (size of object $\geq 2$ mm) |
| <b>Type of transmission</b>          | Infrared  |
| <b>Nominal sensing distance (Sn)</b> | 1 m   |

## References

|  |                                |                   |                    |
|--|--------------------------------|-------------------|--------------------|
| <b>3-wire, PNP or NPN programmable</b> | NO or NC programmable function | <b>XUK8AKSNL2</b> | <b>XUK8AKSNM12</b> |
| <b>Weight (kg)</b>                     |                                | 0.190             | 0.070              |

## Characteristics

|                                     |  |
|-------------------------------------|--|
| <b>Product certifications</b>       | CE, UL, CSA  |
| <b>Ambient air temperature</b>      | For operation: - 25... + 55°C.<br>For storage: - 30... + 70°C  |
| <b>Vibration resistance</b>         | Conforming to IEC 60068-2-6<br>7 gn (f = 10...55 Hz)   |
| <b>Shock resistance</b>             | Conforming to IEC 60068-2-27<br>10 gn, duration 11 ms  |
| <b>Degree of protection</b>         | Conforming to IEC 60529<br>IP 65 (IP 30 with cover open).<br>NEMA 4X indoor use, 12 and 13 double insulation   |
| <b>Materials</b>                    | Case: PC, lenses: PMMA, cable: PVC   |
| <b>Connection (1)</b>               | Pre-cabled, diameter 6 mm, length 2 m, wire c.s.a.: 5 x 0.34 mm <sup>2</sup><br>M12 male connector, 4-pin, can be set at 2 positions (suitable female connectors, including pre-wired versions, see page 5/28) |
| <b>Rated supply voltage</b>         | 12...24 V $\overline{\text{DC}}$ with protection against reverse polarity  |
| <b>Voltage limits</b>               | 10...36 V $\overline{\text{DC}}$ (including ripple)  |
| <b>Switching capacity (sealed)</b>  | $\leq 100$ mA with overload and short-circuit protection   |
| <b>Voltage drop, closed state</b>   | $\leq 1.5$ V   |
| <b>Current consumption, no-load</b> | 35 mA  |
| <b>Maximum switching frequency</b>  | 250 Hz   |
| <b>Delays</b>                       | First-up: $\leq 80$ ms; response: $\leq 2$ ms; recovery: $\leq 2$ ms   |

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

(1) For a 10 m long cable replace L2 by L10.

# Photo-electric sensors

OsiSense XU, general purpose

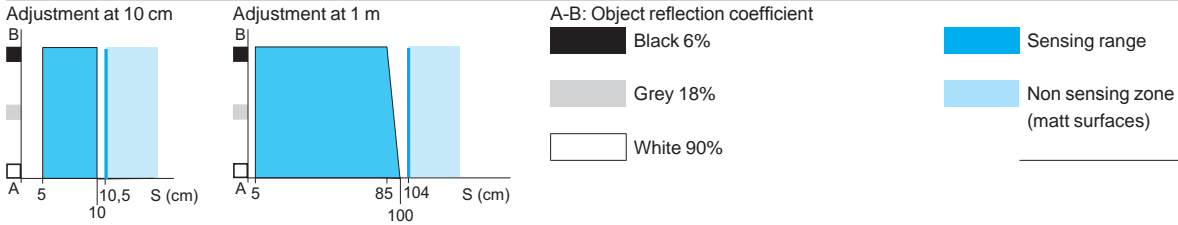
With adjustable background suppression

Mechanical display of setting

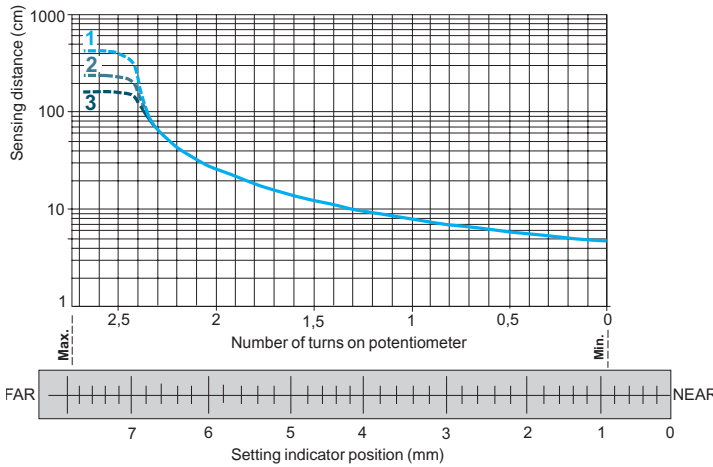
DC supply. Solid-state output

## Detection curves

### Variation of usable sensing distance $S_u$

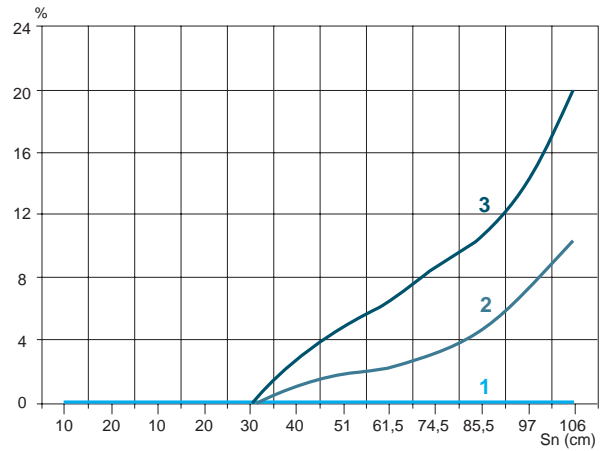


### Sensing distance adjustment



- 1 White 90%
- 2 Grey 18%
- 3 Black 6%

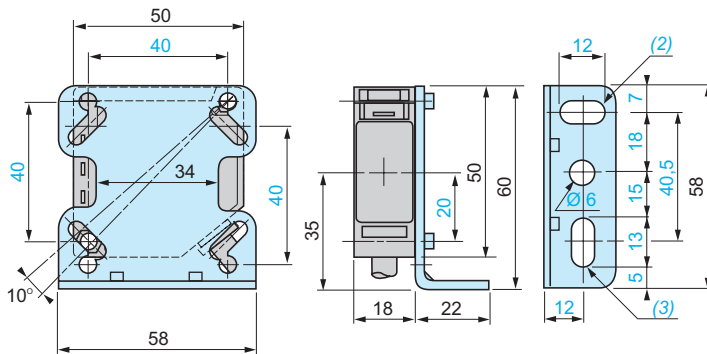
### Relative difference in sensing distances according to object colour



- 1 White 90%
- 2 Grey 18%
- 3 Black 6%

## Dimensions

### XUK8AKSNL2 (1)

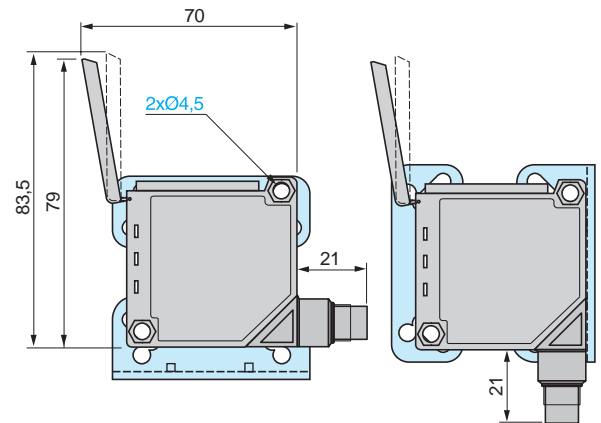


(1) The bracket **XUZA51** is included with the sensor.

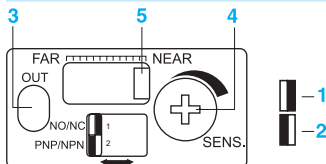
(2) 1 elongated hole  $\varnothing 6 \times 12$ .  
(3) 1 elongated hole  $\varnothing 6 \times 13$ .

### Bracket fixing (1)

### XUK8AKSNM12 with cover open (1)



## Functions



### Switches

- 1 NO/NC programming
- 2 PNP or NPN output

### LED

- 3 Yellow LED, output

### Potentiometer

- 4 Sensing distance adjustment

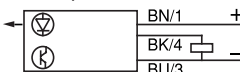
### Setting indicator

- 5 Potentiometer setting indication

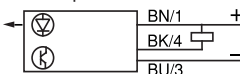
## Wiring schemes (3-wire ---)

### NO/NC programming

#### PNP output



#### NPN output



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

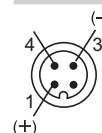
## Cable connections

### XUK8AKSNL2

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

## Connector schemes

### XUK8AKSNM12



# Photo-electric sensors

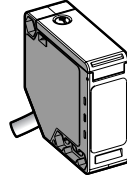
OsiSense XU, general purpose

With adjustable background suppression

Compact design, 50 x 50

Five-wire AC or DC, 1 "C/O" relay output

## Compact design



|  |  |
|--|--|
| System                                     | Diffuse with adjustable background suppression |
| Type of transmission                       | Infrared                                       |
| Nominal sensing distance (S <sub>n</sub> ) | 0.75 m   |

## References

|                                 |                                |            |
|---------------------------------|--------------------------------|------------|
| 3-wire, PNP or NPN programmable | NO or NC programmable function | XUK8ARCTL2 |
| Weight (kg)                     |                                | 0.190      |

## Characteristics

|                             |                              |  |
|-----------------------------|------------------------------|--|
| Product certifications      |                              | CE, UL, CSA  |
| Ambient air temperature     |                              | For operation: - 25... + 55°C.<br>For storage: - 30... + 70°C                |
| 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 double insulation □ (IP 30 with cover open)                            |
| Materials                   |                              | Case: PBT<br>Lenses: PMMA<br>Cable: PVC                                      |
| Indicator lights            | Output state                 | Yellow LED   |
|                             | Supply on                    | Green LED  |
|                             | Optical alignment aid/dirty  | Red LED  |
| Connection                  |                              | Pre-cabled, diameter 6 mm, length 2 m, wire c.s.a.: 5 x 0.34 mm <sup>2</sup> |
| Rated supply voltage        |                              | 24...240 V ~ or ☐  |
| Voltage limits              |                              | 20...264 V ~ or ☐ (including ripple)   |
| Switching capacity          |                              | 3 A: cos φ = 1<br>0.5 A: cos φ = 0.4   |
| Voltage drop, closed state  |                              | ≤ 1.5 V  |
| Power consumption           |                              | 3 W (~ or ☐)   |
| Maximum switching frequency |                              | 200 Hz (☐); 20 Hz (~)  |
| Time delay                  |                              | 0...15 s: on-delay, off-delay, monostable                                    |
| Delays                      |                              | First-up: ≤ 300 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:<br>yellow LED (illuminated when sensor output is ON) | NO       |                               |  |                            |  |
|   | NC       |                               |  |                            |  |

# Photo-electric sensors

OsiSense XU, general purpose

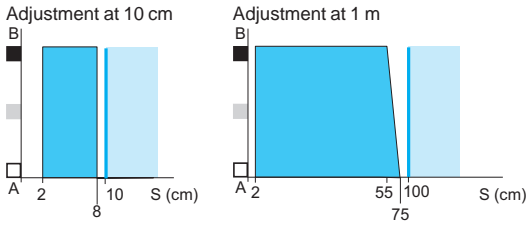
With adjustable background suppression

Compact design, 50 x 50

Five-wire AC or DC, 1 "C/O" relay output

## Detection curves

### Variation of usable sensing distance $S_u$



A-B: Object reflection coefficient

Black 6%

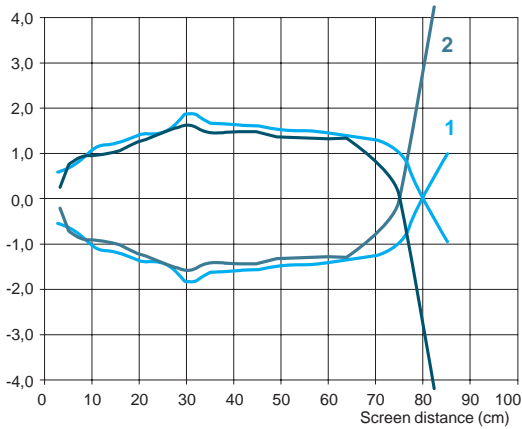
Grey 18%

White 90%

Sensing range

Non sensing zone  
(Matt surfaces)

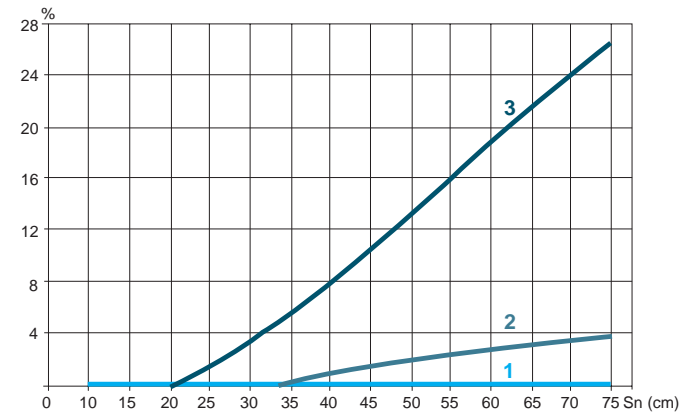
### Detection curves



Screen: 20 x 20 cm

- 1 White 90%
- 2 Grey 18%

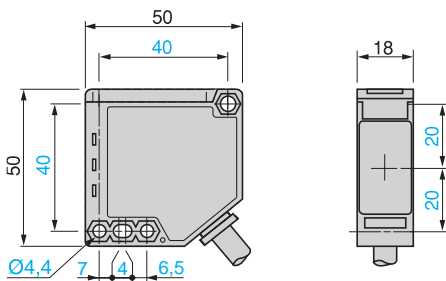
### Relative difference in sensing distances according to object colour



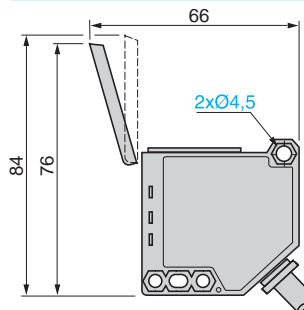
- 1 White 90%
- 2 Grey 18%
- 3 Black 6%

## Dimensions

### XUK8ARCTL2



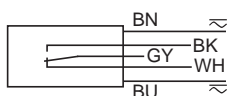
### XUK8ARCTL2 with cover open



## Connections

### Wiring scheme

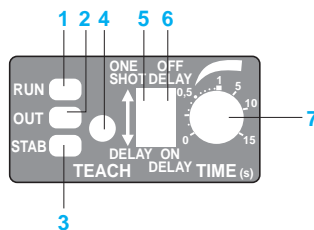
Cable connection, relay output



- ⊃ : BU (Blue)
- ⊃ : BN (Brown)
- Relay common: GY (Grey)
- NO: BK (Black), detection of object
- NC: WH (White), detection of object absence

## Description

### Indicators and settings



- 1 RUN (Supply on): Green LED
- 2 OUT (Output state): Yellow LED
- 3 STAB (Optical alignment aid/dirty): Red LED
- 4 TEACH: Teach mode button
- 5 ONE SHOT or DELAY (monostable or time delay)
- 6 ON DELAY, OFF DELAY (on-delay, off-delay)
- 7 Time delay potentiometer (0..15 s)

# Photo-electric sensors

OsiSense XU, general purpose, single mode function. Compact design

Five-wire AC or DC, 1 CO relay output

Three-wire DC, solid-state output

| Sensing distance (Sn) m   | Function | Output | Connection          | Reference          | Weight kg |
|---------------------------|----------|--------|---------------------|--------------------|-----------|
| <b>Diffuse system (1)</b> |          |        |                     |                    |           |
| <b>DC</b>                 |          |        |                     |                    |           |
| 2.1                       | NO       | PNP    | Screw terminals (3) | <b>XUX5APANT16</b> | 0.200     |
|                           |          |        | M12 connector       | <b>XUX5APANM12</b> | 0.200     |
|                           |          | NPN    | Screw terminals (3) | <b>XUX5ANANT16</b> | 0.200     |
|                           |          |        | M12 connector       | <b>XUX5ANANM12</b> | 0.200     |
|                           | NC       | PNP    | Screw terminals (3) | <b>XUX5APBNT16</b> | 0.200     |
|                           |          |        | M12 connector       | <b>XUX5APBNM12</b> | 0.200     |
|                           |          | NPN    | Screw terminals (3) | <b>XUX5ANBNT16</b> | 0.200     |
|                           |          |        | M12 connector       | <b>XUX5ANBNM12</b> | 0.200     |

| <b>AC or DC</b> |         |       |                     |                    |       |
|-----------------|---------|-------|---------------------|--------------------|-------|
| 2.1             | NO + NC | Relay | Screw terminals (3) | <b>XUX5ARCNT16</b> | 0.200 |

| <b>Polarised reflex system (1)</b> |    |     |                     |                    |       |
|------------------------------------|----|-----|---------------------|--------------------|-------|
| <b>DC</b>                          |    |     |                     |                    |       |
| 11                                 | NO | PNP | Screw terminals (3) | <b>XUX9APANT16</b> | 0.200 |
|                                    |    |     | M12 connector       | <b>XUX9APANM12</b> | 0.200 |
|                                    |    | NPN | Screw terminals (3) | <b>XUX9ANANT16</b> | 0.200 |
|                                    |    |     | M12 connector       | <b>XUX9ANANM12</b> | 0.200 |
|                                    | NC | PNP | Screw terminals (3) | <b>XUX9APBNT16</b> | 0.200 |
|                                    |    |     | M12 connector       | <b>XUX9APBNM12</b> | 0.200 |
|                                    |    | NPN | Screw terminals (3) | <b>XUX9ANBNT16</b> | 0.200 |
|                                    |    |     | M12 connector       | <b>XUX9ANBNM12</b> | 0.200 |

| <b>AC or DC</b>          |         |       |                     |                    |       |
|--------------------------|---------|-------|---------------------|--------------------|-------|
| 11                       | NO + NC | Relay | Screw terminals (3) | <b>XUX9ARCNT16</b> | 0.200 |
| Reflector 50 x 50 mm (2) |         |       |                     | <b>XUZC50</b>      | 0.020 |

| <b>Reflex system (1)</b> |    |     |                     |                    |       |
|--------------------------|----|-----|---------------------|--------------------|-------|
| <b>DC</b>                |    |     |                     |                    |       |
| 14                       | NO | PNP | Screw terminals (3) | <b>XUX1APANT16</b> | 0.200 |
|                          |    |     | M12 connector       | <b>XUX1APANM12</b> | 0.200 |
|                          |    | NPN | Screw terminals (3) | <b>XUX1ANANT16</b> | 0.200 |
|                          |    |     | M12 connector       | <b>XUX1ANANM12</b> | 0.200 |
|                          | NC | PNP | Screw terminals (3) | <b>XUX1APBNT16</b> | 0.200 |
|                          |    |     | M12 connector       | <b>XUX1APBNM12</b> | 0.200 |
|                          |    | NPN | Screw terminals (3) | <b>XUX1ANBNT16</b> | 0.200 |
|                          |    |     | M12 connector       | <b>XUX1ANBNM12</b> | 0.200 |

| <b>AC or DC</b>          |         |       |                     |                    |       |
|--------------------------|---------|-------|---------------------|--------------------|-------|
| 14                       | NO + NC | Relay | Screw terminals (3) | <b>XUX1ARCNT16</b> | 0.200 |
| Reflector 50 x 50 mm (2) |         |       |                     | <b>XUZC50</b>      | 0.020 |

| <b>Thru-beam system (1)</b> |  |    |                     |                     |                     |       |
|-----------------------------|--|----|---------------------|---------------------|---------------------|-------|
| <b>DC</b>                   |  |    |                     |                     |                     |       |
| <b>Transmitter</b>          |  |    | Screw terminals (3) | <b>XUX0AKSAT16T</b> | 0.200               |       |
| <b>40</b>                   |  |    |                     | M12 connector       | <b>XUX0AKSAM12T</b> | 0.200 |
| <b>Receiver</b>             |  | NO | PNP                 | Screw terminals (3) | <b>XUX2APANT16R</b> | 0.200 |
| <b>40</b>                   |  |    |                     | M12 connector       | <b>XUX2APANM12R</b> | 0.200 |
|                             |  |    | NPN                 | Screw terminals (3) | <b>XUX2ANANT16R</b> | 0.200 |
|                             |  |    |                     | M12 connector       | <b>XUX2ANANM12R</b> | 0.200 |
|                             |  | NC | PNP                 | Screw terminals (3) | <b>XUX2APBNT16R</b> | 0.200 |
|                             |  |    |                     | M12 connector       | <b>XUX2APBNM12R</b> | 0.200 |
|                             |  |    | NPN                 | Screw terminals (3) | <b>XUX2ANBNT16R</b> | 0.200 |
|                             |  |    |                     | M12 connector       | <b>XUX2ANBNM12R</b> | 0.200 |

