

# Photoelectric Sensors

## Optical Forks and Frames





# Offering efficient solutions

We acted on your feedback, studied your specific needs, and went back to the basics.

## Optical fork detection that is:

### > Economical, simple, and robust

Increase the profitability of your installation

### > Adaptable and practical

The answer to your specific requirements

### > Compact and precise

Easy integration and precise adjustment

## Contents Optical forks and frames

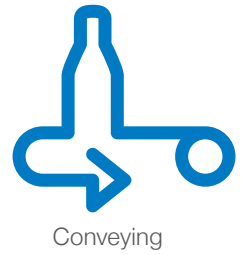
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Making sense of sensors



# XUVR

The basic fork, designed for packaging and material handling machine manufacturers



## > Economical, simple and robust

### Increase the profitability of your solution:

#### No adjustment:

- Visible red beam for ease of use
- Accuracy of spot for small objects (Ø 0.03 in. / 0.8mm)
- Excellent visibility of yellow output LED.

#### Sturdy metal construction:

Simple product with renowned Telemecanique quality

- Rugged metal case
- High-tech electronics
- Degree of protection: IP65 and IP67.



## > Adaptable

### The answer to your specific requirements:

- Models that cover the most common applications and to market standards (sizes, mounting, connections, etc.)
- Modular design that easily adapts to your specific integration needs (dimensions, mounting, connections, packaging, etc.).

- 1 Depth adaptable from 30 to 120 mm (1.18 to 4.73 in.)
- 2 M8 connector or precabled connection
- 3 Adaptable drilling and mounting centers
- 4 Passageway adaptable from 30 to 250 mm (1.18 to 9.85 in.)



Suited to your needs

# XUVA

The complementary fork suited to conveyor applications

## > Practical

- L-shaped opening provides greater access for conveyors and transported objects.
- Ready to use without adjustment; plug it in and the XUVA is fully operational.
- Simplified installation: uses a mounting foot integrated in the product.



NEW

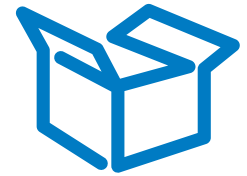


Suited to your conveyors

# XUVE

A small fork for label detection,  
easy to integrate

NEW



Packaging

## > Compact and precise

Due to its compactness, with slender heel, the XUVE fork is easy to integrate into your machine and is easy to adapt to all types of opaque labels.



Adaptable

# XUVF

Optical frames with dynamic and  
static functions

## > Long object detection

These new optical frames now integrate a static function that lets you adapt them for the detection of long or medium length bars or cables.



Flexible

## A complete offering of optical fork and frame solutions for each of your applications



Basic forks



Forks and frames



Forks without adjustment

Forks with teach mode

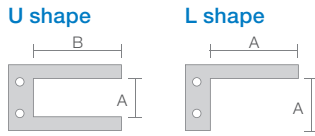
Specific ultrasonic and laser forks especially for the detection of transparent materials and labels

Optical frames for dynamic counting with static function

# > OsiSense: Optical forks and frames

## General use

### Versions for machine manufacturers (OEM)



Passageway (mm)	30	50	80	120	150	180
Typical application	Packaging and materials handling sector					
Beam accuracy (mm)	0.6		0.8		0.9	
Sensitivity adjustment	Without adjustment					
Type of transmission	Visible red (simplifies setup)					
Switching frequency (Hz)	4000					

## Sensors for DC applications

	M8 connector						
	Precabled (L = 2 m)	A = 30 / B = 30	A = 50 / B = 60	A = 80 / B = 60	A = 120 / B = 120	A = 150	A = 180 / B = 120
Connection							
A = passageway/B = depth (mm)							
3-wire, NO function <sup>(1)</sup> U shape PNP outputs <sup>(2)</sup> L shape	XUVR0303PANL2 -	XUVR0605PANM8 XUVA0505PANM8	XUVR0608PANM8 XUVA0808PANM8	XUVR0608PANM8 XUVA1212PANM8	- XUVA1515PANM8	XUVR1218PANM -	
4-wire, NO/NC selectable B=42 function—Independent B=59 PNP/NPN outputs B=95	- - -	- - -	- - -	- - -	- - -	- - -	

(1) NC version available

(2) NPN versions also available

## Specific applications use

### Versions specifically for your sector



Passageway (mm)	3	2	3	2-120
Detection of	Transparent labels on transparent background	Opaque labels	Opaque labels	Miniature parts, position
Beam accuracy (mm)	±0.16 mm	0.5 mm	0.05 mm	Adjustable up to 0.05
Sensitivity adjustment	Numeric +/- button and red LED	Using teach mode	Using teach mode	Using teach mode <sup>(4)</sup>
Type of transmission	Ultrasonic	Infrared	Infrared	Laser, visible red
Switching frequency (Hz)	500	25,000	10,000	10,000

## Sensors for DC applications

	M8 connector			
Passageway x depth (mm)	3 x 68	2 x 50	3 x 40	2-120 x 42-95
4-wire, PNP and NPN NO or NC programmable function	XUVU06M3KCNM8	XUVK0252S (3)	XUVE04M3KSNM8	XUYFALNEP...

(3) Red/green dual transmission version available for detection of color reference marks: XUVK0252VS

(4) For a numeric potentiometer adjustable version, delete the letter A from the catalog number. Example: XUYFALNEP... becomes XUYFLNEP...

## General use

## Adjustable versions using teach mode



2      5      15      30      50      80      120

Packaging and materials handling sector

Adjustable down to 0.3

Using teach mode <sup>(4)</sup>

Infrared (Excess gain, higher accuracy)

10,000

### M8 connector

A = 2      A = 5      A = 15      A = 30      A = 50      A = 80      A = 120

-      -      -      -      -      -      -

XUYFANEP40002 XUYFANEP60002 XUYFANEP100002	XUYFANEP40005 XUYFANEP60005 XUYFANEP100005	XUYFANEP40015 XUYFANEP60015 XUYFANEP100015	XUYFANEP40030 XUYFANEP60030 XUYFANEP100030	XUYFANEP40050 XUYFANEP60050 XUYFANEP100050	XUYFANEP40080 XUYFANEP60080 XUYFANEP100080	XUYFANEP40120 XUYFANEP60120 XUYFANEP100120
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(4) For a numeric potentiometer adjustable version, delete the letter A from the catalog number. Example: XUYFANEP40002 becomes XUYFNEP40002

## Specific applications use

## Optical frames for dynamic counting with static function



Passageway (mm)      30      60      120      180      250

Typical application      Packaging sector

Function type      Dynamic      Dynamic or static

Minimum size of object detected      2 mm      4 mm

Sensitivity adjustment      Using potentiometer

Type of transmission      Infrared

Switching frequency (Hz)      500      5000

### Sensors for DC applications

Connection      M8 connector      M12 connector

Passageway x depth (mm)      30 x 30      60 x 60      200 x 120 <sup>(5)</sup>      200 x 180 <sup>(5)</sup>      200 x 200 <sup>(5)</sup>

4-wire PNP and NPN Object Ø2 mm min. Object Ø4 mm min. Object Ø10 mm min.	XUVF30M8	XUVF60M8	-	-	-
	-	-	XUVF120M12 XUYFRS120S	XUVF180M12 XUYFRS180S	XUVF250M12 XUYFRS250S
	-	-	-	-	-

