

# Photo-electric sensors

## Optical forks and frames

Catalogue





# 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 at its simplest and the best possible price

### > Economical, simple and robust

Increase the profitability of your installation

### > Adaptable and practical

The perfect answer to your specific requirements

### > Compact and precise

Easy integration and precise adjustment

## Contents Optical forks and frames

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# XUVR

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



## > Economical, simple and robust

### Increase the profitability of your solution:

#### No adjustment:

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

#### Sturdy metal construction:

Product without loss of Telemecanique Sensor quality

- Metal case, avoiding deformation
- High-tech electronics
- Degree of protection (IP65 and IP67).



## > Adaptable

### The perfect answer to your specific requirements:

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

- ① Depth adaptable from 30 to 120mm and more
- ② M8 connector or pre-cabled connection
- ③ Adaptable drillings and fixing centres
- ④ Passageway adaptable from 30 to 250mm



**100%**  
Suited to your needs

# XUVA

The complementary fork suited to conveyor applications of any size

## > Practical

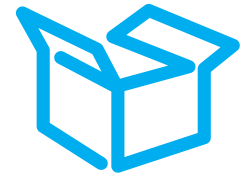
- "L" shaped opening providing greater access for conveyors and transported objects
- Products without adjustment for easier installation
- Simplified fixing using mounting foot integrated in the product.



**100%**  
Suited to your conveyors

# XUVE

A small fork for label detection,  
easy to integrate



Packaging

## > Compact and precise

Due to its compactness, with slender heel, the XUVE fork is easy to integrate in your machine and easily adaptable to all types of opaque label by simply pressing the “Teach” button for fine tuning of the detection accuracy.



**100%**  
of labels detected

# XUVF

Optical frames with dynamic and  
static functions

## > Long object detection

These new optical frames now integrate a static function that enables them to be adapted for the detection of long or medium length bars or cables.



**100%**  
flexible

## A complete offer comprising 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 specially for the detection of transparent materials and labels

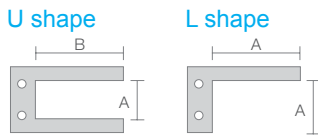
Optical frames for dynamic counting with static function



# > OsiSense: Optical forks and frames

## General use

## Versions for machine manufacturers (OEM)



### Passageway (mm)

30	50	80	120	150	180
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### Typical application

Packaging and materials handling sector

### Beam accuracy (mm)

0.6	0.8	0.9
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### Sensitivity adjustment

Without adjustment

### Type of transmission

Visible red (simplifies setting-up)

### Switching frequency (Hz)

4000

## Sensors for DC applications

### Connection

Pre-cabled (L = 2m)	M8 connector				
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### A=passageway / B=depth (mm)

A=30 / B=30	A=50 / B=60	A=80 / B=60	A=120 / B=120	A=150	A=180 / B=120
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### 3-wire, NO function<sup>(1)</sup> PNP output<sup>(2)</sup>

U shape  
L shape

XUVR0303PANL2	XUVR0605PANM8 XUVA0505PANM8	XUVR0608PANM8 XUVA0808PANM8	XUVR0608PANM8 XUVA1212PANM8	- XUVA1515PANM8	XUVR1218PANM -
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### 4-wire, NO/NC selectable function - Independent PNP/NPN outputs

B=42  
B=59  
B=95

-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

<sup>(1)</sup> NC version available    <sup>(2)</sup> NPN versions also available

## Specific applications use

## Versions specifically for your profession



### Passageway (mm)

3	2	3	2...120
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### Detection of

Transparent labels on transparent background	Opaque labels		Minijature parts, position
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### Beam accuracy (mm)

+/- 0.16	0.5	0.05	Adjustable up to 0.05
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### Sensitivity adjustment

Using teach mode	Using teach mode		Using teach mode <sup>(5)</sup>
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### Type of transmission

Ultrasonic	Infrared		Laser, visible red
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### Switching frequency (Hz)

1500	25000	10000	10000
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## Sensors for DC applications

### Connection

M8 connector
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### Passageway x depth (mm)

3 x 68	2 x 50	3 x 40	2...120 x 42...95
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### 4-wire, PNP and NPN NO or NC programmable function

XUVU06M3KSNM8 (3)	XUVK0252S (4)	XUVE04M3KSNM8 (3)	XUYFALNEP...
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<sup>(3)</sup> Remote teach mode version available, XUV...M3PSNM8 or XUV...M3NSNM8

<sup>(4)</sup> Red/green dual transmission version available for detection of colour reference marks: XUVK0252VS

<sup>(5)</sup> For a numeric potentiometer adjustable version, delete the letter A from the reference. 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>(5)</sup>

Infrared (Excess gain, higher accuracy)

10000

### M8 connector

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

-	-	-	-	-	-	-
XUYFANEP40002	XUYFANEP40005	XUYFANEP40015	XUYFANEP40030	XUYFANEP40050	XUYFANEP40080	XUYFANEP40120
XUYFANEP60002	XUYFANEP60005	XUYFANEP60015	XUYFANEP60030	XUYFANEP60050	XUYFANEP60080	XUYFANEP60120
XUYFANEP100002	XUYFANEP100005	XUYFANEP100015	XUYFANEP100030	XUYFANEP100050	XUYFANEP100080	XUYFANEP100120

<sup>(5)</sup> For a numeric potentiometer adjustable version, delete the letter A from the reference. Example XUYFANEP40002 becomes XUYFNEP40002

## Specific applications use

Optical frames for dynamic counting with static function



### Passageway (mm)

30      60      120      120      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>(6)</sup>      200 x 180 <sup>(6)</sup>      200 x 200 <sup>(6)</sup>

4-wire      Object Ø 2mm min.  
PNP and NPN      Object Ø 4mm min.  
Object Ø 10mm min.

XUVF30M8	XUVF60M8	-	-	-
-	-	XUVF120M12	XUVF180M12	XUVF250M12
-	-	XUYFRS120S	XUYFRS180S	XUYFRS250S

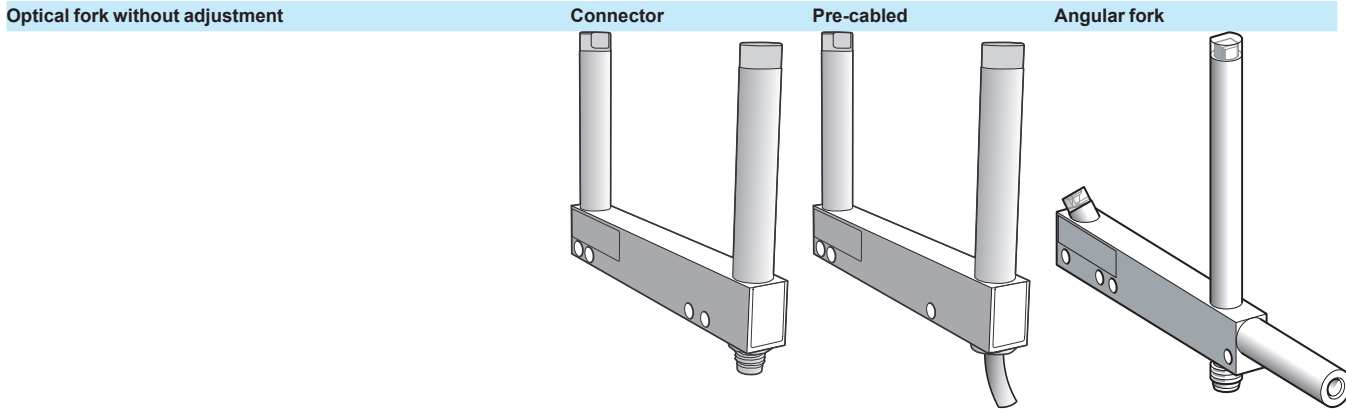
<sup>(6)</sup> For an open fork version, add the letter U to the end of the reference. Example: XUVF120M12 becomes XUVF120M12U