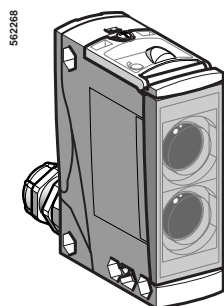
| <b>AC or DC</b>    |  |         |                     |                     |                     |       |
|--------------------|--|---------|---------------------|---------------------|---------------------|-------|
| <b>Transmitter</b> |  |         | Screw terminals (3) | <b>XUX0ARCTT16T</b> | 0.200               |       |
| <b>40</b>          |  |         |                     |                     |                     |       |
| <b>Receiver</b>    |  | NO + NC | Relay               | Screw terminals (3) | <b>XUX2ARCNT16R</b> | 0.200 |
| <b>40</b>          |  |         |                     |                     |                     |       |

| <b>Fixing accessories (2)</b>                                   |                 |           |
|---|-----------------|-----------|
| Description   | Reference       | Weight kg |
| 3D fixing kit for use on M12 rod, for XUX or XUZC50             | <b>XUXZ2003</b> | 0.220     |
| 3D fixing kit for use on M12 rod, with protective cover for XUX | <b>XUXZ2004</b> | 0.420     |
| M12 rod   | <b>XUZ2001</b>  | 0.050     |
| Support for M12 rod   | <b>XUZ2003</b>  | 0.150     |
| Fixing bracket  | <b>XUXZ2000</b> | 0.120     |

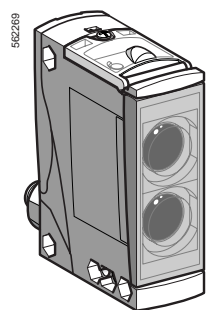
(1) With adjustable sensitivity.

(2) For further information, see page 5/158.

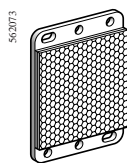
(3) Screw terminals with ISO 16 cable gland for cable Ø 7 to 10 mm.



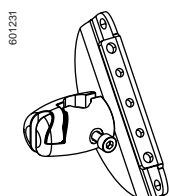
XUX●A●●●T16



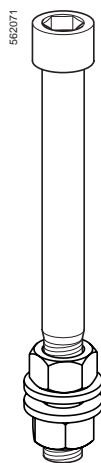
XUX●A●●●M12



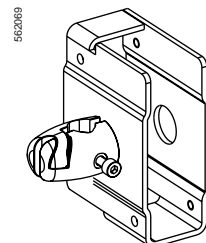
XUZC50



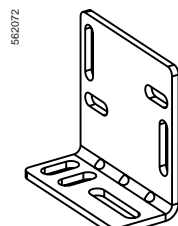
XUXZ2003



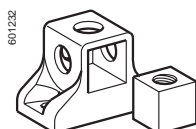
XUZZ2001



XUXZ2004



XUXZ2000



XUZZ2003




# Photo-electric sensors

OsiSense XU, general purpose,  
single mode function. Compact design  
Five-wire AC or DC, 1 CO relay output  
Three-wire DC, solid-state output

## Characteristics

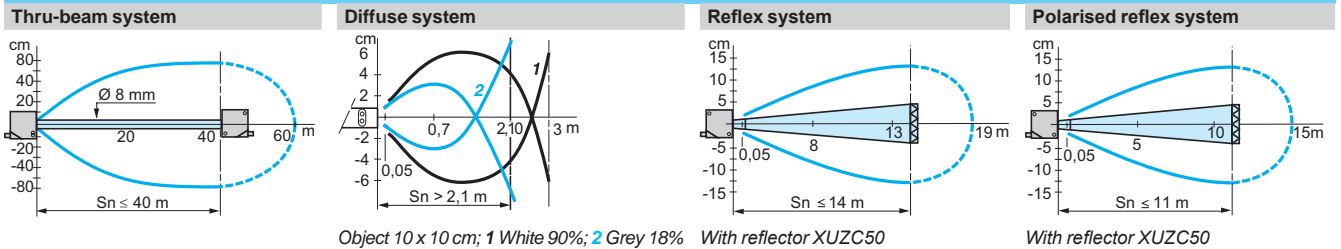
| Sensor type   |  | XUX●●●●●M12                             | XUX●AN●NT16, ●AP●NT16   | XUX●ARC●T16   |
|---|--|---|---|---|
| Product certifications  |  | UL, CSA, CE                             |   |   |
| Connection  |  | M12 connector                           | Screw terminals, ISO 16 cable gland   |   |
| Sensing distance nominal Sn / maximum (excess gain = 2) (excess gain = 1) |  | <b>m</b>                                | <b>2.1 / 3 diffuse with adjustable sensitivity</b>                                  |   |
|   |  | <b>m</b>                                | <b>11 / 15 polarised reflex with adjustable sensitivity (with reflector XUZC50)</b> |   |
|   |  | <b>m</b>                                | <b>14 / 19 reflex with adjustable sensitivity</b>                                   |   |
|   |  | <b>m</b>                                | <b>40 / 60 thru-beam with adjustable sensitivity</b>                                |   |
| Type of transmission  |  | Infrared, except polarised reflex (red) |   |   |
| Degree of protection  |  | Conforming to IEC 60529                 | IP 65, IP 67, double insulation □   |   |
| Storage temperature   |  | °C -40...+70                            |   |   |
| Operating temperature   |  | °C -25...+55                            |   |   |
| 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   |   |
|   |  | Instability                             | Red LED (for XUX9ARCNT16)   |   |
| 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 schemes

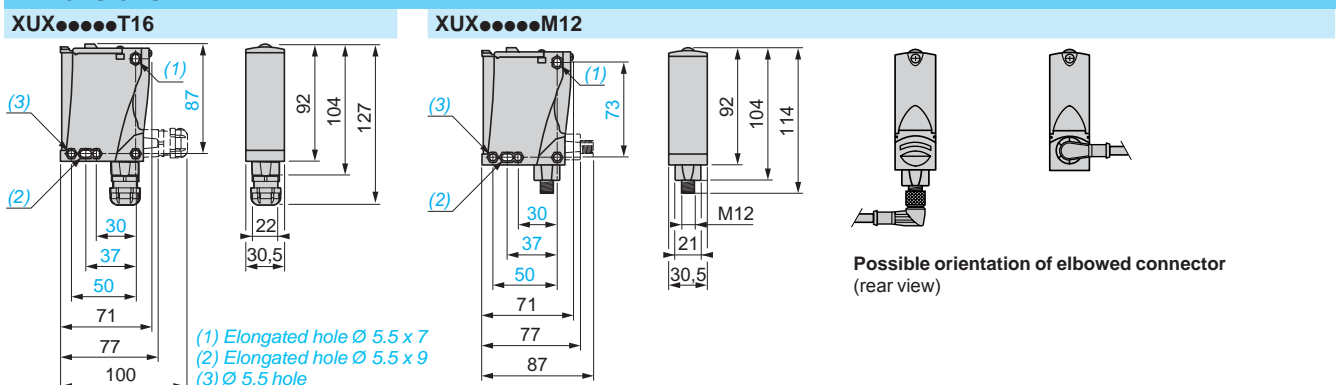
| M12 connector   | Relay output ~   | PNP/NPN ---                              | Transmitter ---   | Transmitter ~  |
|---|--|--|---|----------------|
|   | Terminals  | M12 Terminals                            | M12 Terminals   | Terminals      |
|  | 1 ⊘ ~<br>2 ⊘ ~<br>3 ⊘ NO<br>4 ⊘ Relay common<br>5 ⊘ NC | 1 ● 1 ⊘ +<br>3 ● 2 ⊘ -<br>4 ● 3 ⊘ Output | 1 ● 1 ⊘ +<br>3 ● 2 ⊘ -<br>2 ● 3 ⊘ Beam break input (1)                    | 1 ⊘ ~<br>2 ⊘ ~ |
|   |  |  | (1) Input not connected: beam made.<br>Input connected to -: beam broken. |                |

Maximum permissible conductor c.s.a.: 1 x 1.5 mm<sup>2</sup> or 1 x 0.75 mm<sup>2</sup> with cable end.

## Detection curves



## Dimensions





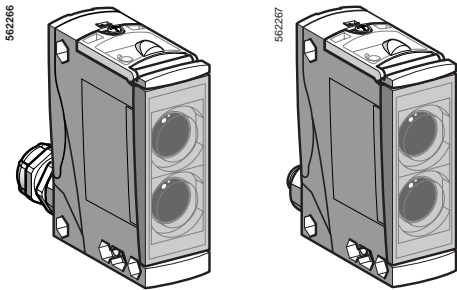
# Photo-electric sensors

OsiSense XU, general purpose, multimode function <sup>(1)</sup>

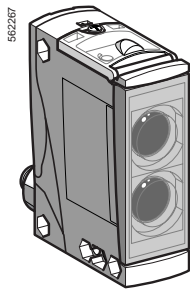
Compact design

Five-wire AC or DC, 1 CO relay output

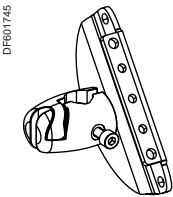
Three-wire DC, solid-state output



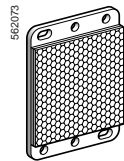
XUX0ARCTT16



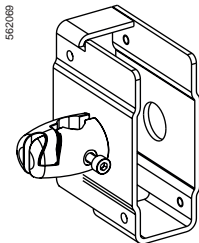
XUX0AKSAM12



XUZX2003



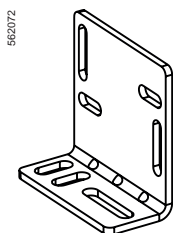
XUZC50



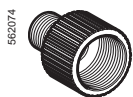
XUZX2004



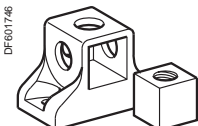
XUZZ001



XUZX2000



XUZX2001



XUZX2002

## References

### DC

| Sensing distance (Sn) m                          | Function                 | Output  | Connection   | Reference                  | Weight kg      |
|--|--------------------------|---------|--|----------------------------|----------------|
| 0...40 depending on whether accessories are used | NO or NC, by programming | PNP/NPN | Screw terminals, ISO 16 cable gland (3)<br>M12 connector | XUX0AKSAT16<br>XUX0AKSAM12 | 0.200<br>0.200 |

### Accessories

| Description                        | Connection   | Reference                    | Weight kg      |
|------------------------------------|--|------------------------------|----------------|
| Transmitter for thru-beam function | Screw terminals, ISO 16 cable gland (3)<br>M12 connector | XUX0AKSAT16T<br>XUX0AKSAM12T | 0.200<br>0.200 |
| Reflector 50 x 50 mm               | -  | XUZC50                       | 0.020          |

### AC or DC

| Sensing distance (Sn) m                          | Function                 | Output           | Connection                              | Reference   | Weight kg |
|--|--------------------------|------------------|---|-------------|-----------|
| 0...40 depending on whether accessories are used | NO or NC, by programming | Time delay relay | Screw terminals, ISO 16 cable gland (3) | XUX0ARCTT16 | 0.200     |

### Accessories

| Description                        | Connection                              | Reference    | Weight kg |
|------------------------------------|---|--------------|-----------|
| Transmitter for thru-beam function | Screw terminals, ISO 16 cable gland (3) | XUX0ARCTT16T | 0.200     |
| Reflector 50 x 50 mm               | -                                       | XUZC50       | 0.020     |

### Fixing accessories (2)

| Description   | Reference | Weight kg |
|---|-----------|-----------|
| 3D fixing kit for use on M12 rod, for XUX or XUZC50             | XUZX2003  | 0.220     |
| 3D fixing kit for use on M12 rod, with protective cover for XUX | XUZX2004  | 0.420     |
| M12 rod   | XUZZ001   | 0.050     |
| Support for M12 rod   | XUZX2000  | 0.150     |
| Fixing bracket  | XUZX2000  | 0.120     |
| Adaptor, ISO 16 - 1/2" NPT                                      | XUZX2001  | 0.050     |
| Adaptor, ISO 16 - ISO 20  | XUZX2002  | 0.050     |

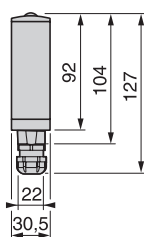
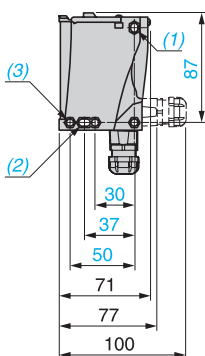
(1) For further information on **the multimode function**, see page 5/14.

(2) For further information, see page 5/158.

(3) For  $\varnothing$  7 to 10 mm cable.

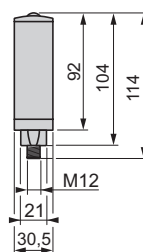
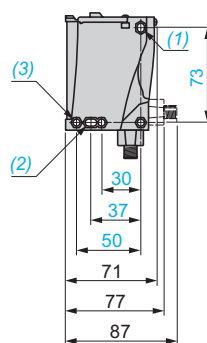
## Dimensions

### XUX●●●●●T16

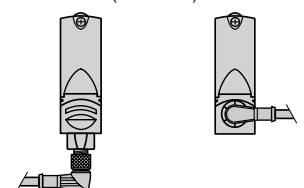


(1) Elongated hole  $\varnothing$  5.5 x 7  
(2) Elongated hole  $\varnothing$  5.5 x 9  
(3)  $\varnothing$  5,5 hole

### XUX●●●●●M12



Possible orientation of elbowed connector (rear view)



# Photo-electric sensors

OsiSense XU, general purpose, multimode function

Compact design

Five-wire AC or DC, 1 CO relay output

Three-wire DC, solid-state output

## Characteristics

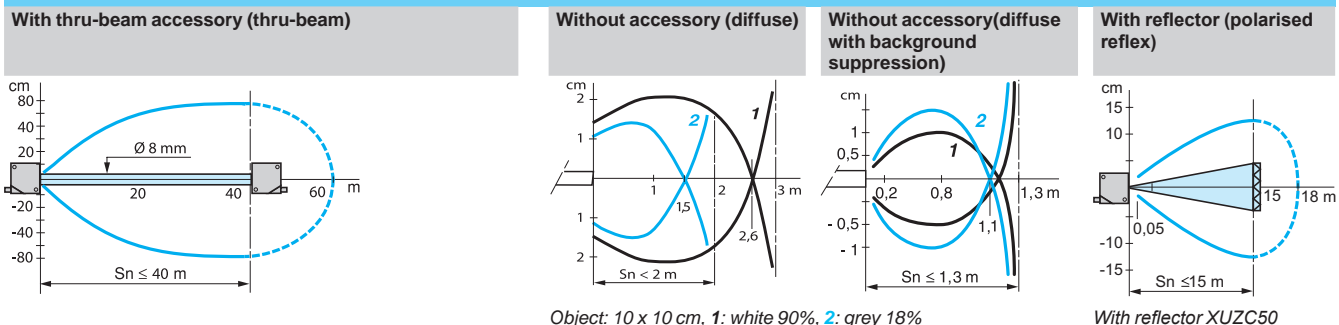
| Sensor type  |  | XUX●●●●●M12   | XUX●●●●●T16   |
|--|--|---|---|
| Product certifications   |  | UL, CSA, CE   |   |
| Connection   |  | M12 connector   | Screw terminals, ISO 16 cable gland   |
| Sensing distance nominal $S_n$ / maximum (excess gain = 2) (excess gain = 1) |  | <b>m</b> 1.3 / 1.3 without accessory (diffuse with background suppression)    |   |
|  |  | <b>m</b> 2 / 3 without accessory (diffuse)                                    |   |
|  |  | <b>m</b> 15 / 18 with reflector (polarised reflex)                            |   |
|  |  | <b>m</b> 40 / 60 with transmitter for thru-beam function (thru-beam)          |   |
| Type of transmission   |  | Infrared, except for polarised reflex (red)                                   |   |
| Degree of protection   |  | Conforming to IEC 60529 IP 65, IP 67, double insulation $\square$             |   |
| Storage temperature  |  | °C -40...+70  |   |
| Operating temperature  |  | °C -25...+55  |   |
| Materials  |  | Case  | PBT   |
|  |  | Lens  | PMMA  |
| Vibration resistance   |  | Conforming to IEC 60068-2-6 7 gn, amplitude $\pm 1.5$ 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 $\bar{\bar{}}$ 12...24 with protection against reverse polarity                   |
|  |  | Relay output  | V - 24...240 $\sim$ or $\bar{\bar{}}$   |
| Voltage limits (including ripple)  |  | PNP/NPN   | V $\bar{\bar{}}$ 10...36  |
|  |  | Relay output  | V - 20...264 $\sim$ or $\bar{\bar{}}$   |
| Current consumption, no-load   |  | PNP/NPN   | mA $\leq 35$ (20 for XUX0●●●●●●T)   |
| Power consumption  |  | Relay output  | W - 2 $\sim$ or $\bar{\bar{}}$  |
| Alarm output   |  |   | mA $\leq 100$ with overload and short-circuit protection                            |
| Switching capacity   |  | PNP/NPN   | mA $\leq 100$ with overload and short-circuit protection                            |
|  |  | Relay output  | A - 500 000 operating cycles<br>3 A: $\cos \varphi = 1/0.5$ A: $\cos \varphi = 0.4$ |
| Voltage drop, closed state   |  |   | V $\leq 1.5$  |
| 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)   |

## Wiring schemes

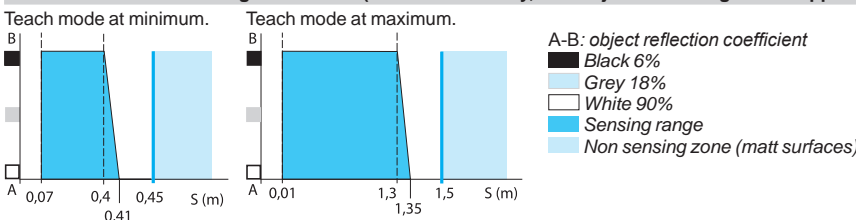
| M12 connector | Relay output $\bar{\bar{}}$     | PNP/NPN $\bar{\bar{}}$ | Transmitter $\bar{\bar{}}$  | Transmitter $\bar{\bar{}}$      |
|---------------|---------------------------------|------------------------|---|---------------------------------|
|               | Terminals                       | M12 Terminals          | M12 Terminals   | Terminals                       |
|               | 1 $\bar{\bar{}}$ $\bar{\bar{}}$ | 1 ● 1 $\bar{\bar{}}$ + | 1 ● 1 $\bar{\bar{}}$ +  | 1 $\bar{\bar{}}$ $\bar{\bar{}}$ |
|               | 2 $\bar{\bar{}}$ $\bar{\bar{}}$ | 3 ● 2 $\bar{\bar{}}$ - | 3 ● 2 $\bar{\bar{}}$ -  | 2 $\bar{\bar{}}$ $\bar{\bar{}}$ |
|               | 3 NO                            | 4 ● 3 Output           | 2 ● 3 Beam break input (1)  |                                 |
|               | 4 Relay common                  | 2 ● 4 Alarm            | (1) Input not connected: beam made.<br>Input connected to -: beam broken. |                                 |
|               | 5 NC                            |                        |   |                                 |

Maximum permissible conductor c.s.a.: 1 x 1.5 mm<sup>2</sup> or 1 x 0.75 mm<sup>2</sup> with cable end.

