Photoelectric sensors
Optical forks and frames

Catalog
May 2009
Offering you the most efficient solution

Having acted on your feedback, studied your specific requirements and needs, we went back to the basics:

Optical fork detection that is simple and economical.

>Economical:
Increase the profitability of your solution

>Simple and robust:
No adjustment
Quality metal used throughout

>Adaptable:
The perfect answer to your specific requirements

Contents
Optical forks and frames

Presentation p 2 and 3
Selection guide p 4 and 5
Economical optical forks p 6 and 7
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Make the most of your energy
Economical

Increase the profitability of your solution:

- When purchasing:
  The thru-beam system design at a very affordable price
- When installing:
  Low up-and-running costs

Simple and robust

No adjustment:

- Visible red beam to make life easy
- Accuracy of spot for small objects (Ø 0.8 mm, 0.03 in.)
- Excellent visibility of yellow output LED

Strong metal casing:

Product without loss of Schneider Electric quality
- Metal case, avoiding deformation
- High-tech electronics
- Degree of protection (IP 65 and IP 67)
Adaptable

The perfect answer to your specific requirements:

- Catalogued models covering the most common standard market applications (sizes, mountings, connections, etc.)
- Modular design enabling simple adaptation to your specific integration requirement (dimensions, mounting, connections, packaging, etc.)

1. Depth adaptable from 30 to 120 mm (1.18 to 4.72 in.) and more
2. M8 connector or pre-cabled connection
3. Adaptable mounting holes
4. Passageway adaptable from 30 to 250 mm (1.18 to 9.84 in.)

A complete offer comprising optical fork and frame solutions for each of your applications

Optimum optical forks

- Forks without adjustment
- Forks with teach mode

Forks and frames

- Forks specifically for your applications: Laser - Transparent materials - Ultrasonic...
- Optical frames for dynamic counting
OsiSense: Optical forks and frames

General use

Optimum versions for machine manufacturers (OEM)

<table>
<thead>
<tr>
<th>Sensing distance, mm (in.)</th>
<th>30 (1.18)</th>
<th>50 (1.97)</th>
<th>80 (3.15)</th>
<th>120 (4.72)</th>
<th>180 (7.09)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical application</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Packagin...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beam accuracy, mm (in.)</td>
<td>0.6 (0.024)</td>
<td>0.8 (0.031)</td>
<td>0.9 (0.035)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity adjustment</td>
<td>Without adjustment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of transmission</td>
<td>Visible red (simplifies setup)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching frequency (Hz)</td>
<td>4000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sensors for DC applications

<table>
<thead>
<tr>
<th>Connection</th>
<th>Pre-cabled (L = 2 m)</th>
<th>M8 connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passageway, mm (in.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-wire, NO function (1) PNP outputs (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B=30</td>
<td>B=60</td>
<td>B=120</td>
</tr>
<tr>
<td>XUVR0303PANL2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>XUVR0605PANM8</td>
<td>XUVR0608PANM8</td>
<td>-</td>
</tr>
<tr>
<td>XUVR1218PANM8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4-wire, NO/NC selectable function - Independent PNP/NPN outputs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B=42</td>
<td>B=69</td>
<td>B=95</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

(1) NC version available
(2) NPN versions also available

Specific applications use

Versions specifically for your profession

<table>
<thead>
<tr>
<th>Sensing distance, mm (in.)</th>
<th>3 (0.12)</th>
<th>2 (0.08)</th>
<th>2...120 (0.08...4.72)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical application</td>
<td></td>
<td></td>
<td>Packaging and materials handling sector</td>
</tr>
<tr>
<td>Beam accuracy, mm (in.)</td>
<td>+/- 0.16 (0.006)</td>
<td>0.5 (0.019)</td>
<td>Adjustable down to 0.05 (0.001)</td>
</tr>
<tr>
<td>Sensitivity adjustment</td>
<td>Numeric +/- button and red LED</td>
<td>Using teach mode</td>
<td>Using teach mode (4)</td>
</tr>
<tr>
<td>Type of transmission</td>
<td>Ultrasonic</td>
<td>Infrared</td>
<td>Laser, visible red</td>
</tr>
<tr>
<td>Switching frequency (Hz)</td>
<td>500</td>
<td>25000</td>
<td>10000</td>
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</table>

Sensors for DC applications

<table>
<thead>
<tr>
<th>Connection</th>
<th>M8 connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passageway, mm (in.)</td>
<td></td>
</tr>
<tr>
<td>3 x 68 (0.12 x 2.68)</td>
<td>2 x 50 (0.08 x 1.97)</td>
</tr>
<tr>
<td>4-wire, PNP and NPN NO or NC programmable function</td>
<td></td>
</tr>
<tr>
<td>XUVO6M3KCNM8</td>
<td>XUVK0252S (3)</td>
</tr>
</tbody>
</table>