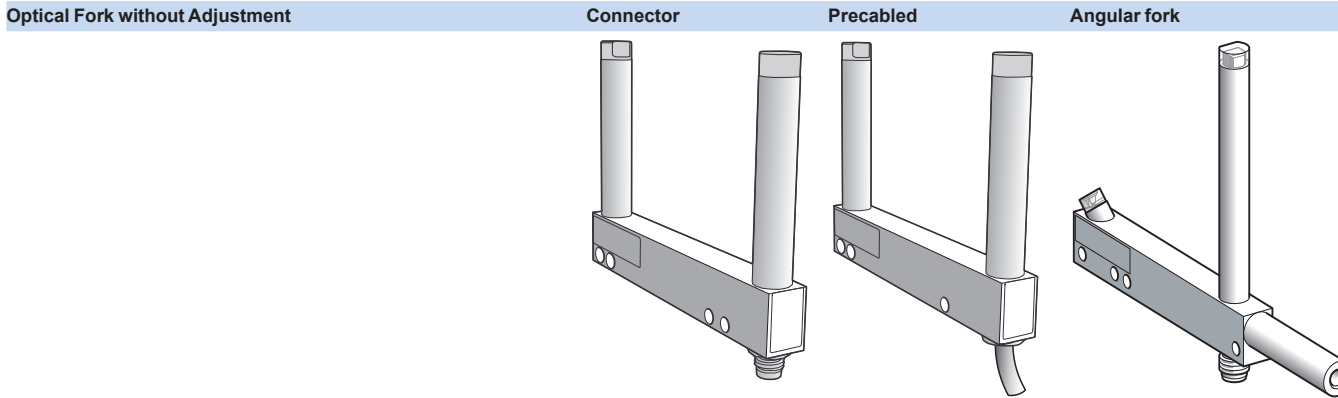
(5) For an open fork version, add the letter U to the end of the catalog number. Example: XUVF120M12 becomes XUVF120M12U

# Photoelectric sensors

OsiSense XU

Optical fork without adjustment

DC supply, solid-state output



<b>System</b>	<b>Thru-beam</b>		
<b>Type of transmission</b>	Red LED, modulated		
<b>Nominal sensing distance (Sn)</b>	2–180 mm (0.079–7.09 in.)		
<b>Minimum size of object detected, mm (in.)</b>	Passageway 2 to 120 (0.079 to 4.72)	0.8 mm (0.03 in.)	
	Passageway ≥ 150 (5.91)	1 mm (0.04 in.)	
<b>Fork type</b>	XUVR●		XUVA●

### Catalog numbers—Forks, Type XUVR●

3-wire NO or NC function PNP or NPN output	Passageway (A)	Function	Output	Precabled, length 2 m (78.7 in.). Depth (B): 30 mm (1.18 in.)
<p>A = Passageway B = Depth</p>	30 mm (1.18 in.)	NO	PNP	XUVR0303PANL2
	50 mm (1.97 in.)	NO	PNP	M8 connector, 3-pin. Depth (B): 60 mm (2.36 in.)
			NPN	XUVR0605PANM8
			NC	PNP
	80 mm (3.15 in.)	NO	NPN	XUVR0605NBNM8
			PNP	XUVR0608PANM8
			NPN	XUVR0608NANM8
	120 mm (4.73 in.)	NO	PNP	M8 connector, 3-pin. Depth (B): 120 mm (4.73 in.)
			NPN	XUVR1212PANM8
			NC	PNP
	180 mm (7.09 in.)	NO	NPN	XUVR1212NBNM8
			PNP	XUVR1218PANM8
NPN			XUVR1218NANM8	
	NC	PNP	XUVR1218PBNM8	
		NPN	XUVR1218NBNM8	

**Weight** 0.080 to 0.190 kg (0.18 to 0.42 lb), depending on model

### Catalog numbers—Forks, Type XUVA●

3-wire NO function, PNP output	Type	Function	Output	M8 connector, 3-pin
<p>A = Passageway</p>	50 mm (1.97 in.)	NO	PNP	XUVA0505PANM8
	80 mm (3.15 in.)	NO	PNP	XUVA0808PANM8
	120 mm (4.73 in.)	NO	PNP	XUVA1212PANM8
	150 mm (5.91 in.)	NO	PNP	XUVA1515PANM8

**Weight** 0.100 to 0.195 kg (0.22 to 0.43 lb), depending on model

**Other versions: please consult the Customer Care Center.**

Applications: detection on conveyor, detection on vibrating rail.

### Accessories

Description	Details	Length of cable, m (in.)	Catalog number	Weight lb (kg)
Pre-wired M8 connector	Straight	2 (78.7)	XZCP0566L2	0.13 (0.06)
	Elbow (90°)	2 (78.7)	XZCP0666L2	0.13 (0.06)
	Straight	5 (197)	XZCP0566L5	0.26 (0.12)
	Elbow (90°)	5 (197)	XZCP0666L5	0.26 (0.12)



# Photoelectric sensors

## OsiSense XU

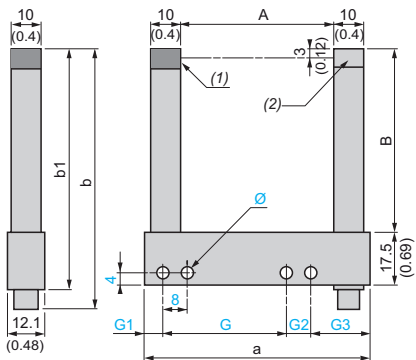
Optical fork without adjustment

DC supply, solid-state output

Specifications		XUVR●	XUVA
<b>Product certifications</b>		CE, UL, CSA	CE
<b>Ambient air temperature</b>	For operation	14...+140 °F (- 10...+ 60 °C)	
	For storage	- 40...+176 °F (- 40...+ 80 °C)	
<b>Degree of protection</b>	Conforming to IEC 60529	IP 65 and IP 67	
<b>Vibration resistance</b>	Conforming to IEC 60068-2-6	7 gn, amplitude ± 0.03 in. (0.75 mm) (f = 10–55 Hz)	
<b>Shock resistance</b>	Conforming to IEC 60068-2-27	30 gn, duration 11 ms	
<b>Materials</b>	Case	Painted aluminium and polyamide	
<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>	Natural light	10,000 lux	
	Incandescent bulb	5000 lux	
<b>Switching capacity</b>		100 mA with overload and short-circuit protection	
<b>Voltage drop, closed state</b>		< 1.5 V	
<b>Current consumption, no-load</b>		< 20 mA	
<b>Maximum switching frequency</b>		4000 Hz	
<b>Delays</b>	First-up	140 ms max.	
	Stability	± 15 µs	
<b>Indicator lights</b>	Yellow LED	Output signal	

### Dimensions

#### XUVR●

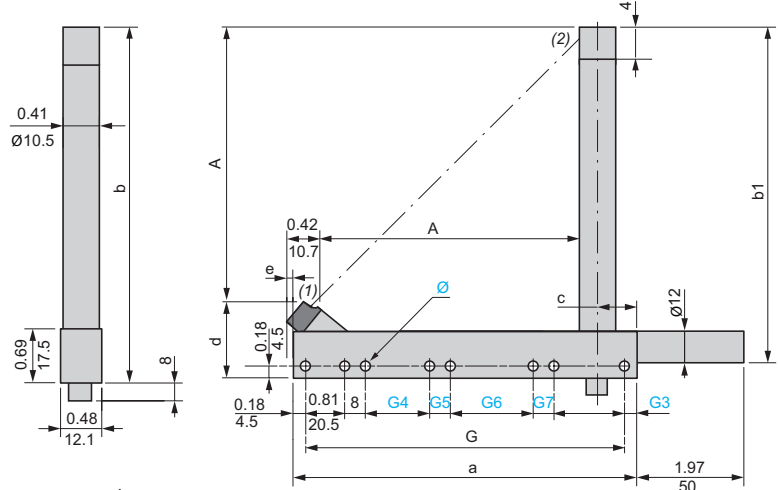


XUVR0303● (precabled version detail)

Orientation of elbow connector



#### XUVA●



Dual Dimensions =  $\frac{\text{in}}{\text{mm}}$

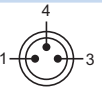
(1) Transmission LED. (2) Yellow LED: output signal