## Detection curves



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



# Photo-electric sensors

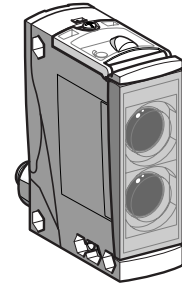
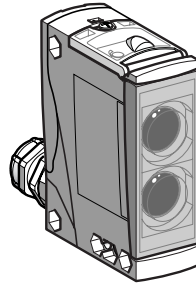
OsiSense XU, general purpose

With adjustable background suppression

Five-wire AC or DC, 1 CO relay output

Three-wire DC, 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) | 2 m  |

## References

|  |                                |             |             |             |
|--|--------------------------------|-------------|-------------|-------------|
| 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)  |                                | 0.200       | 0.200       | 0.200       |

## Characteristics

|                              |                              |   |
|------------------------------|------------------------------|---|
| Product certifications       |                              | CE, UL, CSA   |
| Ambient air temperature      |                              | For operation: - 25...+ 55 °C.<br>For storage: - 40...+ 70 °C   |
| 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 ≐ 20...264 V (including ripple) ≐ 10...0.36V (including ripple)  |
| Switching capacity (sealed)  | Relay output                 | 500 000 operating cycles; 3A Cos φ = 1; 0.5 A Cos φ = 0.4   |
|                              | PNP/NPN                      | - ≤ 100 mA with overload and short-circuit protection   |
| Indicator light              | Output state                 | Yellow LED  |
|                              | Supply on                    | Green LED   |
|                              | Stability                    | 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       |                               |  |                            |  |

# Photo-electric sensors

OsiSense XU, general purpose

With adjustable background suppression

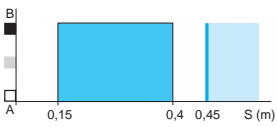
Five-wire AC or DC, 1 CO relay output

Three-wire DC, solid-state output

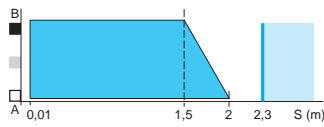
## Detection curves

### Variation of usable sensing distance $S_u$

Teach mode at minimum



Teach mode at maximum



A-B: Object reflection coefficient

Black 6%

Grey 18%

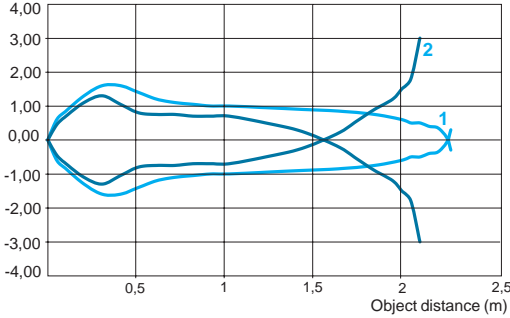
White 90%

Sensing range

Non sensing zone  
(Matt surfaces)

## Detection curves

Detection lobe (cm)



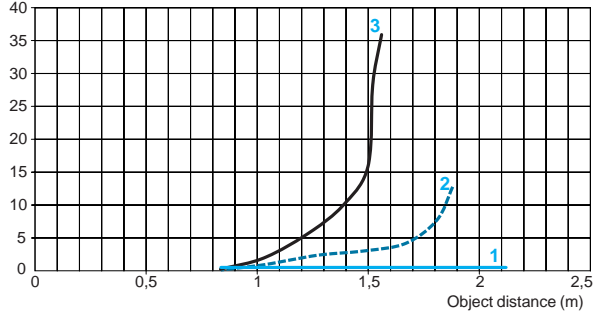
Object: 10 x 10 cm

1 white 90%

2 grey 18%

## Relative difference in sensing distances according to object colour

Relative error (%)



Object: 10 x 10 cm

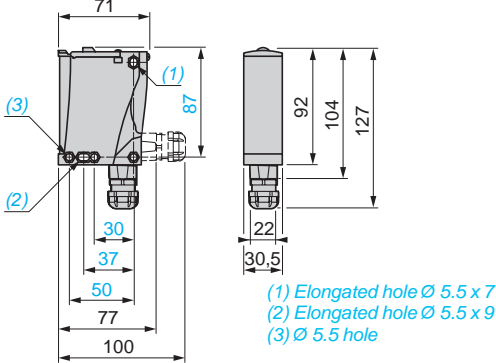
1 white 90%

2 grey 18%

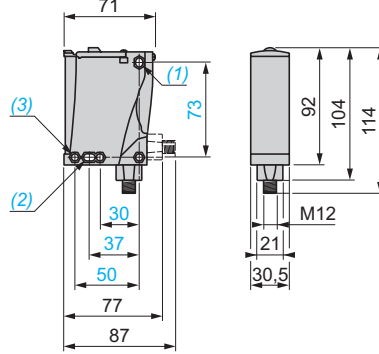
3 black 6%

## Dimensions

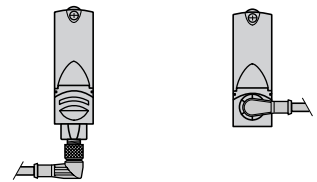
XUX●●●●T16



XUX●●●●M12



Possible orientation of elbowed connector (rear view)



## Wiring schemes

M12 connector



Relay output  $\sim$

Terminals

- 1  $\varnothing$   $\sim$
- 2  $\varnothing$   $\sim$
- 3  $\varnothing$  NO
- 4  $\varnothing$  Relay common
- 5  $\varnothing$  NC

PNP/NPN  $\text{---}$

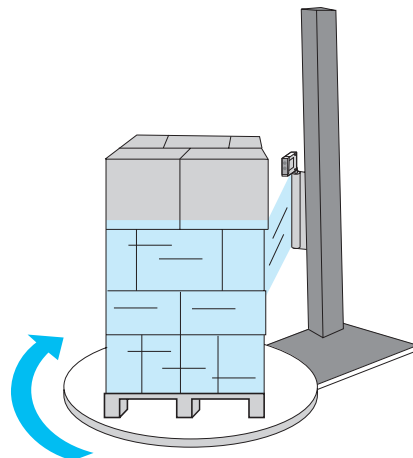
M12 Terminals

- |     |   |                              |
|-----|---|------------------------------|
| 1 ● | 1 | $\varnothing$ +              |
| 3 ● | 2 | $\varnothing$ -              |
| 4 ● | 3 | $\varnothing$ Output         |
| 2 ● | 4 | $\varnothing$ Alarm inactive |

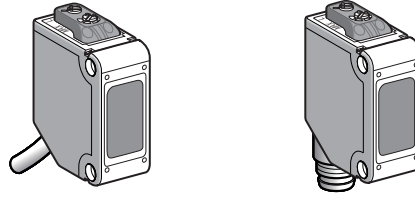
Maximum permissible conductor c.s.a.: 1 x 1.5 mm<sup>2</sup>  
or 1 x 0.75 mm<sup>2</sup> with cable end.

## Typical application

Wrapping system/outer wrapping



Compact design



|                                      |  |
|--------------------------------------|--|
| <b>System</b>                        | <b>Reflex</b>  |
| <b>Type of transmission</b>          | Infra-red  |
| <b>Nominal sensing distance (Sn)</b> | <b>0.1...1 m with reflector XUZC50CR (1)</b><br><b>0.8...2 m with reflector XUZC50 (1)</b> |
| <b>Adjustment</b>                    | 270° potentiometer   |

References

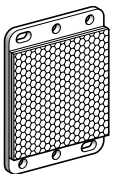
|                    |                                |                          |                          |                          |                          |                              |
|--------------------|--------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|------------------------------|
| <b>3-wire</b>      | NO or NC programmable function | PNP<br><b>XUMTAPCNL2</b> | NPN<br><b>XUMTANCNL2</b> | PNP<br><b>XUMTAPCNM8</b> | NPN<br><b>XUMTANCNM8</b> | PNP<br><b>XUMTAPCNL03M12</b> |
| <b>Weight (kg)</b> |                                | 0.155                    | 0.155                    | 0.055                    | 0.055                    | 0.055                        |

Characteristics

|                                   |   |   |                    |   |
|-----------------------------------|---|---|--------------------|---|
| <b>Product certifications</b>     |   | CE, cURus   |                    |   |
| <b>Ambient air temperature</b>    |   | For operation: -25...+55°C.<br>For storage: -30...+70°C                                     |                    |   |
| <b>Vibration resistance</b>       | Conforming to IEC 60068-2-8                 | 20 gn max., amplitude: 3 mm, frequency: 10...500 Hz   |                    |   |
| <b>Shock resistance</b>           | Conforming to IEC 60068-2-27                | 50 gn   |                    |   |
| <b>Degree of protection</b>       | Conforming to IEC 60529                     | IP 67   |                    |   |
| <b>Material</b>                   |   | Case: PBT<br>Lenses: polycarbonate  |                    |   |
| <b>Indicator lights</b>           | Output state<br>Power on, help with setting | Orange LED<br>Green LED   |                    |   |
| <b>Connection</b>                 |   | 2 m cable<br>Conductor c.s.a.: 0.2 mm <sup>2</sup>  | M8 4-pin connector | Remote M12 connector 0.3 m cable<br>Conductor c.s.a.: 0.2 mm <sup>2</sup> |
| <b>Rated supply voltage</b>       |   | <b>12...24 V <math>\overline{\text{DC}}</math> with protection against reverse polarity</b> |                    |   |
| <b>Voltage limits</b>             |   | 10...30 V $\overline{\text{DC}}$ (including ripple)   |                    |   |
| <b>Switching capacity</b>         |   | <b>≤ 100 mA with overload and short-circuit protection</b>                                  |                    |   |
| <b>Immunity to ambient light</b>  | Natural light                               | 3000 lux  |                    |   |
|                                   | Incandescent bulb                           | 3000 lux  |                    |   |
| <b>Voltage drop, closed state</b> |   | < 2 V   |                    |   |
| <b>Current consumption</b>        |   | ≤ 10 mA   |                    |   |
| <b>Response time</b>              |   | ≤ 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



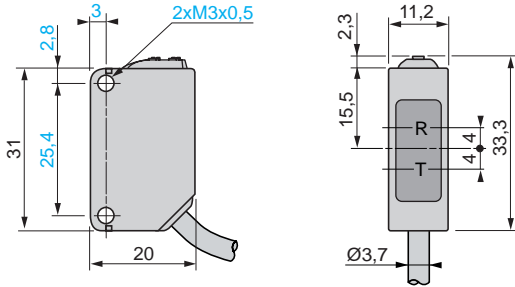
XUZC50  
XUZC50CR

| Description  | Dimensions | Reference       | Weight kg |
|--|------------|-----------------|-----------|
| <b>Standard reflector</b><br>Reflector distance from the product:<br>0.8 to 2 m    | 50 x 50 mm | <b>XUZC50</b>   | 0.020     |
| <b>Application reflector</b><br>Reflector distance from the product:<br>0.2 to 1 m | 50 x 50 mm | <b>XUZC50CR</b> | 0.020     |

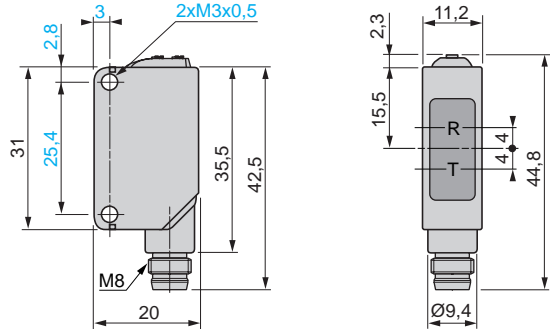
(1) Reflector to be ordered separately.

## Dimensions

XUMTAPCNL2, XUMTANCNL2 and XUMTAPCNL03M12

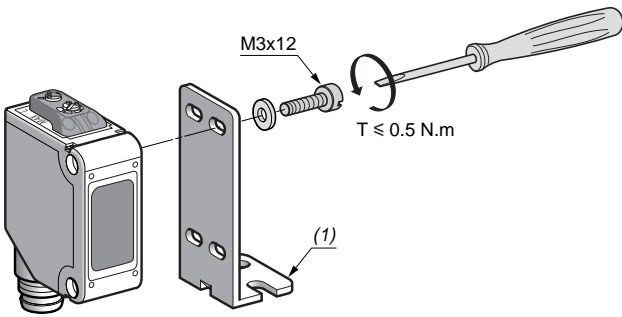


XUMTAPCNM8 and XUMTANCNM8



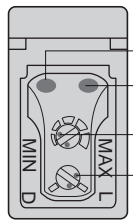
R: Reception, T: Transmission

## Mounting



(1) XUZAM02 or XUZAM03 metal bracket (see pages 5/34 and 5/38).

## Functions



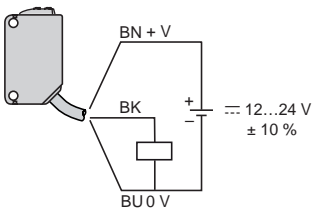
- 1 Stability indicator (green). LED on in stable detection conditions (NO or NC).
- 2 Change indicator (orange). LED lit when the detection output has been activated.
- 3 Sensitivity adjustment potentiometer.
- 4 NO/NC operating mode selector switch.

| NO/NC selector switch | Function        | Details  |
|-----------------------|-----------------|--|
|                       | NC (position L) | NC mode is obtained when the selector switch slot is fully turned to position L. |
|                       | NO (position D) | NO mode is obtained when the selector switch slot is fully turned to position D. |

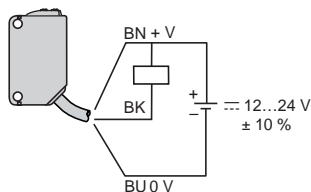
## Connections

### Wiring schemes (3-wire $\overline{\text{---}}$ )

PNP output



NPN output



### Cable connections

XUMTA●CNL2

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

### Connector schemes

XUMTA●CNM8

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

XUMTAPCNL03M12

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

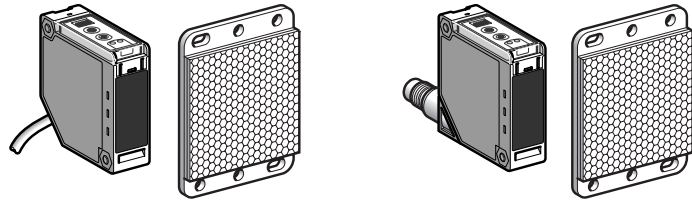
# Photo-electric sensors

OsiSense XU Application, packaging series

For detection of transparent materials, with teach mode and automatic compensation for accumulation of dirt <sup>(1)</sup>

**Solid-state** output

## Compact design



|                                      |                                   |
|--------------------------------------|-----------------------------------|
| <b>System</b>                        | <b>Reflex</b>                     |
| <b>Type of transmission</b>          | Red                               |
| <b>Nominal sensing distance (Sn)</b> | 1.5 m (with 50 x 50 mm reflector) |

## References

|                    |                                |                       |                        |
|--------------------|--------------------------------|-----------------------|------------------------|
| 3-wire, PNP or NPN | NO or NC programmable function | <b>XUKT1KSML2 (2)</b> | <b>XUKT1KSMM12 (2)</b> |
| Weight (kg)        |                                | 0.280                 | 0.120                  |

## Characteristics

|                                     |   |   |
|-------------------------------------|---|---|
| <b>Product certifications</b>       |   | CE, UL, CSA   |
| <b>Ambient air temperature</b>      | For operation   | - 25...+ 55 °C  |
|                                     | For storage   | - 30...+ 70 °C  |
| <b>Vibration resistance</b>         | Conforming to IEC 60068-2-6   | 7 gn (f = 10...55 Hz)   |
| <b>Shock resistance</b>             | Conforming to IEC 60068-2-27  | 10 gn, duration 11 ms   |
| <b>Degree of protection</b>         | Conforming to IEC 60529   | IP 65   |
| <b>Materials</b>                    | Case  | PC  |
|                                     | Lenses  | PMMA  |
|                                     | Cable   | PVC   |
| <b>Connection</b>                   | Pre-cabled, diameter 6 mm, length 2 m, wire c.s.a.: 4 x 0.34 mm <sup>2</sup>      | M12 male connector, can be set at 2 positions (suitable female connectors, including pre-wired versions, see page 5/28) |
| <b>Rated supply voltage</b>         | --- 12...24 V with protection against reverse polarity                            |   |
| <b>Voltage limits</b>               | --- 10...30 V (including ripple)  |   |
| <b>Switching capacity (sealed)</b>  | ≤ 100 mA with overload and short-circuit protection                               |   |
| <b>Voltage drop, closed state</b>   | ≤ 2 V   |   |
| <b>Current consumption, no-load</b> | ≤ 35 mA   |   |
| <b>Maximum switching frequency</b>  | 1500 Hz   |   |
| <b>Delays</b>                       | First-up  | ≤ 80 ms   |
|                                     | Response  | ≤ 0.3 ms  |
|                                     | Recovery  | ≤ 0.3 ms  |
| <b>Time delay</b>                   | Monostable, on-delay or off-delay (programmable) adjustable from 0.1 to 5 seconds |   |

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

(1) Sensor memorises, 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 **XUZC50** included with the sensor.



# Photo-electric sensors

OsiSense XU Application, packaging series  
For detection of transparent materials, with teach mode  
and automatic compensation for accumulation of dirt  
Solid-state output

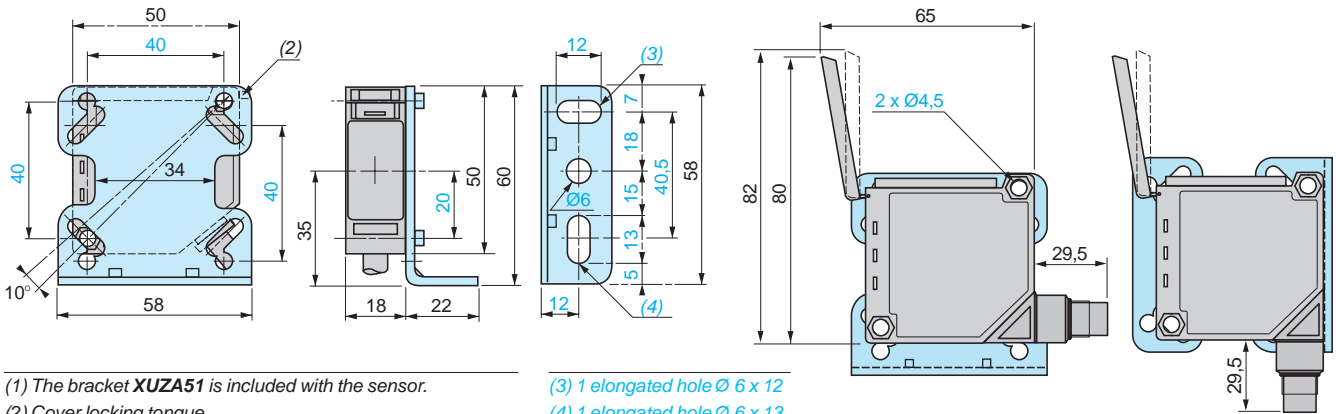
## Dimensions

XUKT1KSML2 (1)

Bracket fixing (1)

XUKT1KSMM12 with cover open

Fixing bracket mounting according to position of connector (1)



(1) The bracket XUZA51 is included with the sensor.