(3) Red/green dual transmission version available for detection of color reference marks: XUVK0252VS
(4) For a potentiometer adjustable version, delete the letter A from the reference. Example: XUYFLNEP... becomes XUYFLNEP...
### General use

Universal versions, adjustable using teach mode

<table>
<thead>
<tr>
<th>Sensing distance, mm (in.)</th>
<th>2 (0.08)</th>
<th>5 (0.20)</th>
<th>15 (0.59)</th>
<th>30 (1.18)</th>
<th>50 (1.97)</th>
<th>80 (3.15)</th>
<th>120 (4.72)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustable down to 0.3 (0.01)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using teach mode (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infrared (Excess gain, higher accuracy)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10,000</td>
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</tr>
</tbody>
</table>

#### M8 connector

<table>
<thead>
<tr>
<th>Sensing distance, mm (in.)</th>
<th>2 (0.08)</th>
<th>5 (0.20)</th>
<th>15 (0.59)</th>
<th>30 (1.18)</th>
<th>50 (1.97)</th>
<th>80 (3.15)</th>
<th>120 (4.72)</th>
</tr>
</thead>
</table>

(4) For a potentiometer adjustable version, delete the letter A from the reference. Example: XUYFANEP40002 becomes XUYFANEP40002

### Specific applications use

#### Optical frames for dynamic counting

<table>
<thead>
<tr>
<th>Sensing distance, mm (in.)</th>
<th>30 (1.18)</th>
<th>60 (2.36)</th>
<th>120 (4.72)</th>
<th>180 (7.09)</th>
<th>250 (9.84)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical application</td>
<td>Packaging sector</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum size of object detected</td>
<td>2 mm (0.08 in.)</td>
<td>4 mm (0.16 in.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensitivity adjustment</td>
<td>Using potentiometer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of transmission</td>
<td>Infrared</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching frequency (Hz)</td>
<td>500</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Sensors for DC applications

<table>
<thead>
<tr>
<th>Connection</th>
<th>M8 connector</th>
<th>M12 connector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passageway, mm (in.)</td>
<td>30 x 30 (1.18 x 1.18)</td>
<td>60 x 60 (2.36 x 2.36)</td>
</tr>
<tr>
<td>4-wire</td>
<td>XUJF30M8</td>
<td>XUJF60M8</td>
</tr>
</tbody>
</table>

(5) For an open fork version, add the letter U to the end of the reference. Example: XUJF120M12 becomes XUJF120M12U

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Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com
Photoelectric sensors
OsiSense® XU Optimum
Optical fork without adjustment
D.C. supply, solid-state output

References, characteristics

Optical fork without adjustment

<table>
<thead>
<tr>
<th>System</th>
<th>Thru-beam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of transmission</td>
<td>Red LED, modulated</td>
</tr>
<tr>
<td>Nominal sensing distance (Sn)</td>
<td>2…180 mm (0.08…7.09 in.)</td>
</tr>
<tr>
<td>Minimum size of object detected</td>
<td>Passageway 2…120 mm (0.08…4.72 in.) 0.8 mm (0.031 in.) Passageway ≥180 mm (7.09 in.) 1 mm (0.039 in.)</td>
</tr>
<tr>
<td>Fork type</td>
<td>XUV Rx</td>
</tr>
</tbody>
</table>

### References

<table>
<thead>
<tr>
<th>3-wire</th>
<th>Passageway (A)</th>
<th>Function</th>
<th>Output</th>
<th>Pre-cabled, length 2 m. Depth (B): 30 mm (1.18 in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO or NC function</td>
<td>30 mm (1.18 in.)</td>
<td>NO PNP</td>
<td>Pre-cabled, length 2 m. Depth (B): 30 mm (1.18 in.)</td>
<td></td>
</tr>
<tr>
<td>PNP or NPN output</td>
<td>50 mm (1.97 in.)</td>
<td>NO PNP</td>
<td>Pre-cabled, length 2 m. Depth (B): 30 mm (1.18 in.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>80 mm (3.15 in.)</td>
<td>NO PNP</td>
<td>Pre-cabled, length 2 m. Depth (B): 30 mm (1.18 in.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>120 mm (4.72 in.)</td>
<td>NO PNP</td>
<td>Pre-cabled, length 2 m. Depth (B): 30 mm (1.18 in.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>180 mm (7.09 in.)</td>
<td>NO PNP</td>
<td>Pre-cabled, length 2 m. Depth (B): 30 mm (1.18 in.)</td>
<td></td>
</tr>
</tbody>
</table>

M8 connector, 3-pin. Depth (B): 60 mm (2.36 in.)

