Photo-electric sensors
OsiSense XU

Catalogue

Simply easy!™

Telemecanique

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OsiSense XU

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Photo-electric sensors
OsiSense XU General purpose
Single mode or multimode function

Format			Design 18			
			Metal		Plastic	
						
Single mode function			**Type**	**Sensing distance** (m)	**Type**	**Sensing distance** (m)
Sensing distance (m) related to system	Diffuse with adjustable sensitivity		XUB5B	0.6	XUB5A	0.6
	Diffuse		XUB4B	0.1	XUB4A	0.1
	Polarised reflex		XUB9B	2	XUB9A	2
	Reflex		XUB1B	4	XUB1A	4
	Thru-beam		XUB2B	15	XUB2A	15
Type reference			**XUB●B** *(1)*		**XUB●A** *(1)*	
Pages			30		28	
Multimode function			**Type**	**Sensing distance** (m)	**Type**	**Sensing distance** (m)
Sensing distance (m) related to system	Diffuse with background suppression		XUB0B	0.12	XUB0A	0.12
	Diffuse			0.30		0.30
	Polarised reflex			3		3
	Thru-beam			15		15
Type reference			**XUB0B** *(1)*		**XUB0A** *(1)*	
Pages			32		32	
High performance diffuse with adjustable background suppression			**Type**	**Sensing distance** (m)	**Type**	**Sensing distance** (m)
			–		–	
Type reference			–		–	
Pages			–		–	
Characteristics						
Dimensions (w x h x d) in mm			Ø 18, threaded M18 x 1 XUB●A/XUB●B: length 46 (62 for XUB5 and connector version) XUB0A/XUB0B: length 62 (pre-cabled version) or length 78 (connector version)			
Case	Materials	Plastic, PBT	–		●	
		Nickel plated brass	●		–	
		Stainless steel	● (XUB0S: see page 92)		–	
Degree of protection			IP 65, IP 67 IP 69K (XUB0S, stainless steel case, see page 92)		IP 65, IP 67	
Supply	⎓ 3-wire (PNP/NPN)		●		●	
	∿ 5-wire, relay output		(2-wire XU●M18, see page 156)		–	
Function	NO		●		●	
	NC		●		●	
	NO/NC		–		–	
	NO + NC		–		–	
Connection	Pre-cabled (L = 2 m) *(2)*		●		●	
	Connector	M8 (4-pin) ⎓ 3-wire	–		–	
		M12	●		●	
	Screw terminals		–		–	
	Remote connector		M8 and M12 remote connectors available: please contact our Customer Care Centre.			

(1) Sensors also available with line of sight 90° to case axis.
(2) Cable lengths of 5 and 10 m also available, depending on model.
(3) With adjustable sensitivity.

Miniature design	Compact design, 50 x 50	Compact design, 92 x 71
Plastic	Plastic	Plastic
		

Type	Sensing distance (m)	Type	Sensing distance (m)	Type	Sensing distance (m)
XUM5A	1 *(3)*	XUK5A	1 *(3)*	XUX5A	2 *(3)*
–		–		–	
XUM9A	5 *(3)*	XUK9A	6	XUX9A	11 *(3)*
–		XUK1A	7	XUX1A	14 *(3)*
XUM2A	15 *(3)*	XUK2A	30	XUX2A	40 *(3)*
XUM●A		**XUK●A**		**XUX●A**	
34		42		50	

Type	Sensing distance (m)	Type	Sensing distance (m)	Type	Sensing distance (m)
XUM0A	0.10	XUK0A	0.28	XUX0A	1.3
	0.4		0.8		2
	3		4		15
	10		30		40
XUM0A		**XUK0A**		**XUX0A**	
38		44		52	

Type	Sensing distance (m)	Type	Sensing distance (m)	Type	Sensing distance (m)
XUM8	0.3	XUK8AKSN	1	XUX8	2
		XUK8ARCT	0.75		
XUM8		**XUK8AKSN, XUK8ARCT**		**XUX8**	
40		46 and 48		54	

XUM●A: 11 x 34 x 20 (pre-cabled) or 11 x 43 x 20 (M8) XUM0A: 12 x 34 x 20 (pre-cabled) or 12 x 45 x 20 (M8)	18 x 50 x 50	31 x 92 x 77
●	●	●
–	–	–
–	–	–
IP 65, IP 67	IP 65	IP 65, IP 67
●	●	●
–	●	●
–	●	●
–	●	●
● configurable using switch and by programming (XUM0A)	● by programming (XUK0A and XUK8)	● by programming (XUX0A and XUX8)
–	● relay output	● relay output
●	●	–
●	–	–
–	●	●
–	–	●
M8 and M12 remote connectors available: please contact our Customer Care Centre.		

Photo-electric sensors
OsiSense XU Application
Fork and frame form

Recommended applications		**Detection of objects on small conveyors**	**Detection of labels on strip. Detection of sheet feed on printing machine**	**Detection on vibrating rail. Detection of transparent objects**	**Detection of transparent labels**
					
Format		Optical fork	Optical fork	Laser optical fork	Ultrasonic fork
Dimensions (w x h x d) in mm		Passageway: 30 to 180 Depth: 30, 60, 95	Passageway: 2 to 120 Depth: 42, 59, 95		18 x 47.3 x 92.5
Case		Metal	Metal	Metal	Metal
Sensing distance (mm) related to system	Diffuse with background suppression	–	–	–	–
	Diffuse	–	–	–	–
	Polarised reflex	–	–	–	–
	Reflex	–	–	–	–
	Thru-beam	2...180 *(2)*	2... 120 *(1) (2)*	2... 120 *(1) (2)*	3
Degree of protection		IP65, IP 67	IP 65	IP 65	IP 65
Supply	⎓	●	●	●	●
	∿	–	–	–	–
	≂	–	–	–	–
Output		PNP/NPN NO/NC	PNP/NPN *(3)* NO/NC *(4)*	PNP/NPN *(3)* NO/NC *(4)*	PNP and NPN NO/NC *(4)*
Connection	Pre-cabled	●	–	–	–
	Connector	●	●	●	●
	Screw terminals	–	–	–	–
Type reference		**XUVR● XUVA●**	**XUYFNEP● XUYFANEP●**	**XUYFLNEP● XUYFALNEP●**	**XUVU06**
Pages		56	58	60	62

(1) With or without teach mode, depending on model.
(2) Depending on model.
(3) Depending on wiring.
(4) By programming.

Detection of opaque labels, of different colours		Detection of opaque labels	Detection of flags in lifts and transtockers. Integrated amplifier	Material handling: detection and counting of objects being fed to or exiting a machine
				
Optical fork	Optical fork	Optical fork	Optical fork	Frame design
10 x 25 x 64	20 x 26 x 90	12 x 37.5 x 80	14 x 58 x 68	15 x 50 x 108 15 x 86 x 131 25 x 230 x 205/265/335
Plastic	Metal	Metal	Plastic	Metal
–	–	–	–	–
–	–	–	–	–
–	–	–	–	–
–	–	–	–	–
3	2	3 or 5 *(2)*	3	3, 6, 12,18, 25 *(2)*
IP 65	IP 65	IP 65	IP 54	IP 65
●	●	●	●	●
–	–	–	–	–
–	–	–	–	–
PNP and NPN NO/NC *(4)*	PNP and NPN NO/NC *(4)*	PNP and NPN NO/NC *(4)*	Solid-state PNP or NPN NO	PNP and NPN NO/NC *(3)*
–	–	–	●	–
●	●	●	–	●
–	–	–	–	–
XUVE	**XUVK**	**XUYFA98●**	**XUVH** **XUVJ**	**XUVF**
64	66	68	70	72

Photo-electric sensors
OsiSense XU Application

Recommended applications		Packaging			
		Colour mark readers			Luminescence sensors
		Detection of reference marks, contrasting colours and markings on packaging, printing, labelling machines, etc.	Detection of reference marks on packaging paper, tubes	Detection of reference marks, contrasting colours and markings on packaging, printing, labelling machines, etc.	Detection of invisible reference marks, markings, adhesives, varnishes, etc. Sensitive to the bluing agents generally present in inks, adhesives, varnishes, etc.
					
Format		Compact design	Fibre design	Compact design	Design 18
Dimensions (w x h x d) in mm		50 x 50 x 15	13 x 72 x 30	31 x 81 x 58	Ø 18, threaded M18 x 1 L: 82
Case		Plastic	Plastic	Metal	
Sensing distance (m) related to system	Diffuse with background suppression	–	–	–	–
	Diffuse	0.019	*(1)*	0.009	0.02
	Polarised reflex	–	–	–	–
	Reflex	–	–	–	–
	Thru-beam	–	–	–	–
Degree of protection		IP 65	IP 65	IP 67	IP 67
Supply	⎓	●	●	●	●
	∿	–	–	–	–
	⎓ ∿	–	–	–	–
Output		Solid-state (PNP or NPN)			Solid-state (PNP)
Connection	Pre-cabled	–	–	–	–
	Connector	●	●	●	●
	Screw terminals	–	–	–	–
Type reference		**XUKR**	**XUYDCF ●●966S**	**XURK**	**XU5M**
Pages		74	76	78	80

(1) Depending on fibres used.
(2) Depending on model.

Packaging				
Illumination sensors Verifying operation of indicator lights	**Detection of any transparent object** Bottles, flasks, containers, films, etc.			**For detection of colours, sorting** Recognises colours for sorting or checking parts
				
Fibre design	Design 18	Miniature design	Compact design, 50 x 50	Compact design
13 x 76.7 x 30	Ø 18, threaded M18 x 1 L: 64, 78 or 92	11 x 43 x 20	18 x 50 x 50	50 x 50 x 25
Plastic	Plastic or stainless steel *(2)*	Plastic	Plastic	Plastic
Sensing distance depending on fibre used	–	–	–	–
	–	–	–	0.020
	0...1.4	–	–	–
	–	0.1…2 (depending on reflector)	1.5	–
	–	–	–	–
IP 65	IP 65 IP 67	IP 67	IP 65	IP 65
●	●	●	●	●
–	–	–	–	–
–	–	–	–	–
PNP/NPN NO/NC (programmable)	Solid-state (PNP or NPN)	PNP/NPN NO/NC (programmable)	Solid-state (PNP or NPN)	
–	●	●	●	–
●	●	●	●	●
–	–	–	–	–
XUYAFL ●●966S	**XUBT**	**XUMT**	**XUKT**	**XUKC**
82	84	86	88	90

Photo-electric sensors
OsiSense XU Application

Recommended applications	Food processing		Assembly
	Stainless steel cylindrical sensor (grade 304 CU)	**Stainless steel case, grade 316 L**	**Diameter 8 metal range**
	For use in vicinity of food processing machinery		



Format		Design 18	Design 18	Compact design, 50 x 50	Design 8
Dimensions (w x h x d) in mm		Ø 18, threaded M18 x 1 L: 64...92	Ø 18, threaded M18 x 1 L: 62...88	50 x 50 x 23	Ø 8, threaded M8 x 1 L: 40
Case		Stainless steel	Stainless steel	Stainless steel	Metal
Sensing distance related to system	Diffuse with background suppression	0.12 m	–	3…550 mm	–
	Diffuse	0.3 m	0.10 m	–	0.05 m
	Polarised reflex	2 m	2 m	0.4…13 m	–
	Reflex	–	4 m	–	–
	Thru-beam	15 m	15 m	0…20 m	2 m
Degree of protection		IP 67, IP 69K	IP 67	IP 67, IP 69K	IP 65 *(2)* IP 67 *(2)*
Supply	⎓	●	●	●	●
	∼	–	–	–	–
	⎓ ∼	–	–	–	–
Output		Solid-state (PNP and NPN)	Solid-state (PNP and NPN)		Solid-state (PNP or NPN)
Connection	Pre-cabled	●	●	–	●
	Connector	●	●	●	●
	Screw terminals	–	–	–	–
Type reference		**XUB0S●**	**XU●N18**	**XUK●S**	**XUA**
Pages		92	94	98	102

Assembly	Conveying and assembly		
Detection of objects on conveyor and access control	**Miniature, laser with teach mode**	**Long range laser**	**Detection of objects on conveyor**
			
Miniature design	Miniature design	Compact design	Cylindrical design
20 x 32 x 13 10 x 40 x 13.5	12 x 32 x 20	23 x 50 x 50	250…900
Plastic	Plastic	PC Shock-resistant ABS	Aluminium and PA
0.015…0.08 m	20…60 mm 30…110 mm	5…800 mm	–
0.03…0.25 m	–	5…1200 mm	0…0.1 m
1 m	100…1000 mm	0.3…12 m	–
–	–	–	–
4 m	15 m	0…25 m	–
IP 65 IP 67	IP 67	IP 67 IP 69K	IP 50 (IP 65 on request)
●	●	●	●
–	–	–	–
–	–	–	–
PNP or NPN NO/NC *(1)*	PNP	PNP	Solid-state (PNP or NPN)
●	●	–	●
●	●	●	M8 and M12 remote connector (other connectors available on request)
–	–	–	–
XUY●●989	**XUY●●●929**	**XUK●LA●●**	**XUY●●●N●●●**
104	106	108	112

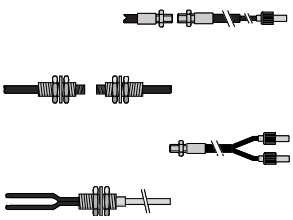
Photo-electric sensors
OsiSense XU Application

Recommended applications		**Material handling**			
		Laser	**Diffuse with analogue output**		**Laser**
			Measurement, servo control, position control, eccentricity monitoring, concentricity monitoring, etc.		Time of flight measurement
					
Format		Design 18	Compact design	Design 18	Design 90 x 90
Dimensions (w x h x d) in mm		Ø 18, threaded M18 x 1	27 x 85 x 61	Ø 18, threaded M18 x 1 L: 82	42 x 93 x 95
Case		Plastic or brass *(2)*	Plastic	Metal	ABS
Sensing distance (m) related to system	Diffuse with background suppression	–	–	–	–
	Diffuse	–	0.20…0.80	0.05…0.4	0.2…6
	Polarised reflex	–	–	–	0.2…30
	Reflex	–	–	–	–
	Thru-beam	0...100 with teach mode	–	–	–
Degree of protection		IP 67	IP 67	IP 67	IP 67
Supply	⎓	●	●	●	●
	∿	–	–	–	–
	⎓ or ∿	–	–	–	–
Output		PNP, NPN NO/NC by programming	Analogue (PNP)		Solid-state PNP (2 outputs) + analogue
Connection	Pre-cabled	●	–	–	–
	Connector	●	–	●	●
	Screw terminals	–	●	–	–
Type reference		**XUBL**	**XUJ**	**XU5M**	**XUE●AA2**
Pages		116	118	120	122

(1) Depending on model.