(2) Cover locking tongue

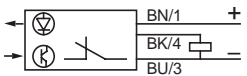
(3) 1 elongated hole  $\varnothing 6 \times 12$

(4) 1 elongated hole  $\varnothing 6 \times 13$

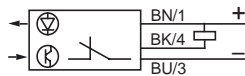
## Wiring schemes (3-wire ...)

### NC programmed

PNP programmed output

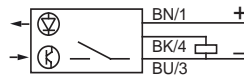


NPN programmed output



### NO programmed

PNP programmed output

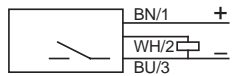


NPN programmed output

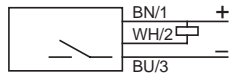


### Alarm output

PNP programmed



NPN programmed



## Connection

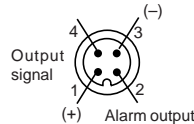
### Cable connections

XUKT1KSML2

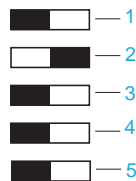
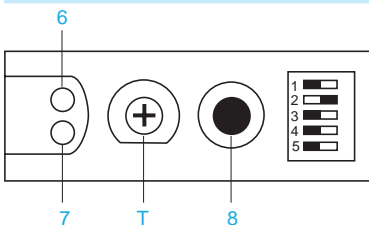
|       |    |         |
|-------|----|---------|
| (-)   | BU | (Blue)  |
| (+)   | BN | (Brown) |
| (OUT) | BK | (Black) |
| Alarm | WH | (White) |

### Connector scheme

XUKT1KSMM12



## Functions



### Switches

- 1 NC/NO 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

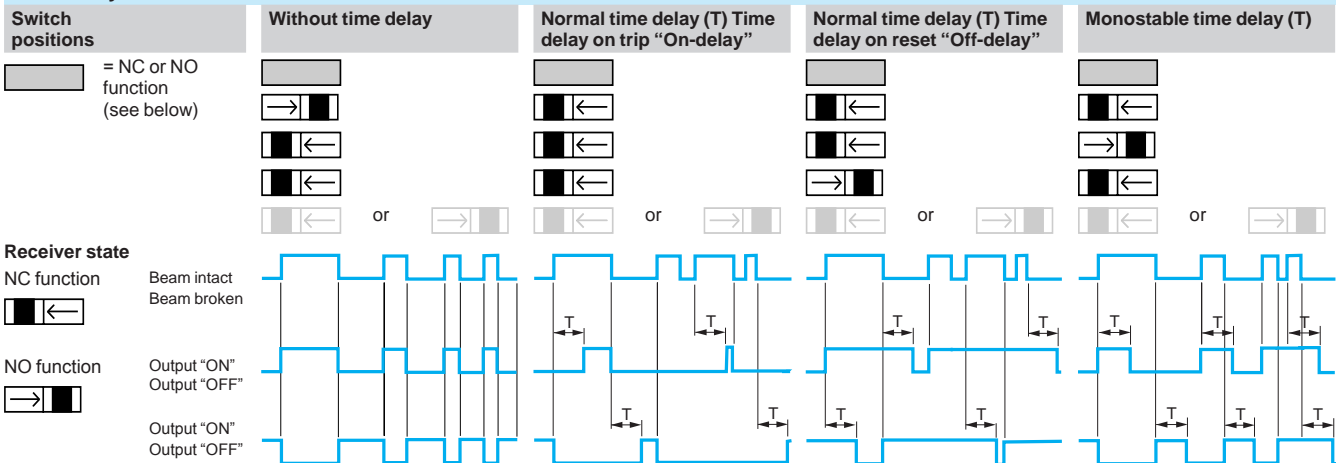
### LED

- 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



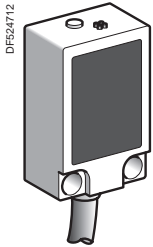
# Photo-electric sensors

## OsiSense XU Application

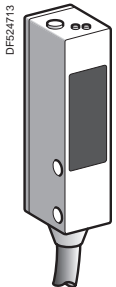
### Conveying and access control series

#### Miniature design

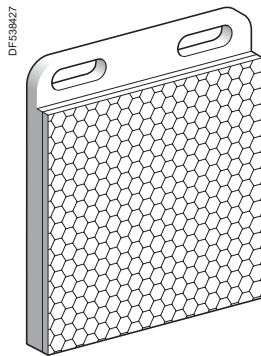
#### Four-wire DC, solid-state output



XUYPS989S●



XUYB989S●



XUY1111

| Diffuse system with background suppression |                           |        |                      |             |           |
|--|---------------------------|--------|----------------------|-------------|-----------|
| Sensing dist. (Sn) m                       | Function                  | Output | Connection           | Reference   | Weight kg |
| 0.015...0.08                               | NO/NC depending on wiring | PNP    | Pre-cabled (L = 2 m) | XUYPS989SP  | 0.075     |
|  |                           |        | M8 connector         | XUYPCO989SP | 0.044     |
|  |                           | NPN    | Pre-cabled (L = 2 m) | XUYPS989SN  | 0.075     |
|  |                           |        | M8 connector         | XUYPCO989SN | 0.044     |

| Diffuse system with adjustable sensitivity |                           |        |                      |             |           |
|--|---------------------------|--------|----------------------|-------------|-----------|
| Sensing dist. (Sn) m                       | Function                  | Output | Connection           | Reference   | Weight kg |
| 0.03...0.25                                | NO/NC depending on wiring | PNP    | Pre-cabled (L = 2 m) | XUYPS989SP  | 0.075     |
|  |                           |        | M8 connector         | XUYPCO989SP | 0.044     |
|  |                           | NPN    | Pre-cabled (L = 2 m) | XUYPS989SN  | 0.075     |
|  |                           |        | M8 connector         | XUYPCO989SN | 0.044     |

| Polarised reflex system     |                           |        |                      |                 |           |
|-----------------------------|---------------------------|--------|----------------------|-----------------|-----------|
| Sensing dist. (Sn) m        | Function                  | Output | Connection           | Reference       | Weight kg |
| 1 with 50 x 50 mm reflector | NO/NC depending on wiring | PNP    | Pre-cabled (L = 2 m) | XUYB989SP (1)   | 0.093     |
|                             |                           |        | M8 connector         | XUYBCO989SP (1) | 0.061     |
|                             |                           | NPN    | Pre-cabled (L = 2 m) | XUYB989SN (1)   | 0.093     |
|                             |                           |        | M8 connector         | XUYBCO989SN (1) | 0.061     |

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

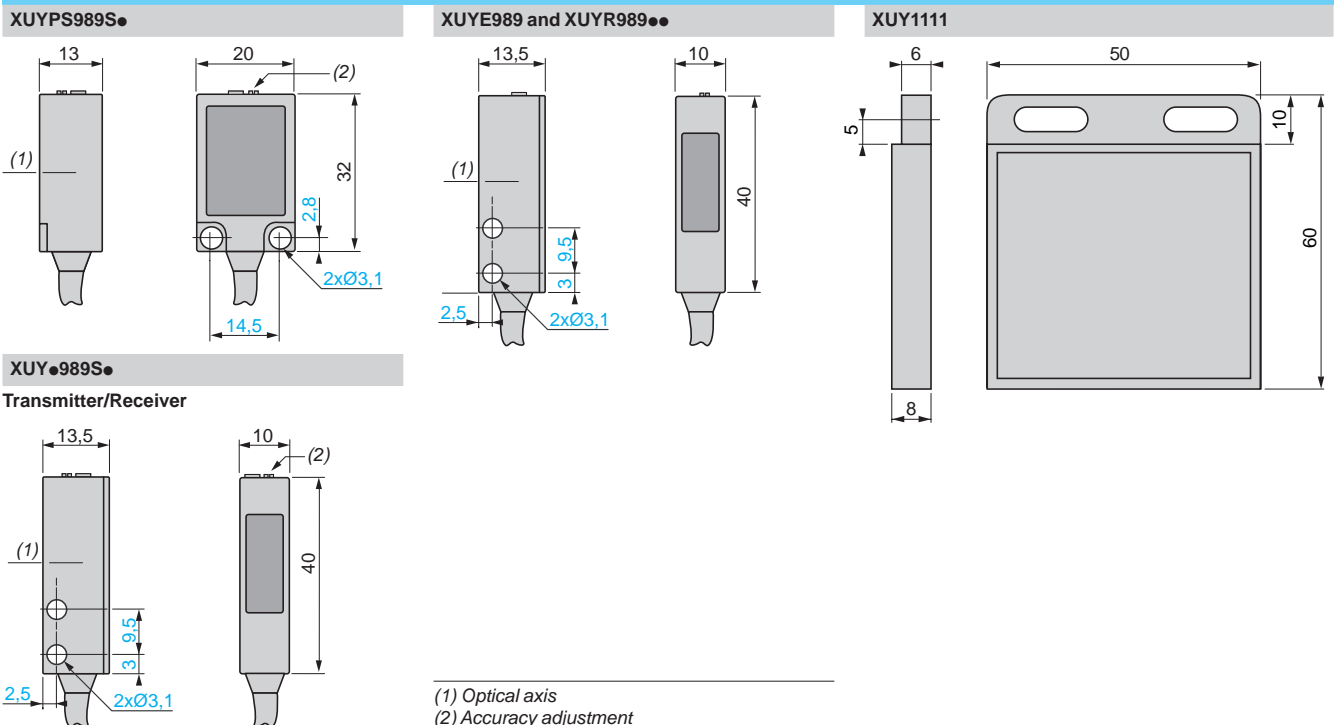
| Accessory             | For use with | Reference | Weight kg |
|-----------------------|--------------|-----------|-----------|
| Reflector, 50 x 50 mm | XUYB989S●    | XUY1111   | 0.018     |

| Thru-beam system     |                           |        |                      |             |           |
|----------------------|---------------------------|--------|----------------------|-------------|-----------|
| Sensing dist. (Sn) m | Function                  | Output | Connection           | Reference   | Weight kg |
| 4 (Transmitter)      |                           | -      | Pre-cabled (L = 2 m) | XUYE989     | 0.075     |
|                      |                           |        | M8 connector         | XUYECO989   | 0.044     |
| 4 (Receiver)         | NO/NC depending on wiring | PNP    | Pre-cabled (L = 2 m) | XUYR989SP   | 0.075     |
|                      |                           |        | M8 connector         | XUYRCO989SP | 0.044     |
|                      |                           | NPN    | Pre-cabled (L = 2 m) | XUYR989SN   | 0.075     |
|                      |                           |        | M8 connector         | XUYRCO989SN | 0.044     |

■ 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



(1) Optical axis  
(2) Accuracy adjustment

| Characteristics                   |                       | XUY●●●●●                                       | XUY●CO●●●●●  |
|-----------------------------------|-----------------------|--|--|
| Sensor type                       |                       |  |  |
| 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                     | 0.08 diffuse with background suppression       |  |
|                                   | m                     | 0.25 diffuse with adjustable sensitivity       |  |
|                                   | m                     | 1 polarised reflex (with 50 x 50 mm reflector) |  |
|                                   | m                     | 4 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...+80  |
|                                   | For operation         | °C   | 0...+50  |
| Materials                         | Case                  | ABS  |  |
|                                   | Lens                  | PMMA   |  |
|                                   | Cable                 | PVC  | PUR  |
| Immunity to ambient light         | Natural light         | Lux  | 10 000 (insensitive for XUYPS●●989S●)              |
|                                   | Incandescent bulb     | Lux  | 5000 (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 scheme - connector

| M8 | Pin n° - colour |
|----|-----------------|
|    | 1 BN: Brown     |
|    | 2 WH: White     |
|    | 3 BU: Blue      |
|    | 4 BK: Black     |

### Transmitter

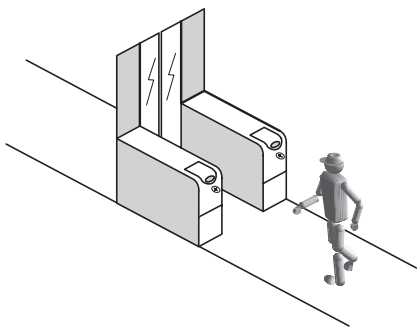
|    |           |                   |
|----|-----------|-------------------|
| BN | ~ 10-30 V | Nc: Not connected |
| BK | Nc        |                   |
| WH | Nc        |                   |
| BU | 0 V       |                   |

### Wiring scheme - pre-cabled

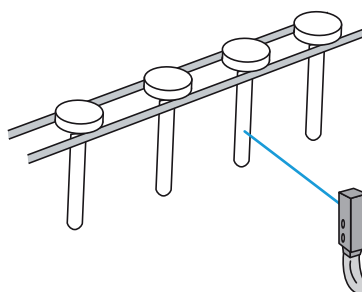
| Diffuse    |  | Polarised reflex and thru-beam |  |
|------------|--|--------------------------------|--|
| PNP output |  | PNP output                     |  |
|            |  |                                |  |
| NPN output |  | NPN output                     |  |
|            |  |                                |  |

### Application examples

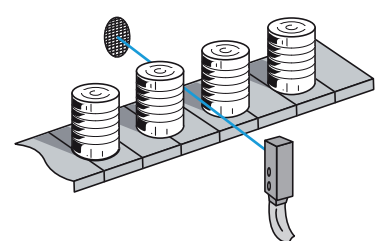
#### Access control



#### Monitoring metal rods



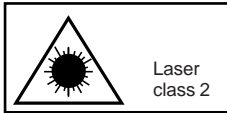
#### Detection of tin cans on a conveyor



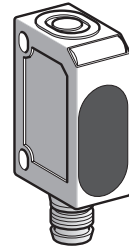
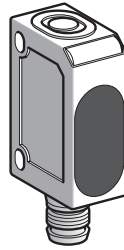
# Photo-electric sensors

OsiSense XU Application, assembly series  
Miniature design  
with laser transmission and teach mode  
Three-wire DC, solid-state output

## Miniature design



Laser class 2, conforming to IEC 825-1.  
Visible laser radiation: do not stare into beam.



|                                      |  |  |             |                           |
|--------------------------------------|--|--|-------------|---------------------------|
| <b>System</b>                        | <b>Polarised reflex</b>                        | <b>Diffuse with background suppression</b> |             | <b>Colour mark reader</b> |
| <b>Type of transmission</b>          | Red laser, pulsed, Class 2, wavelength: 655 nm |  |             |                           |
| <b>Nominal sensing distance (Sn)</b> | 100...1000 mm (1)                              | 20...60 mm                                 | 30...110 mm | 40...150 mm               |

## References

|                           |                            |                     |                       |                       |                      |
|---------------------------|----------------------------|---------------------|-----------------------|-----------------------|----------------------|
| <b>4-wire, PNP output</b> | NO/NC function, selectable | <b>XUYBCO929LSP</b> | <b>XUYPSCO929L1SP</b> | <b>XUYPSCO929L2SP</b> | <b>XUYPCCO929LSP</b> |
| <b>Weight (kg)</b>        |                            | 0.056               | 0.056                 | 0.056                 | 0.056                |

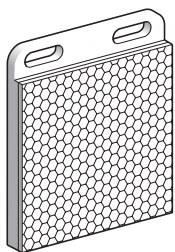
## Characteristics

|  |                              |   |                 |          |
|--|------------------------------|---|-----------------|----------|
| <b>Product certifications</b>            |                              | CE  |                 |          |
| <b>Ambient air temperature</b>           | For operation                | - 20... + 60 °C   |                 |          |
|  | For storage                  | - 20... + 80 °C   |                 |          |
| <b>Degree of protection</b>              | Conforming to IEC 60529      | IP 67   |                 |          |
| <b>Connection</b>                        |                              | M8, 4-pin male connector                                    |                 |          |
| <b>Vibration resistance</b>              | Conforming to IEC 60068-2-6  | 7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz)                  |                 |          |
| <b>Shock resistance</b>                  | Conforming to IEC 60068-2-27 | 30 gn, duration 11 ms                                       |                 |          |
| <b>Materials</b>                         | Case                         | ABS   |                 |          |
| <b>Rated supply voltage</b>              |                              | --- 12...24 V with protection against reverse polarity      |                 |          |
| <b>Voltage limits (including ripple)</b> |                              | --- 10...30 V   |                 |          |
| <b>Immunity to ambient light</b>         |                              | 5000 lux  |                 |          |
| <b>Laser transmission</b>                |                              | T pulse: 3 µs, pulse frequency: 5 kHz                       |                 |          |
| <b>Spot diameter</b>                     |                              | < 0.7 mm  | < 0.3 ... 40 mm | < 0.7 mm |
| <b>Switching capacity</b>                |                              | 100 mA with overload and short-circuit protection           |                 |          |
| <b>Voltage drop, closed state</b>        |                              | < 2.4 V   |                 |          |
| <b>Current consumption, no-load</b>      |                              | 25 mA   | 30 mA           | 25 mA    |
| <b>Maximum switching frequency</b>       |                              | 1000 Hz   |                 |          |
| <b>Indicator lights</b>                  | Supply on/Dirty              | Green LED   |                 |          |
|  | Output signal                | Yellow LED  |                 |          |
| <b>Adjustment</b>                        |                              | Using teach mode button or remote teaching (external input) |                 |          |

(1) With 50 x 50 mm reflector, reference XUY1111.

- Applications
- Monitoring of small parts on production machines
- Setting-up of sensors

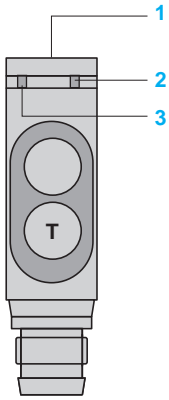
## Accessories



XUY1111

| Description                       | Details              | Length of cable | References        | Weight |
|-----------------------------------|----------------------|-----------------|-------------------|--------|
|                                   |                      | m               |                   | kg     |
| <b>Pre-wired M8 connector</b>     | Straight             | 2               | <b>XZCP0941L2</b> | 0.080  |
|                                   | Elbowed (90°)        | 2               | <b>XZCP1041L2</b> | 0.080  |
|                                   | Straight             | 5               | <b>XZCP0941L5</b> | 0.180  |
|                                   | Elbowed (90°)        | 5               | <b>XZCP1041L5</b> | 0.180  |
| <b>Reflector for XUYBCO929LSP</b> | 50 x 50 mm           | –               | <b>XUY1111</b>    | 0.018  |
| <b>Fixing bracket</b>             |                      |                 | <b>XUY929</b>     | 0.013  |
| <b>Protection bracket</b>         | Vertical rear fixing |                 | <b>XUY9291</b>    | 0.070  |
|                                   | Lower side fixing    |                 | <b>XUY9292</b>    | 0.061  |

### Description



#### XUYBC0929LSP

- 1 Teach In (T.I.)
- 2 Yellow LED: Detection LED (1)
- 3 Green LED: Supply on or fault due to accumulation of dirt (if LED off)

- **Teach mode** (yellow and green LEDs are on)
  - Line up with reflector, press T.I. for 3 seconds: both LEDs flash
  - Insert the object, press T.I. for 1 second: the green LED flashes then remains on (teaching completed).