M8 connector, 3-pin. Depth (B): 120 mm (4.72 in.)

Weight, kg (lb) 0.080 to 0.190 (0.176 to 0.419) depending on model

Other versions: please consult your local sales office.

### Characteristics

<table>
<thead>
<tr>
<th>Product certifications</th>
<th>CE, UL, CSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient air temperature</td>
<td>For operation: −10…+ 60 °C (+14…+140 °F) For storage: −40…+ 80 °C (+40…+176 °F)</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>Conforming to IEC 60529 IP 65 and IP 67</td>
</tr>
<tr>
<td>Vibration resistance</td>
<td>Conforming to IEC 60068-2-6 7 gn, amplitude ± 0.75 mm (f = 10 to 55 Hz)</td>
</tr>
<tr>
<td>Shock resistance</td>
<td>Conforming to IEC 60068-2-27 30 gn, duration 11 ms</td>
</tr>
<tr>
<td>Materials</td>
<td>Painted aluminium and polyamide</td>
</tr>
<tr>
<td>Rated supply voltage</td>
<td>≥12…24 V with protection against reverse polarity</td>
</tr>
<tr>
<td>Voltage limits (including ripple)</td>
<td>≥10…30 V</td>
</tr>
<tr>
<td>Immunity to ambient light</td>
<td>Natural light 10,000 Lux Incandescent bulb 5000 Lux</td>
</tr>
<tr>
<td>Switching capacity</td>
<td>100 mA with overload and short-circuit protection</td>
</tr>
<tr>
<td>Voltage drop, closed state</td>
<td>&lt; 0.5 V</td>
</tr>
<tr>
<td>Current consumption, no-load</td>
<td>&lt; 20 mA</td>
</tr>
<tr>
<td>Maximum switching frequency</td>
<td>4000 Hz</td>
</tr>
<tr>
<td>Delays</td>
<td>First-up 140 ms max.</td>
</tr>
<tr>
<td>Indicator lights</td>
<td>Yellow LED Output signal</td>
</tr>
</tbody>
</table>

Applications: detection on conveyor, detection on vibrating rail.
Photoelectric sensors
OsiSense® XU Optimum
Optical fork without adjustment
D.C. supply, solid-state output

Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
<th>Length of cable (m)</th>
<th>Reference</th>
<th>Weight kg (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-wired M8 connector</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Straight</td>
<td>2</td>
<td>XZCP0566L2</td>
<td>0.060 (0.132)</td>
<td></td>
</tr>
<tr>
<td>Elbowed (90°)</td>
<td>2</td>
<td>XZCP0666L2</td>
<td>0.060 (0.132)</td>
<td></td>
</tr>
<tr>
<td>Straight</td>
<td>5</td>
<td>XZCP0566L5</td>
<td>0.120 (0.265)</td>
<td></td>
</tr>
<tr>
<td>Elbowed (90°)</td>
<td>5</td>
<td>XZCP0666L5</td>
<td>0.120 (0.265)</td>
<td></td>
</tr>
</tbody>
</table>

Dimensions

XUV R

<table>
<thead>
<tr>
<th>XUV R0303</th>
<th>Passageway Depth</th>
<th>a</th>
<th>b</th>
<th>b1</th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>Ø</th>
<th>Length of cable (m)</th>
<th>Reference</th>
<th>Weight kg (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 (1.18 in.)</td>
<td>40</td>
<td>54</td>
<td>65.7</td>
<td>57.5</td>
<td>30</td>
<td>6.5</td>
<td>--</td>
<td>--</td>
<td>3 x 4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 (1.97 in.)</td>
<td>60</td>
<td>74</td>
<td>85.7</td>
<td>77.5</td>
<td>40</td>
<td>6.5</td>
<td>8</td>
<td>19.5</td>
<td>4 x 4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80 (3.19 in.)</td>
<td>60</td>
<td>104</td>
<td>85.7</td>
<td>77.5</td>
<td>70</td>
<td>6.5</td>
<td>8</td>
<td>19.5</td>
<td>4 x 4.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120 (4.72 in.)</td>
<td>124.3</td>
<td>144</td>
<td>150.2</td>
<td>142</td>
<td>100</td>
<td>17</td>
<td>17</td>
<td>4 x 4.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>180 (7.09 in.)</td>
<td>124.3</td>
<td>144</td>
<td>150.2</td>
<td>142</td>
<td>152</td>
<td>22</td>
<td>22</td>
<td>4 x 4.3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Wiring schemes