# Photo-electric sensors

OsiSense XU

Optical fork without adjustment

DC supply. Solid-state output



System	Thru-beam	
Type of transmission	Red LED, modulated	
Nominal sensing distance (Sn)	2...180 mm	
Minimum size of object detected	Passageway 2...120 mm	0.8 mm
	Passageway ≥ 150 mm	1 mm
Fork type	XUV R●	XUV A●

### References of forks type XUV R●

3-wire NO or NC function PNP or NPN output	Passageway (A)	Function	Output	Pre-cabled, length 2 m. Depth (B): 30 mm	
<p>A = Passageway B = Depth</p>	30 mm	NO	PNP	XUV R0303PANL2	
	50 mm	NO	PNP	M8 connector, 3-pin. Depth (B): 60 mm	
			NPN	XUV R0605PANM8	
			NC	PNP	XUV R0605PBNM8
			NPN	XUV R0605NBNM8	
	80 mm	NO	PNP	XUV R0608PANM8	
			NPN	XUV R0608NANM8	
			NC	PNP	XUV R0608PBNM8
			NPN	XUV R0608NBNM8	
	120 mm	NO	PNP	M8 connector, 3-pin. Depth (B): 120 mm	
			NPN	XUV R1212PANM8	
			NC	PNP	XUV R1212PBNM8
NPN			XUV R1212NBNM8		
180 mm		NO	PNP	XUV R1218PANM8	
			NPN	XUV R1218NANM8	
		NC	PNP	XUV R1218PBNM8	
			NPN	XUV R1218NBNM8	

Weight (kg)	0.080 to 0.190 depending on model
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### References of forks type XUV A●

3-wire NO function, PNP output	Type	Function	Output	M8 connector, 3-pin
<p>A = Passageway</p>	50 mm	NO	PNP	XUV A0505PANM8
	80 mm	NO	PNP	XUV A0808PANM8
	120 mm	NO	PNP	XUV A1212PANM8
	150 mm	NO	PNP	XUV A1515PANM8

Weight (kg)	0.100 to 0.195 depending on model
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Other versions: please consult our Customer Care Centre.

Applications: detection on conveyor, detection on vibrating rail.

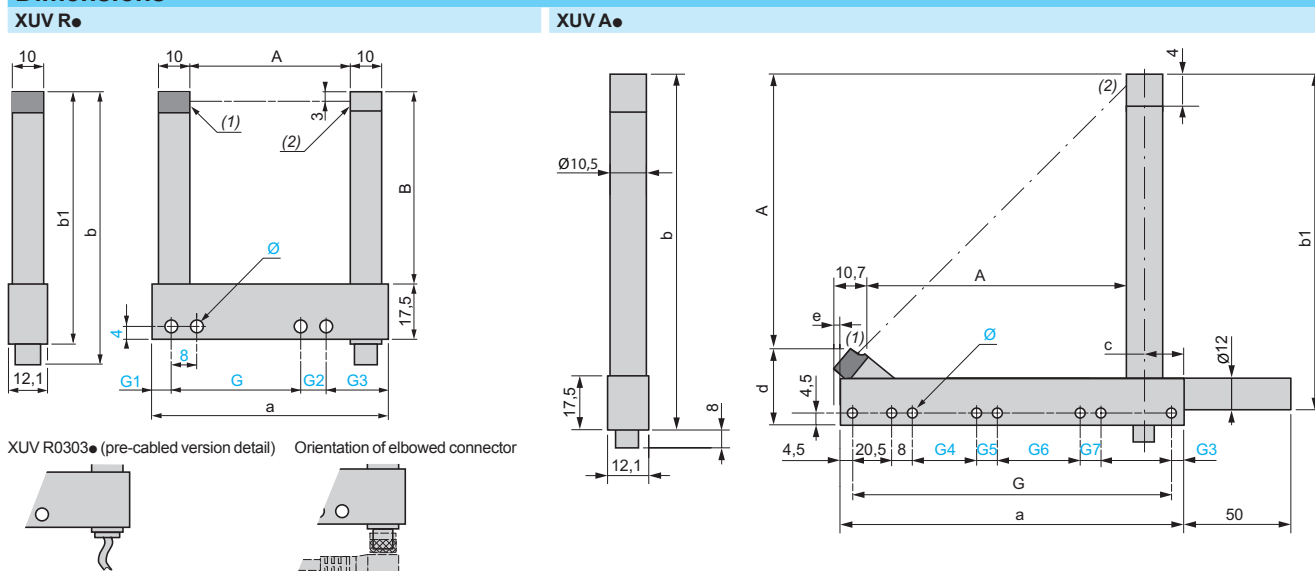
### Accessories

Description	Details	Length of cable (m)	Reference	Weight kg
Pre-wired M8 connector	Straight	2	XZC P0566L2	0.060
	Elbowed (90°)	2	XZC P0666L2	0.060
	Straight	5	XZC P0566L5	0.120
	Elbowed (90°)	5	XZC P0666L5	0.120



Characteristics		XUV R●	XUV A
<b>Product certifications</b>		CE, UL, CSA	CE
<b>Ambient air temperature</b>	For operation	- 10...+ 60 °C	
	For storage	- 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 ± 0.75 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	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>		<b>100 mA with overload and short-circuit protection</b>	
<b>Voltage drop, closed state</b>		< 1.5 V	
<b>Current consumption, no-load</b>		< 20 mA	
<b>Maximum switching frequency</b>		<b>4000 Hz</b>	
<b>Delays</b>	First-up	140 ms max.	
	Stability	± 15 µs	
<b>Indicator lights</b>	Yellow LED	Output signal	

### Dimensions



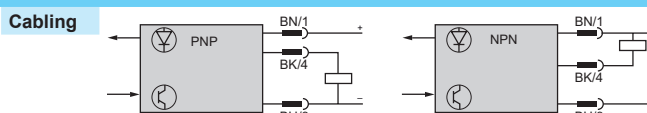
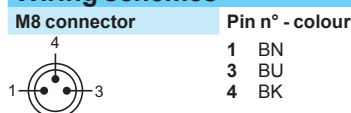
(1) Transmission LED - (2) Yellow LED: output signal

Type XUV R	Passageway A	Depth B	a	b	b1	G	G1	G2	G3	Ø
XUV R0303●●●●●●	30	40	54	65.7	57.5	30	17	—	—	4 x 4.3
XUV R0605●●●●●●	50	60	74	85.7	77.5	40	6.5	8	19.5	4 x 4.3
XUV R0608●●●●●●	80	60	104	85.7	77.5	70	6.5	8	19.5	4 x 4.3
XUV R01212●●●●●●	120	124.3	144	150.2	142	100	17	10	17	4 x 4.3
XUV R01218●●●●●●	180	124.3	204	150.2	142	152	22	8	22	4 x 4.3