#### XUYPCO929L●SP, XUYPCO929LSP

- 1 Teach In (T.I.)
- 2 Yellow LED: Detection LED (2)
- 3 Green LED: Supply on or fault due to accumulation of dirt (if LED off)

- **Teach mode** (yellow and green LEDs are on)
  - Line-up with object, press T.I. for 3 seconds: both LEDs flash
  - Insert the object, press T.I. for 1 second: the green LED flashes then remains on (teaching completed)

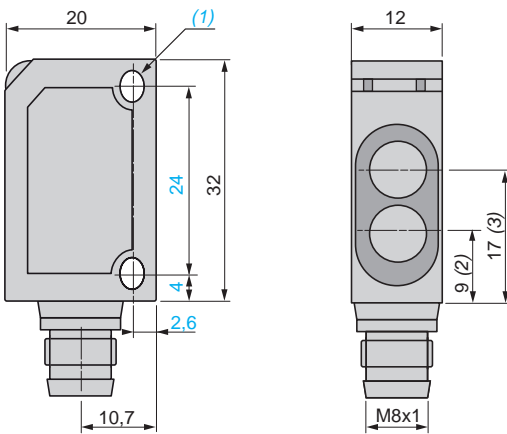
R: Receiver  
T: Transmitter

- **NO/NC** Press T.I. for 13 seconds: the two LEDs alternatively flash (on the release of T.I., the green LED remains on). Each press on T.I. changes the output state (NO, NC, NO, NC, ...). When T.I. is not pressed for 10 seconds, the green LED goes off: the selected state is memorised.

(1) Whether the output is direct or inverse, the "detection" LED goes off only on beam break.  
(2) Whether the output is direct or inverse, the "detection" LED comes on only when an object is present.

### Dimensions

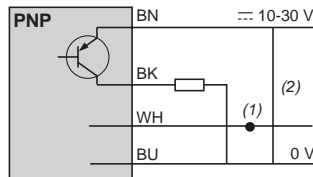
#### XUYBC0929LSP, XUYPCO929L●SP



(1) 2 elongated holes  $\varnothing 3.2 \times 4.2$ .  
(2) Transmitter optical axis.  
(3) Receiver optical axis.

### Wiring schemes

#### Pre-cabled



(1) - Connected to +: external teaching,  
- Connected to -: locking of functions  
(2) Output 100 mA max.

#### M8 connector

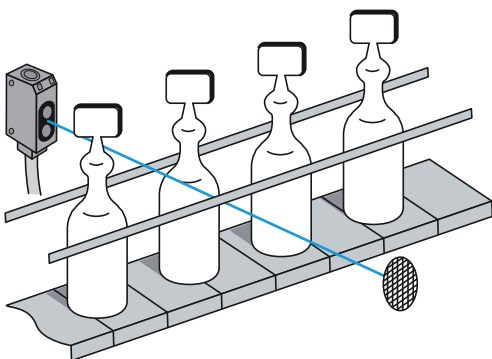


#### Pin n° - colour

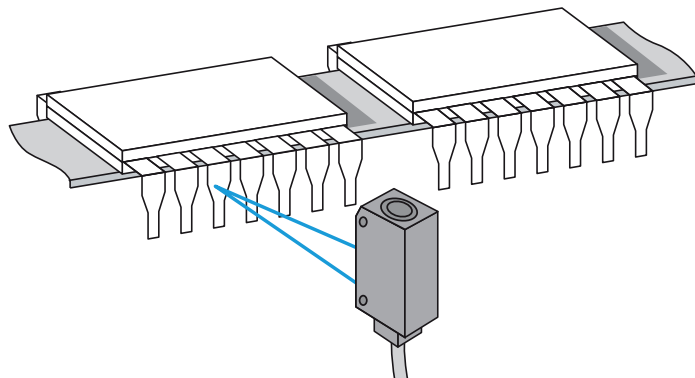
- 1 BN: Brown
- 2 WH: White
- 3 BU: Blue
- 4 BK: Black

### Application examples

#### Detection of pharmaceutical ampoules



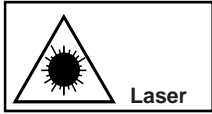
#### Detection of connection tags on integrated circuits passing on rail



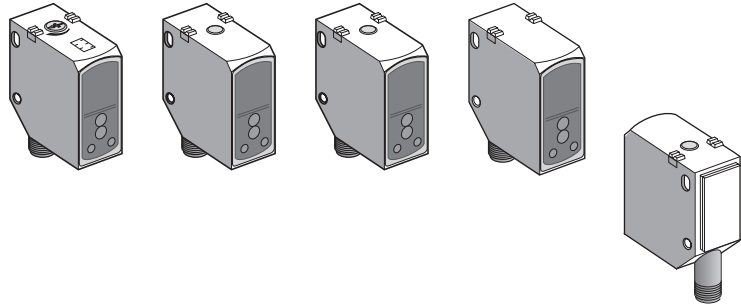
# Photo-electric sensors

OsiSense XU Application, single mode  
Assembly series  
Plastic, M12 connector  
DC

## Compact design



Class 1 or class 2 laser,  
conforming to IEC 60825-1  
Visible laser radiation:  
do not stare into beam



| System   | Diffuse with background suppression  | Diffuse  | Polarized reflex                        | Thru-beam                  |
|--|--|--|---|----------------------------|
| Type of transmission                                   | Red laser (655 nm) class 1   | Red laser (650 nm) class 2   | Red laser (655 nm) class 1              | Red laser (655 nm) class 1 |
| Nominal sensing distance (Sn)/Maximum sensing distance | 5...800 mm, on white 90% (1)<br>10...600 mm, on grey 18%<br>30...500 mm, on black 6% (2) | 5...1200 mm, on white 90%<br>10...700 mm, on grey 18%<br>100...400 mm, on black 6% (2) | 0.3...12/14 m (with reflector XUZC50HP) | 0...25/30 m                |

## References

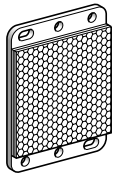
| 4-wire, PNP<br>NO/NC programmable | XUK8LAPPNM12 | XUK5LAPSMM12 | XUK9LAPSMM12 | Transmitter:<br>XUK2LAKSMM12T | Receiver:<br>XUK2LAPSMM12R |
|-----------------------------------|--------------|--------------|--------------|-------------------------------|----------------------------|
| Weight (kg)                       | 0.035        | 0.035        | 0.035        | 0.035                         | 0.035                      |

## Characteristics

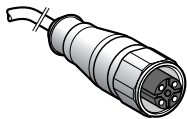
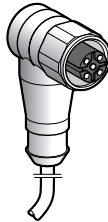
|                                   |  |                                     |            |            |         |                                  |
|-----------------------------------|--|-------------------------------------|------------|------------|---------|----------------------------------|
| Product certifications            | ECOLAB, CE, cULus  |                                     |            |            |         |                                  |
| Connection                        | M12, 4-pin connector   |                                     |            |            |         |                                  |
| Degree of protection              | Conforming to IEC 60529  | IP 67                               |            |            |         |                                  |
|                                   | Conforming to DIN 40050  | IP 69K                              |            |            |         |                                  |
| Ambient air temperature           | For operation  | -20...+60°C                         |            |            |         |                                  |
|                                   | For storage  | -20...+80°C                         |            |            |         |                                  |
| Material                          | Case   | PC - ABS anti-shock                 |            |            |         |                                  |
|                                   | Lenses   | PMMA                                |            |            |         |                                  |
| Vibration resistance              | Conforming to EN/IEC 60068-2-6                                       | Amplitude ±0.5 mm (f = 10 to 55 Hz) |            |            |         |                                  |
| Shock resistance                  | Conforming to EN/IEC 60068-2-27                                      | 30 gn, duration 11 ms               |            |            |         |                                  |
| Indicator lights                  | Output state   | Yellow LED                          | Yellow LED | Yellow LED | –       | Yellow LED                       |
|                                   | Instability/alignment  | Yellow LED, flashing/–              |            |            | –/–     | Yellow LED, flashing/<br>Red LED |
|                                   | Supply on  | Green LED                           |            |            |         |                                  |
| Rated supply voltage              | 12...30 V $\overline{\text{DC}}$                                     | 10...30 V $\overline{\text{DC}}$    |            |            |         |                                  |
| Voltage limits (including ripple) | 10.8...33 V $\overline{\text{DC}}$ /9...33 V $\overline{\text{DC}}$  |                                     |            |            |         |                                  |
| Current consumption, no-load      | < 30 mA  |                                     |            |            |         |                                  |
| Switching capacity                | ≤ 100 mA, with protection against reverse polarity and short-circuit |                                     |            |            |         |                                  |
| Test function                     | Breaking red beam  | –                                   | –          | –          | Yes     | –                                |
| Voltage drop, closed state        | ≤ 2.4 V  |                                     |            |            |         |                                  |
| Maximum switching frequency       | 1000 Hz  | 600 Hz                              | 2000 Hz    | –          | 3500 Hz |                                  |
| Delays                            | First-up   | < 300 ms                            |            |            |         |                                  |
|                                   | Response   | 0.5 ms                              | 0.8 ms     | 0.25 ms    | –       | 0.14 ms                          |
|                                   | Recovery   | 0.5 ms                              | 0.8 ms     | 0.25 ms    | –       | 0.14 ms                          |

(1) On the minimum setting, the background suppression distance (white) is 70 mm.  
(2) % of object remission.

## References of accessories

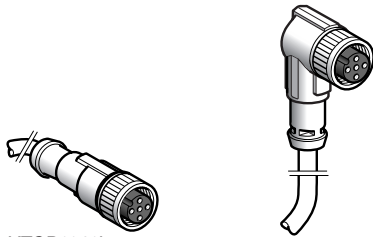


XUZC50HP

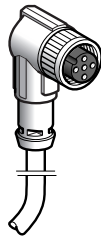


XZCPA1141L5

XZCPA1241L5



XZCP1141L5



XZCPA1241L5

| Description                                      | Dimensions | Reference | Weight kg |
|--|------------|-----------|-----------|
| <b>Fixing bracket</b><br>304 stainless steel     | –          | XUZA51S   | 0.050     |
| <b>Protection bracket</b><br>304 stainless steel | –          | XUZASK001 | 0.210     |
| <b>Mounting bracket on dovetail</b>              | –          | XUZASK002 | 0.050     |
| <b>Rigid microprism reflector</b>                | 50 x 50 mm | XUZC50HP  | 0.020     |

### Pre-wired connectors with PVC cable for food and beverage applications

|   |     |             |       |
|---|-----|-------------|-------|
| <b>Straight pre-wired connector</b><br>M12, 4-pin, female connector,<br>stainless steel clamping ring | 5 m | XZCPA1141L5 | 0.210 |
| <b>Elbowed pre-wired connector</b><br>M12, 4-pin, female connector,<br>stainless steel clamping ring  | 5 m | XZCPA1241L5 | 0.210 |

### Pre-wired connectors with PUR cable for industrial applications

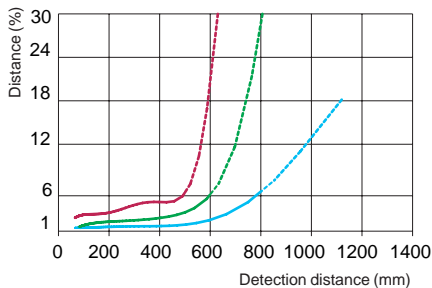
|   |     |             |       |
|---|-----|-------------|-------|
| <b>Straight pre-wired connector</b><br>M12, 4-pin, female connector,<br>nickel-plated brass clamping ring | 5 m | XZCP1141L5  | 0.210 |
| <b>Elbowed pre-wired connector</b><br>M12, 4-pin, female connector,<br>nickel-plated brass clamping ring  | 5 m | XZCPA1241L5 | 0.210 |

**Note:** To find other connection accessories, please consult our catalogue "OsiSense XZ cabling accessories".

## Curves

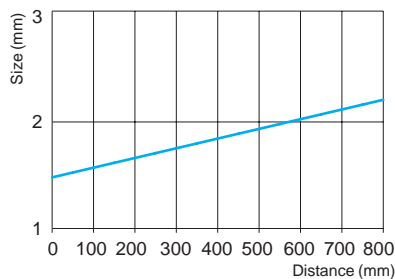
### XUK8LAPPNM12

#### Scanning properties



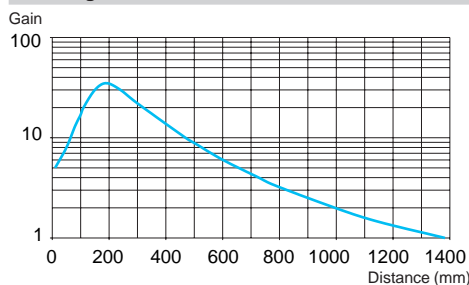
— Black/white 6%/90%  
— Grey/white 18%/90%  
— White/white 90%/90%

#### Size of luminous point

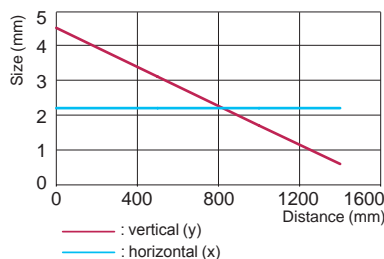


### XUK5LAPSM12

#### Excess gain curve



#### Size of luminous point



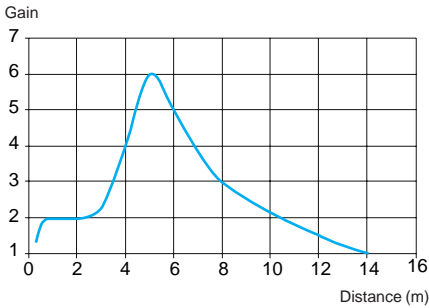
— : vertical (y)  
— : horizontal (x)



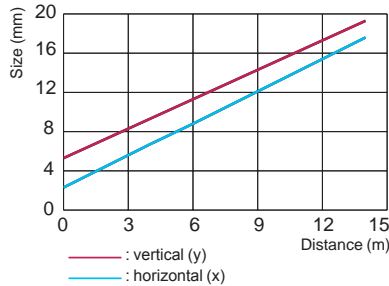
**Curves (continued)**

**XUK9LAPSMM12**

**Excess gain curve**

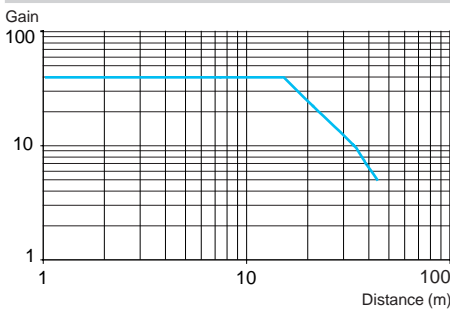


**Size of luminous point**

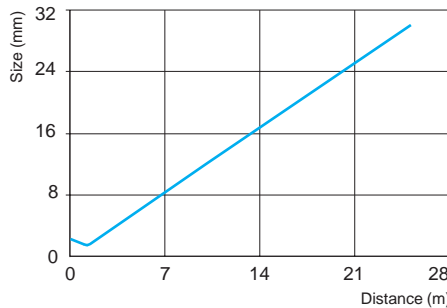


**XUK2LAKSMM12T and XUK2LAPSMM12R**

**Excess gain curve**



**Size of luminous point**



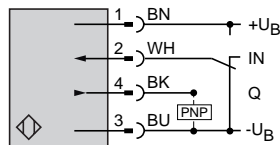
5

**Wiring schemes using M12 connector**

**XUK8LAPPNM12**



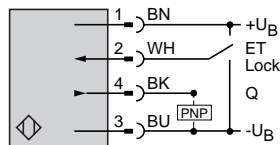
- 1 **BN:** Brown (+)
- 2 **WH:** White
- (+UB = NC, -UB = NO, not connected = NO)
- 3 **BU:** Blue (-)
- 4 **BK:** Black (Output)



**XUK5LAPSMM12, XUK9LAPSMM12 and XUK2LAPSMM12R**



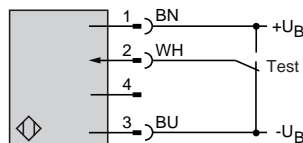
- 1 **BN:** Brown (+)
- 2 **WH:** White (ET/Lock) (1)
- 3 **BU:** Blue (-)
- 4 **BK:** Black (Output)



**XUK2LAPSMM12T**



- 1 **BN:** Brown (+)
- 2 **WH:** White (Test input) (2)
- 3 **BU:** Blue (-)
- 4 **BK:** Black (pin not connected)



(1) ET/Lock. ET: External Teach, Lock: pushbutton locking.  
+UB: external teach. -UB: pushbutton locking.  
Not connected: normal operation.  
(2) Test input: +UB = test function (transmitter disconnected). -UB or not connected = normal operation.

# Photo-electric sensors

OsiSense XU Application, single mode

Assembly series

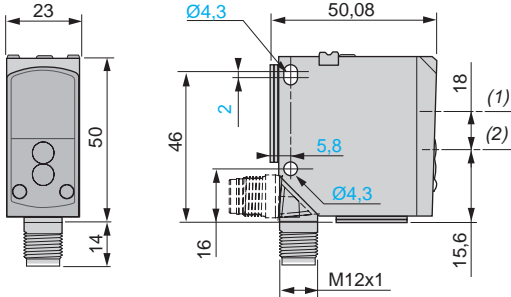
Plastic, M12 connector

DC

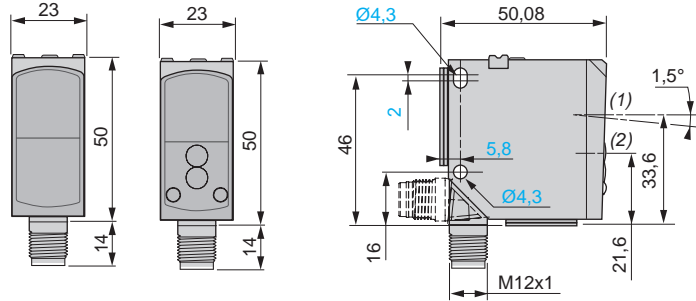
## Dimensions

### Sensors

#### XUK8LAPPNM12

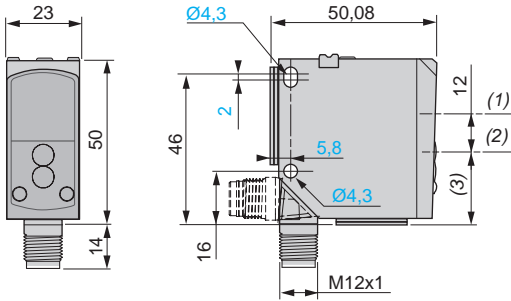


#### XUK2LAKSMM12T and XUK2LAPSMM12R



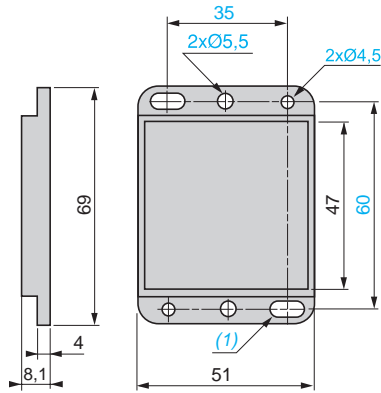
### Sensors (continued)

#### XUK5LAPSMM12 and XUK9LAPSMM12



### Reflector

#### XUZC50HP



- (1) Receiver optical axis.
- (2) Transmitter optical axis.
- (3) 21.4 mm for XUK5LAPSMM12,  
21.6 mm for XUK9LAPSMM12.

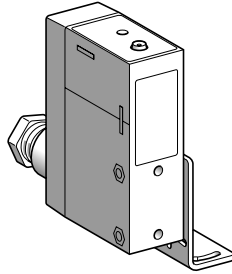
- (1) 2 elongated holes for M4 screws.