M8 connector

<table>
<thead>
<tr>
<th>Pin n°</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BN</td>
</tr>
<tr>
<td>3</td>
<td>BU</td>
</tr>
<tr>
<td>4</td>
<td>BK</td>
</tr>
</tbody>
</table>

Pre-cabled

Application examples

Vibrating bowl

Monitoring height of objects passing on a conveyor

References (continued), dimensions, schemes

Accessories

References

Dimensions

Wiring schemes

Application examples

Photoelectric sensors
OsiSense® XU Optimum
Optical fork without adjustment
D.C. supply, solid-state output

Accessories

References (continued), dimensions, schemes

Dimensions

Wiring schemes

Application examples
# Photoelectric sensors

## Osiris® Application

**Optical fork with teach mode**

- **D.C. supply, solid-state output**

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## References, characteristics, accessories

### Optical fork with teach mode

<table>
<thead>
<tr>
<th></th>
<th>+/- numeric potentiometer mode</th>
<th>Teach mode</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Green keypad</td>
<td>Yellow keypad</td>
</tr>
</tbody>
</table>

### System

- **Type of transmission**: Thru-beam
- **Nominal sensing distance (Sn)**: 2…120 mm (0.08…4.72 in.)
- **Minimum size of object detected**:
  - Passageway: 2…120 mm, 0.2 mm (0.008 in.)

### References

<table>
<thead>
<tr>
<th>4-wire, PNP/NPN independent outputs</th>
<th>NO/NC function, selectable</th>
<th>Passageway (A) (mm)</th>
<th>Depth (B) (mm)</th>
<th>Passageway (A) (mm)</th>
<th>Depth (B) (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2 (0.08)</td>
<td></td>
<td>5 (0.12)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 (0.39)</td>
<td></td>
<td>15 (0.59)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>30 (1.18)</td>
<td></td>
<td>50 (1.97)</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>80 (3.15)</td>
<td></td>
<td>120 (4.72)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>XUY FNEP40002</td>
<td>XUY FNEP60002</td>
<td>XUY FNEP100002</td>
<td>XUY FANEP40002</td>
<td>XUY FANEP60002</td>
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<td></td>
<td></td>
<td>XUY FNEP40005</td>
<td>XUY FNEP60005</td>
<td>XUY FNEP100005</td>
<td>XUY FANEP60005</td>
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<td>XUY FNEP40015</td>
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<td>XUY FANEP60015</td>
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<td>XUY FNEP40030</td>
<td>XUY FNEP60030</td>
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<td>XUY FANEP60030</td>
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<td>XUY FNEP40050</td>
<td>XUY FNEP60050</td>
<td>XUY FNEP100050</td>
<td>XUY FANEP60050</td>
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<td>XUY FNEP40080</td>
<td>XUY FNEP60080</td>
<td>XUY FNEP100080</td>
<td>XUY FANEP60080</td>
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<tr>
<td></td>
<td></td>
<td>XUY FNEP40120</td>
<td>XUY FNEP60120</td>
<td>XUY FNEP100120</td>
<td>XUY FANEP60120</td>
</tr>
</tbody>
</table>

### Weight, kg (lb)

- 0.055 to 0.128 (0.12 to 0.28) depending on model

### Characteristics

- **Product certification**: CE, cULus. This product is UL Listed if supplied by a class II or isolated supply delivering ≤ 30 V max. (isolated transformer for example) and protected by a UL fuse rated at 3 A max.
- **Ambient air temperature**
  - For operation: -20…+ 60 °C (-4…+140 °F)
  - For storage: -30…+ 80 °C (-22…+176°F)
- **Degree of protection**: Conforming to IEC 60529 IP 65
- **Connection**: M8, 4-pin male connector (for 3-pin version please consult your Regional Sales Office)
- **Vibration resistance**: Conforming to IEC 60068-2-6 7 gn, amplitude ± 0.75 mm (f = 10 to 55 Hz)
- **Shock resistance**: Conforming to IEC 60068-2-27 30 gn, duration 11 ms
- **Materials**
  - Case: Painted aluminium and polyamide/glass
- **Rated supply voltage**: Conforming to IEC 60664-2-1: 12…24 V with protection against reverse polarity
- **Voltage limits (including ripple)**: ≤ 10…30 V
- **Immunity to ambient light**
  - Natural light: 10,000 Lux
  - Incandescent bulb: 5000 Lux
- **Outputs**
  - PNP and NPN: By independent wire
  - NO/NC: By programming
- **Switching capacity**: 100 mA with overload and short-circuit protection
- **Voltage drop, closed state**: < 2 V
- **Current consumption, no-load**: 40 mA
- **Permissible capacitive load**: 330 nF
- **Maximum switching frequency**: 10 kHz
- **Response time**
  - Stability: ±/± 20 µs
- **Indicator lights**
  - Yellow LED: Output signal
  - Red LED: Adjustment mode and keypad locking

### Application: Detection of labels, detection of double sheet, detection of reference marks, detection on conveyor, detection on vibrating rail.