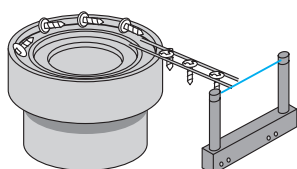
Type XUV A	Type	Depth A	a	b	b1	G	G1	G2	G3	Ø	G4	G5	G6	G7	c
XUV A0505●●●●●●	50	44.3	75	83	75	66	—	—	4.5	4 x 4.3	—	—	—	—	14.75
XUV A0808●●●●●●	80	74.3	105	113	105	96	—	—	4.5	4 x 4.3	—	—	—	—	14.75
XUV A1212●●●●●●	120	112.3	145	154	146	136	—	—	4.5	4 x 4.3	—	—	—	—	19.75
XUV A1515●●●●●●	150	142.3	175	184	176	166	—	—	4.5	8 x 4.3	24	8	60	8	19.75

### Wiring schemes

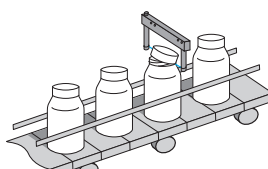


### Application examples

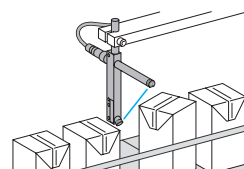
Vibrating bowl



Monitoring height of objects passing on a conveyor



Detecting position of object on a conveyor



# Photo-electric sensors

OsiSense XU Application

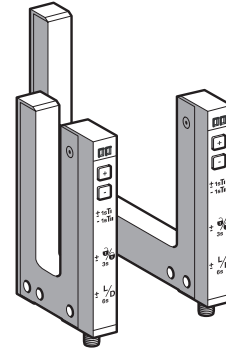
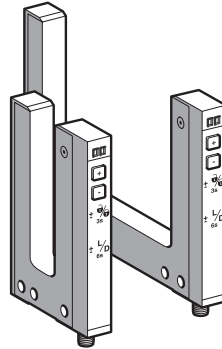
Optical fork with teach mode

DC supply. Solid-state output

Optical fork with teach mode

+/- numeric potentiometer mode  
Green keypad

Teach mode  
Yellow keypad

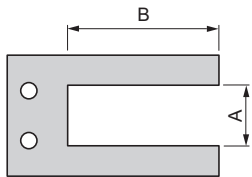


<b>System</b>	<b>Thru-beam</b>
<b>Type of transmission</b>	Infrared LED, modulated
<b>Nominal sensing distance (Sn)</b>	2...120 mm
<b>Minimum size of object detected</b>	Passageway 2...120 mm
<b>Fork type</b>	XUY FNEP● XUY FANEP●

## References

4-wire, PNP/NPN independent outputs

NO/NC function, selectable



A = Passageway  
B = Depth

Passageway (A) mm	Depth (B)			Depth (B)		
	42	59	95	42	59	95
2	XUY FNEP40002	XUY FNEP60002	XUY FNEP100002	XUY FANEP40002	XUY FANEP60002	XUY FANEP100002
5	XUY FNEP40005	XUY FNEP60005	XUY FNEP100005	XUY FANEP40005	XUY FANEP60005	XUY FANEP100005
15	XUY FNEP40015	XUY FNEP60015	XUY FNEP100015	XUY FANEP40015	XUY FANEP60015	XUY FANEP100015
30	XUY FNEP40030	XUY FNEP60030	XUY FNEP100030	XUY FANEP40030	XUY FANEP60030	XUY FANEP100030
50	XUY FNEP40050	XUY FNEP60050	XUY FNEP100050	XUY FANEP40050	XUY FANEP60050	XUY FANEP100050
80	XUY FNEP40080	XUY FNEP60080	XUY FNEP100080	XUY FANEP40080	XUY FANEP60080	XUY FANEP100080
120	XUY FNEP40120	XUY FNEP60120	XUY FNEP100120	XUY FANEP40120	XUY FANEP60120	XUY FANEP100120

**Weight (kg)** 0.055 to 0.128 depending on model

## Characteristics

<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 3A max.
<b>Ambient air temperature</b>	For operation	- 20...+ 60 °C
	For storage	- 30...+ 80 °C
<b>Degree of protection</b>	Conforming to IEC 60529	IP 65
<b>Connection</b>		M8, 4-pin male connector (for 3-pin version please consult our Customer Care Centre)
<b>Vibration resistance</b>	Conforming to IEC 60068-2-6	7 gn, amplitude ± 0.75 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	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>Indicator lights</b>	Yellow LED	Output signal
	Red LED	Adjustment mode and keypad locking

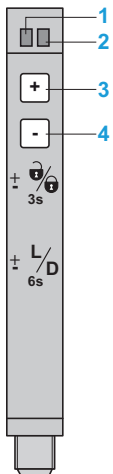
Application: Detection of labels, detection of double sheet, detection of reference marks, detection on conveyor, detection on vibrating rail.

## Accessories

Description	Details	Length of cable (m)	References	Weight kg
Pre-wired M8 connector	Straight	2	XZC P0941L2	0.080
	Elbowed (90°)	2	XZC P1041L2	0.080
	Straight	5	XZC P0941L5	0.180
	Elbowed (90°)	5	XZC P1041L5	0.180

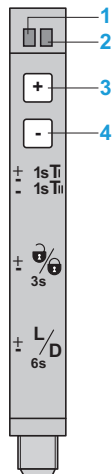
## Presentation

### XUY FNEP●●●



- 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)

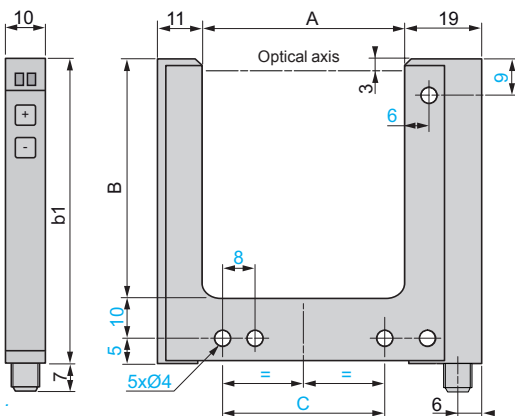
### XUY FANEP●●●



- 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

### XUY FNEP●●● / XUY FANEP●●●



XUY	Passageway Depth		b1	C
	A	B		
FNEP/FANEP●002	2	42, 59, 95	57, 74, 110	14
FNEP/FANEP●005	5	42, 59, 95	57, 74, 110	14
FNEP/FANEP●015	15	42, 59, 95	57, 74, 110	27
FNEP/FANEP●030	30	42, 59, 95	57, 74, 110	42
FNEP/FANEP●050	50	42, 59, 95	57, 74, 110	40
FNEP/FANEP●080	80	42, 59, 95	57, 74, 110	70
FNEP/FANEP●120	120	42, 59, 95	57, 74, 110	110