Material handling				Conveying
Thru-beam with high excess gain Detection of objects in harsh environments (smoke, dust, mist, etc.). Measuring opacity	**Laser transmission** Monitoring dimensions in series, monitoring roundness of a wheel	**Diffuse with background suppression, laser transmission** High precision, detection of any dark or shiny object, including small sized	**Diffuse with 2 channels using triangulation, with background suppression**	
				
Design 18	Compact design, 50 x 50	Compact design	Compact design	–
Ø 18, threaded M18 x 1 L: 82	17 x 50 x 50	18 x 60 x 60	18 x 60 x 60	29 x 95 x 60
Metal	Plastic	Plastic	Plastic	Plastic
–	–	Adjustable from 50 to 300 mm	Adjustable from 50 to 600 mm	–
–	0.04…0.06 0.045…0.085 0.08…0.3	–	–	1.5 or 4 *(1)*
–	–	–	–	6 or 10 *(1)*
–	–	–	–	–
50	–	–	–	●
IP 67	IP 67	IP 65	IP 65	IP 65 and IP 67
●	●	●	●	●
–	–	–	–	●
–	–	–	–	–
Solid-state (PNP) + analogue	Solid-state (PNP) + analogue	PNP and NPN NO/NC depending on wiring	PNP and NPN NO/NC programmable	PNP/NPN Relay NO/NC programmable
–	–	–	●	–
●	●	●	●	–
–	–	–	–	●
XU2M	**XUYP●●925**	**XUYPS1●**	**XUYPS2●**	**XUY● 952/954**
124	126	128	130	154

Photo-electric sensors
OsiSense XU Application

Recommended applications		Amplifier and fibre optics				
		Amplifier, teach mode	**Plastic fibres with end fittings**	**Glass fibres with end fittings**	**Ecofibre concept** Bare fibres and end fittings supplied separately for customer assembly	**Amplifier, teach mode or potentiometer**
						
Format		Fibre design	–	–	–	Fibre design
Dimensions (w x h x d) in mm		10 x 40 x 65 (amplifier)	Length *(1)*: 1 m, 2 m or 10 m	Length *(1)*: 0.60 m, 1 m, 1.5 m or 2 m	Length *(1)*: 1 m, 10 m or 50 m	13 x 72.2 x 30 13 x 76.7 x 30
Case		Plastic	Plastic	Glass	Plastic	Plastic
Sensing distance (m) related to system	Diffuse with background suppression	–	–	–	Sensing distance: 70 mm to 4000 mm *(1)*	Sensing distance depends on fibre used
	Diffuse	0.006 to 0.095 *(2)*	6 to 95 *(1)*	80		
	Polarised reflex	–	–	–		
	Reflex	–	–	–		
	Thru-beam	0.050 to 2 *(2)*	30 to 2500 *(1)*	80 or 200 *(1)*		
Degree of protection		IP 65 (amplifier) IP 64 (fibres)	IP 64, IP641 *(1)* IP 65, IP651 *(1)*	–	–	IP 65
Supply	⎓	●	–	–	–	●
	∼	–	–	–	–	–
	⎓ ∼	–	–	–	–	–
Output		Solid-state (PNP or NPN) *(3)* NO or NC (programmable)	–	–	–	PNP/NPN NO/NC depending on wiring or programmable depending on model
Connection	Pre-cabled	●	–	–	–	●
	Connector	●	–	–	–	●
	Screw terminals	–	–	–	–	–
Type reference		**XUDA**	**XUF**	**XUYFV●**	**XUYA●** **XUYFP●**	**XUY AF●966** **AF●946**
Pages		132	134	142	148	150

(1) Depending on model.
(2) Depending on fibre.
(3) Depending on wiring.
*(4) With audible signalling (buzzer): reference **XUJB** (see page 160).*

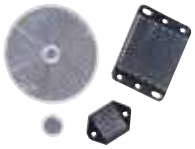
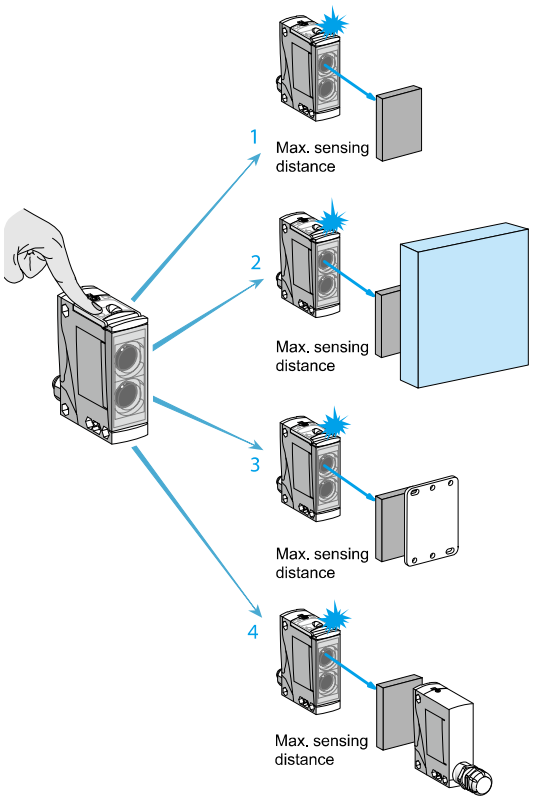
Building, tertiary sectors		Accessories		
2-wire AC or DC supply	**Motion detection, relay output. With audible signalling (buzzer)** *(4)*	**Reflectors**	**Fixing brackets, clamps and kits**	**Protective covers**
				
Design 18	Compact design			
Ø 18, threaded, M18 x 1 L: 82...110	18 x 50 x 50 (XUK1AR) 27 x 85 x 61 (XUJB)			
Metal	Plastic			
0.12	–			
0.4	–			
2	–			
–	7 with 50 x 50 reflector (XUK1AR) 6 (XUJB)			
15	–			
IP 67	IP 65 (XUK1AR) IP 40 (XUJB)			
–	–			
–	–			
●	●			
Solid-state	1 NO/NC programmable relay (XUK1AR) 1 NO relay (XUJB)			
●	● (XUK1AR)			
●	–			
–	● (XUJB)			
XU●M18	**XUK1AR, XUJB** *(4)*	**XUZC●, XUZB●**	**XUZA●, XUZB●, XUZE●, XUZX●, XULZ●, XUZM●**	**XUZD●●, XUJZ01**
156	158, 160	162	164	164

Photo-electric sensors

OsiSense XU

Multimode: Simplicity through innovation



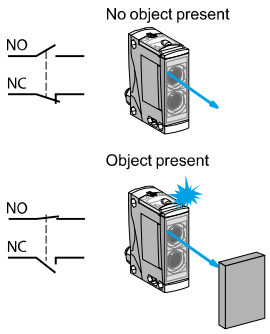
Principle

In proposing multimode products, Telemecanique Sensors offers simplicity through innovation.

■ With the multimode function, a single product meets all the requirements for optical detection.
Effectively, by simply pressing the “Teach mode” button, the sensor automatically acquires optimum configuration for the application requirements

1 Diffuse system detection of object.
2 Diffuse system, with background suppression, detection of object.
3 Reflex system (reflector accessory) detection of object.
4 Thru-beam system, on optical receiver (transmitter accessory for thru-beam use), detection of object.

■ In addition to this, a multimode sensors also means:
□ improved performance:
maximum sensing distance guaranteed and optimised for each application,
□ simplified use:
intuitive setting-up plus less and easier maintenance,
□ lower costs:
the number of references is divided by 10 and, consequently, selection and supply is simplified and storage costs significantly reduced,
□ guaranteed maximum productivity.

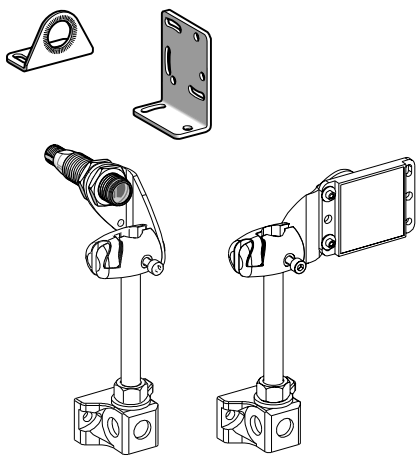


Straightforward NO or NC output

■ Irrespective of the detection mode used (diffuse, reflex, thru-beam, etc.), the outputs become either NO or NC *(1)*.

■ A multimode sensor means immediate and intuitive setting-up that is accessible to all.

(1) The sensor is supplied in NO configuration. NO or NC selection is performed by simply pressing the Teach mode button.



Fixing accessories

A complete range of inexpensive mounting accessories (clamps, traditional or 3D brackets, etc.) is available that provides solutions for all installation and adjustment problems

Photo-electric sensors

OsiSense XU

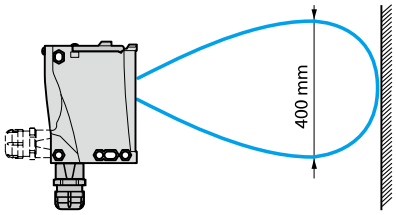
Multimode: Simplicity through innovation

Design

	Cylindrical 18	Miniature	Compact 50 x 50	Compact 92 x 77
				

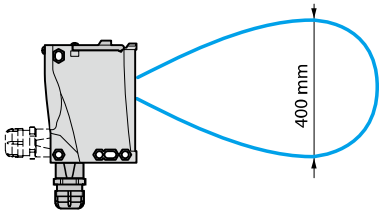
Dimensions (w x h x d) in mm		M18 x 64	12 x 34 x 20	18 x 50 x 50	30 x 92 x 77
Maximum sensing distance in m	Without accessory with background suppression	0.12	0.10	0.28	1.3
	Without accessory	0.4	0.55	1.2	3
	With polarised reflector	3	4	5.7	15
	With thru-beam accessory	20	14	35	60
Supply	Solid-state output	■	■	■	■
	Relay output	–	–	■	■
Connection	Pre-cabled	■	■	■	–
	Connector	■	■	■	■
	Screw terminals	–	–	–	■
Sensor type		**XUB0**	**XUM0**	**XUK0**	**XUX0**
Pages		32	38	44	52

Sensing distances (see table above)



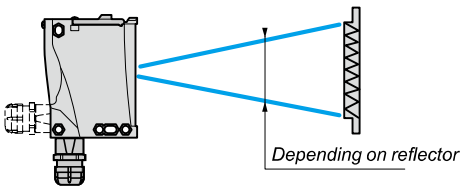
Sensing distance without accessory with background suppression

■ Without accessory, the multimode sensor detects objects irrespective of their colour or background.
■ A clean environment is recommended



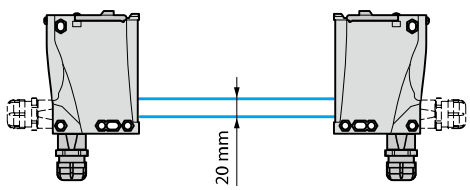
Sensing distance without accessory

■ Beyond the sensing distance with background suppression, the same multimode sensor without accessory detects objects but may be influenced by the backgrounds and colour of the objects to be detected.



Sensing distance with polarised reflector

■ By installing a reflector opposite, the same multimode sensor detects objects irrespective of their shininess and colour.
■ The size of the reflector must be smaller than that of the object to be detected.
■ The larger the area of the reflector the longer the sensing distance.

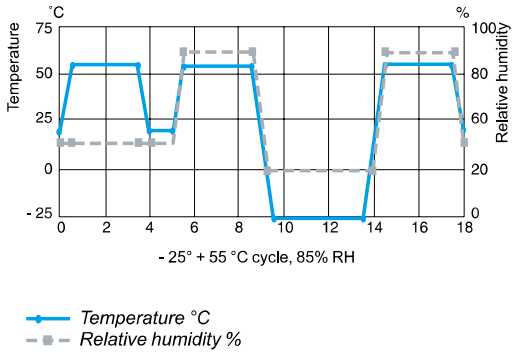


Sensing distance with thru-beam transmitter accessory

■ After setting-up and connecting a thru-beam transmitter accessory opposite, the same multimode sensor detects objects irrespective of their shininess, colour or background.
■ The detection distance is a maximum.
■ The sensor and the thru-beam transmitter must be carefully aligned.
■ Good resistance to accumulation of dirt and dust.

Photo-electric sensors
OsiSense XU

Standards and certifications
Parameters related to the environment



Recommendation

The sensors detailed in this catalogue are designed for use in standard industrial applications relating to presence detection.
These sensors do not incorporate the required redundant electrical circuit enabling their usage in safety applications.
For safety applications, please refer to our “Safety solutions using Preventa” catalogue.

Quality control

Our photo-electric sensors are subject to special precautions in order to guarantee their reliability in the most arduous industrial environments.

■ **Qualification**

□ The product characteristics stated in this catalogue are subject to a **qualification procedure** carried out in our laboratories.

□ In particular, the products are subjected to **climatic cycle** tests for 3000 hours whilst powered-up to verify their ability to maintain their characteristics over time.

■ **Production**

□ The electrical characteristics and sensing distances at both ambient temperature and extreme temperatures are 100% checked.

□ Products are randomly selected during the course of production and subjected to **monitoring tests** relating to all their characteristics.

■ **Customer returns**

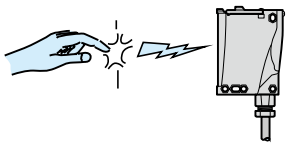
□ If, in spite of all these precautions, defective products are returned to us, they are subject to **systematic analysis** and **corrective actions** are implemented to eliminate the risks of the fault recurring.

Immunity to ambient light

■ OsiSense XU photo-electric sensors use the pulsed light principle. This provides a high degree of immunity to spurious light that conforms to standard **IEC 60947-5-2**.

Resistance to electromagnetic interference

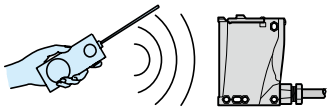
The photo-electric sensors are tested in accordance with the recommendations of the standard IEC 60947-5-2



■ Electrostatic discharges

IEC/EN 61000-4-2

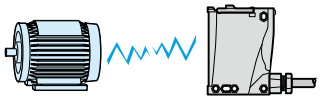
≂ 15 kV version, level 4
⎓ 8 kV version, level 3



■ Radiated electromagnetic fields (electromagnetic waves)

IEC/EN 61000-4-3

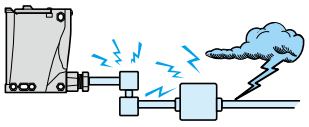
10 V/metre, level 3



■ Fast transients in salvos (motor start/stop interference)

IEC/EN 61000-4-4

2 kV, level 4



■ Impulse voltages, lightning

IEC 60947-5-2

≂ 2.5 kV version
⎓ 1 kV version

Mechanical shock resistance

The sensors are tested in accordance with standard IEC 60068-2-27, 30 gn, duration 11 ms.

Vibration resistance

The sensors are tested in accordance with standard IEC 60068-2-6,
7 gn, amplitude ± 1.5 mm, f = 10…55 Hz.

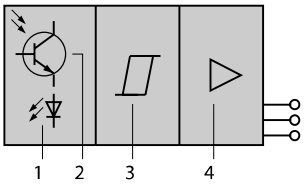
Resistance to chemicals in the environment

■ Owing to the very wide range of chemicals encountered in industry, it is very difficult to give general guidelines common to all sensors.

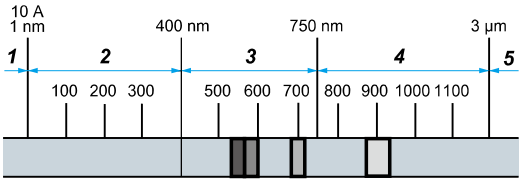
■ To ensure lasting efficient operation, it is essential that any chemicals coming into contact with the sensors will not affect their casing and, in doing so, prevent their reliable operation (please refer to the characteristics pages for the various sensors).
In all cases, the materials selected (see product characteristics) provide satisfactory compatibility in most industrial environments (for further information, please consult our Customer Care Centre).