### Accessories

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
<th>Length of cable (m)</th>
<th>References</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-wired M8 connector</td>
<td>Straight</td>
<td>2</td>
<td>XZCP0941L2</td>
<td>0.080 (0.18)</td>
</tr>
<tr>
<td></td>
<td>Elbowed (90°)</td>
<td>2</td>
<td>XZCP1041L2</td>
<td>0.080 (0.18)</td>
</tr>
<tr>
<td></td>
<td>Straight</td>
<td>5</td>
<td>XZCP0941L5</td>
<td>0.180 (0.40)</td>
</tr>
<tr>
<td></td>
<td>Elbowed (90°)</td>
<td>5</td>
<td>XZCP1041L5</td>
<td>0.180 (0.40)</td>
</tr>
</tbody>
</table>
### Presentation

**XUY FNEP*** ***XUY FANEP***

1. Yellow LED “On”: Output activated
2. Red LED “On”: Adjustments and keypad locking
3. Sensitivity adjustment
4. Keypad locking (3 s ≤ press time < 6 s)
5. NO/NC (press time ≥ 6 s)

### Dimensions (mm)

<table>
<thead>
<tr>
<th>XUY FNEP*** / XUY FANEP***</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Passageway Depth</th>
<th>B (mm)</th>
<th>b1 (mm)</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>FNEP/FANEPp002</td>
<td>2 (0.08 in.)</td>
<td>42, 59, 95</td>
<td>57, 74, 110</td>
</tr>
<tr>
<td>FNEP/FANEPp005</td>
<td>5 (0.20 in.)</td>
<td>42, 59, 95</td>
<td>57, 74, 110</td>
</tr>
<tr>
<td>FNEP/FANEPp015</td>
<td>15 (0.59 in.)</td>
<td>42, 59, 95</td>
<td>57, 74, 110</td>
</tr>
<tr>
<td>FNEP/FANEPp030</td>
<td>30 (1.18 in.)</td>
<td>42, 59, 95</td>
<td>57, 74, 110</td>
</tr>
<tr>
<td>FNEP/FANEPp050</td>
<td>50 (1.97 in.)</td>
<td>42, 59, 95</td>
<td>57, 74, 110</td>
</tr>
<tr>
<td>FNEP/FANEPp080</td>
<td>80 (3.15 in.)</td>
<td>42, 59, 95</td>
<td>57, 74, 110</td>
</tr>
<tr>
<td>FNEP/FANEPp120</td>
<td>120 (4.72 in.)</td>
<td>42, 59, 95</td>
<td>57, 74, 110</td>
</tr>
</tbody>
</table>

### Wiring schemes

**Cabling**

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

**M8 connector**

### Application examples

- **Green keypad: Potentiometer mode**
  - Detection of labels on belt

- **Yellow keypad: Teach mode**
  - Detection of sheet feed on printing machine

---

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com
### Photoelectric sensors

**Osiris® Application**

Optical fork with laser transmission, with teach mode

D.C. supply, solid-state output

---

**High sensitivity fork range**

- **Laser class 1**, conforming to IEC 625-1

---

**System**

<table>
<thead>
<tr>
<th>Type of transmission</th>
<th>Thru-beam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal sensing distance (Sn)</td>
<td>2...120 mm (0.08...4.72 in.)</td>
</tr>
<tr>
<td>Minimum size of object detected</td>
<td>0.05 mm (0.002 in.)</td>
</tr>
</tbody>
</table>

**Fork type**

- XUY FLNEP
- XUY FALNEP

---

**References**

- 4-wire, PNP/NPN
- Independent outputs
- NO/NC function, selectable

<table>
<thead>
<tr>
<th>Passageway (A)</th>
<th>Depth (B)</th>
<th>Depth (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm (in.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42 (1.65)</td>
<td>59 (2.32)</td>
<td>95 (3.74)</td>
</tr>
<tr>
<td>2 (0.08)</td>
<td>XUY FLNEP40002</td>
<td>XUY FLNEP60002</td>
</tr>
<tr>
<td>5 (0.20)</td>
<td>XUY FLNEP40005</td>
<td>XUY FLNEP60005</td>
</tr>
<tr>
<td>15 (0.59)</td>
<td>XUY FLNEP40150</td>
<td>XUY FLNEP60150</td>
</tr>
<tr>
<td>30 (1.18)</td>
<td>XUY FLNEP40300</td>
<td>XUY FLNEP60300</td>
</tr>
<tr>
<td>50 (1.97)</td>
<td>XUY FLNEP40050</td>
<td>XUY FLNEP60050</td>
</tr>
<tr>
<td>80 (3.15)</td>
<td>XUY FLNEP40080</td>
<td>XUY FLNEP60080</td>
</tr>
<tr>
<td>120 (4.72)</td>
<td>XUY FLNEP40120</td>
<td>XUY FLNEP60120</td>
</tr>
</tbody>
</table>