## Wiring schemes

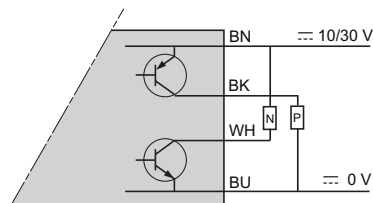
### Cabling



#### Pin n° - colour

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

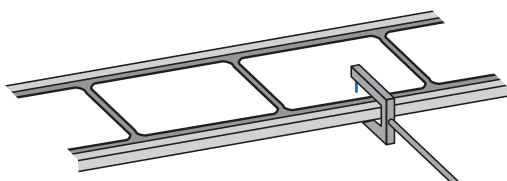
### M8 connector



## Application examples

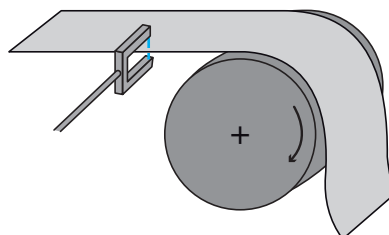
### Green keypad: Potentiometer mode

Detection of labels on belt



### Yellow keypad: Teach mode

Detection of sheet feed on printing machine



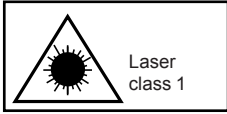
# Photo-electric sensors

## OsiSense XU Application

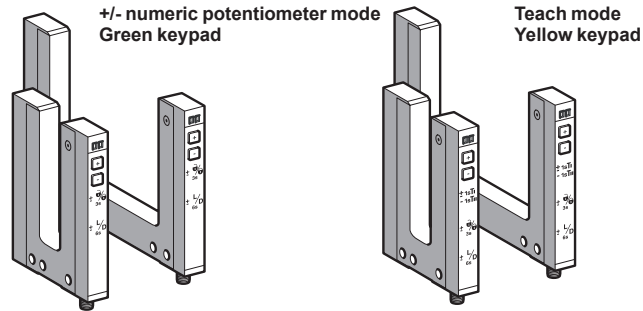
Optical fork with laser transmission, with teach mode

DC supply. Solid-state output

### High sensitivity fork range



Laser class 1, conforming to IEC 825-1



<b>System</b>	<b>Thru-beam</b>	
<b>Type of transmission</b>	Red laser, modulated, class 1, wavelength: 670 m	
<b>Nominal sensing distance (Sn)</b>	2...120 mm	
<b>Minimum size of object detected</b>	Passageway 2...120 mm 0.05 mm (repeat accuracy 0.01 mm)	
<b>Fork type</b>	<b>XUY FLNEP●</b>	<b>XUY FALNEP●</b>

### References

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

**Weight (kg)** 0.055 to 0.128 depending on model

### Characteristics

<b>Product certifications</b>	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.	
<b>Ambient air temperature</b>	For operation	- 20...+ 50 °C
	For storage	- 30...+ 80 °C
<b>Degree of protection</b>	Conforming to IEC 60529	IP 65
<b>Connection</b>	M8, 4-pin male connector	
<b>Vibration resistance</b>	Conforming to IEC 60068-2-6	7 gn, amplitude $\pm 0.75$ 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	Painted aluminium and polyamide/glass
<b>Rated supply voltage</b>	$\leq 12...24$ V with protection against reverse polarity	
<b>Voltage limits (including ripple)</b>	$\leq 10...30$ V	
<b>Immunity to ambient light</b>	Natural light	10 000 lux
	Incandescent bulb	5000 lux
<b>Outputs</b>	PNP/NPN	By wiring
	NO/NC	Using teach mode
<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>	+/- 20 $\mu$ s	
<b>Indicator lights</b>	Yellow LED: output signal; red LED: keypad locking and adjustments	

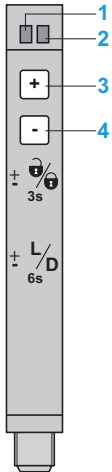
■ Applications: Detection of reference marks, detection on conveyor, detection on vibrating rail, detection of transparent object.

### Accessories

Description	Details	Length of cable (m)	References	Weight kg
Pre-wired M8 connector	Straight	2	XZC P0941L2	0.080
	Elbowed (90°)	2	XZC P1041L2	0.080
	Straight	5	XZC P0941L5	0.180
	Elbowed (90°)	5	XZC P1041L5	0.180

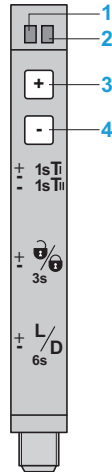
### Presentation

#### XUY FLNEP●



- 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)

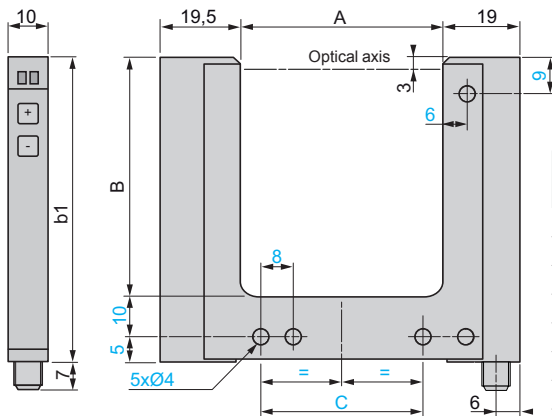
#### XUY FALNEP●



- 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

#### XUY FLNEP●/XUY FALNEP●



XUY	Passageway Depth		b1	C
	A	B		
FLNEP/FALNEP●2	2	42, 59, 95	57, 74, 110	14
FLNEP/FALNEP●5	5	42, 59, 95	57, 74, 110	14
FLNEP/FALNEP●15	15	42, 59, 95	57, 74, 110	27
FLNEP/FALNEP●30	30	42, 59, 95	57, 74, 110	42
FLNEP/FALNEP●50	50	42, 59, 95	57, 74, 110	40
FLNEP/FALNEP●80	80	42, 59, 95	57, 74, 110	70
FLNEP/FALNEP●120	120	42, 59, 95	57, 74, 110	110

### Wiring schemes

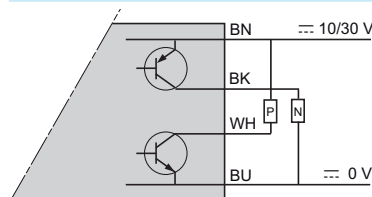
#### Cabling



#### Pin n° - colour

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

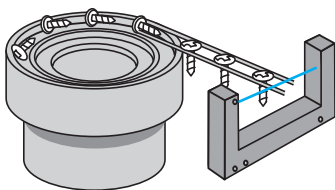
#### M8 connector



### Application examples

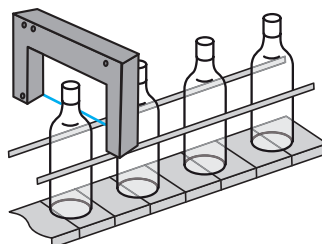
#### Green keypad: Potentiometer mode

Detection of an object exiting a vibrating bowl



#### Yellow keypad: Teach mode

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





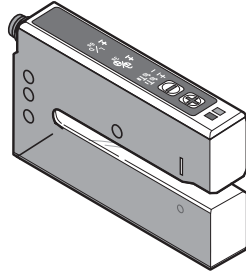
# Ultrasonic sensor

OsiSense XU Application, packaging series

For detection of transparent labels

DC supply. Solid-state output

## Fork design



<b>System</b>	Thru-beam								
<b>Type of transmission</b>	Ultrasonic								
<b>Nominal sensing distance (Sn)</b>	3 mm								
<b>Depth</b>	69 mm								
<b>References</b>									
<b>4-wire</b>	<table border="1"> <tr> <td></td> <td><b>XUV U06M3KSNM8</b></td> <td><b>XUV U06M3PSNM8</b></td> <td><b>XUV U06M3NSNM8</b></td> </tr> <tr> <td>NC or NO programmable function</td> <td>PNP/NPN</td> <td>PNP</td> <td>NPN</td> </tr> </table>		<b>XUV U06M3KSNM8</b>	<b>XUV U06M3PSNM8</b>	<b>XUV U06M3NSNM8</b>	NC or NO programmable function	PNP/NPN	PNP	NPN
	<b>XUV U06M3KSNM8</b>	<b>XUV U06M3PSNM8</b>	<b>XUV U06M3NSNM8</b>						
NC or NO programmable function	PNP/NPN	PNP	NPN						
<b>Remote adjustment</b>	No								
<b>Adjustment</b>	By numeric potentiometer (+/- buttons), static and dynamic teach modes.								
<b>Protection of settings</b>	By locking keypad								
<b>Weight (kg)</b>	0.130								