Photo-electric sensors
OsiSense XU

Principle of optical detection

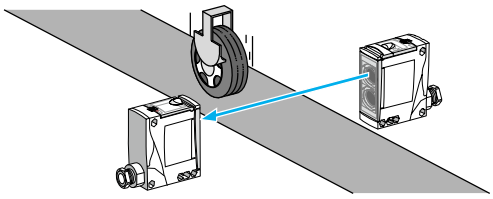


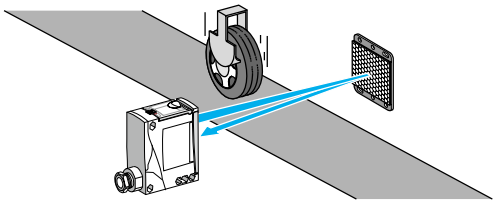
1 *Light beam transmitter*
2 *Light beam receiver*
3 *Signal processing stage*
4 *Output stage*

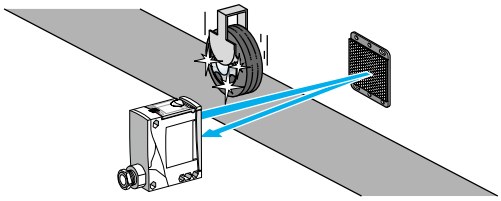


1 *X rays,* ***2*** *Ultraviolet,* ***3*** *Visible light,*
4 *Near infrared,* ***5*** *Far infrared*

Detection systems







Composition of a photo-electric sensor

A photo-electric sensor basically comprises a light beam transmitter (light-emitting diode) and a light-sensitive receiver (photo-transistor).
A light-emitting diode is an electronic semi-conductor component that emits light when an electric current flows through it. This light can be visible or invisible, depending on the transmission wavelength.

Detection occurs when an object enters the transmitted light beam and, in so doing, affects the intensity of the light at the receiver. As the light intensity at the receiver decreases a point is reached whereby the output of the sensor changes state.

Light spectrum

Depending on the model and application requirements, the transmission beam is either non visible infrared (most common case) or ultraviolet (detection of luminescent materials). It may also be visible red or green (colour mark reading etc.) and laser red (long sensing distance and short focal length).

Modulation

The advantage of LEDs is their very fast response. To render the system insensitive to ambient light, the current flowing through the LED is modulated so as to produce a pulsed light transmission.
Only the pulsed signal will be used by the photo-transistor and processed to control the load.

Thru-beam system or multimode with thru-beam accessory

■ **Advantages**
□ Long sensing distance(up to 60 m).
□ Very precise detection, high repeat accuracy.
□ Detection not affected by colour of object.
□ Good resistance to difficult environments (dust, grime, etc.).
■ **Drawbacks**
□ 2 units to be wired.
□ The object to be detected must be opaque.
□ Precise alignment required, which can be difficult since the sensor transmits in the infrared range (invisible).

■ **Operating precautions**
□ When several sensors are used, care must be taken to ensure that no sensor is disrupted by another sensor (e.g. alternate mounting of transmitter/receiver etc.).

Advantages of multimode sensor with thru-beam accessory
■ Easy alignment
□ The sensor transmits in the visible red range during the alignment phase.
□ 3 LEDs providing setting-up assistance.

Polarised reflex system or multimode with reflector accessory

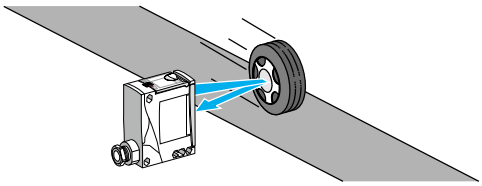
■ **Advantages**
□ Medium sensing distance (up to 15 m).
□ Precise detection.
□ Only one unit to be wired.
□ Detection not affected by colour of object.
□ Visible red beam transmission.
■ **Drawbacks**
□ Precise alignment required.
□ The object to be detected must be opaque and larger than the reflector.

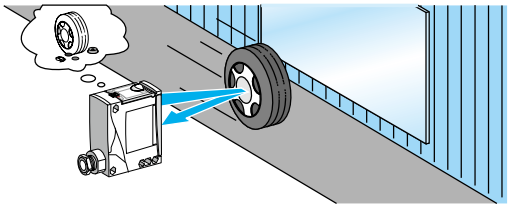
■ **Operating precautions**
□ When several sensors are used, they must be aligned in such a manner that no sensor is disrupted by another sensor.
□ For short distance detection use a reflector with large trihedrons, type XUZC24.
□ For long distance detection use a reflector XUZC50 or XUZC80.
□ To increase the sensing distance use reflector XUZC100.
□ If reflective tape is used, use rolls of tape XUZB1 or XUZB15 which are specially adapted for polarised reflex systems.

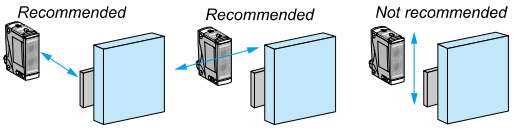
Advantages of multimode sensor with reflector accessory
■ Easy alignment
□ 3 LEDs providing setting-up assistance.
□ The anti-interference function enables 2 sensors to be used without specific alignment precautions.
■ Semi-transparent objects can be detected by using the teach mode function.

Photo-electric sensors
OsiSense XU

Detection systems *(continued)*

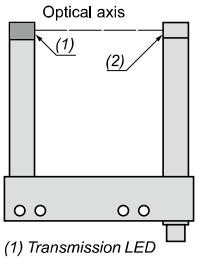




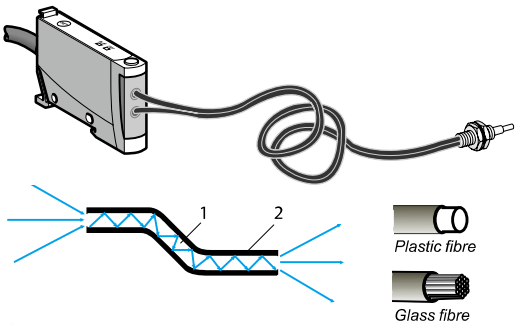


Positioning recommendations for sensor with background suppression

Specific systems



(1) Transmission LED
(2) Output LED



1 *Core*
2 *Sheath*

Diffuse system or multimode

■ **Advantage**
□ Only one unit to be wired.
■ **Drawbacks**
□ Short sensing distance.
□ Sensitivity to object or background colour differences.
□ Object sighting line difficult since the sensor transmits in the infrared range (invisible).
■ **Operating precautions**
□ When several sensors are used, they must be aligned in such a manner that no sensor is disrupted by another sensor.
■ **Advantages of a multimode sensor**
□ Easy alignment:
- the sensor transmits in the visible red range during the alignment phase,
- 3 LEDs providing setting-up assistance,
- the anti-interference function enables 2 sensors to be used without specific alignment precautions.

□ Refined detection: the position of the object can be detected using the teach mode.

Diffuse, with or without background suppression, system or multimode

■ **Advantages**
□ Only one unit to be wired.
□ Detection not affected by colour of object or background.
■ **Drawbacks**
□ Short sensing distance.
□ Object sighting line difficult since the sensor transmits in the infrared range (invisible).
■ **Operating precautions**
□ Detection can be affected by the object's direction of movement. To overcome this phenomenon (the hat effect), it is recommended that the sensor is mounted so that the object simultaneously breaks the beam of both lenses.
□ When several sensors are used, they must be aligned in such a manner that no sensor is disrupted by another sensor.
■ **Advantages of a multimode sensor**
□ Easy alignment:
- the sensor transmits in the visible red range during the alignment phase,
- 3 LEDs providing setting-up assistance,
- the anti-interference function enables 2 sensors to be used without specific alignment precautions,
- the hat effect is minimised using the background teach mode.

□ Refined detection: the position of the object can be detected using the teach mode.

Optical forks

■ Constructed from metal, the optical fork is a robust sensor that is particularly suited to conveying and packaging applications and detection of labels.
■ Rugged optical detection device **not requiring alignment** in thru-beam mode.
■ The beam from the transmitter limb is transmitted to the receiver limb. Due to its construction, **only one connection** is required as opposed to two for a traditional thru-beam function.
■ The transmission sources are LEDs of various technologies:
□ Red for much improved efficiency during adjustment and maintenance
□ Red laser for detection of transparent materials or very small parts
□ Infrared, particularly for optical frames
□ Ultrasonic for detection of transparent labels (clear on clear)
■ The beam is adjustable or fixed depending on the version. Adjustment enables the sensitivity to be altered and, therefore, detection of small parts down to dimensions of less than tenths of millimetres (minimum size of detectable object: 0.05 mm).
■ The high switching frequency (from 4 kHz up to 25 kHz) is very useful in industrial applications involving high operating rates.

Fibre optics

■ The fibre acts as a light conductor. Light rays entering the fibre at a certain angle are conveyed to the required location, with minimum loss.
■ Separate amplifier.
□ Size kept to minimum.
□ This system enables detection of very small objects (approximately 1 mm).
□ And, detection is very precise.

Plastic fibres
The core of the fibre is flexible plastic (PMMA). In general, there is only a single fibre of diameter 0.25 to 1 mm, depending on the model.
□ Fibres are used with amplifiers transmitting red light.
□ Minimum bend radius:
- 10 mm for fibres with 0.25 mm diameter core,
- 25 mm for fibres with 1 mm diameter core.

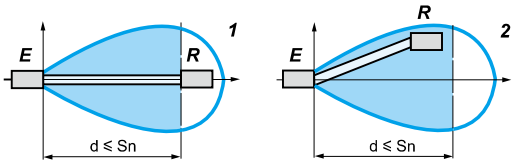
■ Advantages: fibres can be cut to the required length.

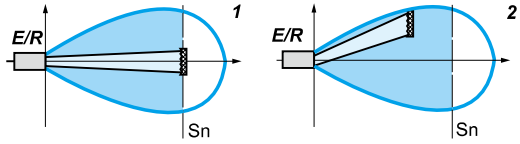
Glass fibres
□ The core of the fibre is silica. For maximum flexibility, each fibre comprises numerous strands that are approximately 50 µ in diameter.
□ Fibres are used with amplifiers transmitting infrared or red light.
□ Minimum bend radius:
- 10 mm with plastic sheath,
- 90 mm with stainless steel sheath.

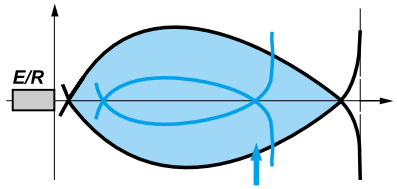
■ **Advantages**
□ Fibres suitable for use at high temperatures (250 °C).
□ Fibres with stainless steel sheath provide protection against mechanical impact and crushing.

Photo-electric sensors
OsiSense XU

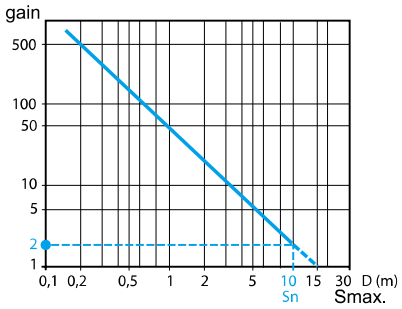
Detection curves



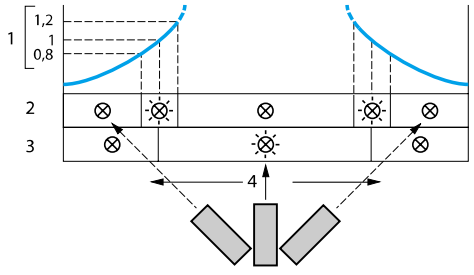




Excess gain



Optical alignment aid



Detection distance using reflector

Thru-beam system

■ The ▭ zone indicates the positioning tolerance of the receiver.
■ The ▭ zone represents the usable sensing zone of the system. Any opaque object entering this zone breaks the beam and causes the sensor's output to change state.
1 *Ideal detection*
2 *Acceptable detection*
T = *transmitter*
R = *receiver*

Polarised reflex system

■ The ▭ zone indicates the positioning tolerance of the reflector.
■ The ▭ zone represents the usable sensing zone of the system. Any opaque object entering this zone breaks the beam and causes the sensor's output to change state.
1 *Ideal detection*
2 *Acceptable detection*
T = *transmitter*
R = *receiver*

Diffuse, with or without background suppression, system

■ The ▭ zone represents the sensor's sensitivity zone.
All of this zone is usable: any object that is adequately reflective entering this zone, in the direction of the arrow, will cause the sensor's output to change state. The black line corresponds to a light colour surface and the blue line to a darker colour surface.
■ A test using the object to be detected will determine the zone of sensitivity in relation to its reflection coefficient.
——— White 90% object
——— Grey 18% object
For specific aspects of diffuse systems see page 18.
T = *transmitter*
R = *receiver*

Operating margin

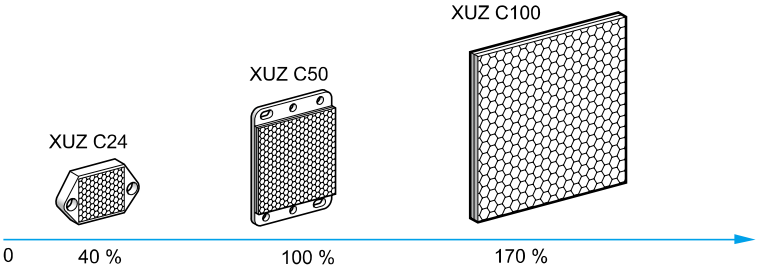
To ensure correct operation of a sensor in spite of environmental constraints, the sensors feature an operating margin.
This margin can be expressed in terms of excess gain, which is the ratio:
Excess gain = Signal level received/Signal required for switching.

For all OsiSense XU sensors
■ The **nominal sensing distance Sn** is defined as the sensing distance with an **excess gain of 2**, i.e. the sensing distance for which the sensor receives twice as much light energy as it strictly needs to switch it.
■ The **maximum sensing distance** is defined as the sensing distance with an **excess gain of 1**. It corresponds to the maximum detection value.

The use of the sensor at the nominal sensing distance ensures the sensor's correct operation in normal operating conditions.

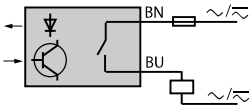
In extreme conditions, refer to the following setting-up recommendations:
- clean environment: work at nominal sensing distance Sn,
- slightly polluted environment: work at sensing distance Sn/2,
- moderately polluted environment: work at sensing distance Sn/4,
- heavily polluted environment: preferably use multimode sensors with thru-beam accessory (or the thru-beam system) with a sensing distance Sn/10.

A red LED assists setting-up by illuminating when optimum alignment of the sensor is achieved.
1 *Signal level*
2 *Red LED, on ⊛, off ⊗*
3 *Green LED, on ⊛, off ⊗*
4 *Optimum alignment*



Detection distance depending on reflector size

Outputs



2-wire technique ∼ or ⎓

■ **Specific aspects**

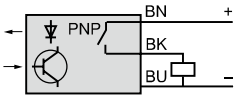
These sensors are wired in series with the load to be switched.
As a consequence, they are subject to:
□ A residual current in the open state (current flowing through the sensor in the "open" state),
□ A voltage drop in the closed state (voltage drop across the sensor's terminals in the "closed" state).

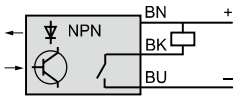
■ **Advantages**

□ Only 2 wires to be connected. They can be wired in series in the same way as mechanical limit switches.
□ For use on 2-wire ⎓, they can be connected to either positive (PNP) or negative (NPN) logic PLC inputs.
□ No risk of incorrect connections.

■ **Operating precautions**

□ Check the possible effects of residual current and voltage drop on the actuator or input connected.
□ These sensors do not incorporate overload or short-circuit protection and therefore, it is essential to connect a 0.4 A "quick-blow" fuse in series with the load.





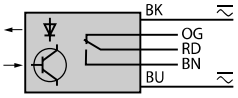
3-wire technique ⎓

■ **Specific aspects**

□ These sensors comprise 2 wires for the DC supply and a 3rd wire for the output signal.
□ PNP type: switching the positive side to the load.
□ NPN type: switching the negative side to the load.

■ **Advantages**

□ No residual current, low voltage drop.



5-wire technique ∼ or ⎓, relay output

■ **Specific aspects**

□ Sensors incorporating output relay. The supply and output circuits are electrically separate.