---

**Characteristics**

- **Weight (kg)**: 0.055 to 0.128 (0.12 to 0.28 lbs) depending on model
- **Product certifications**: CE, cULus. This product is UL Listed if supplied by a class II or isolated supply delivering ≤30 V max. (isolated transformer for example) and protected by a UL fuse rated at 3 A max.
- **Ambient air temperature**
  - For operation: -20...+50 °C (-4...+122 °F)
  - For storage: -30...+80 °C (-22...+176 °F)
- **Degree of protection**: Conforming to IEC 60529 IP 65
- **Connection**: M8, 4-pin male connector
- **Vibration resistance**: Conforming to IEC 60068-2-6 7 gn, amplitude ± 0.75 mm (f = 10 to 55 Hz)
- **Shock resistance**: Conforming to IEC 60068-2-27 30 gn, duration 11 ms
- **Materials**: Case Painted aluminium and polyamide/glass
- **Rated supply voltage**: 12...24 V with protection against reverse polarity
- **Voltage limits (including ripple)**: 10...30 V
- **Immunity to ambient light**
  - Natural light: 10.000 Lux
  - Incandescent bulb: 5000 Lux
- **Outputs**
  - PNP/NPN
  - NO/NC Using teach
- **Switching capacity**: 100 mA with overload and short-circuit protection
- **Voltage drop, closed state**: < 2 V
- **Current consumption, no-load**: < 40 mA
- **Permissible capacitive load**: 330 nF
- **Maximum switching frequency**: 10 kHz
- **Response time**: Stability +/- 20 µs

---

**Accessories**

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
<th>Length of cable (m)</th>
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<th>Weight (kg)</th>
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<td></td>
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<td>XZCP0941L2</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>Elbowed (90°)</td>
<td>5</td>
<td>XZCP1041L5</td>
<td>0.180 (0.40)</td>
<td></td>
</tr>
</tbody>
</table>

---

**Applications**: Detection of reference marks, detection on conveyor, detection on vibrating rail, detection of transparent object.

---

**References, characteristics, accessories**

![Photoelectric sensors diagram](image-url)
Photoelectric sensors
Osiris® Application
Optical fork with laser transmission, with teach mode
D.C. supply, solid-state output

Presentation

Dimensions (mm)

Wiring schemes

Application examples
### Fork design

![Fork design](image)

<table>
<thead>
<tr>
<th>System</th>
<th>Thru-beam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of transmission</td>
<td>Ultrasonic</td>
</tr>
<tr>
<td>Nominal sensing distance (Sn)</td>
<td>3 mm (0.12 in.)</td>
</tr>
</tbody>
</table>

### References

4-wire, PNP and NPN: Light switching (NC) or dark switching (NO) programmable XUV U06M3KCNMS

### Adjustment

By numerical potentiometer (+/- buttons) and red LED

### Protection of settings

By locking keypad

### Weight, kg (lb)

0.130 (0.29)

### Characteristics

#### Materials

Aluminium case

#### Connection

M8 4-pin connector

#### Detection performance

- Minimum length of label: 2 mm (0.08 in)
- Minimum distance between 2 labels: 2 mm (0.08 in)
- Maximum flow rate: 120 m/min
- Detection accuracy: +/- 0.16 mm at 60 m/min
  
  +/- 0.30 mm at 120 m/min

#### Power supply

- Rated supply voltage: 12...24 V with protection against reverse polarity
- Voltage limits: 10...30 V (including ripple)
- Current consumption, no-load: 40 mA
  - At 100 mA: < 2 V
  - At 10 mA: < 1 V

#### Output

- Type: NPN and PNP
- Function: Light switching (NC) or dark switching (NO), to be programmed
- Maximum rated current: 100 mA with overload and short-circuit protection
- Maximum switching frequency: 500 Hz
- LED indicators
  - Output state: Yellow LED
  - Delay: On and Off: 500 µs

#### Environment

- Operating temperature: + 5...+ 55 °C (+41...+131 °F)
- Storage temperature: -20 °C...+ 70 °C (-4...+158 °F)
- Degree of protection: IP 65