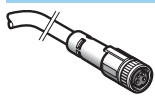
## Characteristics

<b>Product certifications</b>	CE, IEC 60947-5-2												
<b>Materials</b>	Aluminium case												
<b>Connection</b>	M8, 4-pin connector												
<b>Detection performance</b>	<table border="1"> <tr> <td>Minimum length of label</td> <td>2 mm</td> </tr> <tr> <td>Minimum distance between 2 labels</td> <td>2 mm</td> </tr> <tr> <td>Maximum flow rate</td> <td>180 m/min</td> </tr> <tr> <td>Detection accuracy</td> <td>+/- 0.20 mm at 120 m/min</td> </tr> </table>	Minimum length of label	2 mm	Minimum distance between 2 labels	2 mm	Maximum flow rate	180 m/min	Detection accuracy	+/- 0.20 mm at 120 m/min				
Minimum length of label	2 mm												
Minimum distance between 2 labels	2 mm												
Maximum flow rate	180 m/min												
Detection accuracy	+/- 0.20 mm at 120 m/min												
<b>Supply</b>	<table border="1"> <tr> <td>Rated supply voltage</td> <td><b>12...24 V with protection against reverse polarity</b></td> </tr> <tr> <td>Voltage limits</td> <td><b>10...30 V (including ripple)</b></td> </tr> <tr> <td>Current consumption, no-load</td> <td>45 mA</td> </tr> <tr> <td>Residual voltage</td> <td></td> </tr> <tr> <td>    At 100 mA</td> <td>&lt; 2 V</td> </tr> <tr> <td>    At 10 mA</td> <td>&lt; 1 V</td> </tr> </table>	Rated supply voltage	<b>12...24 V with protection against reverse polarity</b>	Voltage limits	<b>10...30 V (including ripple)</b>	Current consumption, no-load	45 mA	Residual voltage		At 100 mA	< 2 V	At 10 mA	< 1 V
Rated supply voltage	<b>12...24 V with protection against reverse polarity</b>												
Voltage limits	<b>10...30 V (including ripple)</b>												
Current consumption, no-load	45 mA												
Residual voltage													
At 100 mA	< 2 V												
At 10 mA	< 1 V												
<b>Output</b>	<table border="1"> <tr> <td>Maximum rated current</td> <td>100 mA with overload and short-circuit protection</td> </tr> <tr> <td>Maximum switching frequency</td> <td><b>1500 Hz</b></td> </tr> <tr> <td>Indicator light</td> <td></td> </tr> <tr> <td>    Output state</td> <td>Yellow LED</td> </tr> <tr> <td>    Adjustment and keypad locking</td> <td>Red LED</td> </tr> </table>	Maximum rated current	100 mA with overload and short-circuit protection	Maximum switching frequency	<b>1500 Hz</b>	Indicator light		Output state	Yellow LED	Adjustment and keypad locking	Red LED		
Maximum rated current	100 mA with overload and short-circuit protection												
Maximum switching frequency	<b>1500 Hz</b>												
Indicator light													
Output state	Yellow LED												
Adjustment and keypad locking	Red LED												
<b>Delay</b>	300 µs, response and recovery												
<b>Environment</b>	<table border="1"> <tr> <td>Operating temperature</td> <td>+ 5...+ 55° C</td> </tr> <tr> <td>Storage temperature</td> <td>- 20° C..+ 70° C</td> </tr> <tr> <td>Degree of protection</td> <td>IP 65</td> </tr> </table>	Operating temperature	+ 5...+ 55° C	Storage temperature	- 20° C..+ 70° C	Degree of protection	IP 65						
Operating temperature	+ 5...+ 55° C												
Storage temperature	- 20° C..+ 70° C												
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		

## References of pre-wired connectors



XZ CP0941L●



XZ CP1041L●

Type of connector	For use with forks	Type	Cable length (m)	Reference	Weight kg
Female, M8, 4 pins	XUV U06M3KSNM8, XUV U06M3PSNM8, XUV U06M3NSNM8.	Straight	2	<b>XZ CP0941L2</b>	0.080
			5	<b>XZ CP0941L5</b>	0.180
		Elbowed	2	<b>XZ CP1041L2</b>	0.080
			5	<b>XZ CP1041L5</b>	0.180

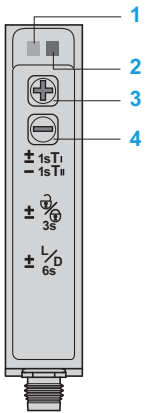
# Ultrasonic sensor

OsiSense XU Application, packaging series

For detection of transparent labels

DC supply. Solid-state output

## Presentation (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

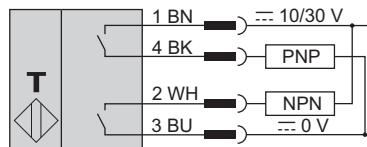


### Pin no. - colour

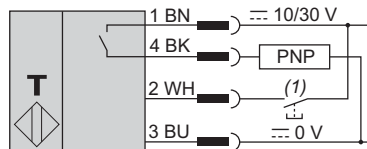
- 1 **BN**: Brown
- 2 **WH**: White (remote teaching)
- 3 **BU**: Blue
- 4 **BK**: Black

### Wiring schemes

#### PNP/NPN: XUV U06M3KSNM8

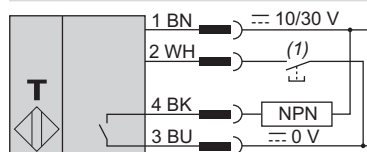


#### PNP: XUV U06M3PSNM8



(1) Remote teaching.

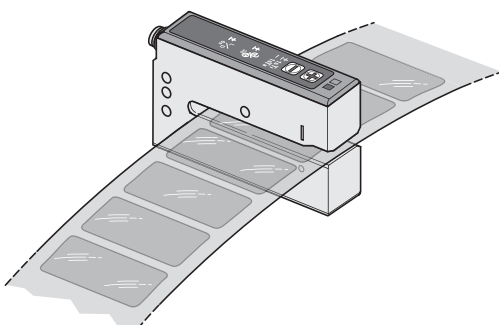
#### NPN: XUV U06M3NSNM8



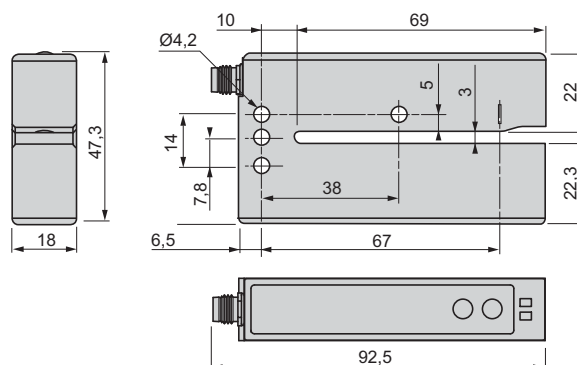
(1) Remote teaching.