(1) Transmission LED. (2) Yellow LED: output signal

Type XUVR	Passageway A	Depth B	a	b	b1	G	G1	G2	G3	Ø					
XUVR0303●●●●●●	30	40	54	65.7	57.5	30	17	–	–	4 x 4.3					
XUVR0605●●●●●●	50	60	74	85.7	77.5	40	6.5	8	19.5	4 x 4.3					
XUVR0608●●●●●●	80	60	104	85.7	77.5	70	6.5	8	19.5	4 x 4.3					
XUVR01212●●●●●●	120	124.3	144	150.2	142	100	17	10	17	4 x 4.3					
XUVR01218●●●●●●	180	124.3	204	150.2	142	152	22	8	22	4 x 4.3					
Type XUVA	Type	Depth A	a	b	b1	G	G1	G2	G3	Ø	G4	G5	G6	G7	c
XUVA0505●●●●●●	50	44.3	75	83	75	66	–	–	4.5	4 x 4.3	–	–	–	–	14.75
XUVA0808●●●●●●	80	74.3	105	113	105	96	–	–	4.5	4 x 4.3	–	–	–	–	14.75
XUVA1212●●●●●●	120	112.3	145	154	146	136	–	–	4.5	4 x 4.3	–	–	–	–	19.75
XUVA1515●●●●●●	150	142.3	175	184	176	166	–	–	4.5	8 x 4.3	24	8	60	8	19.75

### Wiring diagrams

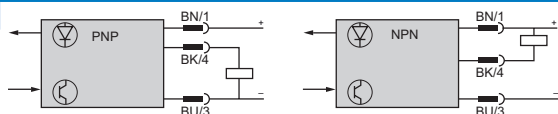
#### M8 connector



#### Pin number-color

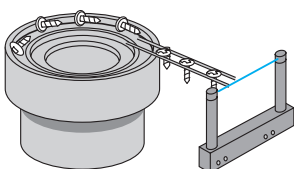
- 1 BN
- 3 BU
- 4 BK

#### Cabling

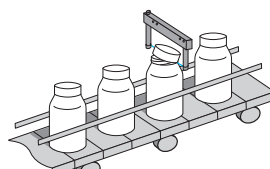


### Application examples

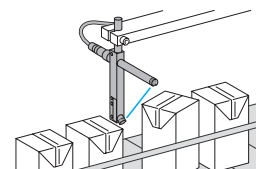
#### Vibrating bowl



#### Monitoring height of objects passing on a conveyor



#### Detecting position of object on a conveyor



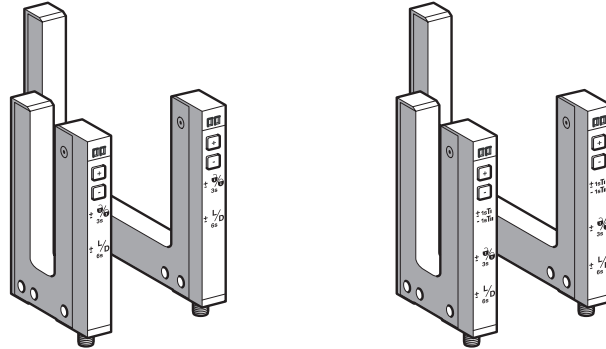
# Photoelectric sensors

## OsiSense XU Application

### Optical fork with teach mode

### DC supply, solid-state output

Optical fork with teach mode	Numeric potentiometer mode, +/- Green keypad	Teach mode Yellow keypad
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<b>System</b>	<b>Thru-beam</b>
<b>Type of transmission</b>	Infrared LED, modulated
<b>Nominal sensing distance (Sn)</b>	2–120 mm (0.08–4.72 in.)
<b>Minimum size of object detected</b>	Passageway 2–120 mm (0.08–4.72 in.) <b>0.2 mm (0.008 in.)</b>
<b>Fork type</b>	XUVFNEP● <span style="float:right">XUVFANEP●</span>

### Catalog numbers

4-wire, PNP/NPN independent outputs	NO/NC function, selectable	Passageway (A) mm (in.)	Depth (B)			Depth (B)		
			42 (1.65)	59 (2.32)	95 (3.74)	42 (1.65)	59 (2.32)	95 (3.74)
<p>A = Passageway B = Depth</p>		2 (0.08)	XUY FNEP40002	XUY FNEP60002	XUY FNEP100002	XUY FANEP40002	XUY FANEP60002	XUY FANEP100002
		5 (0.12)	XUY FNEP40005	XUY FNEP60005	XUY FNEP100005	XUY FANEP40005	XUY FANEP60005	XUY FANEP100005
		15 (0.59)	XUY FNEP40015	XUY FNEP60015	XUY FNEP100015	XUY FANEP40015	XUY FANEP60015	XUY FANEP100015
		30 (1.18)	XUY FNEP40030	XUY FNEP60030	XUY FNEP100030	XUY FANEP40030	XUY FANEP60030	XUY FANEP100030
		50 (1.97)	XUY FNEP40050	XUY FNEP60050	XUY FNEP100050	XUY FANEP40050	XUY FANEP60050	XUY FANEP100050
		80 (3.15)	XUY FNEP40080	XUY FNEP60080	XUY FNEP100080	XUY FANEP40080	XUY FANEP60080	XUY FANEP100080
		120 (4.72)	XUY FNEP40120	XUY FNEP60120	XUY FNEP100120	XUY FANEP40120	XUY FANEP60120	XUY FANEP100120

<b>Weight, kg (lb)</b>	0.055–0.128 (0.12–0.28) depending on model
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### Specifications

<b>Product certifications</b>	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.	
<b>Ambient air temperature</b>	For operation	- 20...+ 60 °C (-4...+140 °F)
	For storage	- 30...+ 80 °C (-22...+176 °F)
<b>Degree of protection</b>	Conforming to IEC 60529	IP 65
<b>Connection</b>	M8, 4-pin male connector (for 3-pin version, please contact the Regional Sales Office)	
<b>Vibration resistance</b>	Conforming to IEC 60068-2-6	7 gn, amplitude ± 0.75 mm (f = 10–55 Hz)
<b>Shock resistance</b>	Conforming to IEC 60068-2-27	30 gn, duration 11 ms
<b>Materials</b>	Case	Painted aluminium and polyamide/glass
<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>	Natural light	10,000 lux
	Incandescent bulb	5000 lux
<b>Outputs</b>	PNP and NPN	By independent wire
	NO/NC	By programming
<b>Switching capacity</b>	100 mA with overload and short-circuit protection	
<b>Voltage drop, closed state</b>	< 2 V	
<b>Current consumption, no-load</b>	40 mA	
<b>Permissible capacitive load</b>	330 nF	
<b>Maximum switching frequency</b>	10 kHz	
<b>Response time</b>	Stability	± 20 µs
<b>Tower lights</b>	Yellow LED	Output signal
	Red LED	Adjustment mode and keypad locking

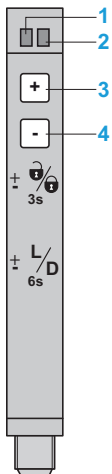
Application: Detection of labels, detection of double sheet, detection of reference marks, detection on conveyor, detection on vibrating rail.