#### Function table

<table>
<thead>
<tr>
<th>Output state (PNP or NPN) yellow LED (illuminated when sensor output is on)</th>
<th>Function</th>
<th>Thru-beam system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light switching (NC)</td>
<td><img src="image" alt="Light switching (NC)" /></td>
<td></td>
</tr>
<tr>
<td>Dark switching (NO)</td>
<td><img src="image" alt="Dark switching (NO)" /></td>
<td></td>
</tr>
</tbody>
</table>

---

References, characteristics

Ultrasonic sensor

Application, packaging series

For detection of transparent labels

D.C. supply, solid-state output

---

Courtesy of Steven Engineering, Inc.-230 Ryan Way, South San Francisco, CA 94080-6370-Main Office: (650) 588-9200-Outside Local Area: (800) 258-9200-www.stevenengineering.com
Presentation (adjustment and display)

1. Tripping threshold adjustment using +/- buttons
2. Locking of keypad by simultaneously pressing ± buttons and holding down for 3 s
3. Selection of output type (NO or NC) by simultaneously pressing ± buttons and holding down for 6 s
4. Yellow LED: On when outputs active (current established)
   Yellow LED: Flashes slowly in event of output short-circuit
5. Red LED: On each time the +/- buttons are pressed
   Red LED: Permanently On when keypad locked
   Red LED: Off when keypad unlocked

Dimensions (mm)

Wiring schemes (sensor connector pin view)

Connector

<table>
<thead>
<tr>
<th>Connector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brown</td>
</tr>
<tr>
<td>2</td>
<td>White</td>
</tr>
<tr>
<td>3</td>
<td>Blue</td>
</tr>
<tr>
<td>4</td>
<td>Black</td>
</tr>
</tbody>
</table>

Application example

Detection of transparent labels on transparent or opaque strip
Photoelectric sensors
OsiSense® XU Application, packaging series
For detection of labels (1)
D.C. supply, solid-state output

Fork design

System | Thru-beam
---|---
Type of transmission | Infrared | Red/green
Nominal sensing distance (Sn) | 2 mm (0.26 in.)

References

<table>
<thead>
<tr>
<th>3-wire, PNP and NPN</th>
<th>Light or dark programmable switching (2)</th>
<th>XUV K0252S</th>
<th>XUV K0252VS</th>
</tr>
</thead>
</table>
Weight, kg (lbs) | 0.120 (0.26) |

Characteristics

Product certifications | CE
Ambient air temperature | For operation: 0…+ 55 °C (+32...+131 °F) For storage: - 20…+ 70 °C (-4...+158 °F)
Vibration resistance | Conforming to IEC 60068-2-6 Amplitude ± 1.5 mm up to 55 Hz, 7 gn (f = 10…55 Hz)
Shock resistance | Conforming to IEC 60068-2-27 30 gn, duration 11 ms
Degree of protection | Conforming to IEC 60529 IP 65
Connection | M8 connector (suitable female connectors, see page 30210/2)
Materials | Case: zinc alloy; lens: glass
Rated supply voltage | 12…24 V with protection against reverse polarity
Voltage limits | 10…30 V (including ripple)
Switching capacity (sealed) | ≤ 100 mA with overload and short-circuit protection
Voltage drop, closed state | ≤ 1.5 V
Output clamping resistor | 10 kΩ
Current consumption, no-load | ≤ 50 mA
Maximum switching frequency | 25 kHz
Delays | First-up: ≤ 30 ms; response: < 100 μs; recovery: < 100 μs
Indicator lights | Output state: Yellow LED
Sensor ready | Green LED
Read error | Red LED

Function table

<table>
<thead>
<tr>
<th>Output state (PNP or NPN) indicator: yellow LED (illuminated when sensor output is on)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function</td>
</tr>
<tr>
<td>No label present in the path</td>
</tr>
<tr>
<td>Light switching</td>
</tr>
<tr>
<td>Dark switching</td>
</tr>
</tbody>
</table>

(1) Applications: the infrared transmission beam sensor XUV K0252S is suitable for the detection of all types of opaque legends; the red/green transmission sensor XUV K0252VS is suitable for the detection of all types of legends of different colors.

(2) This sensor is adjustable using teach mode: the light or dark switching function is selected when performing the first stage of teaching for setting up the sensor (see “Programming using teach mode” on page 15).
Photoelectric sensors
OsiSense® XU Application, packaging series
For detection of labels
D.C. supply, solid-state output

**Programming using teach mode**

- Place the label to be detected in the beam of the optical fork. Press the Set button and hold down until the green LED 2 goes out.
- When the green LED 2 flashes, the detector has "learned" the label. Following this, place the item to which the label is affixed in the beam of the optical fork. Press the Set button and hold down until the green LED 2 goes out.
- When the green LED 2 illuminates as a steady light, teaching is completed and the sensor is ready for operation.