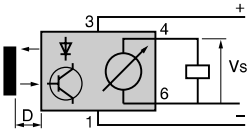
■ **Advantages**

□ ∼ or ⎓ supply with a wide voltage range.
□ High breaking capacity (approximately 3 A).
□ Direct control of a simple automation system.
□ Availability of a NC (normally closed) contact and a NO (normally open) contact.
□ The sensor/relay contact galvanic isolation is 1500 to 2500 V, depending on the model.

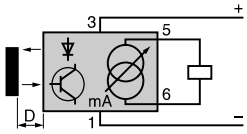
■ **Operating precautions**

□ Low switching frequency. Check that it is suitable for the application.
□ Limited service life of relay. Check that it is suitable for the application.

1



2



Analogue technique

■ **Specific aspects**

There are two output configurations:
□ Voltage output: the output voltage varies in proportion to the distance between the sensor and the object to be detected.
□ Current output: the output current varies in proportion to the distance between the sensor and the object to be detected.

■ **Advantage**

□ Availability of a physical item of data proportional to the distance between the sensor and the object to be detected.

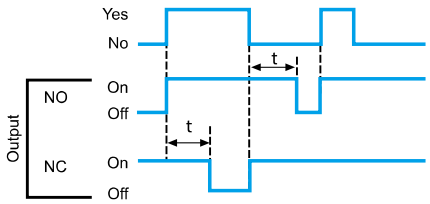
■ **Operating precautions**

□ Refer to the detailed descriptions of the sensor to assess the relative influence of the colour of the object to be detected.

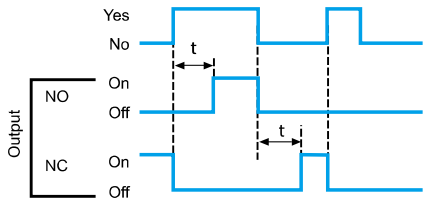
1 *Voltage output*
2 *Current output*

Photo-electric sensors
OsiSense XU

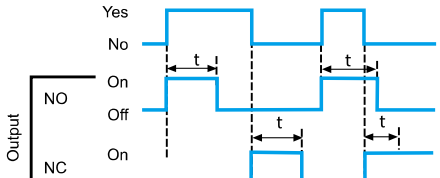
Outputs *(continued)*



Time delay on beam break



Monostable



Output functions

In the past, the output functions of photo-electric sensors were always governed by the "light/dark" principle, i.e. the output would be activated on light being received for "light" switching and the output would be activated on light not being received for "dark" switching.
This called for fastidious programming specific to each detection mode.

Now, the output functions of the OsiSense XU range of photo-electric sensors are in phase with the language of the automation system engineer, i.e. NO (normally open) or NC (normally closed).

■ **Advantages**

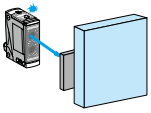
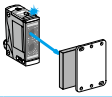
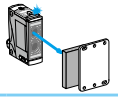
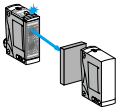
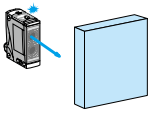
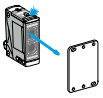
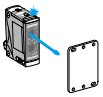
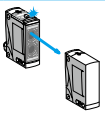
□ NO output (or NO programming for multimode sensors): irrespective of the detection mode, the output of the sensor is activated when the object to be detected is present.

□ NC output (or NC programming for multimode sensors): irrespective of the detection mode, the output of the sensor is activated when the object to be detected is not present.

■ **Advantages of multimode sensors**

By default, the output is NO programmed, i.e. the output of the sensor is activated when the object to be detected is present.

□ By pressing the teach button, the output can programmed to NC, i.e. the output of the sensor is activated when the object to be detected is not present.

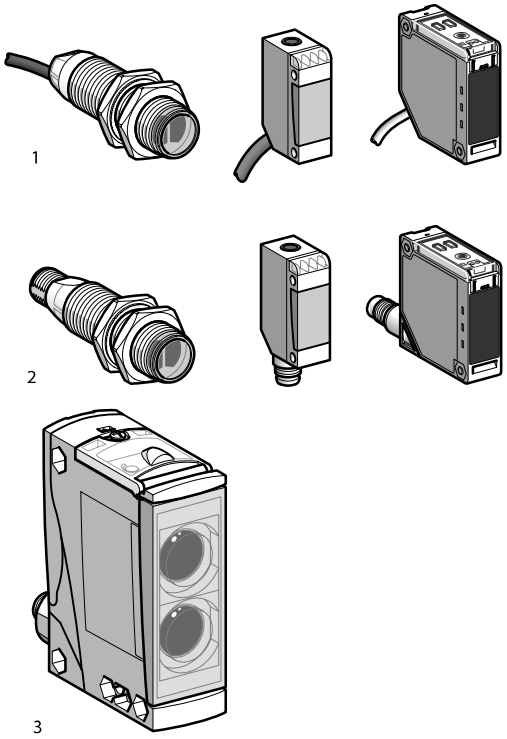
System		NO output or NO programming	Yellow LED	NC output or NC programming	Yellow LED
	Object present				
Diffuse		Activated	On ☼	Not activated	Off ⊗
Diffuse with background suppression		Activated	On ☼	Not activated	Off ⊗
Reflex		Activated	On ☼	Not activated	Off ⊗
Polarised reflex		Activated	On ☼	Not activated	Off ⊗
Thru-beam		Activated	On ☼	Not activated	Off ⊗
	No object present				
Diffuse		Not activated	Off ⊗	Activated	On ☼
Diffuse with background suppression		Not activated	Off ⊗	Activated	On ☼
Reflex		Not activated	Off ⊗	Activated	On ☼
Polarised reflex		Not activated	Off ⊗	Activated	On ☼
Thru-beam		Not activated	Off ⊗	Activated	On ☼

Output signal time delay

■ Certain sensor models (XUK, XUX and XUD) incorporate a time delay output.
■ These time delays enable simple automation systems to be established.
■ There are three types of time delay:
□ Time delay on beam make (ON delay).
□ Time delay on beam break (OFF delay).

Photo-electric sensors
OsiSense XU

Connections



All our sensors are available either in pre-cabled version (except XUX; screw terminal with cable gland version) or connector version.
The connectors used are:

M12 (4-pin)

M8 (4-pin)

1/2" 20UNF (3-pin)

■ **Types of connection**

1 *Factory fitted moulded cable: good protection against splashing liquids.*
2 *Connector: easy installation and maintenance.*
3 *Screw terminals: flexibility, cable runs to required length.*

■ **Wiring advice**

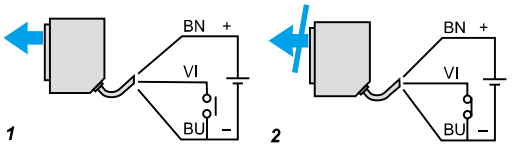
□ Length of cable: no limitation up to 200 m or up to a line capacitance of < 0.1 µF (characteristics of sensors remain unaffected). In this case, it is important to take into account the voltage drop on the line.

□ Separation of control and power circuit wiring: the sensors are immune to electrical interference encountered in normal industrial conditions. Where extreme conditions of electrical "noise" could occur (motors etc.), it is advisable to protect against transients in the normal way:
- suppress interference at source and filter the power supply,
- separate power and control wiring from each other,
- ensure the HF equipotentiality of the site,
- limit the length of cable,
- connect the sensor with supply switched off.

□ Dust and damp protection of connections: the level of dust and damp protection depends on how carefully the cable glands or connectors are tightened. To efficiently protect the sensors from dust and damp, select the correct diameter cable for the cable gland used.

Cable gland	Diameter of cable	
	Minimum	Maximum
9P	6	8
11P	8	10
13P	10	12
ISO 16	7	10
ISO 20	10	12

Complementary functions



Diagnostics, beam break test

A test input enables the transmitted beam to be broken in order to verify that the output of the sensor changes state.
Fault diagnostics regarding correct operation of the sensor can therefore be carried out.

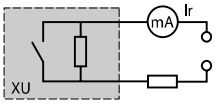
1 *Beam made*
2 *Beam broken*
VI: test input for breaking transmitted beam.

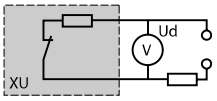
Verification of correct operation

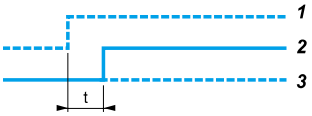
In the event of dirty lenses (reflectors), an excessively polluted atmosphere or a slight disturbance of optical alignment (mechanical impact on support), the level of light energy received by the sensor will decrease until it ceases to operate.
To overcome this problem, all our products incorporate:
- a red alarm LED,
- an alarm output, for connection in the automation system, to warn the operator that the operation of the sensor is stable but close to its limits (applies to sensors XUK, XUX, XUD).

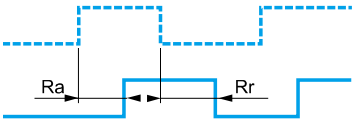
Photo-electric sensors
OsiSense XU

Specific aspects of electronic sensors









Terminology

Residual current (Ir)
□ The residual current (Ir) corresponds to the current flowing through the sensor when in the "open" state.
□ Characteristic of 2-wire type sensors.

Voltage drop (Ud)
□ The voltage drop (Ud) corresponds to the voltage drop at the sensor's terminals when in the "closed" state (value measured at nominal current rating of sensor).
□ Characteristic of 2-wire type proximity sensors.

First-up delay
The first-up delay corresponds to the time (t) between the connection of the power supply to the sensor and its fully operational state.
1 *Supply voltage U on*
2 *Sensor operational at state 1*
3 *Sensor at state 0*

Response time
□ Response time (Ra): the time delay between the object to be detected entering the sensor's operating zone and the subsequent change of output state. This parameter limits the speed and size of the object.
□ Recovery time (Rr): the time delay between an object to be detected leaving the sensor's operating zone and the subsequent change of output state. This parameter limits the interval between successive objects.

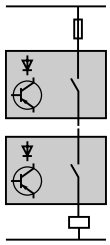
Power supplies

Sensors for AC circuits (∿ and ⎓ models)
Check that the voltage limits of the sensor are compatible with the nominal voltage of the AC supply used.

Sensors for DC circuits (⎓ models)
■ DC source: check that the voltage limits of the sensor and the acceptable level of ripple are compatible with the supply used.
■ AC source (comprising transformer, rectifier, smoothing capacitor): the supply voltage must be within the operating limits specified for the sensor.
□ Where the voltage is derived from a single-phase AC supply, the voltage must be rectified and smoothed to ensure that:
- the peak voltage of the DC supply is lower than the maximum voltage rating of the sensor. Peak voltage = nominal voltage x $\sqrt{2}$
- the minimum voltage of the supply is greater than the minimum voltage rating of the sensor, given that:
$\Delta V = (I \times t)/C$
ΔV = max. ripple: 10% (V),
I = anticipated load current (mA),
t = period of 1 cycle (10 ms full-wave rectified for a 50 Hz supply frequency),
C = capacitance (µF).
□ As a general rule, use a transformer with a lower secondary voltage (Ue) than the required DC voltage (U).

Example: ∿ 18 V to obtain ⎓ 24 V, ∿ 36 V to obtain ⎓ 48 V. Fit a smoothing capacitor of 400 µF minimum per sensor, or 2000 µF minimum per Ampere required.

Setting-up



Connection in series

2-wire type sensors

■ The following points should be taken into account:

□ Series wiring is only possible using sensors with wide voltage limits.

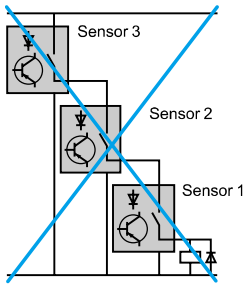
Based on the assumption that each sensor has the same residual current value, each sensor, in the open state, will share the supply voltage, i.e.

$$U\ sensor = \frac{U\ supply}{n\ sensors}$$

U sensor and U supply must remain within the sensor's voltage limits.

□ If only one sensor in the circuit is in the open state, it will be supplied at a voltage almost equal to the supply voltage.

□ When in the closed state, a small voltage drop is present across each sensor. The resultant loss of voltage at the load will be the sum of the individual voltage drops and therefore, the load voltage should be selected accordingly.



3-wire type sensors

This connection method is not recommended.

■ Correct operation of the sensors cannot be assured and, if this method is used, tests should be made before installation.

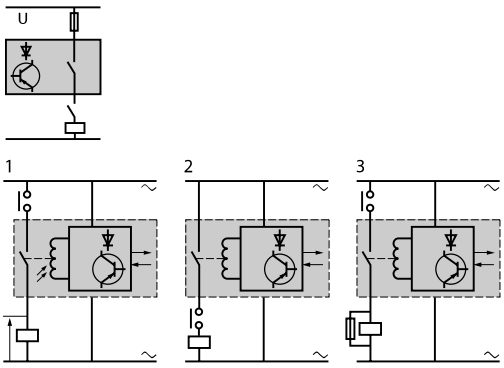
■ The following points should be taken into account:

□ The first sensor carries the load current in addition to the no-load current consumption values of the other sensors connected in series. For certain models, this connection method is not possible unless a current limiting resistor is used.

□ When in the closed state, a small voltage drop is present across each sensor. The load should therefore be selected accordingly.

□ As sensor 1 closes, sensor 2 does not operate until a certain time (t) has elapsed (corresponding to the first-up delay) and likewise for the following sensors in the sequence.

□ The use of "flywheel" diodes is recommended when an inductive load is being switched.



Wiring sensors to devices with mechanical contact

2 and 3-wire type sensors

■ The following points should be taken into account:

□ When the mechanical contact is open, the sensor is not supplied.

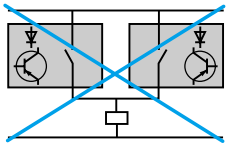
□ When the contact closes, the sensor does not operate until a certain time (t) has elapsed (corresponding to the first-up delay).

■ In scheme ***1***, as the external contact opens, the voltage transient caused by the breaking of the inductive load will appear inside the sensor and, if greater than the recommended max. insulation voltage, may cause a "flashover" within the sensor.

□ The return path of this voltage will be back to one line of the supply, through the sensor, and should "flashover" occur anywhere on the printed circuit board, severe damage could occur.

□ It is therefore recommended to use schemes ***2*** or ***3***.

Connection in parallel



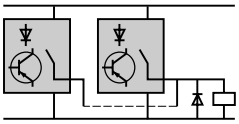
2-wire type sensors

This connection method is not recommended.

■ Should one of the sensors be in the closed state, the sensor in parallel will be "shorted-out" and no longer supplied. As the first sensor passes into the open state, the second sensor will become energised and will be subject to its first-up delay.

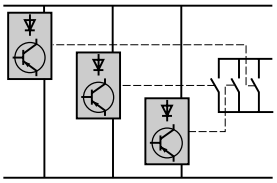
■ This configuration is only permissible where the sensors will be working alternately.

■ This method of connection can lead to irreversible damage of the units.



3-wire type sensors

■ No specific restrictions. The use of "flywheel" diodes is recommended when an inductive load (relay) is being switched.



Wiring sensors to devices with mechanical contact

2 and 3-wire type sensors

■ No specific restrictions.

□ For these sensors, the supply and output circuits are electrically separate.

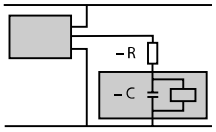
□ The sensor/relay contact galvanic isolation is 1500 to 2500 V, depending on the model.

□ The maximum voltage, depending on the model, across each contact is ∼ 250 V.