# Photo-electric sensors

OsiSense XU Application, material handling series

With analogue output signal 4...20 mA and 0...10 V <sup>(1)</sup>  
DC supply. Solid-state output

## Compact design



|                               |            |
|-------------------------------|------------|
| System                        | Diffuse    |
| Type of transmission          | Infrared   |
| Nominal sensing distance (Sn) | 20...80 cm |

## References

|             |     |            |
|-------------|-----|------------|
| 3-wire      | PNP | XUJK803538 |
| Weight (kg) |     | 0.200      |

## Characteristics

|   |                              |   |
|---|------------------------------|---|
| Product certifications                            |                              | CE, CSA, UL   |
| Ambient air temperature                           | For operation                | - 25...+ 60 °C  |
|   | For storage                  | - 40...+ 80 °C  |
| 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 <sup>2</sup> or 1 x 2.5 mm <sup>2</sup> |
| 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  |
| Output voltage drift in relation to object colour |                              | < 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                       |

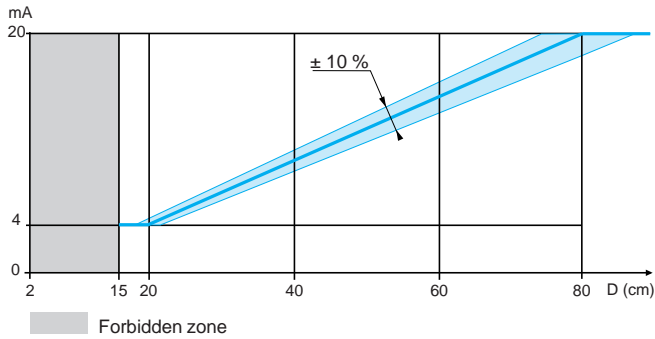
(1) Applications: position control, monitoring concentricity or eccentricity, closed loop regulation, monitoring displacement, etc.

(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 vapour, splashing lactic acid, etc.

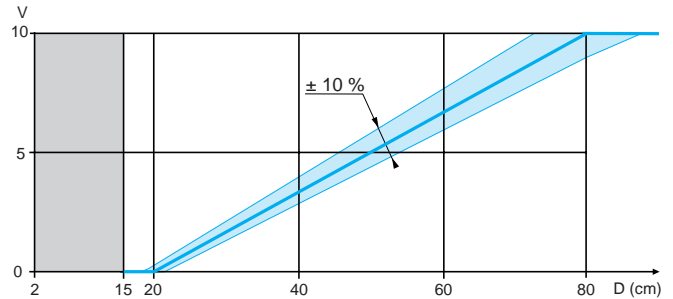
## Curves

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

Output current

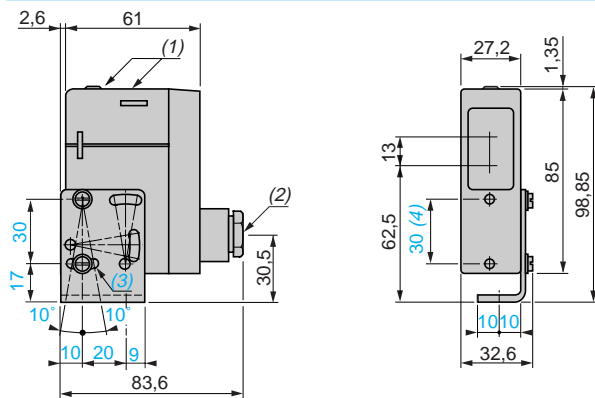


Output voltage



## Dimensions

Sensor XUJK803538 (the bracket XUZA41 is included with the sensor)



(1) LED.

(2) 11P cable gland.

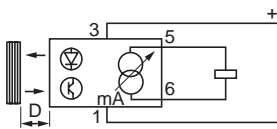
(3) 1 elongated hole  $\varnothing 4.2 \times 14$ .

(4) Front fixing ( $\varnothing 4$  screws and inserts included).

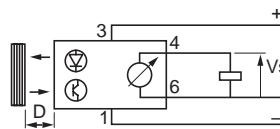
## Wiring schemes

Diffuse system

Current output



Voltage output



## Load characteristics

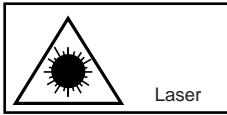
- Output current: the output current varies between 4 and 20 mA depending on the distance of the object and therefore, the load must be less than 1 k $\Omega$ .
- Voltage output: since the minimum rated output current of the sensor is 10 mA, the load must always have a resistive value of more than 1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

## Terminal connections

- 1  $\varnothing$  - (-)
- 2  $\varnothing$
- 3  $\varnothing$  - (+)
- 4  $\varnothing$  - Output voltage
- 5  $\varnothing$  - Output current
- 6  $\varnothing$  - (-)

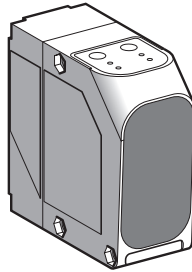
Terminals 1 and 6 connected internally.

Design 90 x 90 mm



Laser class 1, conforming to IEC 60825-1  
Laser class 2 pointer, conforming to IEC 60825-1

Visible laser radiation:  
do not stare into beam



| System               | Object distance sensor   | Reflector distance sensor           |
|----------------------|--|-------------------------------------|
| Type of transmission | Infrared laser, class 1 (905 nm)<br>Red laser pointer, class 2 (650 nm) (1)          |                                     |
| Measuring distance   | 0.2...6 m (on white 90%)<br>0.2...6 m (on grey 18%)<br>0.2...2.5 m (on black 6%) (2) | 0.2...30 m (with reflector XUZC250) |

References

|  |                |             |             |
|--|----------------|-------------|-------------|
| 5-wire<br>solid-state outputs (x 2)<br>analog output (x 1) | PNP, 4...20 mA | XUE5AA2NM12 | XUE1AA2NM12 |
| Weight (kg)  |                | 0.2         | 0.2         |

Characteristics

|                                     |  |  |
|-------------------------------------|--|--|
| Product certifications              | cULus, CE  |  |
| Connection                          | M12, 5-pin connector   |  |
| Degree of protection                | Conforming to IEC 60529  | IP 67  |
| Vibration resistance                | Conforming to EN/IEC 60947-5-2 and IEC 60947-4-2                             | Amplitude $\pm 0.5$ mm (f = 10 to 55 Hz)                       |
| Shock resistance                    | Conforming to EN/IEC 60947-5-2 and IEC 60947-4-1                             | 30 gn, duration 11 ms  |
| Ambient air temperature             | For operation<br>For storage   | - 20...+ 50 °C<br>- 40...+ 80 °C                               |
| Repeat accuracy (analog output) (3) | Fast mode: $\pm 15$ mm<br>Slow mode: $\pm 10$ mm                             | Fast mode: $\pm 10$ mm<br>Slow mode: $\pm 5$ mm                |
| Fast mode/slow mode (response time) | 13 ms/80 ms  | 30 ms/65 ms  |
| Linearity                           | $\leq \pm 40$ mm   | $\leq \pm 60$ mm   |
| Materials                           | Case<br>Lenses   | ABS, mechanical shocks resistant<br>PMMA                       |
| Rated supply voltage                | 18...30 V $\overline{\text{---}}$  |  |
| Voltage limits (including ripple)   | $\pm 10\%$ of rated operational voltage                                      |  |
| Immunity to ambient light           | Conforming to EN/IEC 60947-5-2   |  |
| Output signal                       | Solid-state outputs: 2 x PNP<br>analog output: 4...20 mA                     |  |
| Light spot size                     | 4 x 7 mm at 2 m<br>3 x 10 mm at 4 m<br>4 x 12 mm at 6 m                      | 15 x 20 mm at 10 m<br>30 x 40 mm at 20 m<br>45 x 60 mm at 30 m |
| Switching capacity                  | 100 mA, with protection against reverse polarity, overload and short-circuit |  |
| Voltage drop, closed state          | $\leq 2.4$ V   |  |
| Current consumption, no-load        | $\leq 125$ mA on 24 V $\overline{\text{---}}$                                |  |
| Maximum switching frequency         | Fast mode: 38 Hz<br>Slow mode: 16 Hz   |  |
| Indicator lights                    | Output state<br>Supply on<br>Slow mode<br>Parametering                       | 2 yellow LEDs<br>1 green LED<br>1 orange LED<br>4 red LEDs     |
| Parametering                        | By 2 buttons: Set and Toggle   |  |

(1) In operating mode, the red laser class 2 pointer can be stopped for working on infrared transmission.

(2) % of object remission.

(3) Information taken into account after 30 minutes.

# Photo-electric sensors

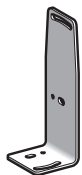
OsiSense XU Application

Material handling series

With solid-state and analogue output signal 4...20 mA

Laser transmission

## References of accessories



XUZA618



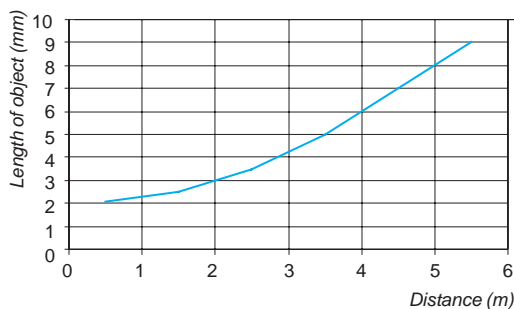
XZCC12FCM50B

| Description   | For use with               | Dimensions (mm) | Reference           | Weight kg |
|---|----------------------------|-----------------|---------------------|-----------|
| <b>Fixing bracket</b><br>(screws, nuts and washers included)  | XUE5AA2NM12<br>XUE1AA2NM12 | –               | <b>XUZA618</b>      | 0.062     |
| <b>Adhesive reflector</b>                                     | XUE1AA2NM12                | 250 x 250       | <b>XZCC250</b>      | 0.040     |
| <b>Straight connector, wired by user</b><br>M12, 5-pin female | XUE5AA2NM12<br>XUE1AA2NM12 | –               | <b>XZCC12FDM50B</b> | 0.020     |
| <b>Elbowed connector, wired by user</b><br>M12, 5-pin female  | XUE5AA2NM12<br>XUE1AA2NM12 | –               | <b>XZCC12FCM50B</b> | 0.020     |

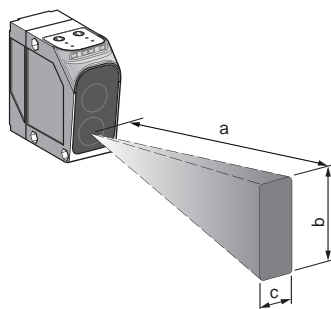
## Presentation

Minimum size of detectable object related to distance

XUE5AA2NM12



Light spot size (not visible)

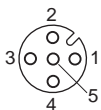


|               | XUE5AA2NM12 |   |    |    | XUE1AA2NM12 |    |    |    |
|---------------|-------------|---|----|----|-------------|----|----|----|
| <b>a</b> (m)  | 0           | 2 | 4  | 6  | 0           | 10 | 20 | 30 |
| <b>b</b> (mm) | 10          | 7 | 10 | 12 | 10          | 20 | 40 | 60 |
| <b>c</b> (mm) | 5           | 4 | 3  | 4  | 5           | 15 | 30 | 45 |

Note: Typical values for application involving measurements on a square white object

## Wiring schemes

M12 connector



Pin n°/colour

1 BN: Brown

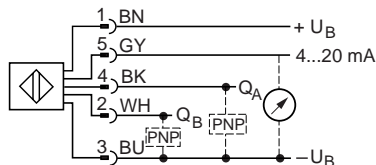
2 WH: White

3 BU: Blue

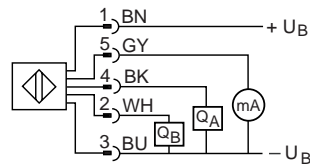
4 BK: Black

5 GY: Grey

XUE5AA2NM12

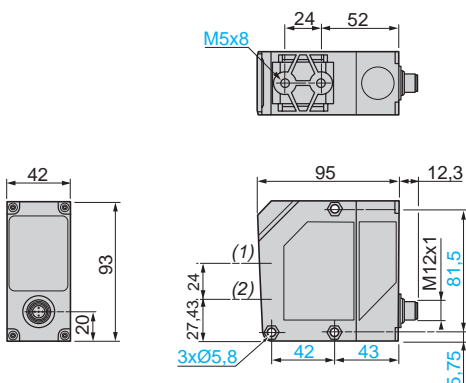


XUE1AA2NM12

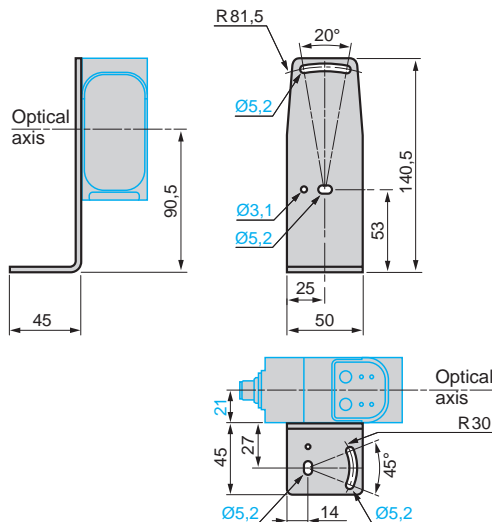


## Dimensions

XUE5AA2NM12 and XUE1AA2NM12



XUE5AA2NM12 and XUE1AA2NM12 with fixing bracket XUZA618



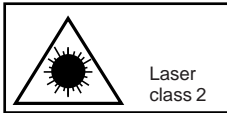
(1) Receiver optical axis.  
(2) Transmitter optical axis.

# Photo-electric sensors

OsiSense XU Application, material handling series

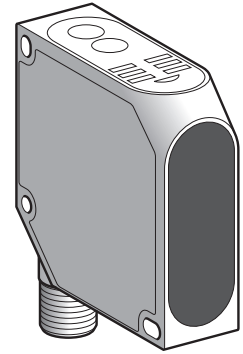
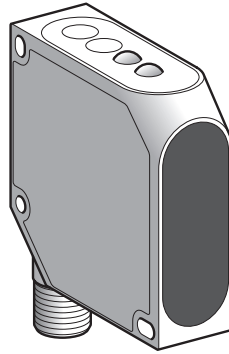
With analogue output signal 0...10 V or 4...20 mA  
Laser transmission

## Compact design, 50 x 50



Laser class 2, conforming to IEC 825-1

Visible laser radiation: do not stare into beam.



|                             |  |            |             |
|-----------------------------|--|------------|-------------|
| <b>System</b>               | Diffuse  |            |             |
| <b>Type of transmission</b> | Red laser, pulsed, Class 2, wavelength: 670 nm |            |             |
| <b>Measuring distance</b>   | 40...60 mm                                     | 45...85 mm | 80...300 mm |

## References

|                           |                 |                 |                 |
|---------------------------|-----------------|-----------------|-----------------|
| <b>3-wire, PNP output</b> | XUYPC0925L1ANSP | XUYPC0925L2ANSP | XUYPC0925L3ANSP |
| <b>Weight (kg)</b>        | 0.057           | 0.057           | 0.057           |

## Characteristics

|   |  |   |                       |
|---|--|---|-----------------------|
| <b>Product certifications</b>                 | CE   |   |                       |
| <b>Ambient air temperature</b>                | For operation  | 0...+45 °C  |                       |
|   | For storage  | -20...+60 °C  |                       |
| <b>Degree of protection</b>                   | Conforming to IEC 60529                                  | IP 67   |                       |
| <b>Resolution</b>                             |  | 7 µm  | 20 µm                 |
| <b>Linearity</b>                              |  | < 1%  |                       |
| <b>Temperature stability</b>                  |  | 10 µm/K   | 18 µm/K               |
| <b>Connection</b>                             | M12 male connector with alternative orientations         |   |                       |
| <b>Vibration resistance</b>                   | Conforming to IEC 60068-2-6                              | 7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz)            |                       |
| <b>Shock resistance</b>                       | Conforming to IEC 60068-2-27                             | 30 gn, duration 11 ms                                 |                       |
| <b>Materials</b>                              | Case   | ABS, anti-shock                                       |                       |
| <b>Rated supply voltage</b>                   | ⎓ 24 V with protection against reverse polarity          |   |                       |
| <b>Voltage limits (including ripple)</b>      | ⎓ 18...28 V  |   |                       |
| <b>Immunity to ambient light</b>              | 5000 lux   |   |                       |
| <b>Output signal</b>                          |  | 0...10 V  | 4...20 mA             |
| <b>Output activation time (from 10...90%)</b> |  | 30 ms   |                       |
|   |  | 0.4 ms (fast speed mode)<br>40 ms (medium speed mode) |                       |
| <b>Laser transmission</b>                     | T pulse: 8 µs, pulse frequency: 6 kHz, time base: 250 ms |   |                       |
| <b>Spot diameter</b>                          | < 1 mm at 50 mm  | < 0.8 mm at 65 mm                                     | 1.5 x 3.5 mm at 80 mm |
|   |  |   |                       |
| <b>Switching capacity</b>                     | 3 mA with overload and short-circuit protection          |   |                       |
| <b>Voltage drop, closed state</b>             | < 2.4 V  |   |                       |
| <b>Current consumption, no-load</b>           | 35 mA  |   | ≤ 40 mA on ⎓ 24 V     |
| <b>Maximum switching frequency</b>            | 40 Hz  |   |                       |
| <b>Indicator lights</b>                       | Dirty  | Red LED   |                       |
|   | Supply on  | Green LED   |                       |
| <b>Parametering</b>                           | -  |   | By buttons            |

■ Applications: position control of robot arm, measuring thickness of mechanical parts.

## Accessories

| Description                    | Details             | Length of cable m | References | Weight kg |
|--------------------------------|---------------------|-------------------|------------|-----------|
| <b>Pre-wired M12 connector</b> | Straight, 4-pin     | 2                 | XZCP1141L2 | 0.090     |
|                                |                     | 5                 | XZCP1141L5 | 0.190     |
|                                | Straight, 5-pin     | 2                 | XZCP1164L2 | 0.115     |
|                                |                     | 5                 | XZCP1164L5 | 0.270     |
| <b>Fixing bracket (1)</b>      | Stainless steel 316 | -                 | XUZA51S    | 0.050     |

(1) For further information, see page 5/160.