1. Yellow LED, output state indicator
2. Dual color green/red LED, Ready/Error
3. Teach mode programming Set button
4. Locking screw

**Dimensions (mm)**

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

![Connector scheme diagram]

See connection on page 9/44 of the Global Detection catalog, MKTED/208052EN.
Photoelectric sensors
Osiris® Application, assembly series
Dynamic detection of passage of objects, counting parts (1)
D.C. supply, solid-state output

System
Thru-beam

Type of transmission
Infrared

Passageway dimensions, mm (in.)
30 x 30 (1.18 x 1.18) 60 x 60 (2.36 x 2.36) 200 x 120 (7.87 x 4.72) 200 x 180 (7.87 x 7.88) 200 x 250 (7.87 x 9.87)

Minimum size of object to be detected, mm (in.)
Ø 2 mm (0.08) Ø 4 mm (0.16)

References
3-wire, PNP and NPN Output function On or Off on passage of object, programmable
Minimum size of object detected – – – – –
Ø 2 mm (0.08 in.) XUV F30M8 XUV F60M8
Ø 4 mm (0.16 in.) XUV F120M12 XUV F180M12 XUV F250M12
Ø 10 mm (0.39 in.) XUY FRS120S XUY FRS180S XUY FRS250S

Weight, kg (lb)
0.080 (0.18) 0.140 (0.31) 1.060 (2.34) 1.200 (2.65) 1.320 (2.91)

Characteristics
Product certifications
C6, cULus

Ambient air temperature
For operation: 0…+ 60 °C (+32...+140 °F). For storage: - 20…+ 80 °C (-4...+176 °F)

Vibration resistance
25 gn, amplitude ± 2 mm (f = 10…55 Hz), conforming to IEC 60068-2-6

Shock resistance
30 gn, duration 11 ms, conforming to IEC 60068-2-27

Degree of protection
Conforming to IEC 60529 IP 65

Connection
M8 connector (suitable female connectors, including pre-wired versions, see page 9/44 of the Global Detection catalog) M12 connector (suitable female connectors, including pre-wired versions, see page 9/44 of the Global Detection catalog)

Materials
Case Painted aluminium
Lenses Polycarbonate Altuglass

Immunity to ambient light
Sunlight: 4000 lux max., incandescent light: 400 lux max.

Passing speed of object
Min.: 10 cm/s, max.: 15 m/s (Ø 2 mm object)
Min.: 10 cm/s, max.: 15 m/s (Ø 4 mm object)

Rated supply voltage
≤ 24 V with protection against reverse polarity

Voltage limits
≤ 18...30 Vdc (including ripple)

Switching capacity (sealed)
≤ 100 mA with overload and short-circuit protection

Voltage drop, closed state
≤ 2 Vdc

Current consumption, no-load
≤ 120 mA ≤ 400 mA

Maximum switching frequency
500 Hz

Delays
First-up: ≤ 100 ms; response: < 1 ms; recovery: < 1 ms

Time delay
Off-delay (reset): adjustable between 0 and 5 seconds

Function table
Function Thru-beam system

Output state (PNP or NPN) indicator:
green LED (illuminated when sensor output is On)

Output Off on passage of object

Output On on passage of object

(1) XUV F sensors are suitable for detecting the passage of all types of objects (metal or plastic, of any shape or color), provided that the flow is dynamic.

Applications: counting parts, flow control of injection machine parts, etc.
Photoelectric sensors
Osiris® Application, assembly series
Dynamic detection of passage of objects, counting parts
D.C. supply, solid-state output

Presentation, dimensions, schemes

Presentation

XUV F30M8 | XUV F60M8 | XUV Fee0M12, XUY FRS0S

1. Sensitivity adjustment potentiometer.
2. Time delay adjustment potentiometer.
3. Indicators:
   - Green LED: output
   - Red LED: alarm

Notes:
- In the event of a supply malfunction, the red LED flashes.
- In the event of a short-circuit on the output, both the red and green LEDs flash.

Dimensions (mm)

XUV F30M8

XUV F60M8

XUV Fee0M12, XUY FRS0S

Wiring schemes

Wiring schemes (3-wire)
Output On on passage of object programmed (1)

PNP output

NPN output

Connector scheme (sensor connector pin view)
Output On on passage of object programmed (1)

XUV Fee0M8

XUV Fee0M12, XUY FRS0S

Note: the alarm (2) triggers in the event of an object stopping within the beam.

(1) Transmitting face.
(2) Reception face.

See connection on page 9/44 of the Global Detection catalog.

(1) To program the sensor for Output Off on passage of object, connect contact 3 to (+) and contact 1 to (–).