Setting-up precautions *(continued)*

AC supply

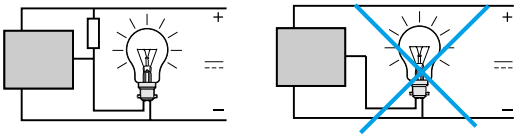
■ **2-wire type sensors cannot be connected directly to an AC supply.**
□ This would result in immediate destruction of the sensor and considerable danger to the user.
□ An appropriate load (refer to the instruction sheet supplied with the sensor) must always be connected in series with the sensor.



Capacitive load (C > 0.1 µF)

■ On power-up, it is necessary to limit (by resistor) the charging current of the capacitive load C.
□ The voltage drop in the sensor can also be taken into account by subtracting it from the supply voltage for the calculation of R.

$$R = \frac{U\ (supply)}{I\ max.\ (sensor)}$$



Load comprising an incandescent lamp

■ If the load comprises an incandescent lamp, the cold state resistance can be 10 times lower than the hot state resistance. This can cause very high current levels on switching. Fit a pre-heat resistor in parallel with the sensor.

$R = \frac{U^2}{P} \times 10$, U = supply voltage and P = lamp power

Photo-electric sensors
OsiSense XU

Fast trouble shooting guide

Problem	Possible causes	Remedy
The sensor's output will not change state when an object enters the operating zone	On multimode sensor: setting-up error (detection mode programming)	■ Use the detection mode display option. After a RESET, follow the environment teach mode procedure.
	Output stage faulty or complete failure of the sensor (in either case, the sensor must be replaced), or the short-circuit protection has tripped.	■ Check that the sensor is compatible with the supply being used. ■ Check the load current characteristics: □ if load current I ≥ maximum switching capacity, an auxiliary relay, of the CAD N type for example, should be interposed between the sensor and the load. □ if I ≤ maximum switching capacity, check or wiring faults (short-circuit). ■ In all cases, a 0.4 A "quick-blow" fuse should be fitted in series with the sensor.
	Wiring error	■ Check that the wiring conforms to the wiring shown on the sensor label or instruction sheet.
	Supply fault	■ Check that the sensor is compatible with the supply (~ or ⎓). ■ Check that the supply voltage is within the voltage limits of the sensor. Remember that with a rectified, smoothed supply, ■ (U peak = U nominal x $\sqrt{2}$ with a ripple voltage of ≤ 10%).
	With a reflex system: incorrect use or poor state of reflector	■ The reflex system must operate in conjunction with a reflector. Adhere to the operating distances and check the alignment between the sensor and the reflector. ■ Replace the reflector if it has been damaged. ■ Clean the reflector and sensor lenses.
	Influence of ambient light	■ Make sure that the sensor is not dazzled by stray light (neon, sun, oven, etc.). ■ Fit a lens hood or turn the sensor.
False or erratic operation, with or without the presence of an object in the operating zone	On multimode sensor: setting-up error (detection mode programming)	■ Use the detection mode display option. After a RESET, follow the environment teach mode procedure.
	Influence of background or surface condition of the object to be detected (stray reflections)	■ Refer to the instruction sheet supplied with the sensor. For sensors with adjustable sensitivity, reduce or increase the sensing distance.
	Operating distance poorly defined for the reflector or object to be detected	■ Apply the correction coefficients. ■ Realign the system. ■ Clean the sensor lenses and reflector, or, if damaged, replace it.
	Influence of immediate environment	■ Check the cleanliness of the lenses and reflector. ■ Fit a lens hood, where required.
	Influence of transient interference on the supply lines	■ Ensure that any DC supplies, when derived from rectified AC, are correctly smoothed (C > 400 µF). ■ Separate AC power cables from low-level DC cables (⎓ 24 V low level). ■ Where very long distances are involved, use suitable cable: screened and twisted pairs of the correct cross-sectional area.
	Equipment prone to emitting electromagnetic interference	■ Position the sensors as far away as possible from any sources of interference.
	Response time of the sensor too slow for the particular object being detected	■ Check the suitability of the sensor for the position or shape of the object to be detected. ■ If necessary, select a sensor with a higher switching frequency.
	Influence of high temperature	■ Eliminate sources of radiated heat or protect the sensor casing with a heat shield. ■ Realign, having adjusted the temperature around the fixing support.
	Influence of ambient light	■ Make sure that the sensor is not disrupted by a intermittent source of light (flashing light, rotating mirror beacon, hinged mirror, reflective door, etc.). ■ Fit a lens hood or turn the sensor.

Photo-electric sensors
OsiSense XU

Fast troubleshooting guide *(continued)*

Problem	Possible causes	Remedy
No detection following a period of service	Vibration, shock	■ Realign the system ■ Replace the support or protect the sensor.
	Deterioration of relay contact	■ On an inductive load, use an RC suppressor connected in parallel with the load. ■ To eliminate contact contamination, the minimum current recommended is 15 mA. ■ Relay output models are not recommended for fast counting of objects since their service life is too short. Use models with a solid-state output.
	Dusty atmosphere	■ Clean the lenses and reflector with a soft cloth.

Notes:

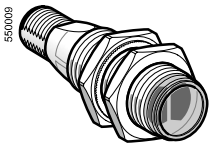
■ **Sensors with a test input** enable automatic verification of their correct operation.
■ **Sensors with an alarm output** enable the operator to be informed, for preventive maintenance purposes, that the operating limits of sensors have been reached (dirty etc.).

Photo-electric sensors

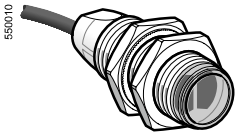
OsiSense XU, single mode function

Design 18, plastic

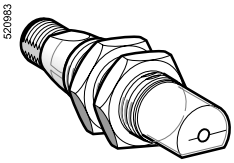
Three-wire DC, solid-state output



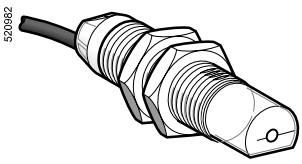
XUB●A●●NM12



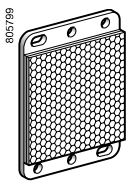
XUB●A●●NL2



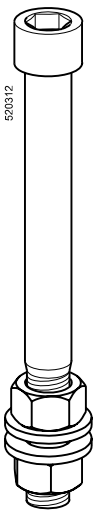
XUB●A●●WM12



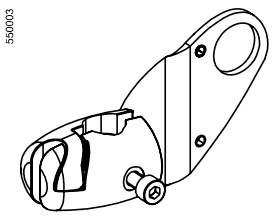
XUB●A●●WL2



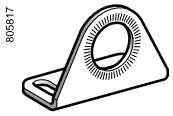
XUZC50



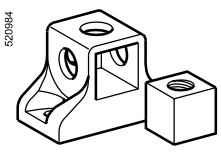
XUZ2001



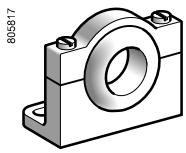
XUZB2003



XUZA118



XUZ2003



Connector

Sensing distance (Sn) m	Function	Output	Line of sight	Reference	Weight kg
Diffuse system					
0.1	NO	PNP	Along case axis	**XUB4APANM12**	0.040
			90° to case axis	**XUB4APAWM12**	0.040
		NPN	Along case axis	**XUB4ANANM12**	0.040
			90° to case axis	**XUB4ANAWM12**	0.040
	NC	PNP	Along case axis	**XUB4APBNM12**	0.040
			90° to case axis	**XUB4APBWM12**	0.040
		NPN	Along case axis	**XUB4ANBNM12**	0.040
			90° to case axis	**XUB4ANBWM12**	0.040
Diffuse system with adjustable sensitivity					
0.6	NO	PNP	Along case axis	**XUB5APANM12**	0.045
			90° to case axis	**XUB5APAWM12**	0.050
		NPN	Along case axis	**XUB5ANANM12**	0.045
			90° to case axis	**XUB5ANAWM12**	0.050
	NC	PNP	Along case axis	**XUB5APBNM12**	0.045
			90° to case axis	**XUB5APBWM12**	0.050
		NPN	Along case axis	**XUB5ANBNM12**	0.045
			90° to case axis	**XUB5ANBWM12**	0.050
Polarised reflex system					
2	NO	PNP	Along case axis	**XUB9APANM12**	0.040
			90° to case axis	**XUB9APAWM12**	0.040
		NPN	Along case axis	**XUB9ANANM12**	0.040
			90° to case axis	**XUB9ANAWM12**	0.040
	NC	PNP	Along case axis	**XUB9APBNM12**	0.040
			90° to case axis	**XUB9APBWM12**	0.040
		NPN	Along case axis	**XUB9ANBNM12**	0.040
			90° to case axis	**XUB9ANBWM12**	0.040
Reflector 50 x 50 mm	–	–	–	**XUZC50**	0.020
Reflex system					
4	NO	PNP	Along case axis	**XUB1APANM12**	0.040
			90° to case axis	**XUB1APAWM12**	0.040
		NPN	Along case axis	**XUB1ANANM12**	0.040
			90° to case axis	**XUB1ANAWM12**	0.040
	NC	PNP	Along case axis	**XUB1APBNM12**	0.040
			90° to case axis	**XUB1APBWM12**	0.040
		NPN	Along case axis	**XUB1ANBNM12**	0.040
			90° to case axis	**XUB1ANBWM12**	0.040
Reflector 50 x 50 mm	–	–	–	**XUZC50**	0.020
Thru-beam system					
Transmitter 15	–	–	Along case axis	**XUB2AKSNM12T**	0.040
			90° to case axis	**XUB2AKSWM12T**	0.040
Receiver 15	NO	PNP	Along case axis	**XUB2APANM12R**	0.040
			90° to case axis	**XUB2APAWM12R**	0.040
		NPN	Along case axis	**XUB2ANANM12R**	0.040
			90° to case axis	**XUB2ANAWM12R**	0.040
	NC	PNP	Along case axis	**XUB2APBNM12R**	0.040
			90° to case axis	**XUB2APBWM12R**	0.040
		NPN	Along case axis	**XUB2ANBNM12R**	0.040
			90° to case axis	**XUB2ANBWM12R**	0.040

Fixing accessories *(1)*

Description	Reference	Weight kg
3D fixing kit for use on M12 rod, for XUB or XUZC50	**XUZB2003**	0.170
M12 rod	**XUZ2001**	0.050
Support for M12 rod	**XUZ2003**	0.150
Stainless steel fixing bracket	**XUZA118**	0.045
Plastic fixing bracket with adjustable ball-joint	**XUZA218**	0.035

Pre-cabled

For a pre-cabled sensor, replace **M12** by **L2** for a 2 m long cable, or by **L5** for a 5 m long cable.
Example: **XUB1APANM12** becomes **XUB1APANL2** for a 2 m long cable and **XUB1APANL5** for a 5 m long cable.
For availability, please consult our Customer Care Centre.

(1) For further information, see page 164.

Characteristics, schemes, curves, dimensions

Photo-electric sensors

OsiSense XU, single mode function

Design 18, plastic

Three-wire DC, solid-state output

Characteristics

Sensor type			XUB1, XUB2, XUB4, XUB5, XUB9	XUB1, XUB2, XUB4, XUB5, XUB9
Product certifications			UL, CSA, CE	
Connection	Connector		M12	–
	Pre-cabled		–	Length: 2 m
Sensing distance nominal Sn / maximum (excess gain = 1) (excess gain = 2)		m	**0.1 / 0.15 diffuse**	
		m	**0.6 / 0.8 diffuse with adjustable sensitivity**	
		m	**2 / 3 polarised reflex**	
		m	**4 / 5.5 reflex**	
		m	**15 / 20 thru-beam**	
Type of transmission			Infrared, except polarised reflex (red)	
Degree of protection	Conforming to IEC 60529		IP 65, IP 67, double insulation ⧈	
	Conforming to DIN 40050		IP 69K for connector versions	
Storage temperature		°C	- 40…+ 70	
Operating temperature		°C	- 25…+ 55	
Materials	Case		PBT	
	Lens		PMMA	
	Cable		–	PvR
Vibration resistance	Conforming to IEC 60068-2-6		7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms	
Indicator lights	Output state		Yellow LED (except for **XUB2●●●●●●T**)	
	Supply on		Green LED (only for **XUB2●●●●●●T**)	
Rated supply voltage		V	⎓ 12…24 with protection against reverse polarity	
Voltage limits (including ripple)		V	⎓ 10…36	
Current consumption, no-load		mA	35	
Switching capacity		mA	⩽ 100 with overload and short-circuit protection	
Voltage drop, closed state		V	1.5	
Maximum switching frequency		Hz	500	
Delays	First-up	ms	< 15	
	Response	ms	< 1	
	Recovery	ms	< 1	

Wiring schemes

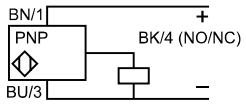
M12 connector

3 (-)
1 (+)
4 OUT/Output
2 Beam break input *(1)*

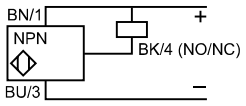
Pre-cabled

(-) BU (Blue)
(+) BN (Brown)
(OUT/Output) BK (Black)
Beam break input *(1)*
VI (Violet)

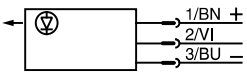
PNP



NPN



Transmitter

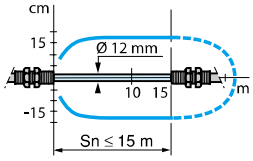


Input 2/VI:
- not connected: *beam made*
- connected to –: *beam broken*

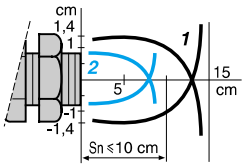
Please refer to our "Cabling accessories OsiSense XZ" catalogue.