### Accessories

Description	Details	Length of cable (m)	Catalog number	Weight kg (lb)
<b>Pre-wired M8 connector</b>	Straight	2	<b>XZCP0941L2</b>	0.080 (0.18)
	Elbowed (90°)	2	<b>XZCP1041L2</b>	0.080 (0.18)
	Straight	5	<b>XZCP0941L5</b>	0.180 (0.40)
	Elbowed (90°)	5	<b>XZCP1041L5</b>	0.180 (0.40)

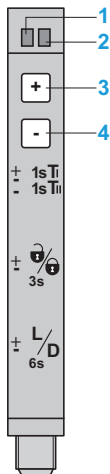
## Introduction

### XUVFNEP●●●



- 1** Yellow LED On:  
Output activated
- 2** Red LED On:  
Adjustments and keypad locking
- 3, 4** Sensitivity adjustment
- 3+4** Keypad locking  
(3 s ≤ press time < 6 s)
- 3+4** NO/NC (press time ≥ 6 s)

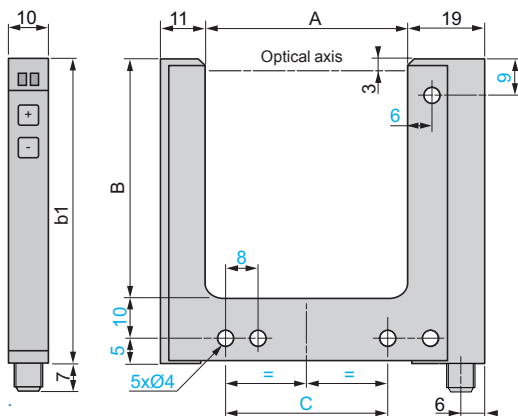
### XUVFANEP●●●



- 1** Yellow LED On:  
Output activated
- 2** Red LED On:  
Adjustments and keypad locking
- 3, 4** Sensitivity adjustment
- 3+4** Teach mode and automatic adjustment of sensitivity  
(press time < 3 seconds)
- 3+4** Keypad locking (3 s ≤ press time < 6 s)
- 3+4** NO/NC (press time ≥ 6 s)

## Dimensions (mm)

### XUVFNEP●●● / XUVFANEP●●●



XUY	Passageway		Depth	
	A	B	b1	C
FNEP/FANEP●002	2 (0.08 in.)	42, 59, 95 (1.65, 2.32, 3.74 in.)	57, 74, 110 (2.24, 2.91, 4.33 in.)	14
FNEP/FANEP●005	5 (0.20 in.)	42, 59, 95 (1.65, 2.32, 3.74 in.)	57, 74, 110 (2.24, 2.91, 4.33 in.)	14
FNEP/FANEP●015	15 (0.59 in.)	42, 59, 95 (1.65, 2.32, 3.74 in.)	57, 74, 110 (2.24, 2.91, 4.33 in.)	27
FNEP/FANEP●030	30 (1.18 in.)	42, 59, 95 (1.65, 2.32, 3.74 in.)	57, 74, 110 (2.24, 2.91, 4.33 in.)	42
FNEP/FANEP●050	50 (1.97 in.)	42, 59, 95 (1.65, 2.32, 3.74 in.)	57, 74, 110 (2.24, 2.91, 4.33 in.)	40
FNEP/FANEP●080	80 (3.15 in.)	42, 59, 95 (1.65, 2.32, 3.74 in.)	57, 74, 110 (2.24, 2.91, 4.33 in.)	70
FNEP/FANEP●120	120 (4.72 in.)	42, 59, 95 (1.65, 2.32, 3.74 in.)	57, 74, 110 (2.24, 2.91, 4.33 in.)	110

## Wiring diagrams

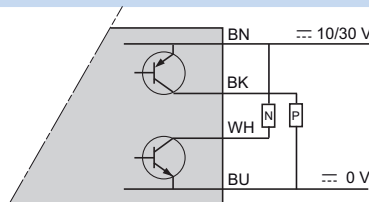
### Cabling



#### Pin number – color

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

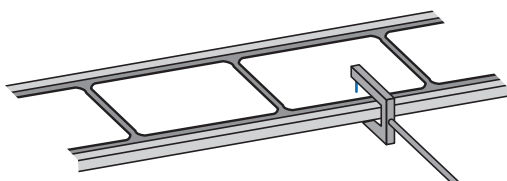
### M8 connector



## Application examples

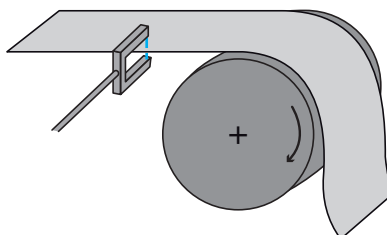
### Green keypad: Potentiometer mode

Detection of labels on belt



### Yellow keypad: Teach mode

Detection of sheet feed on printing machine



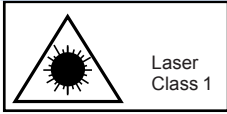
# Photoelectric sensors

OsiSense XU Application

Optical fork with laser transmission, with teach mode

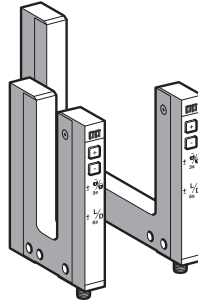
DC supply, solid-state output

High sensitivity fork range

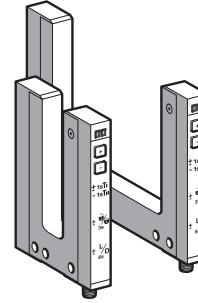


Laser class 1, conforming to IEC 825-1

Numeric potentiometer mode, +/- Green keypad



Teach mode Yellow keypad



System	Thru-beam
Type of transmission	Red laser, modulated, class 1, wavelength: 670 m (2198 ft)
Nominal sensing distance (Sn)	2–120 mm (0.08–4.72 in.)
Minimum size of object detected	Passageway 2–120 mm 0.05 mm (0.002 in.), repeat accuracy 0.01 mm (0.0004 in.)
Fork type	XUYFLNEP● XUYFALNEP●

Catalog numbers

4-wire, PNP/NPN independent outputs	NO/NC function, selectable	Passageway (A)	Depth (B)			Depth (B)		
			mm (in.)	42 (1.65)	59 (2.32)	95 (3.74)	42 (1.65)	59 (2.32)
<p>A = Passageway B = Depth</p>		2 (0.08)	XUY FLNEP40002	XUY FLNEP60002	XUY FLNEP100002	XUY FALNEP40002	XUY FALNEP60002	XUY FALNEP100002
		5 (0.20)	XUY FLNEP40005	XUY FLNEP60005	XUY FLNEP100005	XUY FALNEP40005	XUY FALNEP60005	XUY FALNEP100005
		15 (0.59)	XUY FLNEP40015	XUY FLNEP60015	XUY FLNEP100015	XUY FALNEP40015	XUY FALNEP60015	XUY FALNEP100015
		30 (1.18)	XUY FLNEP40030	XUY FLNEP60030	XUY FLNEP100030	XUY FALNEP40030	XUY FALNEP60030	XUY FALNEP100030
		50 (1.97)	XUY FLNEP40050	XUY FLNEP60050	XUY FLNEP100050	XUY FALNEP40050	XUY FALNEP60050	XUY FALNEP100050
		80 (3.15)	XUY FLNEP40080	XUY FLNEP60080	XUY FLNEP100080	XUY FALNEP40080	XUY FALNEP60080	XUY FALNEP100080
		120 (4.72)	XUY FLNEP40120	XUY FLNEP60120	XUY FLNEP100120	XUY FALNEP40120	XUY FALNEP60120	XUY FALNEP100120

Weight, kg (lb) 0.055–0.128 (0.12–0.28) depending on model

Specifications

Product certifications		CE, cULus. This product is UL Listed if supplied by a class II or isolated supply delivering $\leq 30$ 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 $\pm 0.75$ mm (f = 10–55 Hz)
Shock resistance	Conforming to IEC 60068-2-27	30 gn, duration 11 ms
Materials	Case	Painted aluminium and polyamide/glass
Rated supply voltage		$\leq 12$ –24 V with protection against reverse polarity
Voltage limits (including ripple)		$\leq 10$ –30 V
Immunity to ambient light	Natural light	10,000 lux
	Incandescent bulb	5000 lux
Outputs	PNP/NPN	By wiring
	NO/NC	Using teach
Switching capacity		100 mA with overload and short-circuit protection
Voltage drop, closed state		< 2 V
Current consumption, no-load		< 40 mA
Permissible capacitive load		330 nF
Maximum switching frequency		10 kHz
Response time	Stability	$\pm 20$ $\mu$ s
Tower lights		Yellow LED: output signal; red LED: keypad locking and adjustments.