## Application example

Detection of transparent labels on opaque or transparent strip



## Dimensions (in mm)



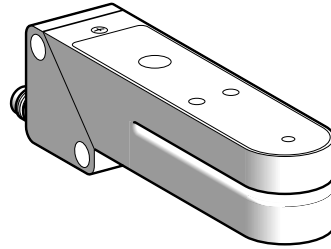
# Photo-electric sensors

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	

## References

3-wire, PNP and NPN	NO or NC programmable function (2)	<b>XUV K0252S</b>	<b>XUV K0252VS</b>
Weight (kg)	0.120		

## Characteristics

Product certifications	CE	
Ambient air temperature	For operation: 0...+55 °C. For storage: -20...+70 °C	
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. Please consult our catalogue: Cabling accessories OsiSense XZ)	
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	
Indicator lights	Output state	Yellow LED
	Sensor ready	Green LED
	Read error	Red LED

Function table	Function	Thru-beam system	
		No label present in the 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 **XUV K0252S** is suitable for the detection of all types of opaque labels; the red/green transmission sensor **XUV K0252VS** is suitable for the detection of all types of labels of different colours.

(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 (see programming using teach mode, next page).

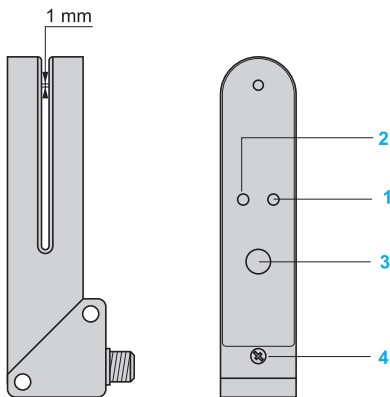
# Photo-electric sensors

OsiSense XU Application, packaging series

For detection of labels

DC supply. Solid-state output

## Presentation

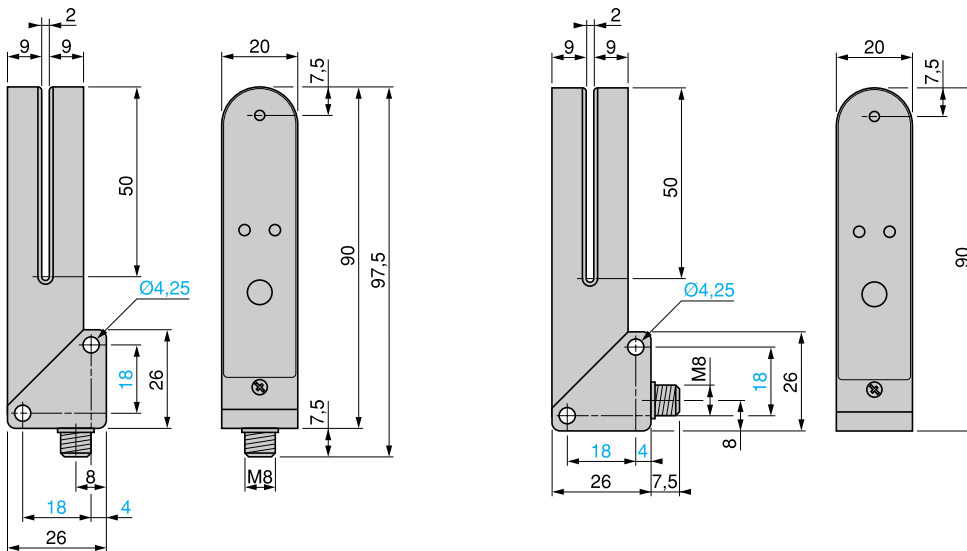


## Programming using teach mode

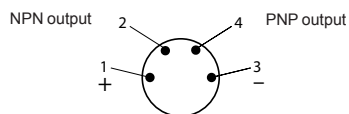
- Place the label to be detected in the beam of the optical fork. Press the SET button and hold down until the green LED 2 goes out,
- When the green LED 2 flashes, the detector has "learnt" the label. Following this, place the backing to which the label is affixed in the beam of the optical fork. Press 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 colour green/red LED, Ready/Error
- 3 Teach mode programming SET button
- 4 Locking screw

## Dimensions



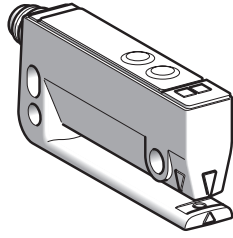
## Connector scheme (sensor connector pin view)



# Photo-electric 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									
<b>Depth</b>	40 mm									
<b>References</b>										
<b>4-wire</b>	<table border="1"> <tr> <td><b>XUV E04M3KSNM8</b></td> <td><b>XUV E04M3PSNM8</b></td> <td><b>XUV E04M3NSNM8</b></td> </tr> <tr> <td>NO or NC programmable function</td> <td>PNP/NPN</td> <td>PNP</td> </tr> <tr> <td></td> <td></td> <td>NPN</td> </tr> </table>	<b>XUV E04M3KSNM8</b>	<b>XUV E04M3PSNM8</b>	<b>XUV E04M3NSNM8</b>	NO or NC programmable function	PNP/NPN	PNP			NPN
<b>XUV E04M3KSNM8</b>	<b>XUV E04M3PSNM8</b>	<b>XUV E04M3NSNM8</b>								
NO or NC programmable function	PNP/NPN	PNP								
		NPN								
<b>Remote adjustment</b>	No									
<b>Adjustment</b>	Yes									
<b>Protection of settings</b>	By numeric potentiometer (+/- buttons) and red LED									
<b>Weight (kg)</b>	0.035									