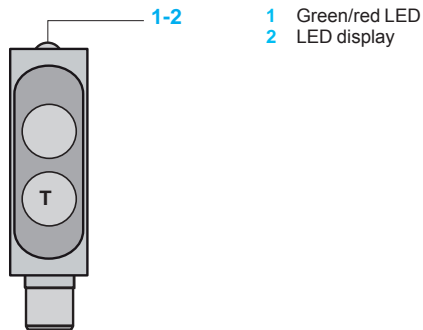
# Photo-electric sensors

OsiSense XU Application, material handling series

With analogue output signal 0...10 V or 4...20 mA  
Laser transmission

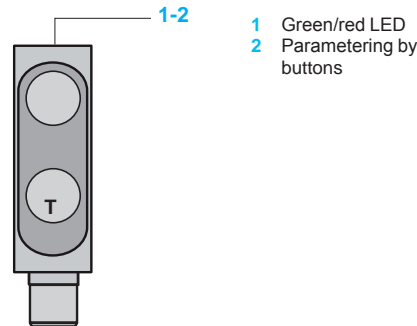
## Presentation

XUYPCO925L1ANSP, XUYPCO925L2ANSP



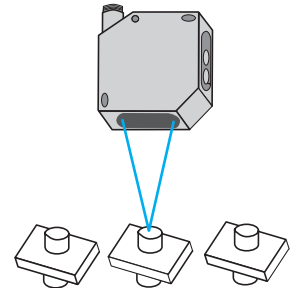
R: Receiver  
T: Transmitter

XUYPCO925L3ANSP



Application example

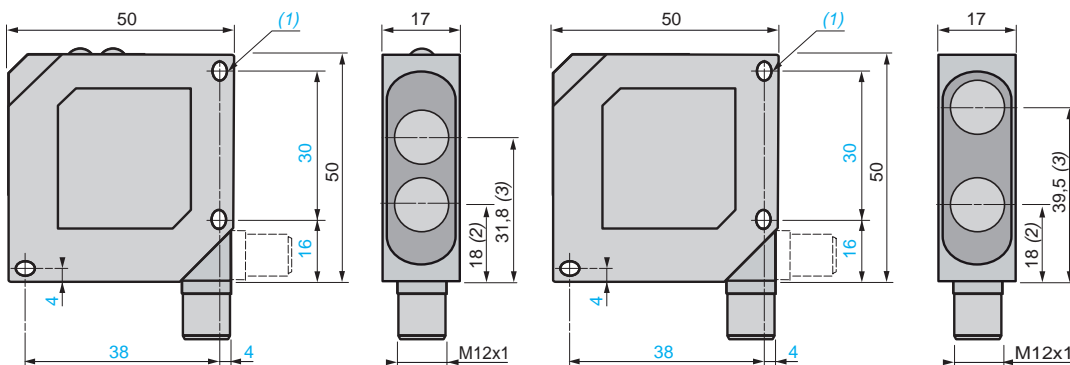
Monitoring dimensions in series



## Dimensions

XUYPCO925L1ANSP, XUYPCO925L2ANSP

XUYPCO925L3ANSP



(1) 2 elongated holes  $\varnothing 4.3 \times 4$ .

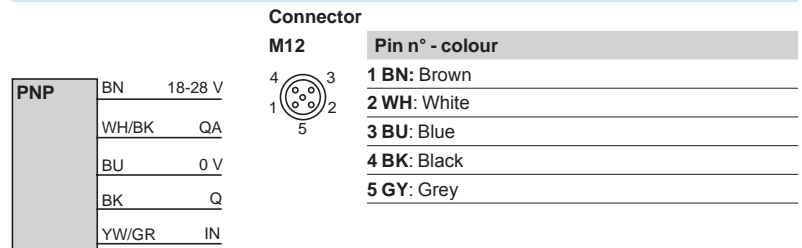
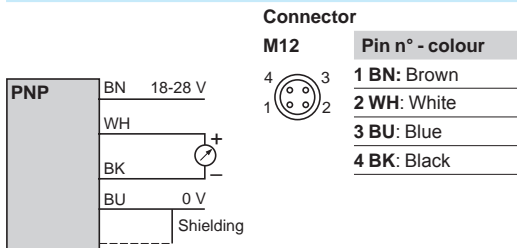
(2) Transmitter optical axis.

(3) Receiver optical axis.

## Wiring schemes

XUYPCO925L1ANSP, XUYPCO925L2ANSP

XUYPCO925L3ANSP



Note: Shielded cable recommended.

QA: 4-20 mA analogue output ( $R \leq 500 \Omega$ )

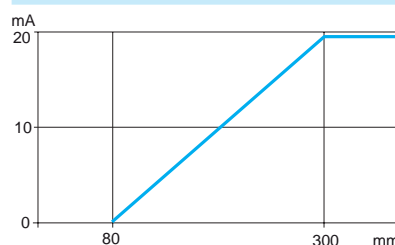
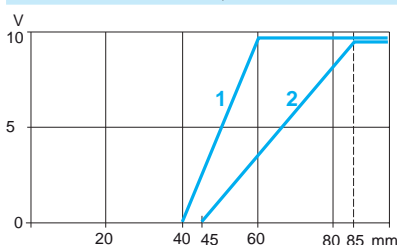
Q: Switching output

IN: Control input (YW/GR: Yellow/green)

## Adjustment curves

XUYPCO925L1ANSP, XUYPCO925L2ANSP

XUYPCO925L3ANSP



1 XUYPCO925L1ANSP  
2 XUYPCO925L2ANSP

# Photo-electric sensors

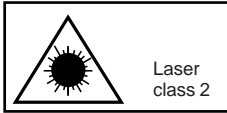
OsiSense XU Application, material handling series

Diffuse, with laser transmission

With background suppression

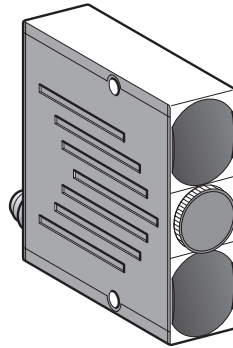
DC supply. Solid-state output

## Compact design



Laser class 2, conforming to IEC 60825-1

Visible laser radiation: do not stare into beam.



|                               |   |
|-------------------------------|---|
| <b>System</b>                 | <b>Diffuse with background suppression</b>            |
| <b>Type of transmission</b>   | <b>Red laser, pulsed, Class 2, wavelength: 675 nm</b> |
| <b>Detection distance</b>     | <b>Adjustable from 50 to 300 mm</b>                   |
| <b>Minimum size of object</b> | <b>0.5 mm</b>   |

## References

|                                   |                           |                      |
|-----------------------------------|---------------------------|----------------------|
| <b>4-wire, PNP and NPN output</b> | NO/NC depending on wiring | <b>XUYPS1LCO965S</b> |
| <b>Weight (kg)</b>                |                           | 0.081                |

## Characteristics

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

## Accessories

| Description                   | Details       | Length of cable | References        | Weight |
|-------------------------------|---------------|-----------------|-------------------|--------|
|                               |               | m               |                   | kg     |
| <b>Pre-wired M8 connector</b> | Straight      | 2               | <b>XZCP0941L2</b> | 0.080  |
|                               | Elbowed (90°) | 2               | <b>XZCP1041L2</b> | 0.080  |
|                               | Straight      | 5               | <b>XZCP0941L5</b> | 0.180  |
|                               | Elbowed (90°) | 5               | <b>XZCP1041L5</b> | 0.180  |

# Photo-electric sensors

OsiSense XU Application, material handling series

Diffuse, with laser transmission

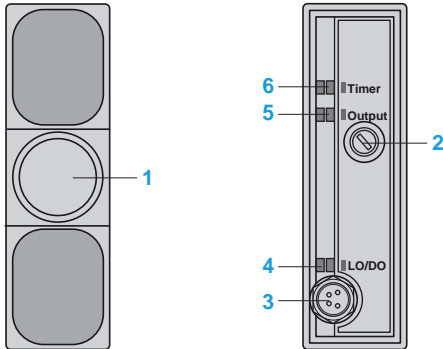
With background suppression

DC supply. Solid-state output

## Presentation

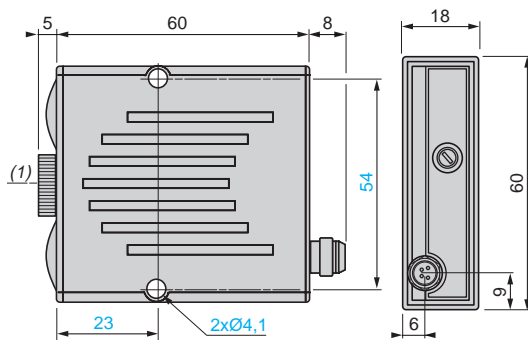
XUYPS1LCO965S

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

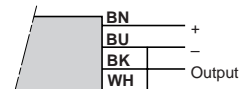


(1) Optical axis of laser

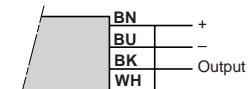
## Wiring schemes

### NO function

Without time delay

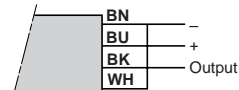


With 40 ms time delay

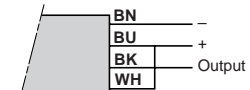


### NC function

Without time delay



With 40 ms time delay



### M8 connector



Pin n° - colour

1 BN: Brown

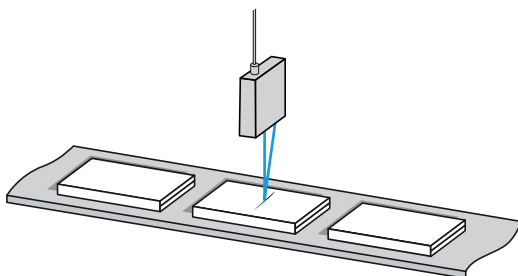
2 WH: White

3 BU: Blue

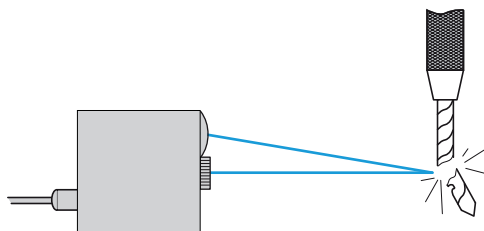
4 BK: Black

## Application examples

Monitoring for crack in a component



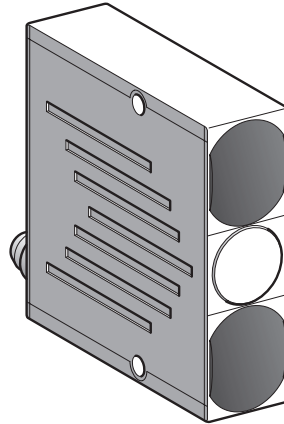
Monitoring for a broken punch on press tool



# Photo-electric sensors

OsiSense XU 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   | Adjustable from 50 to 600 mm          |

## References

|                            |                             |            |              |
|----------------------------|-----------------------------|------------|--------------|
| 4-wire, PNP and NPN output | NO/NC programmable function | XUYPS2945S | XUYPS2C0945S |
| Weight (kg)                |                             | 0.135      | 0.055        |

## Characteristics

|                                   |                         |  |
|-----------------------------------|-------------------------|--|
| Product certifications            |                         | CE, cULus (1)  |
| Ambient air temperature           | For operation           | 0...+ 50 °C  |
|                                   | For storage             | - 20...+ 80 °C                                       |
| 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       | 1300 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 next page

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

## Accessories

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

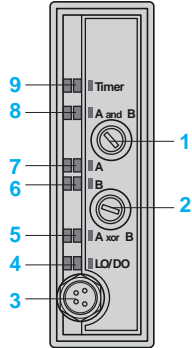
# Photo-electric sensors

OsiSense XU Application, material handling series  
Diffuse, with 2 channels using triangulation  
with background suppression  
DC supply. Solid-state output

## Presentation

XUYPS2945S, XUYPS2CO945S

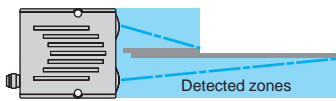
Rear view



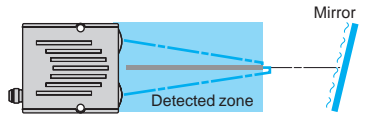
- 1 Adjustment of zone A detection distance
  - 2 Adjustment of zone B detection distance
  - 3 Pre-cabled connection (XUYPS2945S) or M8 connector
  - 4 (XUYPS2CO945S)
  - 5 On in direct mode  
Illuminates when the "exclusive OR" function between the two zones A and B is obtained
  - 6 On when the object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

## Description (4 operating modes)

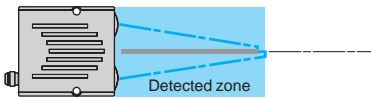
Two independent sensors with triangulation: A, B



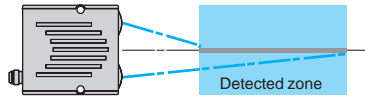
Immunity to reflection: A and B



Detection of contrasting objects: A or B

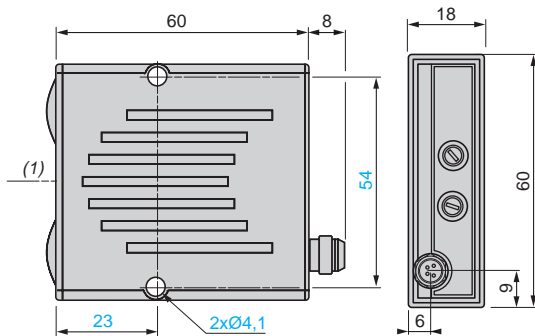


Monitoring of distance: A xor B



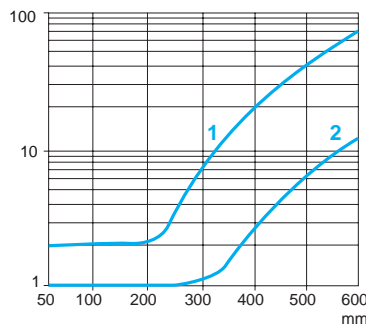
## Dimensions

XUYPS2945S, XUYPS2CO945S



## Detection curves (typical)

XUYPS2945S, XUYPS2CO945S



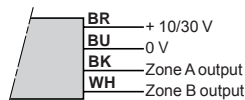
- 1 Black 6%
- 2 Grey 18% - Distance (mm) set on 92% (Kodak 1527795)

(1) Optical axis.

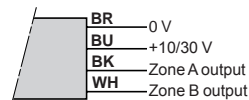
## Wiring schemes and outputs

Two independent sensors with triangulation: A, B

NO output



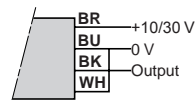
NC output



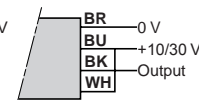
Immunity to reflection: A and B

Without time delay

NO output

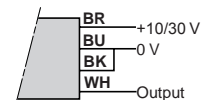


NC output

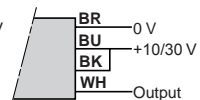


With 40 ms time delay

NO output

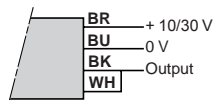


NC output

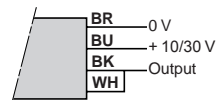


Detection of contrasting objects: A or B

NO output



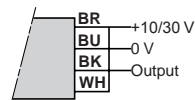
NC output



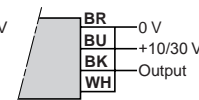
Monitoring of distance: A xor B

Without time delay

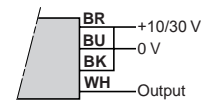
NO output



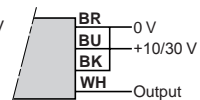
NC output



NO output



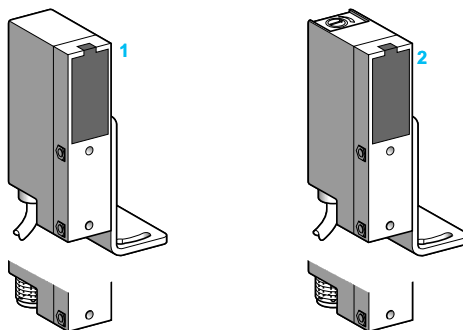
NC output



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

## Compact design

### Pre-cabled and connector versions



| System                        | Reflex 1                        | Polarised reflex 1              | Diffuse 2 |
|-------------------------------|---------------------------------|---------------------------------|-----------|
| Type of transmission          | Infrared                        | Red                             | Infrared  |
| Nominal sensing distance (Sn) | 6 m<br>(with Ø 80 mm reflector) | 4 m<br>(with Ø 80 mm reflector) | 0.7 m     |

## References

|             |             |            |            |                   |                    |                    |
|-------------|-------------|------------|------------|-------------------|--------------------|--------------------|
| 2-wire      | NC function | Connection | Pre-cabled | <b>XULA06021</b>  | <b>XULA040219</b>  | <b>XULA700115</b>  |
|             |             | Connector  | Connector  | <b>XULA06021K</b> | <b>XULA040219K</b> | <b>XULA700115K</b> |
|             | NO function | Connection | Pre-cabled | <b>XULA06011</b>  | <b>XULA040119</b>  | <b>XULA700215</b>  |
|             |             | Connector  | Connector  | <b>XULA06011K</b> | <b>XULA040119K</b> | <b>XULA700215K</b> |
| Weight (kg) |             | Connection | Pre-cabled | 0.195             |                    |                    |
|             |             |            | Connector  | 0.135             |                    |                    |

## Characteristics

|                              |                              |  |  |
|------------------------------|------------------------------|--|--|
| Product certifications       |                              | CE, Special H7 version: UL, CSA                                      |  |
| Ambient air temperature      | For operation                | -25...+60 °C   |  |
|                              | For storage                  | -40...+80 °C   |  |
| 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 mm <sup>2</sup> |  |
|                              | 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   | Function | Reflex system                 |                            | Diffuse system                |                            |  |
|--|----------|-------------------------------|----------------------------|-------------------------------|----------------------------|--|
|  |          | No object present in the beam | Object present in the beam | No object present in the beam | Object present in the beam |  |
| Output state indicator<br>(illuminated when sensor output is ON) | NC       |                               |                            | NO                            |                            |  |
|  | NO       |                               |                            | NC                            |                            |  |

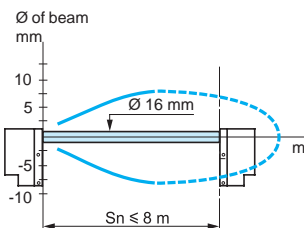
(1) For a sensor with a 5 m long cable add **L05** to the end of the reference; for a 10 m long cable add **L10** to the end of the reference.

Example: sensor **XULA06021** with 5 m cable becomes **XULA06021L05**

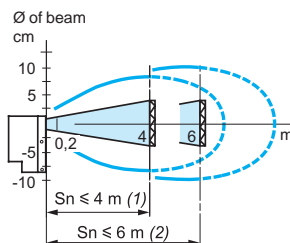
(2) These sensors do not incorporate overload or short-circuit protection and therefore, it is strongly advised to connect a "quick-blow" fuse in series with the load.