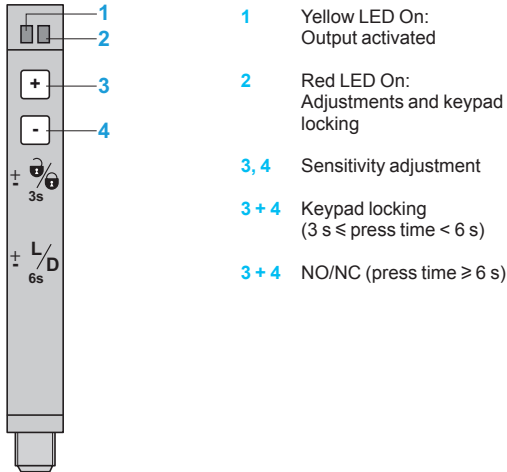
■ Applications: Detection of reference marks, detection on conveyor, detection on vibrating rail, detection of transparent object.

Accessories

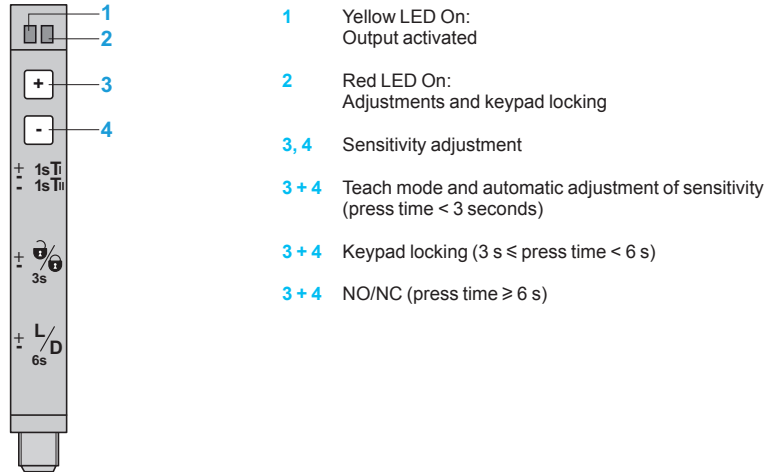
Description	Details	Length of cable (m)	Catalog number	Weight kg (lb)
Pre-wired M8 connector	Straight	2	XZCP0941L2	0.080 (0.18)
	Elbowed (90°)	2	XZCP1041L2	0.080 (0.18)
	Straight	5	XZCP0941L5	0.180 (0.40)
	Elbowed (90°)	5	XZCP1041L5	0.180 (0.40)

### Introduction

#### XUYFLNEP●

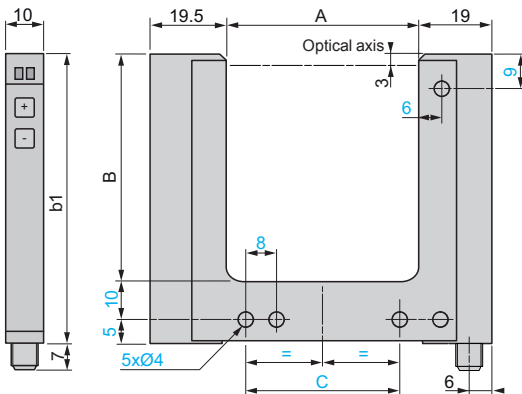


#### XUYFALNEP●



### Dimensions (mm)

#### XUYFLNEP● / XUYFALNEP●



XUY	Passageway A	Depth B	b1	C
FLNEP/FALNEP●2	2 (0.08 in.)	42, 59, 95 (1.65, 2.32, 3.74 in.)	57, 74, 110 (2.24, 2.91, 4.33 in.)	14
FLNEP/FALNEP●5	5 (0.20 in.)	42, 59, 95 (1.65, 2.32, 3.74 in.)	57, 74, 110 (2.24, 2.91, 4.33 in.)	14
FLNEP/FALNEP●15	15 (0.59 in.)	42, 59, 95 (1.65, 2.32, 3.74 in.)	57, 74, 110 (2.24, 2.91, 4.33 in.)	27
FLNEP/FALNEP●30	30 (1.18 in.)	42, 59, 95 (1.65, 2.32, 3.74 in.)	57, 74, 110 (2.24, 2.91, 4.33 in.)	42
FLNEP/FALNEP●50	50 (1.97 in.)	42, 59, 95 (1.65, 2.32, 3.74 in.)	57, 74, 110 (2.24, 2.91, 4.33 in.)	40
FLNEP/FALNEP●80	80 (3.15 in.)	42, 59, 95 (1.65, 2.32, 3.74 in.)	57, 74, 110 (2.24, 2.91, 4.33 in.)	70
FLNEP/FALNEP●120	120 (4.72 in.)	42, 59, 95 (1.65, 2.32, 3.74 in.)	57, 74, 110 (2.24, 2.91, 4.33 in.)	110

### Wiring diagrams

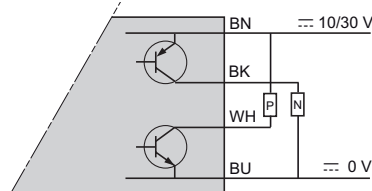
#### Cabling



#### Pin number-color

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

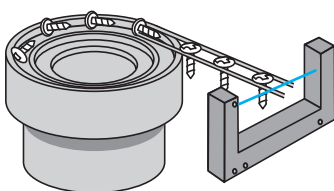
#### M8 connector



### Application examples

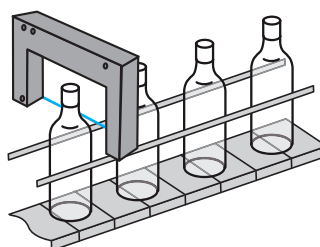
#### Green keypad: Potentiometer mode

Detection of an object exiting a vibrating bowl



#### Yellow keypad: Teach mode

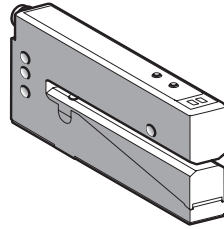
Detection of transparent bottles (glass, PET...)



# Ultrasonic sensor

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

Fork design



System	Thru-beam
Type of transmission	Ultrasonic
Nominal sensing distance (Sn)	3 mm (0.12 in.)