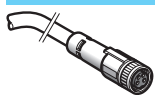
## Characteristics

<b>Product certifications</b>	CE, cULus												
<b>Material</b>	Thermoplastic case (PA12)												
<b>Connection</b>	M8, 4-pin connector												
<b>Detection performance</b>	<table border="1"> <tr> <td>Minimum length of label</td> <td>2 mm</td> </tr> <tr> <td>Minimum distance between 2 labels</td> <td>2 mm</td> </tr> <tr> <td>Maximum flow rate</td> <td>200 m/min</td> </tr> <tr> <td><b>Detection accuracy</b></td> <td><b>+/- 50 µm at 150 m/min</b></td> </tr> </table>	Minimum length of label	2 mm	Minimum distance between 2 labels	2 mm	Maximum flow rate	200 m/min	<b>Detection accuracy</b>	<b>+/- 50 µm at 150 m/min</b>				
Minimum length of label	2 mm												
Minimum distance between 2 labels	2 mm												
Maximum flow rate	200 m/min												
<b>Detection accuracy</b>	<b>+/- 50 µm at 150 m/min</b>												
<b>Supply</b>	<table border="1"> <tr> <td>Rated supply voltage</td> <td>12...24 V with protection against reverse polarity</td> </tr> <tr> <td>Voltage limits</td> <td>10...30 V ~ (including ripple)</td> </tr> <tr> <td>Current consumption, no-load</td> <td>35 mA</td> </tr> <tr> <td>Residual voltage at 100 mA</td> <td>&lt; 2 V</td> </tr> </table>	Rated supply voltage	12...24 V with protection against reverse polarity	Voltage limits	10...30 V ~ (including ripple)	Current consumption, no-load	35 mA	Residual voltage at 100 mA	< 2 V				
Rated supply voltage	12...24 V with protection against reverse polarity												
Voltage limits	10...30 V ~ (including ripple)												
Current consumption, no-load	35 mA												
Residual voltage at 100 mA	< 2 V												
<b>Output</b>	<table border="1"> <tr> <td>Maximum rated current</td> <td>100 mA with overload and short-circuit protection</td> </tr> <tr> <td><b>Maximum switching frequency</b></td> <td><b>10 kHz</b></td> </tr> <tr> <td>Indicator lights</td> <td></td> </tr> <tr> <td>    Output state</td> <td>Yellow LED</td> </tr> <tr> <td>    Adjustment and keypad locking</td> <td>Red LED</td> </tr> <tr> <td>Delay (response and recovery)</td> <td>50 µs</td> </tr> </table>	Maximum rated current	100 mA with overload and short-circuit protection	<b>Maximum switching frequency</b>	<b>10 kHz</b>	Indicator lights		Output state	Yellow LED	Adjustment and keypad locking	Red LED	Delay (response and recovery)	50 µs
Maximum rated current	100 mA with overload and short-circuit protection												
<b>Maximum switching frequency</b>	<b>10 kHz</b>												
Indicator lights													
Output state	Yellow LED												
Adjustment and keypad locking	Red LED												
Delay (response and recovery)	50 µs												
<b>Environment</b>	<table border="1"> <tr> <td>Operating temperature</td> <td>- 20...+ 60°C</td> </tr> <tr> <td>Storage temperature</td> <td>- 30...+ 80°C</td> </tr> <tr> <td>Degree of protection</td> <td>IP 65</td> </tr> </table>	Operating temperature	- 20...+ 60°C	Storage temperature	- 30...+ 80°C	Degree of protection	IP 65						
Operating temperature	- 20...+ 60°C												
Storage temperature	- 30...+ 80°C												
Degree of protection	IP 65												

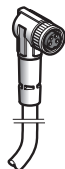
## Function table

	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		

## References of pre-wired connectors



XZ CP0941L●



XZ CP1041L●

Type of connector	For use with forks	Type	Cable length (m)	Reference	Weight kg
Female, M8, 4 pins	XUV E04M3KSNM8, XUV E04M3PSNM8, XUV E04M3NSNM8,	Straight	2	<b>XZ CP0941L2</b>	0,080
			5	<b>XZ CP0941L5</b>	0,180
		Elbowed	2	<b>XZ CP1041L2</b>	0,080
			5	<b>XZ CP1041L5</b>	0,180



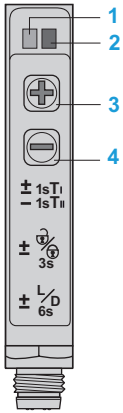
# Photo-electric sensors

OsiSense XUVE Application, packaging series

Optical fork for detection of opaque labels

DC supply. Solid-state output

## Presentation (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

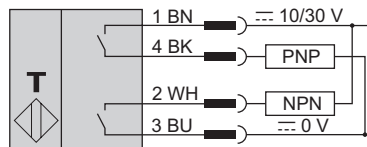


### Pin no. - colour

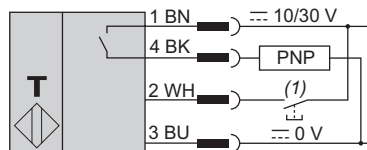
- 1 **BN**: Brown
- 2 **WH**: White (remote teaching)
- 3 **BU**: Blue
- 4 **BK**: Black

### Wiring schemes

#### PNP/NPN: XUV E04M3KSNM8

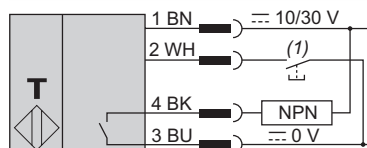


#### PNP: XUV E04M3PSNM8



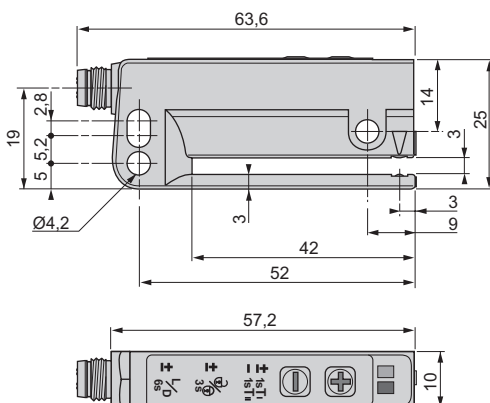
(1) Remote teaching.

#### NPN: XUV E04M3NSNM8



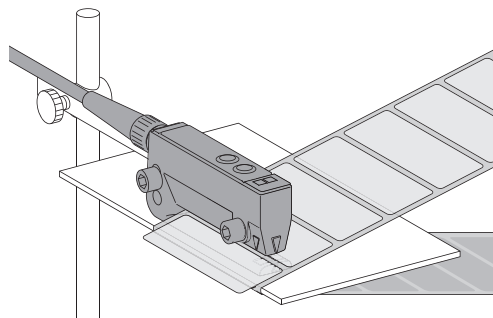
(1) Remote teaching.

## Dimensions



## Application example

Detection of opaque labels before application to a package



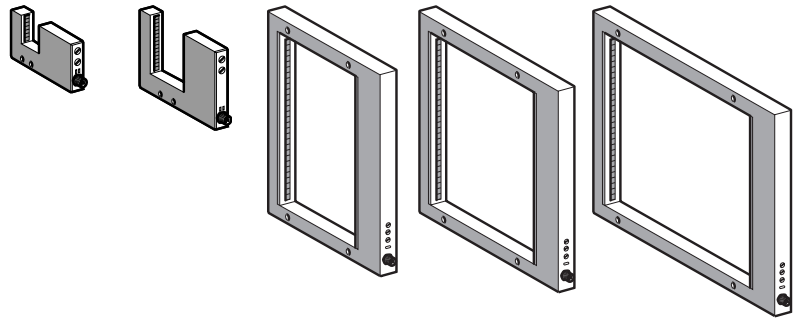
# Photo-electric sensors

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>References</b>						
<b>4-wire, PNP or NPN</b> NO or NC programmable function	Minimum size of object detected					
	Dynamic mode	Static mode				
	Ø 2 mm	–	<b>XUV F30M8</b>	<b>XUV F60M8</b>	–	–
	Ø 4 mm	Ø 6 mm	–	–	<b>XUV F120M12</b>	<b>XUV F180M12</b>
	Ø 10 mm	Ø 15 mm	–	–	<b>XUY FRS120S</b>	<b>XUY FRS180S</b>
					<b>XUY FRS250S</b>	
<b>Weight (kg)</b>			0.080	0.140	0.860	1.000
						1.120

### References 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 reference. Example: XUV F120M12 becomes **XUV F120M12U**.