Detection curves

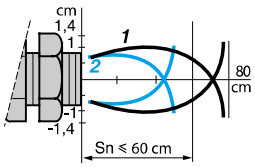
Thru-beam system



Diffuse system

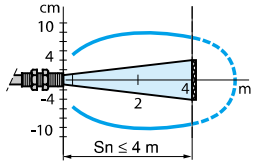


Diffuse system with adjustable sensitivity



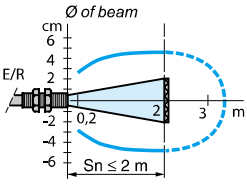
*Object 10 x 10 cm; **1** White 90%; **2** Grey 18%*

Reflex system



With reflector XUZC50

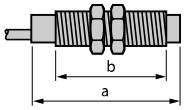
Polarised reflex system



With reflector XUZC50

Dimensions

XUB



	Pre-cabled (mm)		Connector (mm)	
	a	b	a	b
Ø 18, line of sight along case axis	46 (2)	28	60 *(1)*	28
Ø 18, line of sight 90° to case axis	62	28	76	28
Ø 18, line of sight along case axis **XUB5**	62	44	76	44
Ø 18, line of sight 90° to case axis **XUB5**	78	44	92	44

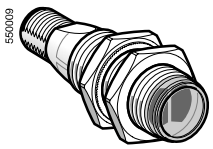
(1) Beam break input on thru-beam transmitter only.
*(2) For **XUB9●●●●●●** (polarised reflex) 46 becomes 48 mm and 60 becomes 62 mm.*

Photo-electric sensors

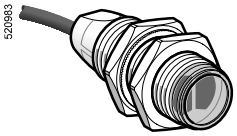
OsiSense XU, single mode function

Design 18, metal

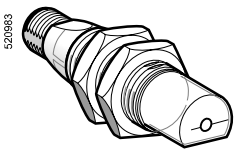
Three-wire DC, solid-state output



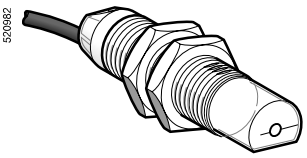
XUB●B●●NM12



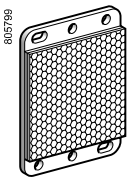
XUB●B●●NL2



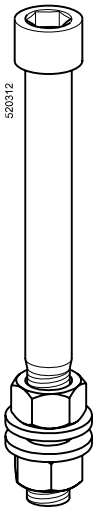
XUB●B●●WM12



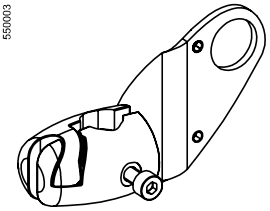
XUB●B●●WL2



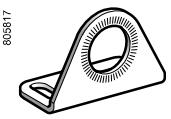
XUZC50



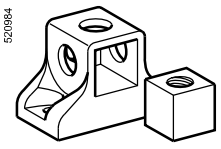
XUZ2001



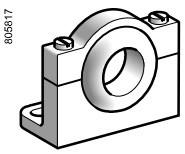
XUZB2003



XUZA118



XUZ2003



Connector

Sensing distance (Sn) m	Function	Output	Line of sight	Reference	Weight kg
Diffuse system					
0.1	NO	PNP	Along case axis	**XUB4BPANM12**	0.050
			90° to case axis	**XUB4BPAWM12**	0.050
		NPN	Along case axis	**XUB4BNANM12**	0.050
			90° to case axis	**XUB4BNAWM12**	0.050
	NC	PNP	Along case axis	**XUB4BPBNM12**	0.050
			90° to case axis	**XUB4BPBWM12**	0.050
		NPN	Along case axis	**XUB4BNBNM12**	0.050
			90° to case axis	**XUB4BNBWM12**	0.050
Diffuse system with adjustable sensitivity					
0.6	NO	PNP	Along case axis	**XUB5BPANM12**	0.055
			90° to case axis	**XUB5BPAWM12**	0.060
		NPN	Along case axis	**XUB5BNANM12**	0.055
			90° to case axis	**XUB5BNAWM12**	0.060
	NC	PNP	Along case axis	**XUB5BPBNM12**	0.055
			90° to case axis	**XUB5BPBWM12**	0.060
		NPN	Along case axis	**XUB5BNBNM12**	0.055
			90° to case axis	**XUB5BNBWM12**	0.060
Polarised reflex system					
2	NO	PNP	Along case axis	**XUB9BPANM12**	0.050
			90° to case axis	**XUB9BPAWM12**	0.050
		NPN	Along case axis	**XUB9BNANM12**	0.050
			90° to case axis	**XUB9BNAWM12**	0.050
	NC	PNP	Along case axis	**XUB9BPBNM12**	0.050
			90° to case axis	**XUB9BPBWM12**	0.050
		NPN	Along case axis	**XUB9BNBNM12**	0.050
			90° to case axis	**XUB9BNBWM12**	0.050
Reflector 50 x 50 mm	–	–	–	**XUZC50**	0.020
Reflex system					
4	NO	PNP	Along case axis	**XUB1BPANM12**	0.050
			90° to case axis	**XUB1BPAWM12**	0.050
		NPN	Along case axis	**XUB1BNANM12**	0.050
			90° to case axis	**XUB1BNAWM12**	0.050
	NC	PNP	Along case axis	**XUB1BPBNM12**	0.050
			90° to case axis	**XUB1BPBWM12**	0.050
		NPN	Along case axis	**XUB1BNBNM12**	0.050
			90° to case axis	**XUB1BNBWM12**	0.050
Reflector 50 x 50 mm	–	–	–	**XUZC50**	0.020
Thru-beam system					
Transmitter 15	–	–	Along case axis	**XUB2BKSNM12T**	0.050
			90° to case axis	**XUB2BKSWM12T**	0.050
Receiver 15	NO	PNP	Along case axis	**XUB2BPANM12R**	0.050
			90° to case axis	**XUB2BPAWM12R**	0.050
		NPN	Along case axis	**XUB2BNANM12R**	0.050
			90° to case axis	**XUB2BNAWM12R**	0.050
	NC	PNP	Along case axis	**XUB2BPBNM12R**	0.050
			90° to case axis	**XUB2BPBWM12R**	0.050
		NPN	Along case axis	**XUB2BNBNM12R**	0.050
			90° to case axis	**XUB2BNBWM12R**	0.050

Fixing accessories *(1)*

Description	Reference	Weight kg
3D fixing kit for use on M12 rod, for XUB or XUZC50	**XUZB2003**	0.170
M12 rod	**XUZ2001**	0.050
Support for M12 rod	**XUZ2003**	0.150
Stainless steel fixing bracket	**XUZA118**	0.045
Plastic fixing bracket with adjustable ball-joint	**XUZA218**	0.035

Pre-cabled

For a pre-cabled sensor, replace **M12** by **L2** for a 2 m long cable, or by **L5** for a 5 m long cable.
Example: **XUB1BPANM12** becomes **XUB1BPANL2** for a 2 m long cable and **XUB1BPANL5** for a 5 m long cable.
For availability, please consult our Customer Care Centre.

(1) For further information, see page 164.

Characteristics, schemes, curves, dimensions

Photo-electric sensors

OsiSense XU, single mode function

Design 18, metal

Three-wire DC, solid-state output

Characteristics

Sensor type			XUB1, XUB2, XUB4, XUB5, XUB9	XUB1, XUB2, XUB4, XUB5, XUB9
Product certifications			UL, CSA, CE	
Connection	Connector		M12	–
	Pre-cabled		–	Length: 2 m
Sensing distance				
nominal Sn / maximum		**m**	**0.1 / 0.15 diffuse**	
(excess gain = 2) (excess gain = 1)		**m**	**0.6 / 0.8 diffuse with adjustable sensitivity**	
		m	**2 / 3 polarised reflex**	
		m	**4 / 5.5 reflex**	
		m	**15 / 20 thru-beam**	
Type of transmission			Infrared, except polarised reflex (red)	
Degree of protection	Conforming to IEC 60529		IP 65, IP 67, double insulation ⧈	
	Conforming to DIN 40050		IP 69K for connector versions	
Storage temperature		**°C**	- 40…+ 70	
Operating temperature		**°C**	- 25…+ 55	
Materials	Case		Nickel plated brass	
	Lens		PMMA	
	Cable		–	PvR
Vibration resistance	Conforming to IEC 60068-2-6		7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms	
Indicator lights	Output state		Yellow LED (except for **XUB2●●●●●●T**)	
	Supply on		Green LED (only for **XUB2●●●●●●T**)	
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10…36	
Current consumption, no-load		**mA**	35	
Switching capacity		**mA**	⩽ 100 with overload and short-circuit protection	
Voltage drop, closed state		**V**	1.5	
Maximum switching frequency		**Hz**	500	
Delays	First-up	**ms**	< 15	
	Response	**ms**	< 1	
	Recovery	**ms**	< 1	

Wiring schemes

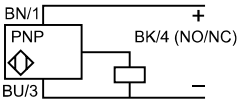
M12 connector

3 (-)
1 (+)
4 OUT/Output
2 Beam break input *(1)*

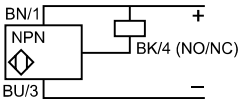
Pre-cabled

(-) BU (Blue)
(+) BN (Brown)
(OUT/Output) BK (Black)
Beam break input *(1)*
VI (Violet)

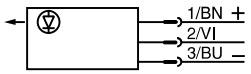
PNP



NPN



Transmitter

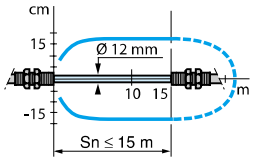


Input 2/VI:
- not connected: *beam made*
- connected to –: *beam broken*

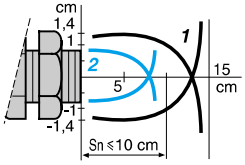
Please refer to our "Cabling accessories OsiSense XZ" catalogue.

Detection curves

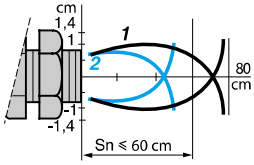
Thru-beam system



Diffuse system

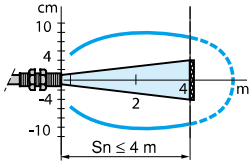


Diffuse system with adjustable sensitivity



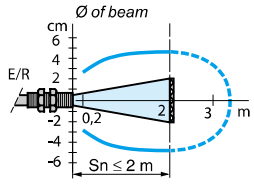
*Object 10 x 10 cm; **1** White 90%; **2** Grey 18%*

Reflex system



With reflector XUZC50

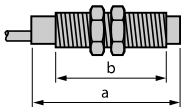
Polarised reflex system



With reflector XUZC50

Dimensions

XUB



	Pre-cabled (mm)		Connector (mm)	
	a	b	a	b
Ø 18, line of sight along case axis	46 (2)	28	60 *(1)*	28
Ø 18, line of sight 90° to case axis	62	28	76	28
Ø 18, line of sight along case axis **XUB5**	62	44	76	44
Ø 18, line of sight 90° to case axis **XUB5**	78	44	92	44

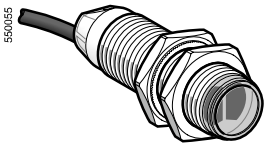
(1) Beam break input on thru-beam transmitter only.
*(2) For **XUB9●●●●●●** (polarised reflex) 46 becomes 48 mm and 60 becomes 62 mm.*

Photo-electric sensors

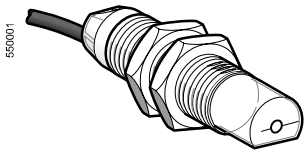
OsiSense XU multimode

Design 18, metal or plastic

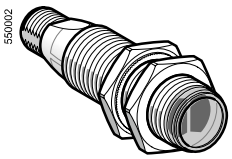
Three-wire DC, solid-state output



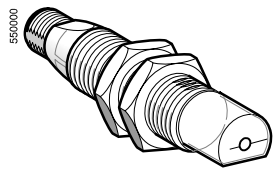
XUB0●●●NL2



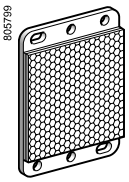
XUB0●●●WL2



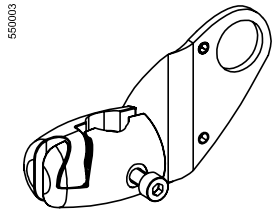
XUB0●●●NM12



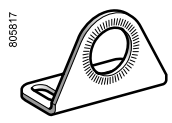
XUB0●●●WM12



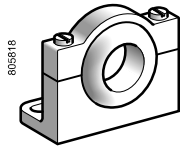
XUZC50

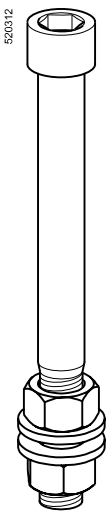


XUZB2003

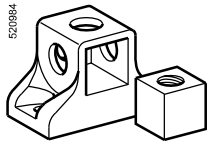


XUZA118





XUZ2001



Ø 18 metal

Pre-cabled *(1)*

Sensing distance (Sn) *(2)* m	Function	Output	Line of sight	Reference	Weight kg
0...20 depending on whether accessories are used	NO or NC, by programming	PNP	Along case axis	**XUB0BPSNL2**	0.105
			90° to case axis	**XUB0BPSWL2** *(3)*	0.110
		NPN	Along case axis	**XUB0BNSNL2**	0.105
			90° to case axis	**XUB0BNSWL2** *(3)*	0.110

M12 connector

0...20 depending on whether accessories are used	NO or NC, by programming	PNP	Along case axis	**XUB0BPSNM12**	0.055
			90° to case axis	**XUB0BPSWM12** *(3)*	0.060
		NPN	Along case axis	**XUB0BNSNM12**	0.055
			90° to case axis	**XUB0BNSWM12** *(3)*	0.060

Accessories

Description	Connection	Line of sight	Reference	Weight kg
Thru-beam transmitter	Pre-cabled *(1)*	Along case axis	**XUB0BKSNL2T**	0.105
		90° to case axis	**XUB0BKSWL2T** *(3)*	0.110
	M12 connector	Along case axis	**XUB0BKSNM12T**	0.055
		90° to case axis	**XUB0BKSWM12T** *(3)*	0.060
Reflector 50 x 50 mm	–	–	**XUZC50**	0.020

Ø 18 plastic

Pre-cabled *(1)*

Sensing distance (Sn) (3) m	Function	Output	Line of sight	Reference	Weight kg
0...20 depending on whether accessories are used	NO or NC, by programming	PNP	Along case axis	**XUB0APSNL2**	0.095
			90° to case axis	**XUB0APSWL2** *(3)*	0.100
		NPN	Along case axis	**XUB0ANSNL2**	0.095
			90° to case axis	**XUB0ANSWL2** *(3)*	0.100

M12 connector

0...20 depending on whether accessories are used	NO or NC, by programming	PNP	Along case axis	**XUB0APSNM12**	0.045
			90° to case axis	**XUB0APSWM12** *(3)*	0.050
		NPN	Along case axis	**XUB0ANSNM12**	0.045
			90° to case axis	**XUB0ANSWM12** *(3)*	0.050

Accessories

Description	Connection	Line of sight	Reference	Weight kg
Thru-beam transmitter	Pre-cabled *(1)*	Along case axis	**XUB0AKSNL2T**	0.095
		90° to case axis	**XUB0AKSWL2T** *(3)*	0.100
	M12 connector	Along case axis	**XUB0AKSNM12T**	0.045
		90° to case axis	**XUB0AKSWM12T** *(3)*	0.050
Reflector 50 x 50 mm	–	–	**XUZC50**	0.020

Fixing accessories *(4)*

Description	Reference	Weight kg
3D fixing kit for use on M12 rod, for XUB or XUZC50	**XUZB2003**	0.170
M12 rod	**XUZ2001**	0.050
Support for M12 rod	**XUZ2003**	0.150
Stainless steel fixing bracket	**XUZA118**	0.045
Plastic fixing bracket with adjustable ball-joint	**XUZA218**	0.035

*(1) For a 5 m long cable, replace L2 by **L5**.*
*Example: XUB0BPSNL2 becomes **XUB0BPSNL5**.*
For availability, please consult our Customer Care Centre.
(2) For further information, see page 33.
(3) For line of sight 90° to case axis versions, see sensing distances on page 33.
(4) For further information, see page 164.