Catalog numbers

4-wire, PNP and NPN	NO or NC programmable function	<b>XUVU06M3KCNM8</b>
Adjustment	By numerical potentiometer (+/- buttons) and red LED	
Protection of settings	By locking keypad	
Weight, kg (lb)	0.130 (0.29)	

Specifications

Product certifications	CE, IEC 60947-5-2	
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
Supply	Rated supply voltage	12–24 V with protection against reverse polarity
	Voltage limits	10–30 V (including ripple)
	Current consumption, no-load	40 mA
	Residual voltage	
	At 100 mA	< 2 V
	At 10 mA	< 1 V
Output	Maximum rated current	100 mA with overload and short-circuit protection
	Maximum switching frequency	500 Hz
	Tower lights	
	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	Function	Thru-beam system	
		No label present in the beam (output inactive)	Label present in the beam (output active)
Output state (PNP or NPN) indicator: yellow LED (illuminated when sensor output is on)	NC		
	NO		

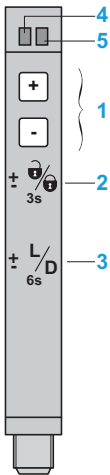
# Ultrasonic sensor

OsiSense XU Application, packaging series

For detection of transparent labels

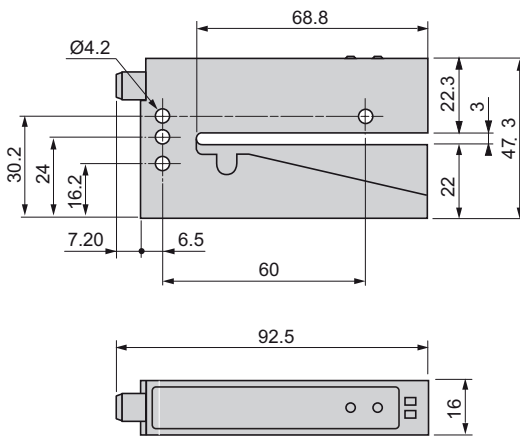
DC supply, solid-state output

## Introduction (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 are active (current established)  
Yellow LED: Flashes slowly in the event of output short-circuit
- 5 Red LED: On each time the +/- buttons are pressed  
Red LED: Permanently on when keypad is locked  
Red LED: Off when keypad is unlocked

## Dimensions (mm)

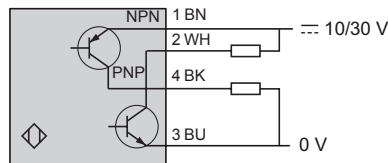


## Wiring diagrams (sensor connector pin view)

### Connector

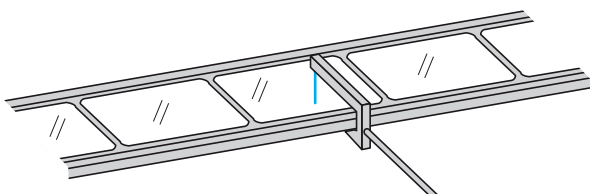


1	Brown	--- + 10–30 V
2	White	NPN output
3	Blue	--- 0 V
4	Black	PNP output



## Application examples

### Detection of transparent labels on opaque or transparent strip



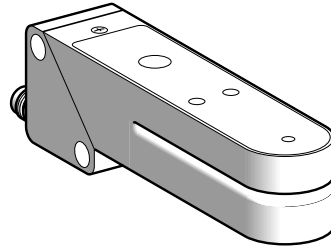
# Photoelectric sensors

OsiSense XU Application, packaging series

For detection of labels (1)

DC supply, solid-state output

## Fork design



System	Thru-beam	
Type of transmission	Infrared	Red/green
Nominal sensing distance (Sn)	2 mm (0.08 in)	

## Catalog numbers

3-wire, PNP and NPN	NO or NC programmable function (2)	<b>XUVK0252S</b>	<b>XUVK0252VS</b>
Weight, kg (lb)	0.120 (0.265)		

## Specifications

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	
Materials	Case: zinc alloy; lenses: 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	
Tower lights	Output state	Yellow LED
	Sensor ready	Green LED
	Read error	Red LED

Function table	Function	Thru-beam system	
		No label present in the beam	Label present in the beam
Output state (PNP or NPN) indicator: yellow LED (illuminated when sensor output is on)	NC		
	NO		

(1) Applications: the infrared transmission beam sensor **XUVK0252S** is suitable for the detection of all types of opaque labels; the red/green transmission sensor **XUVK0252VS** is suitable for the detection of all types of labels of different colors.

(2) This sensor is adjustable using teach mode: the NC or NO function is selected when performing the first stage of teaching for setting up the sensor.



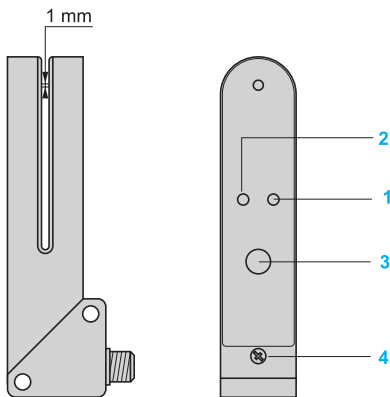
# Photoelectric sensors

OsiSense XU Application, packaging series

For detection of labels

DC supply, solid-state output

## Introduction

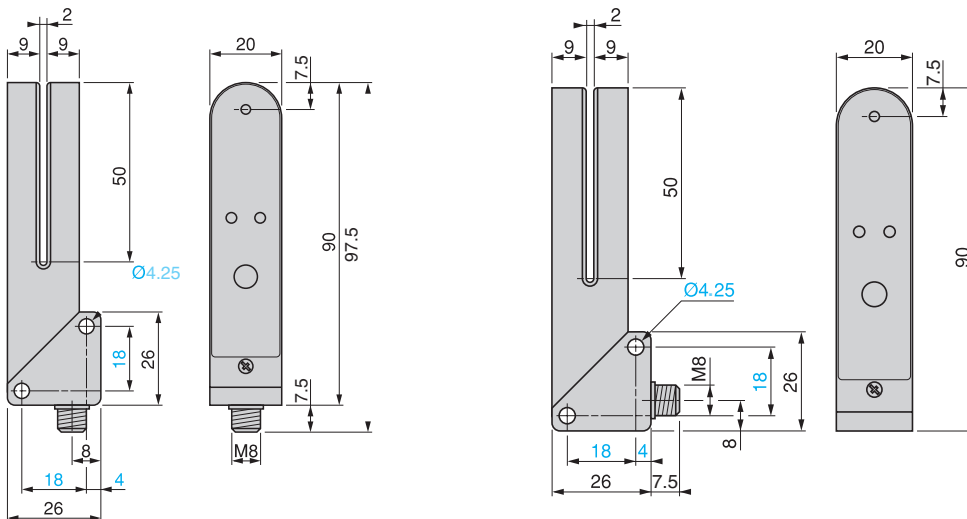


## Programming using teach mode

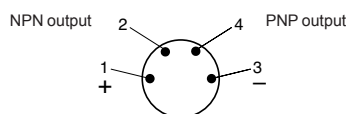
- Place the label to be detected in the beam of the optical fork. Press the Set button and hold down until the green LED 2 goes out.
- When the green LED 2 flashes, the detector has “learned” the label. Following this, place the backing to which the label is affixed in the beam of the optical fork. Press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

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

## Dimensions (mm)



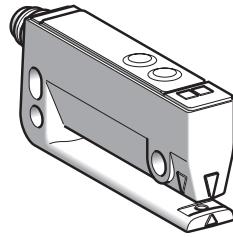
## Connector diagram (sensor connector pin view)



# Photoelectric sensors

OsiSense XUVE Application, packaging series  
Optical fork for detection of opaque labels  
DC supply, solid-state output

## Fork design



<b>System</b>	Thru-beam
<b>Type of transmission</b>	Infrared
<b>Nominal sensing distance (Sn)</b>	3 mm (0.12 in.)
<b>Depth</b>	40 mm (1.57 in.)