### Characteristics

<b>Product certifications</b>	CE, cULus	
<b>Ambient air temperature</b>	For operation: 0...+60°C. For storage: -20...+80°C	
<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 (suitable female connectors, including pre-wired versions)	M12 connector (suitable female connectors, including pre-wired versions)
<b>Materials</b>	Case Lenses	Painted aluminium 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 (Ø 2 mm object)	Min (2): 10 cm/s, max.: 15 m/s (Ø 4 mm object) or max.: 70 m/s (Ø 10 mm object)
<b>Rated supply voltage</b>	<b>24 V <math>\overline{\text{---}}</math> with protection against reverse polarity</b>	
<b>Voltage limits</b>	18...30 V $\overline{\text{---}}$ (including ripple)	
<b>Switching capacity (sealed)</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>	≤ 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
<b>Output state (PNP or NPN) and orange LED:</b> illuminated when sensor output is ON.	NC		
	NO		

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

XUV F120M12, XUV F180M12 and XUV F250M12 frames can be used:

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

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

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

# Photo-electric sensors

OsiSense XU Application, conveying series

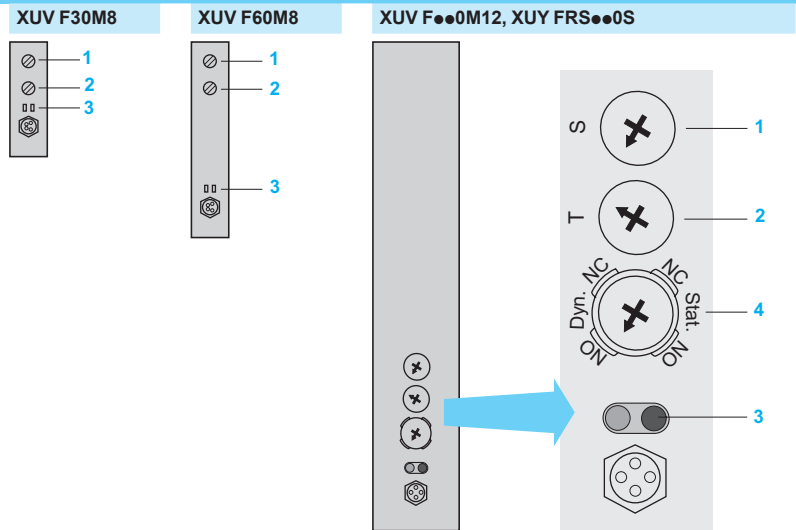
Dynamic/static detection of passage of objects

For detecting and counting parts

DC supply. Solid-state output

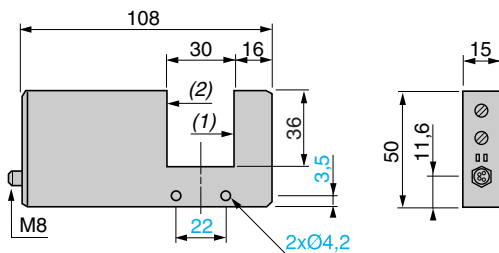
## Presentation

- 1 Sensitivity adjustment potentiometer
  - 2 Time delay adjustment potentiometer (XUV only)
  - 3 Indicators:
    - Orange LED:
      - For XUV F30M8 and XUV F60M8: object in the beam
      - For XUV F120M12, XUV F180M12, XUV F250M12, XUV FRS120S, XUV FRS180S and XUV FRS250S: closed state of the contact
    - Red LED: solid state output overload or short-circuit (flashing)
- Notes concerning XUV F30M8 and XUV F60M8:
- 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 orange LEDs flash
- 4 Dynamic mode (NO or NC) or static mode (NO or NC) selector switch

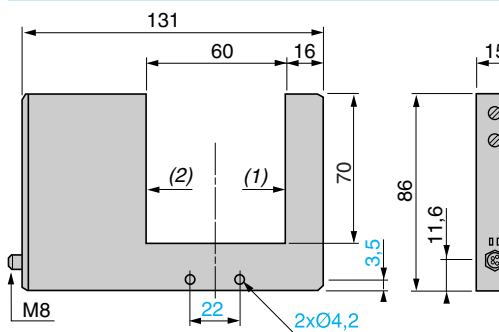


## Dimensions

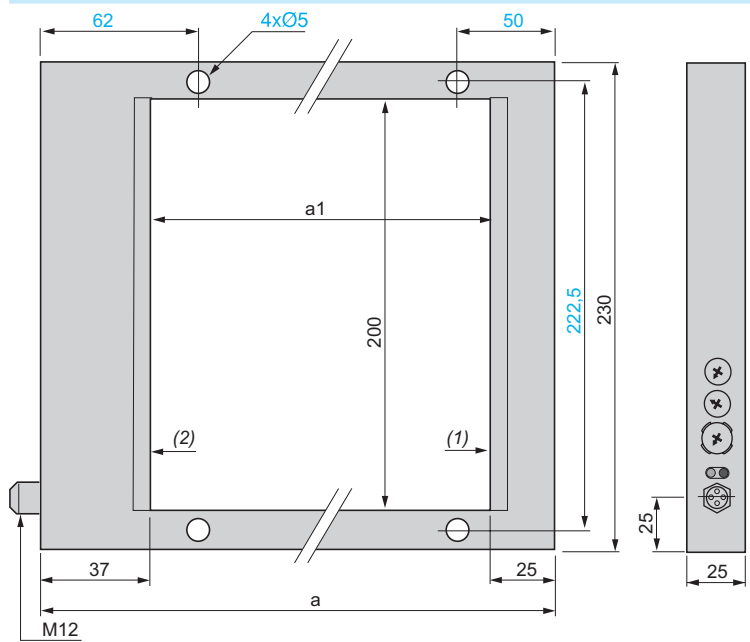
### XUV F30M8



### XUV F60M8



### XUV F120M12, XUY FRS120S



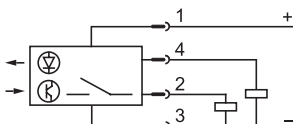
- (1) Transmitting face  
(2) Reception face

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

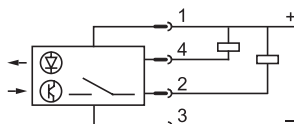
## Connections

### Wiring schemes (4-wire ⚡)

#### PNP output

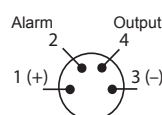


#### NPN output

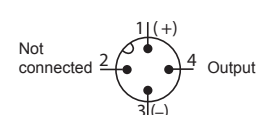


### Connector scheme (sensor connector pin view)

#### XUV F30M8 and XUV F60M8



#### XUV F120M12, XUY FRS120S, XUV F180M12, XUY FRS180S, XUV F250M12 and XUY FRS250S



**Note:** For XUV F30M8 and XUV F60M8 only, the alarm (2) triggers in the event of an object stopping within the beam. For XUV F30M8 and XUV F60M8, the NC output is gained by connecting terminal 3 to (+) and terminal 1 to (-).

**Schneider Electric Industries SAS**

[www.tesensors.com](http://www.tesensors.com)

Head Office  
35, rue Joseph Monier  
F-92500 Rueil-Malmaison  
France

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