## Detection curves

### Thru-beam system

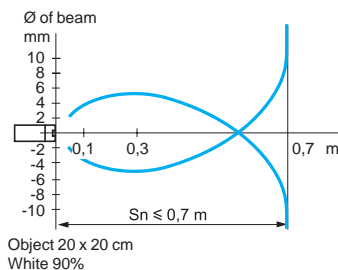


### Reflex system



(1) Polarised  
(2) Infrared

### Diffuse system

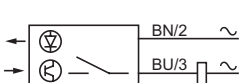


## Schemes

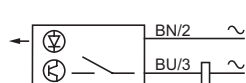
### Wiring schemes (2-wire ~)

NO function (no object present)

Reflex

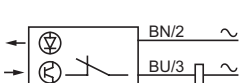


Diffuse

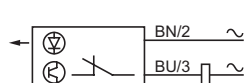


NC function (no object present)

Reflex



Diffuse



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

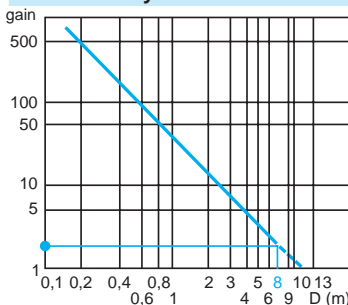
Connector scheme (sensor connector pin view)

Solid-state output (reflex and diffuse system)

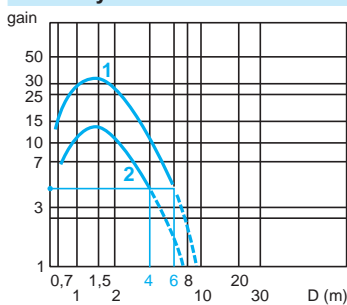


## Excess gain curves (ambient temperature: + 25 °C)

### Thru-beam system



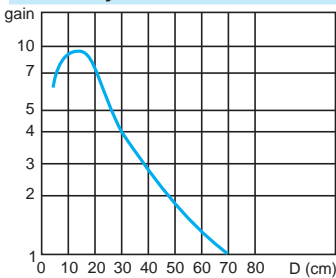
### Reflex system



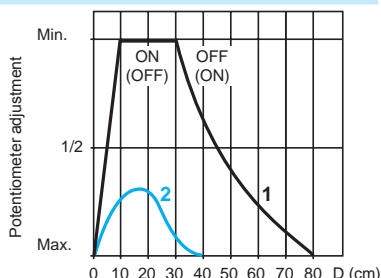
With reflector XUZC80

1 Infrared  
2 Polarised

### Diffuse system



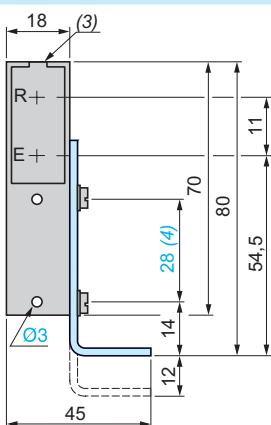
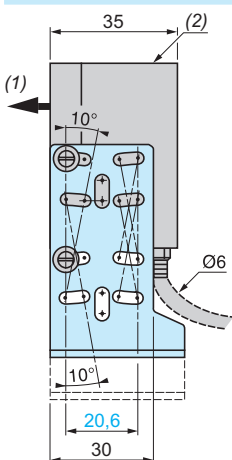
Object 20 x 20 cm  
White 90%



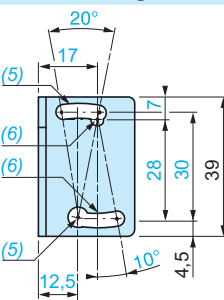
Object 20 x 20 cm  
1 White 90%  
2 grey 18%

## Dimensions (The bracket XULZ41 is included with the sensor)

### Sensor



### Bracket fixing



(1) Optical axis  
(2) Sensitivity potentiometer (diffuse model)  
(3) Output LED indicator

(4) Front fixing (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



# Photo-electric sensors

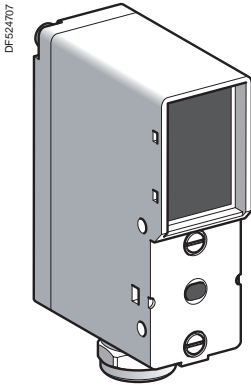
OsiSense XU Application

Conveying and access control series

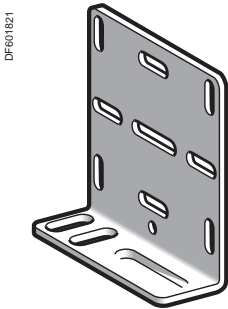
Compact design with teach mode adjustment

Five-wire AC or DC, 1 CO relay output

Three-wire DC, solid-state output



XUYP95●●



XUZA49

| Diffuse system (1)          |                    |         |           |           |
|-----------------------------|--------------------|---------|-----------|-----------|
| Sensing distance (Sn) m     | Function           | Output  | Reference | Weight kg |
| <b>DC</b>                   |                    |         |           |           |
| 1.5                         | NO/NC programmable | PNP/NPN | XUYP954S  | 0.130     |
| 4                           | NO/NC programmable | PNP/NPN | XUYP952S  | 0.130     |
| <b>AC or DC</b>             |                    |         |           |           |
| 1.5                         | NO/NC programmable | Relay   | XUYP954R  | 0.150     |
| 4                           | NO/NC programmable | Relay   | XUYP952R  | 0.150     |
| Polarised reflex system (2) |                    |         |           |           |
| Sensing distance (Sn) m     | Function           | Output  | Reference | Weight kg |
| <b>DC</b>                   |                    |         |           |           |
| 6                           | NO/NC programmable | PNP/NPN | XUYB954S  | 0.130     |
| 10                          | NO/NC programmable | PNP/NPN | XUYB952S  | 0.130     |
| <b>AC or DC</b>             |                    |         |           |           |
| 6                           | NO/NC programmable | Relay   | XUYB954R  | 0.150     |
| 10                          | NO/NC programmable | Relay   | XUYB952R  | 0.150     |
| Fixing accessory            |                    |         |           |           |
| Description                 |                    |         | Reference | Weight kg |
| Metal fixing bracket        |                    |         | XUZA49    | 0.120     |

(1) On 300 x 300 mm white paper

(2) With Ø 84 mm reflector

## Characteristics

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

- Applications
- Detection of belt breakage
- Material handling
- Access control

# Photo-electric sensors

OsiSense XU Application

Conveying and access control series

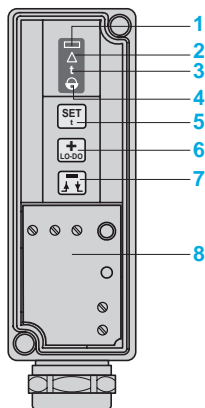
Compact design with teach mode adjustment

Five-wire AC or DC, 1 CO relay output

Three-wire DC, solid-state output

## Description

Rear view



Indicator lights

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

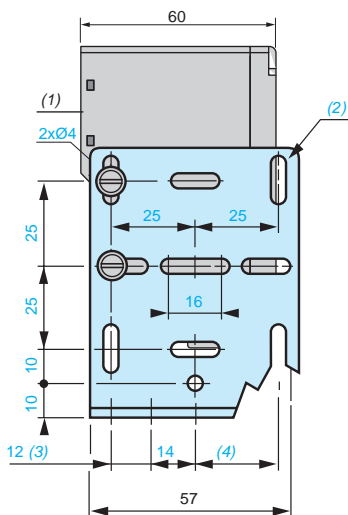
Controls

- 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 and XUYB●95●S versions).

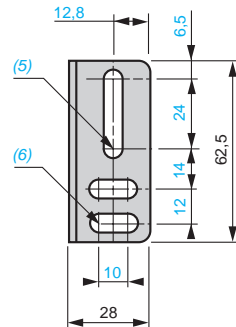
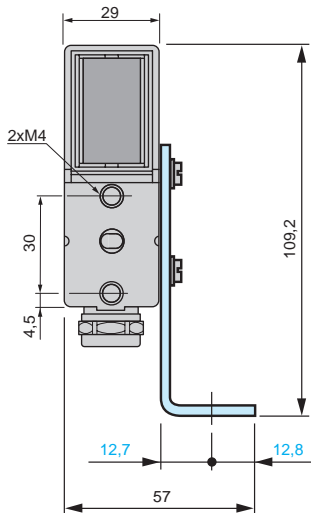
## Dimensions

Sensors XUY●95●S and XUY●95●R



- (1) Optical axis.
- (2) 8 elongated holes  $\varnothing 4.2 \times 10$ .
- (3) 2 elongated holes  $\varnothing 6.5 \times 10$ .
- (4) 1 elongated hole  $\varnothing 6.5 \times 24$ .

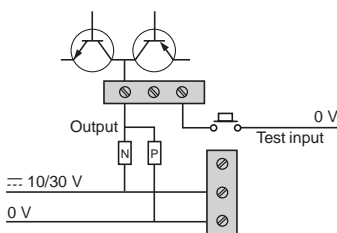
Bracket fixing XUZA49



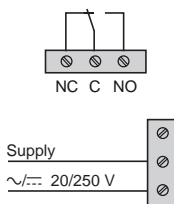
- (5) 2 elongated holes  $\varnothing 6.5 \times 16.5$ .
- (6) 1 elongated hole  $\varnothing 6.5 \times 30.5$ .

## Wiring schemes

XUY●95●S



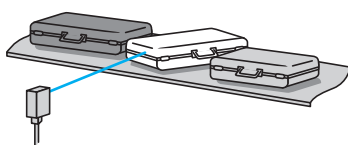
XUY●95●R



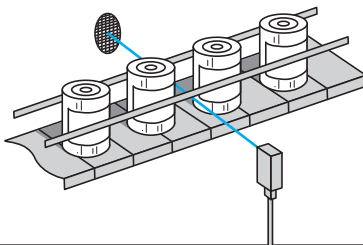
250 V, 1.5 mm<sup>2</sup> terminals.

## Application examples

Monitoring for blockages on a baggage conveyor



Monitoring of gluing, fastening or labelling operations



# Photo-electric sensors

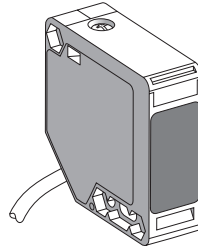
OsiSense XU Application, tertiary sector series

For access detection

AC or DC supply

1 CO relay output

## Compact design



|                               |                                 |
|-------------------------------|---------------------------------|
| System                        | Reflex                          |
| Type of transmission          | Infrared                        |
| Nominal sensing distance (Sn) | 7 m (with 50 x 50 mm reflector) |

## References

|             |             |  |   |
|-------------|-------------|--|---|
| 5-wire      | NC function | <b>XUK1ARCNL2H60</b><br>(supplied as kit comprising: sensor, fixing bracket, 50 x 50 mm reflector and mounting instructions in French and English) | <b>XUK1ARCNL2H61</b><br>(supplied as kit comprising: sensor, fixing bracket, 50 x 50 mm reflector and mounting instructions in French and German) |
| Weight (kg) |             | 0.300  |   |

## Characteristics

|  |   |
|--|---|
| Product certifications                   | UL, CSA, CE   |
| Ambient air temperature                  | For operation: - 25...+ 55 °C.<br>For storage: - 40...+ 70 °C                         |
| Vibration resistance                     | Conforming to IEC 60068-2-6<br>7 gn, amplitude ± 1.5 mm (f = 10...55 Hz)              |
| Shock resistance                         | Conforming to IEC 60068-2-27<br>30 gn, duration 11 ms                                 |
| Degree of protection                     | Conforming to IEC 60529<br>IP 65, double insulation                                   |
| Connection                               | Pre-cabled: diameter 6 mm, length 2 m, wire c.s.a.: 5 x 0.34 mm <sup>2</sup> / AWG 22 |
| Materials                                | Case: PBT; lenses: PMMA; cable: PVC   |
| Rated supply voltage                     | ~ or --- 24...240 V   |
| Voltage limits                           | ~ or --- 20...264 V   |
| Switching capacity                       | 3 A   |
| Maximum voltage on output relay contacts | ~ 250 V   |
| Power consumption, no-load               | 2 W (1)   |
| Maximum switching frequency              | 20 Hz   |
| Delays                                   | First-up: ≤ 60 ms; response: ≤ 25 ms; recovery: ≤ 25 ms                               |

| Function table  | Function | Reflex system                           |                                      |
|---|----------|---|--------------------------------------|
|   |          | No object present in the beam           | Object present in the beam           |
| Output state of relay contact indicator<br>(illuminated when relay energised) | NO or NC | BK — GY<br>WH — ⊗<br>Relay de-energised | BK — GY<br>WH — ⊙<br>Relay energised |

(1) No-load current consumption at ~ 220 V: ≤ 25 mA.

# Photo-electric sensors

OsiSense XU Application, tertiary sector series

For access detection

AC or DC supply

1 CO relay output

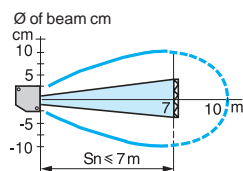
## Contents of kits XUK1ARCNL2H60 and XUK1ARCNL2H61

- reflex system photo-electric sensor,
- fixing bracket XUZASK003 (screws included),
- 50 x 50 mm reflector,
- mounting instructions
- in french and english for XUK1ARCNL2H60,
- in french and german for XUK1ARCNL2H61.



## Detection curve

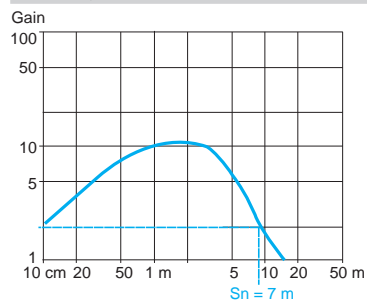
Reflex system ~ or ---



## Excess gain curve

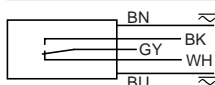
(ambient temperature: + 25 °C)

Reflex system ~ or ---



## Wiring scheme

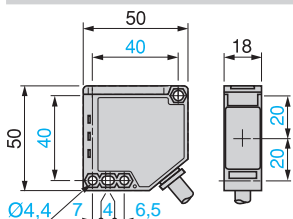
5-wire ~ or ---



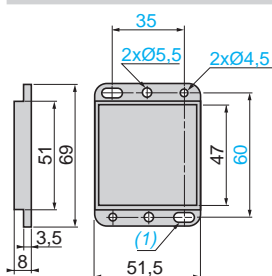
With reflector XUZC50

## Dimensions

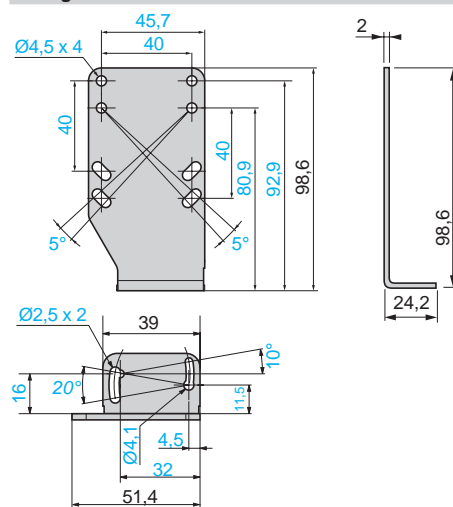
Sensor XUK1ARCNL2



Reflector XUZC50



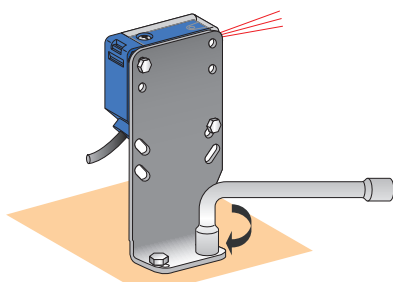
Fixing bracket XUZASK003



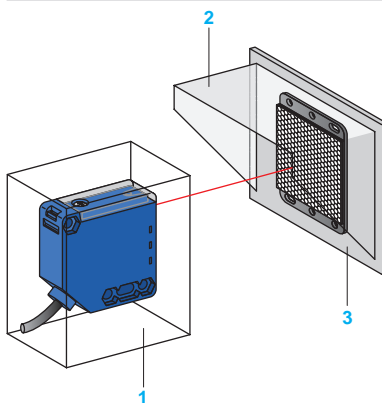
(1) 2 elongated holes Ø 4.5 x 8

## Mounting precautions

Rigid fixing for trouble free detection



Outdoor mounting under protective cover



- 1 Protective housing.
- 2 Lens hood.
- 3 Thermal insulator to avoid frost or condensation forming on the optical parts.

# Photo-electric sensors

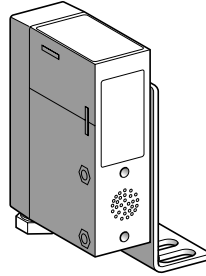
OsiSense XU Application, tertiary sector series

With integral buzzer

AC or DC supply

1 NO relay output

## Compact design







|                               |                              |
|-------------------------------|------------------------------|
| System                        | Reflex                       |
| Type of transmission          | Infrared                     |
| Nominal sensing distance (Sn) | 6 m (with Ø 80 mm reflector) |
| Cable gland                   | 9P, mounted in base          |

## References

|             |  |
|-------------|--|
| NO function | XUJB06031H60 (supplied as kit comprising: sensor, fixing bracket, Ø 80 mm reflector and mounting instructions) |
| Weight (kg) | 0.330  |

## Characteristics

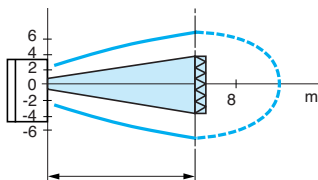
|  |   |
|--|---|
| Product certifications                   | CE  |
| Ambient air temperature                  | For operation: - 25...+ 55 °C.<br>For storage: - 40...+ 70 °C   |
| Vibration resistance                     | Conforming to IEC 60068-2-6<br>7 gn, amplitude ± 1.5 mm (f = 10...55 Hz)  |
| Shock resistance                         | Conforming to IEC 60068-2-27<br>30 gn, duration 11 ms   |
| Degree of protection                     | Conforming to IEC 60529<br>IP 40, double insulation □   |
| Connection                               | Screw terminals, maximum capacity: 1 x 1.5 mm <sup>2</sup>  |
| Materials                                | Case: PEI (1)   |
| Rated supply voltage                     | ~ 24...240 V or ~ 24...48 V   |
| Voltage limits                           | ~ 20...264 V or ~ 20...60 V (including ripple)  |
| Switching capacity                       | 2000 mA (cos φ = 1), 500 mA (cos φ = 0.4) for a contact life of 1 million operating cycles at an operating rate of 1 operating cycle per second, at 250 V |
| Maximum voltage on output relay contacts | ~ 250 V or ~ 30 V   |
| Current consumption, no-load             | ≤ 30 mA   |
| Maximum switching frequency              | 20 Hz   |
| Delays                                   | First-up: ≤ 60 ms; response: ≤ 25 ms; recovery: ≤ 25 ms   |
| Time delay                               | Adjustable from 0.3 to 3 seconds  |

| Function table  | Function | Reflex system   |  |
|---|----------|---|--|
|   |          | No object present in the beam   | Object present in the beam   |
| Output state of relay contacts indicator:<br>yellow LED<br>(illuminated when relay energised) | NO       | <br>Relay de-energised | <br>yellow<br>Relay energised |
|   |          | <br>Relay energised   | <br>yellow                  |

(1) 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 vapour, splashing lactic acid, etc.

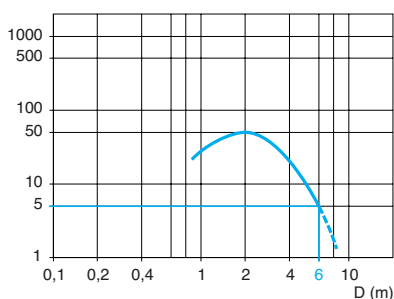
## Detection curve

### Reflex system



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

### Infrared reflex system



## Contents of kit XUJB06031H60

- reflex system photo-electric sensor,
- fixing bracket,
- Ø 80 mm reflector,
- mounting instructions.



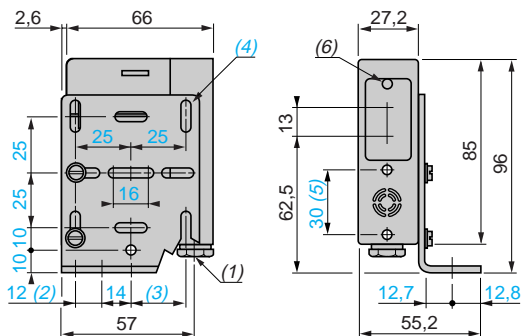
With reflector XUZC80

## Dimensions

### XUJB06031H60

### Face view

### Bracket fixing



(1) 9P cable gland.

(2) 2 elongated holes Ø 6.5 x 10.

(3) 1 elongated hole Ø 6.5 x 24.

(4) 8 elongated holes Ø 4.2 x 10.

(5) Front fixing (Ø 4 screws and inserts included).

(6) Yellow LED.

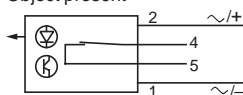
(7) 2 elongated holes Ø 6.5 x 16.5.

(8) 1 elongated hole Ø 6.5 x 30.5.

## Wiring schemes (~ or ---)

### NO function

Object present



## Terminal connections

1 NO relay output

1 Ø - A1 (~/-)

2 Ø - A2 (~/+)

3 Ø -

4 Ø - ~ 250 V, 100 VA max.

5 Ø - --- 30 V, 2 A max.