## Catalog numbers

4-wire	XUVE04M3KSNM8	XUVE04M3PSNM8	XUVE04M3NSNM8
NO or NC programmable function	PNP/NPN	PNP	NPN
<b>Remote adjustment</b>	No	Yes	
<b>Adjustment</b>	By numeric potentiometer (+/- buttons) and red LED		
<b>Protection of settings</b>	By locking keypad		
<b>Weight, kg (lb)</b>	0.035 (0.78)		

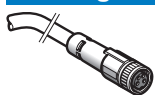
## Specifications

<b>Product certifications</b>	CE, cULus		
<b>Material</b>	Thermoplastic case (PA12)		
<b>Connection</b>	M8, 4-pin connector		
<b>Detection performance</b>	Minimum length of label	2 mm (0.08 in.)	
	Minimum distance between 2 labels	2 mm (0.08 in.)	
	Maximum flow rate	200 m/min	
	Detection accuracy	± 50 µm at 150 m/min	
<b>Supply</b>	Rated supply voltage	12–24 V with protection against reverse polarity	
	Voltage limits	10–30 V $\overline{\text{---}}$ (including ripple)	
	Current consumption, no-load	35 mA	
	Residual voltage at 100 mA	< 2 V	
<b>Output</b>	Maximum rated current	100 mA with overload and short-circuit protection	
	Maximum switching frequency	10 kHz	
	Tower lights	Output state	Yellow LED
		Adjustment and keypad locking	Red LED
	Delay (response and recovery)	50 µs	
<b>Environment</b>	Operating temperature	- 20...+ 60 °C (- 4...+140 °F)	
	Storage temperature	- 30...+ 80 °C (- 22...+ 176 °F)	
	Degree of protection	IP 65	

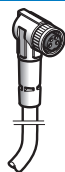
## Function table

	Function	Thru-beam system	
		No label present in the beam (output inactive)	Label present in the beam (output active)
<b>Output state (PNP or NPN) indicator: yellow LED</b> (illuminated when sensor output is on)	NC		
	NO		

## Catalog numbers of pre-wired connectors



XZCP0941L●



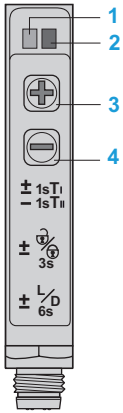
XZCP1041L●

Type of connector	For use with forks	Type	Cable length (m)	Catalog number	Weight kg (lb)
Female, M8, 4 pins	XUVE04M3KSNM8, XUVE04M3PSNM8, XUVE04M3NSNM8,	Straight	2	<b>XZCP0941L2</b>	0.08 (0.18)
			5	<b>XZCP0941L5</b>	0.18 (0.40)
		Elbowed	2	<b>XZCP1041L2</b>	0.08 (0.18)
			5	<b>XZCP1041L5</b>	0.18 (0.40)

# Photoelectric sensors

OsiSense XUVE Application, packaging series  
Optical fork for detection of opaque labels  
DC supply, solid-state output

## Introduction (adjustment and indicators)



- 1 Yellow LED On: Output activated
- 2 Red LED On: Adjustments and keypad locking
- 3,4 Sensitivity adjustment
- 3+4 Teach mode and automatic adjustment of sensitivity (press time < 3 seconds)
- 3+4 Keypad locking (3 s ≤ press time < 6 s)
- 3+4 NO/NC (press time ≥ 6 s)

## Connections

### Connector

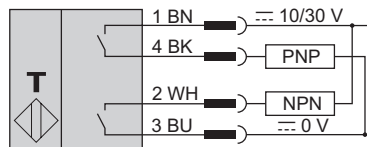


#### Pin no. -color

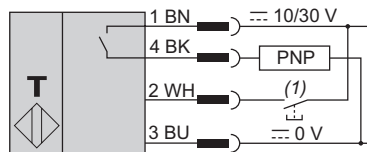
- 1 **BN**: Brown
- 2 **WH**: White (remote teaching)
- 3 **BU**: Blue
- 4 **BK**: Black

### Wiring diagrams

#### PNP/NPN: XUVE04M3KSNM8

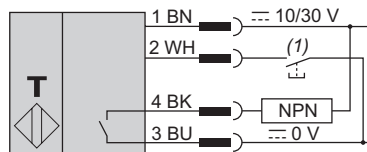


#### PNP: XUVE04M3PSNM8



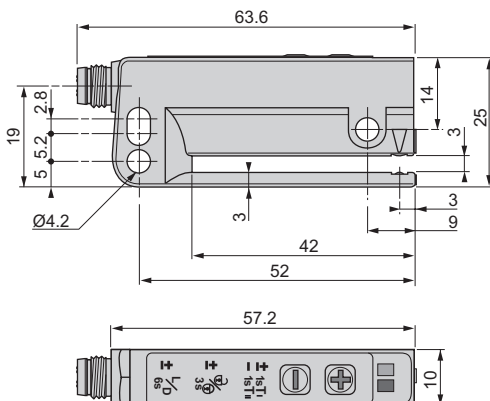
(1) Remote teaching.

#### NPN: XUVE04M3NSNM8



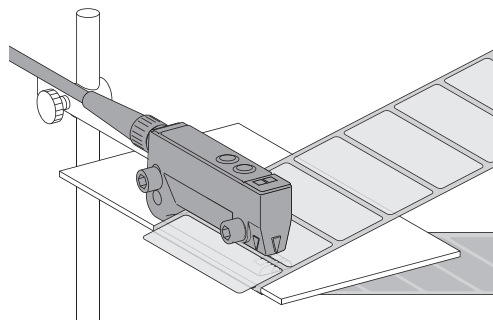
(1) Remote teaching.

## Dimensions (mm)



## Application example

Detection of opaque labels before application to a package



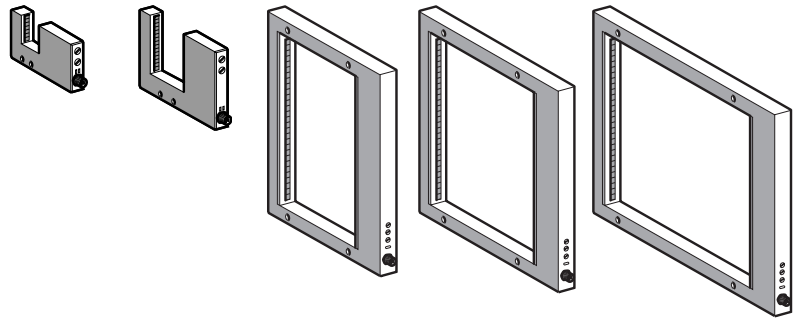
# Photoelectric sensors

OsiSense XU Application, conveying series

Dynamic/static detection of passage of objects (1)

For detecting and counting parts

DC supply, solid-state output



<b>System</b>		<b>Thru-beam</b>				
<b>Type of transmission</b>		<b>Infrared</b>				
<b>Passageway dimensions</b>		<b>30 x 30 mm</b>	<b>60 x 60 mm</b>	<b>200 x 120 mm</b>	<b>200 x 180 mm</b>	<b>200 x 250 mm</b>
<b>Catalog numbers</b>						
<b>4-wire, PNP or NPN</b> NO or NC programmable function	Minimum size of object detected					
	Dynamic mode	Static mode				
	Ø2 mm	–	<b>XUVF30M8</b>	<b>XUVF60M8</b>	–	–
	Ø4 mm	Ø6 mm	–	–	<b>XUVF120M12</b>	<b>XUVF180M12</b>
	Ø10 mm	Ø15 mm	–	–	<b>XUYFRS120S</b>	<b>XUYFRS180S</b>
<b>Weight, kg (lb)</b>			0.08 (0.18)	0.14 (0.31)	0.86 (1.90)	1.00 (2.20)
					1.12 (2.65)	

### Catalog numbers of U-shape frames

Open (U-shape) frames for sizes 120, 180 and 250 mm are also available.

To order an open frame, add the letter **U** to the end of the catalog number. Example: XUVF120M12 becomes **XUVF120M12U**.