Characteristics, schemes, curves, dimensions

Photo-electric sensors

OsiSense XU multimode

Design 18, metal or plastic

Three-wire DC, solid-state output

Characteristics

Sensor type			XUB0●●●●M12, XUB0●●●●M12T		XUB0●●●●L2, XUB0●●●●L2T
Product certifications			UL, CSA, CE		
Connection	Connector		M12		–
	Pre-cabled		–		Length: 2 m
Sensing distance nominal Sn / (excess gain = 2)	**maximum** (excess gain = 1)		**Line of sight along case axis**	**Line of sight 90° to case axis**	**Accessory**
		m	**0.12 / 0.12**	**0.11 / 0.11**	**Without (diffuse with background suppression)**
		m	**0.3 / 0.4**	**0.2 / 0.3**	**Without (diffuse)**
		m	**3 / 4**	**1.5 / 2**	**With reflector (polarised reflex)**
		m	**20 / 30**	**7 / 10**	**With thru-beam transmitter (thru-beam)**
Type of transmission			Infrared, except for polarised reflex (red)		
Degree of protection	Conforming to IEC 60529		IP 65, IP 67, double insulation ⧈		
	Conforming to DIN 40050		IP 69K for **XUB0●●●●M12** and **XUB0●●●●M12T**		
Storage temperature		**°C**	- 40…+ 70		
Operating temperature		**°C**	- 25…+ 55		
Materials			Case: nickel plated brass for XUB0B or PBT for XUB0A; Lens: PMMA; Cable: PvR		
Vibration resistance	Conforming to IEC 60068-2-6		7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms		
Indicator lights	Output state		Yellow LED (transmission present for **XUB0●●●●●●T**)		
	Supply on		Green LED		
	Optical alignment aid/dirty		Red LED (except for **XUB0●●●●●●T**)		
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity		
Voltage limits (including ripple)		**V**	⎓ 10…36		
Current consumption, no-load		**mA**	35 (20 for **XUB0●●●●●●T**)		
Switching capacity		**mA**	≤ 100 with overload and short-circuit protection		
Voltage drop, closed state		**V**	< 1.5		
Maximum switching frequency		**Hz**	250 (200 for diffuse with background suppression)		
Delays	First-up	**ms**	< 200		
	Response	**ms**	< 2 (< 2.5 for diffuse with background suppression)		
	Recovery	**ms**	< 2 (< 2.5 for diffuse with background suppression)		

Wiring schemes

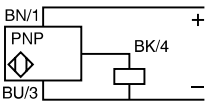
M12 connector

3 (-)
1 (+)
4 OUT/Output
2 Beam break input *(1)*

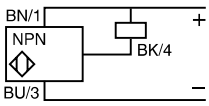
Pre-cabled

(-) BU (Blue)
(+) BN (Brown)
OUT/Output BK (Black)
Beam break input *(1)*
VI (Violet)

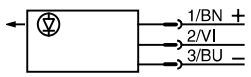
Receiver, PNP output



Receiver, NPN output



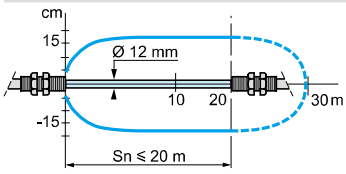
Thru-beam transmitter



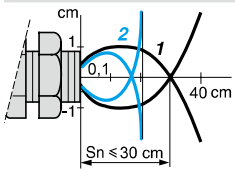
Input 2/VI:
- not connected: *beam made*
- connected to –: *beam broken*

Detection curves (line of sight along case axis)

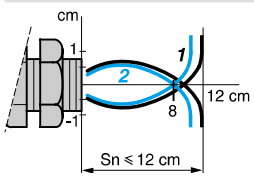
With thru-beam accessory (thru-beam)



Without accessory (diffuse)

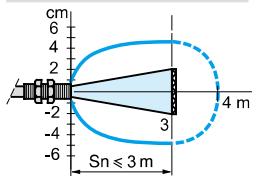


Without accessory (diffuse with background suppression)



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

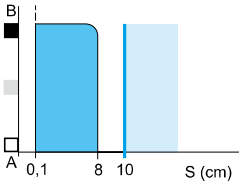
With reflector (polarised reflex)



With reflector XUZC50

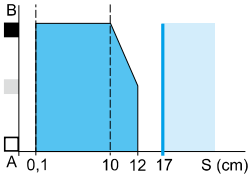
Variation of usable sensing distance Su (without accessory, with adjustable background suppression)

Teach mode at minimum.



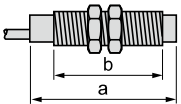
A-B: *object reflection coefficient*
- *Black 6%*
- *Grey 18%*
- *White 90%*
- *Sensing range*
- *Non sensing zone (matt surfaces)*

Teach mode at maximum.



Dimensions

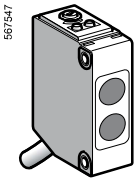
XUB



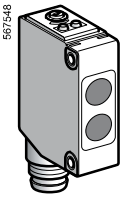
	Pre-cabled (mm)		Connector (mm)	
	a	**b**	**a**	**b**
Ø 18, line of sight along case axis	64 *(2)*	44	78 *(2)*	44
Ø 18, line of sight 90° to case axis	78	44	92	44

Photo-electric sensors

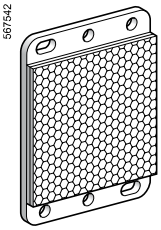
OsiSense XU, general purpose, single mode function
Miniature design, plastic
Three-wire DC, solid-state output
NO/NC configuration switch



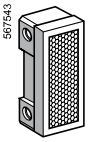
XUM5A●CNL2



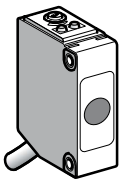
XUM5A●CNM8



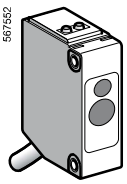
XUZC50



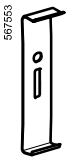
XUZC08



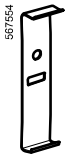
XUM2AKCNL2T



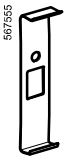
XUM2A●CNL2R



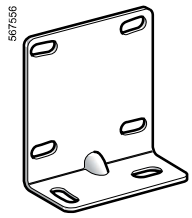
XUZMSV●●



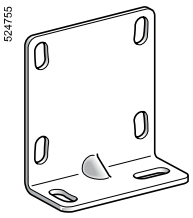
XUZMSH●●



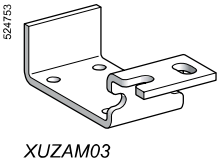
XUZMU01



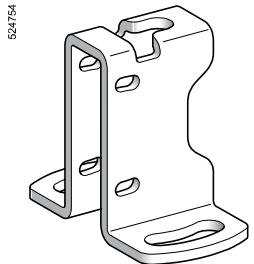
XUZAM01

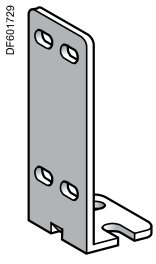


XUZAM04



XUZAM03





Sensing distance (Sn)	Function	Output	Connection	Reference	Weight kg
Diffuse system with adjustable sensitivity					
1 m	NO/NC, configuration by switch	PNP	Pre-cabled (L = 2 m)	**XUM5APCNL2**	0.063
			M8 connector	**XUM5APCNM8**	0.010
		NPN	Pre-cabled (L = 2 m)	**XUM5ANCNL2**	0.063
			M8 connector	**XUM5ANCNM8**	0.010
Polarised reflex system with adjustable sensitivity					
5 m with reflector XUZC50 **2 m** with reflector XUZC08	NO/NC, configuration by switch	PNP	Pre-cabled (L = 2 m)	**XUM9APCNL2**	0.063
			M8 connector	**XUM9APCNM8**	0.010
	NO/NC, configuration by switch	NPN	Pre-cabled (L = 2 m)	**XUM9ANCNL2**	0.063
			M8 connector	**XUM9ANCNM8**	0.010
Reflectors					
Universal reflector 50 x 50 mm		–	–	**XUZC50**	0.020
Lateral reflector 8.6 x 29.5 mm		–	–	**XUZC08**	0.006
Thru-beam system (transmitter + receiver) with adjustable sensitivity					
15 m	NO/NC, configuration by switch	PNP	Pre-cabled (L = 2 m)	**XUM2APCNL2**	0.119
			M8 connector	**XUM2APCNM8**	0.019
		NPN	Pre-cabled (L = 2 m)	**XUM2ANCNL2**	0.119
			M8 connector	**XUM2ANCNM8**	0.019
Transmitter only					
15 m			Pre-cabled (L = 2 m)	**XUM2AKCNL2T**	0.063
			M8 connector	**XUM2AKCNM8T**	0.010
Receiver only					
15 m	NO/NC, configuration by switch	PNP	Pre-cabled (L = 2 m)	**XUM2APCNL2R**	0.063
			M8 connector	**XUM2APCNM8R**	0.010
		NPN	Pre-cabled (L = 2 m)	**XUM2ANCNL2R**	0.063
			M8 connector	**XUM2ANCNM8R**	0.010

Accessories for thru-beam system

Description	Dimensions mm	Sensing distance m	Reference	Weight kg
Vertical diaphragm Sold in lots of 2	0.5 x 6.4	1.2	**XUZMSV05**	0.002
	1 x 6.4	3	**XUZMSV10**	0.002
	1.5 x 6.4	4	**XUZMSV15**	0.002
	2 x 6.4	5	**XUZMSV20**	0.002
Horizontal diaphragm Sold in lots of 2	0.5 x 6.4	1.2	**XUZMSH05**	0.002
	1 x 6.4	3	**XUZMSH10**	0.002
	1.5 x 6.4	4	**XUZMSH15**	0.002
	2 x 6.4	5	**XUZMSH20**	0.002
Anti-interference filter Sold in lots of 4	–	7	**XUZMU01**	0.006

Fixing accessories

Description	Reference	Weight kg
Base mounting fixing bracket	**XUZAM01**	0.017
Side mounting fixing bracket	**XUZAM04**	0.026
Vertical fixing bracket with protective cover *(1)*	**XUZAM02**	0.062
Horizontal fixing bracket with protective cover *(1)*	**XUZAM03**	0.026
Metal fixing bracket	**XUZA50**	0.025

(1) For pre-cabled version

Characteristics, schemes, curves

Photo-electric sensors

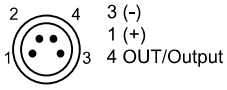
OsiSense XU, general purpose, single mode function
Miniature design, plastic
Three-wire DC, solid-state output
NO/NC configuration switch

Characteristics

Sensor type			XUM●A●●●M8	XUM●A●●●L2
Product certifications			CE, cULus, CTick	
Connection	Connector		M8	–
	Pre-cabled		–	Length: 2 m
Nominal sensing distance Sn (excess gain = 2)		**m**	**1 diffuse with adjustable sensitivity**	
		m	**5 polarised reflex with adjustable sensitivity**	
		m	**15 thru-beam with adjustable sensitivity**	
Type of transmission			Red, except diffuse system (Infrared)	
Degree of protection	Conforming to IEC 60529		IP 65, IP 67	
Storage temperature		**°C**	- 40…+ 70	
Operating temperature		**°C**	- 30…+ 60	
Materials	Case		PBT	
	Lens		PMMA	
	Cable		–	PVC (black for transmitter, grey for other versions)
Vibration resistance	Conforming to IEC 60068-2-6		10 to 55 Hz, amplitude ± 1.5 mm, 2 hours in each direction X, Y and Z	
Shock resistance	Conforming to IEC 60068-2-27		500 m/s² 10 x in each direction X, Y and Z	
Indicator lights	Output state		Orange LED (excluding transmitter)	
	Stability		Green LED	
	Transmitter		Orange LED: supply on	
	Receiver		Red LED: light received; green LED: supply on	
Rated supply voltage		**V**	⎓ 12...24 with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10…30	
Current consumption, no-load		**mA**	16 for **XUM5**; 13 for **XUM9**; 11 for transmitter **XUM2**; 13 for receiver **XUM2**	
Switching capacity		**mA**	⩽ 100 with overload and short-circuit protection	
Voltage drop, closed state		**V**	⩽ 3	
Maximum switching frequency		**Hz**	1000	
Delays	First-up	**ms**	< 100	
	Response	**ms**	0.5	
	Recovery	**ms**	0.5	

Wiring schemes

M8 connector

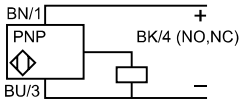


3 (-)
1 (+)
4 OUT/Output

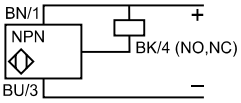
Pre-cabled

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

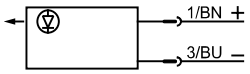
PNP



NPN

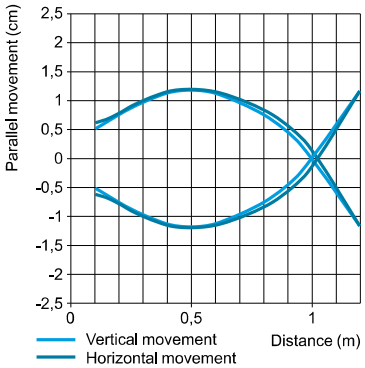


Transmitter ⎓

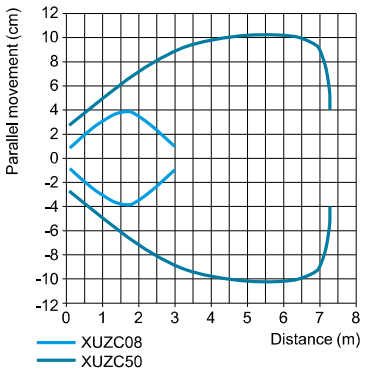


Curves

Diffuse



Polarised reflex



Thru-beam

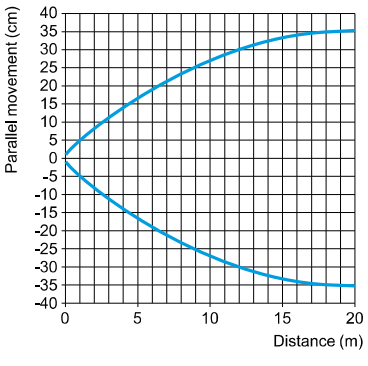


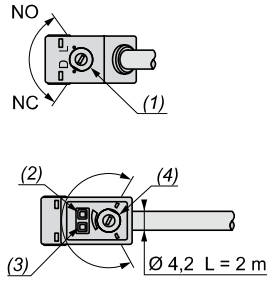
Photo-electric sensors

OsiSense XU, general purpose, single mode function
Miniature design, plastic
Three-wire DC, solid-state output
NO/NC configuration switch

Diffuse system, polarised reflex system

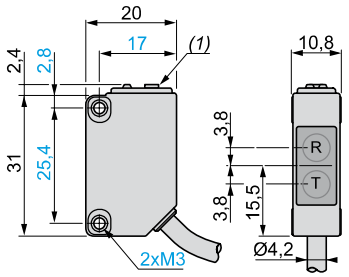
Pre-cabled version

Description - XUM5A●CNL2, XUM9A●CNL2



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

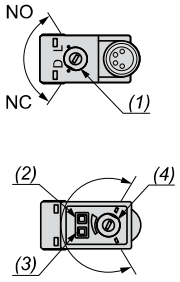
Dimensions - XUM5A●CNL2, XUM9A●CNL2



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

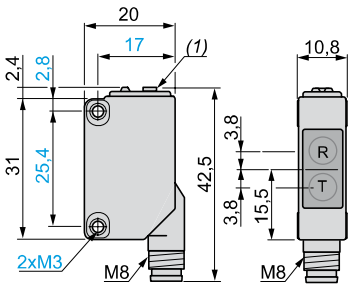
Connector version

Description - XUM5A●CNM8, XUM9A●CNM8



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

Dimensions - XUM5A●CNM8, XUM9A●CNM8

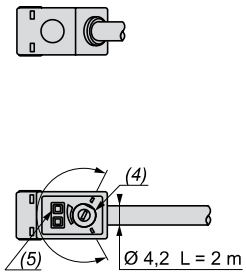


R: Reception, T: Transmission.
(1) Potentiometer.

Thru-beam system

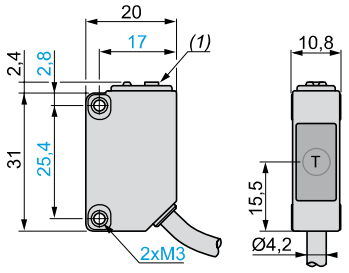
Pre-cabled version

Description - XUM2AKCNL2T



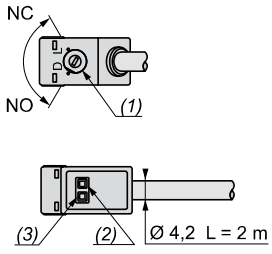
(4) Adjustment potentiometer.
(5) Power on LED.

Dimensions - XUM2AKCNL2T



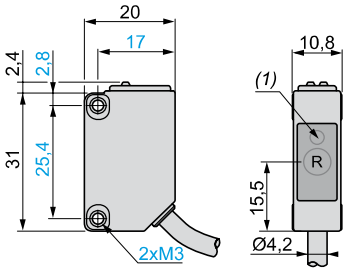
T: Transmission.
(1) Potentiometer.