### Specifications

<b>Product certifications</b>	CE, cULus	
<b>Ambient air temperature</b>	For operation: 0...+ 60 °C (32...140 °F).. For storage: - 20...+ 80 °C (-4...+176 °F).	
<b>Vibration resistance</b>	7 gn, amplitude ± 1 mm (f = 10–55 Hz), conforming to IEC 60068-2-6	
<b>Shock resistance</b>	30 gn, duration 11 ms, conforming to IEC 60068-2-27	
<b>Degree of protection</b>	Conforming to IEC 60529	IP 65
<b>Connection</b>	M8 connector	M12 connector
<b>Materials</b>	Case	Painted aluminium
	Lenses	Polycarbonate   Altuglass
<b>Immunity to ambient light</b>	Sunlight: 4000 lux max. Incandescent light: 400 lux max.	Sunlight: 10,000 lux max. Incandescent light: 3000 lux max.
<b>Passing speed of object</b>	Min.: 10 cm/s, max.: 15 m/s (Ø2 mm object)	Min (2): 10 cm/s, max.: 15 m/s (Ø4 mm object) or max.: 70 m/s (Ø10 mm object)
<b>Rated supply voltage</b>	24 V $\overline{\text{DC}}$ with protection against reverse polarity	
<b>Voltage limits</b>	18–30 V $\overline{\text{DC}}$ (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>	≤ 120 mA	≤ 150 mA
<b>Maximum switching frequency</b>	500 Hz	5000 Hz
<b>Delays</b>	Response: < 1 ms Recovery: < 1 ms	Response: < 0.1 ms Recovery: < 0.1 ms
<b>Time delay</b>	Off-delay (reset): adjustable between 0 and 5 seconds	

Function table	Function	Thru-beam system	
		No object present in the beam	Passage of object through the beam
Output state (PNP or NPN) and green LED: illuminated when sensor output is on.	NC		
	NO		

(1) XUVF●● sensors are suitable for detecting the passage of all types of objects (both metal and plastic), of any shape and color.

XUVF120M12, XUVF180M12 and XUVF250M12 frames can be used:

- In dynamic mode for counting parts or monitoring the passing of parts on injection molding machines.

- In static mode for detecting bar or cable type moving or non-moving parts, entering machines (maintain the signal).

(2) The min. value applies only to dynamic mode.

# Photoelectric sensors

OsiSense XU Application, conveying series

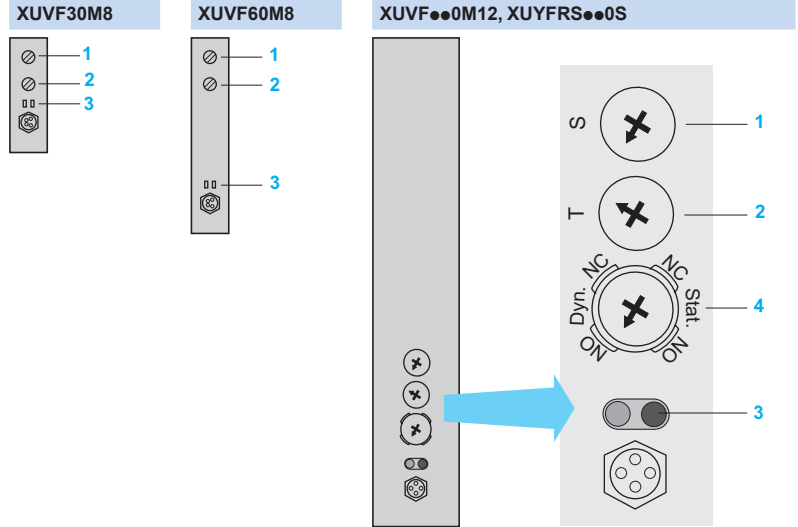
Dynamic/static detection of passage of objects

For detecting and counting parts

DC supply, solid-state output

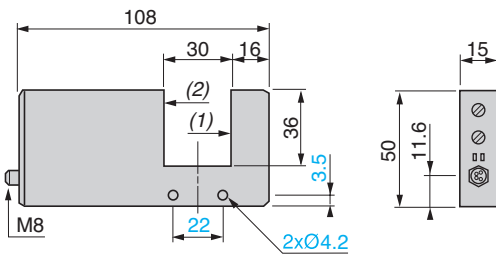
## Introduction

- 1 Sensitivity adjustment potentiometer
- 2 Time delay adjustment potentiometer (XUV only)
- 3 Indicators:
  - Green LED:
    - For XUVF30M8 and XUVF60M8: object in the beam
    - For XUVF120M12, XUVF180M12, XUVF250M12, XUVFRS120S, XUVFRS180S and XUVFRS250S: closed state of the contact
  - Red LED: solid state output overload or short-circuit (flashing)
- Notes concerning XUVF30M8 and XUVF60M8:
  - 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
- 4 Dynamic mode (NO or NC) or static mode (NO or NC) selector switch

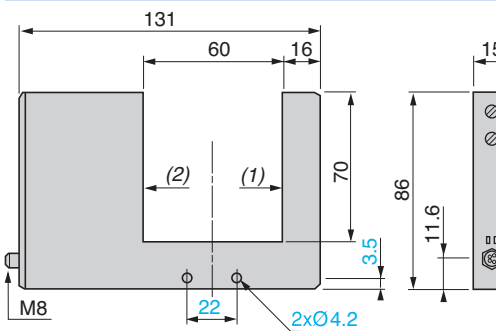


## Dimensions (mm)

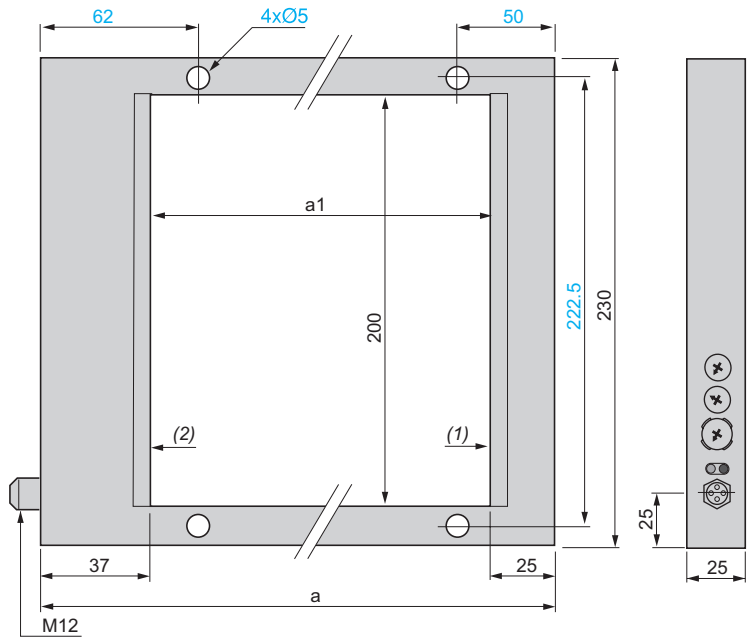
XUVF30M8



XUVF60M8



XUVF...0M12, XUYFRS...0S



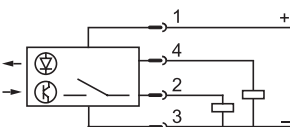
- (1) Transmitting face  
(2) Reception face

XUV	XUY	a	a1
F120M12	FRS120S	182	120
F180M12	FRS180S	242	180
F250M12	FRS250S	312	250

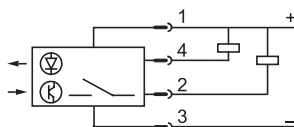
## Connections

Wiring diagrams (4-wire ...)

PNP output

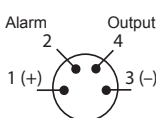


NPN output

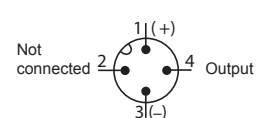


Connector diagram (sensor connector pin view)

XUVF30M8 and XUVF60M8



XUVF120M12, XUYFRS120S, XUVF180M12, XUYFRS180S, XUVF250M12 and XUYFRS250S



**Note:** For XUVF30M8 and XUVF60M8 only, the alarm (2) triggers in the event of an object stopping within the beam. For XUVF30M8 and XUVF60M8, the NC output is gained by connecting terminal 3 to (+) and terminal 1 to (-).





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