Description - XUM2A●CNL2R



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

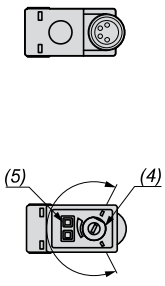
Dimensions - XUM2A●CNL2R



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

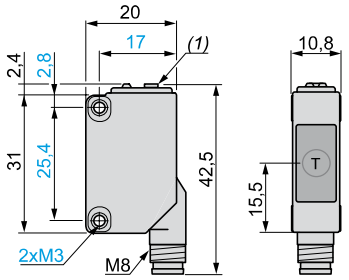
Connector version

Description - XUM2AKCNM8T



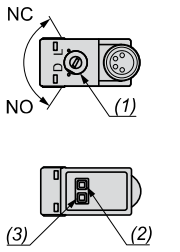
(4) Adjustment potentiometer.
(5) Power on LED.

Dimensions - XUM2AKCNM8T



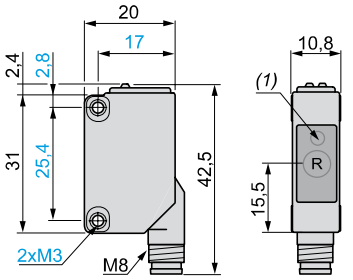
T: Transmission.
(1) Potentiometer.

Description - XUM2A●CNM8R



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

Dimensions - XUM2A●CNM8R

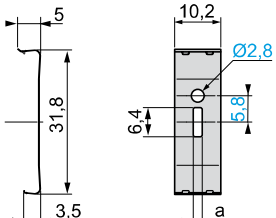


R: Reception.
(1) Output state LED on front face.

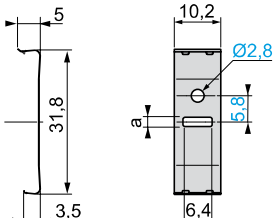
Accessories

Diaphragms

XUZMSV●●



XUZMSH●●



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

Filter

XUZMU01

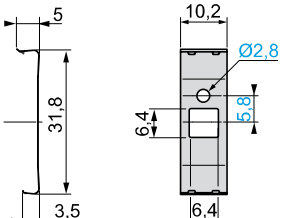


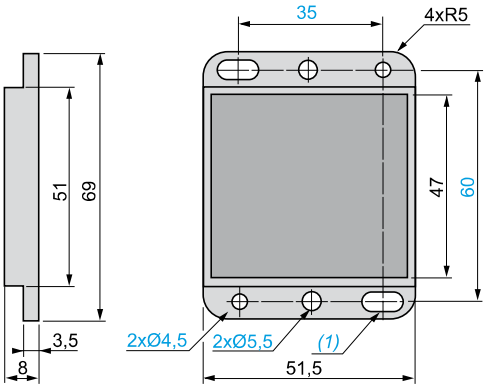
Photo-electric sensors

OsiSense XU, general purpose, single mode function
Miniature design, plastic
Three-wire DC, solid-state output
NO/NC configuration switch

Accessories

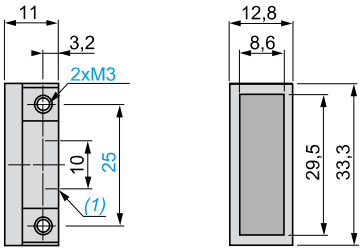
Reflectors

XUZC50



(1) 2 elongated holes Ø 4.5 x 8

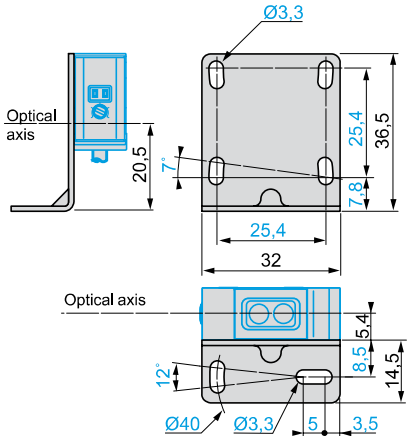
XUZC08



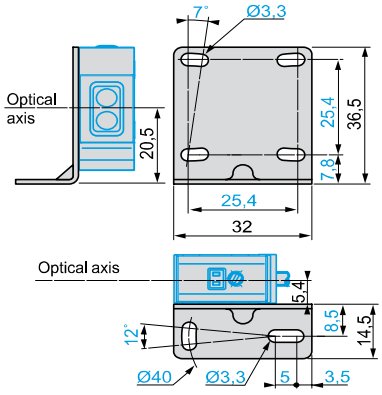
(1) 2 x M3

Fixing brackets

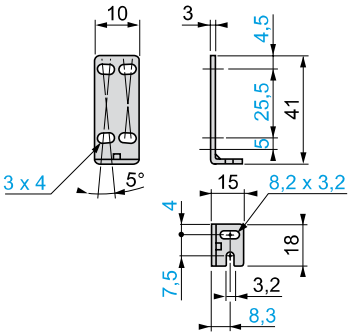
XUZAM04



XUZAM01

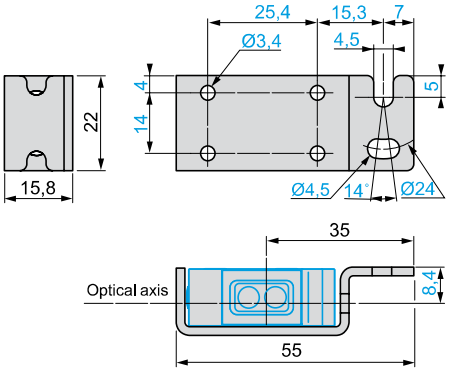


XUZA50



Fixing bracket with protective cover

XUZAM03



XUZAM02

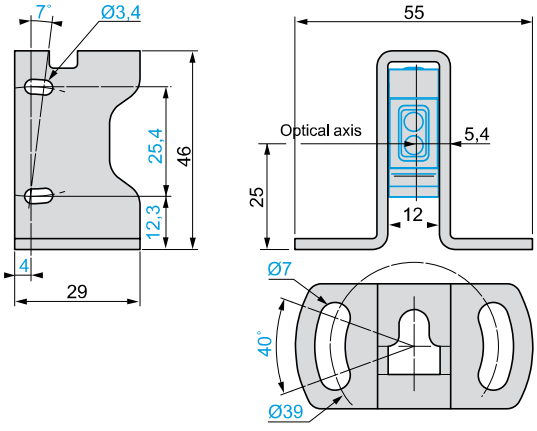
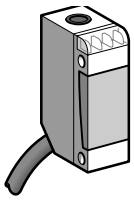


Photo-electric sensors

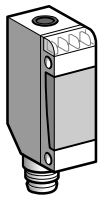
OsiSense XU, general purpose
Multimode function
Miniature design
Three-wire DC, solid-state output

501542_1

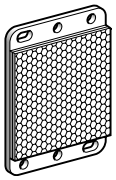


XUM0A●●●L2

501543_1

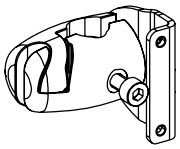


XUM0A●●●M8



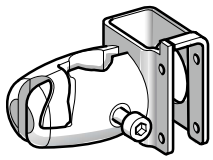
XUZC50

550014



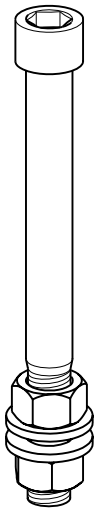
XUZM2003

562213



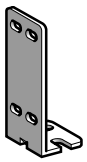
XUZM2004

520312



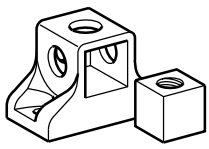
XUZ2001

520960



XUZA50

520984



XUZ2003

Miniature design, DC

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

Accessories

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

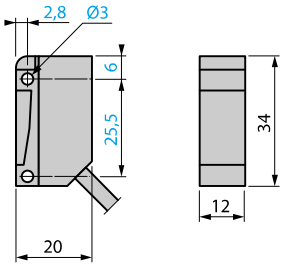
Fixing accessories *(2)*

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

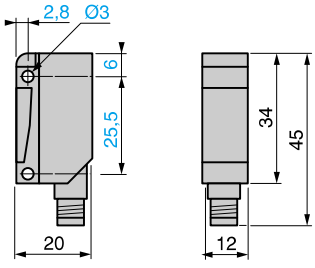
*(1) For a 5 m long cable, replace L2 by **L5**.*
*Example: XUM0APSAL2 becomes **XUM0APSAL5**.*
(2) For further information, see page 164.

Dimensions (mm)

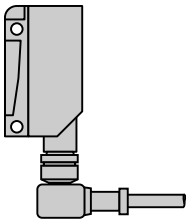
XUM0A●●●L2



XUM0A●●●M8



Possible orientation of elbowed connector



Characteristics, schemes, curves

Photo-electric sensors

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

Characteristics

Sensor type			XUM●●●●●M8	XUM●●●●●L2
Product certifications			UL, CSA, CE	
Connection	Connector		M8	–
	Pre-cabled		–	Length: 2 m
Nominal sensing distance Sn (excess gain = 2)		m	**0.11 / 0.11 without accessory (diffuse with background suppression)**	
		m	**0.4 / 0.55 without accessory (diffuse)**	
		m	**3 / 4 with reflector (polarised reflex)**	
		m	**10 / 14 with transmitter for thru-beam function (thru-beam)**	
Type of transmission			Infrared, except polarised reflex (red)	
Degree of protection	Conforming to IEC 60529		IP 65, IP 67	IP 65, IP 67, double insulation ⧈
Storage temperature		°C	- 40…+ 70	
Operating temperature		°C	- 25…+ 55	
Materials	Case		PBT	
	Lens		PMMA	
	Cable		–	PvR
Vibration resistance	Conforming to IEC 60068-2-6		7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms	
Indicator lights	Output state		Yellow LED (transmission present for **XUM0●●●●●●T**)	
	Supply on		Green LED	
	Optical alignment aid/dirty		Red LED (except for **XUM0●●●●●●T**)	
Rated supply voltage		V	⎓ 12…24 with protection against reverse polarity	
Voltage limits (including ripple)		V	⎓ 10…30	
Current consumption, no-load		mA	35 (20 for **XUM0●●●●●●T**)	
Switching capacity		mA	⩽ 100 with overload and short-circuit protection	
Voltage drop, closed state		V	⩽ 1.5	
Maximum switching frequency		Hz	250 (200 for diffuse with background suppression)	
Delays	First-up	ms	< 200	
	Response	ms	< 2 (< 2.5 for diffuse with background suppression)	
	Recovery	ms	< 2 (< 2,5 for diffuse with background suppression)	

Wiring schemes

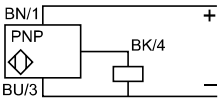
M8 connector

3 (-)
1 (+)
4 OUT/Output
2 Beam break input *(1)*

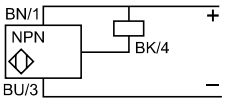
Pre-cabled

(-) BU (Blue)
(+) BN (Brown)
OUT/Output BK (Black)
Beam break input VI (Violet) *(1)*

Receiver, PNP output

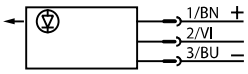


Receiver, NPN output



Thru-beam function transmitter

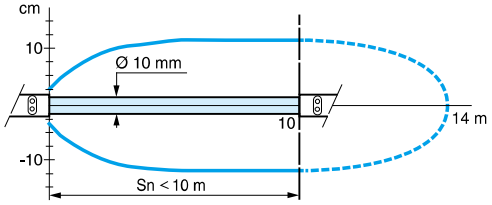
Transmitter



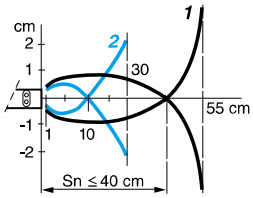
Input 2/VI:
- not connected: *beam made*
- connected to –: *beam broken*

Detection curves

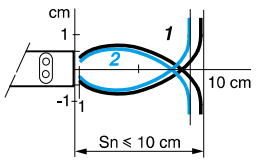
With thru-beam accessory (thru-beam)



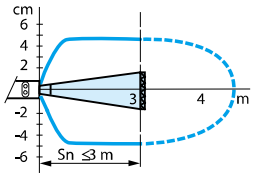
Without accessory (diffuse)



Without accessory (diffuse with background suppression)



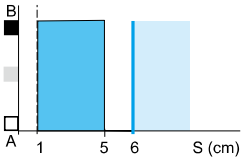
With reflector (polarised reflex)



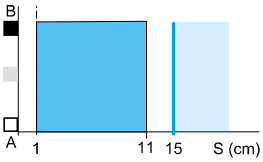
*Object: 10 x 10 cm, **1**: white 90%, 2: grey 18%*

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

Teach mode at minimum.



Teach mode at maximum.



A-B: *object reflection coefficient*
- *Black 6%*
- *Grey 18%*
- *White 90%*
- *Sensing range*
- *Non sensing zone (matt surfaces)*

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

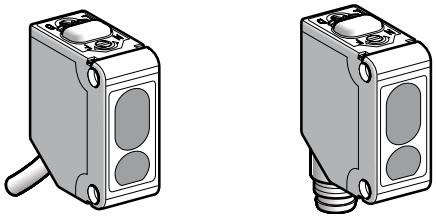
Photo-electric sensors

OsiSense XU, general purpose

With adjustable background and foreground suppression

DC supply. Solid-state output

Compact design



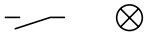
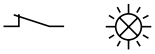
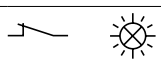
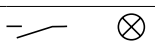
System	**Diffuse with adjustable background and foreground suppression, long sensing distance with high accuracy**
Type of transmission	Red
Nominal sensing distance (Sn)	**20…300 mm**
Differential travel	5% or less of the sensing distance
Adjustment	Potentiometer with 5 turns

References

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

Characteristics

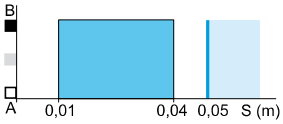
Product certifications		CE, cURus		
Ambient air temperature		For operation: - 25…+ 55°C For storage: - 30…+ 70°C		
Vibration resistance	Conforming to IEC 60068-2-8	20 gn max, amplitude: 3 mm, frequency: 10… 500 Hz		
Shock resistance	Conforming to IEC 60068-2-27	50 gn		
Degree of protection	Conforming to IEC 60529	IP 67		
Material		Case: PBT Lenses: polycarbonate		
Indicator lights	Output state	Orange LED		
	Power on, help with setting	Green LED		
Connection		2 m cable Conductor c.s.a.: 0.2 mm²	M8 4-pin connector	Remote M12 connector, 0.3 m cable Conductor c.s.a.: 0.2 mm²
Rated supply voltage		**12…24 V ⎓ with protection against reverse polarity**		
Voltage limits		10…30 V ⎓ (including ripple)		
Switching capacity		**≤ 100 mA with overload and short-circuit protection**		
Immunity to ambient light	Natural light	3000 lux		
	Incandescent bulb	3000 lux		
Voltage drop, closed state		< 2 V		
Current consumption		≤ 20 mA		
Response time		≤ 1 ms		

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

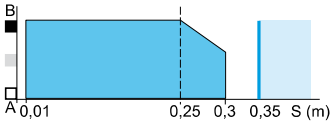
Detection curves

Variation of usable sensing distance

Minimum setting



Maximum setting



A-B: Object reflection coefficient

- Black 6%
- Grey 18%
- White 90%

- Sensing range
- Non sensing zone (Matt surfaces)

Photo-electric sensors

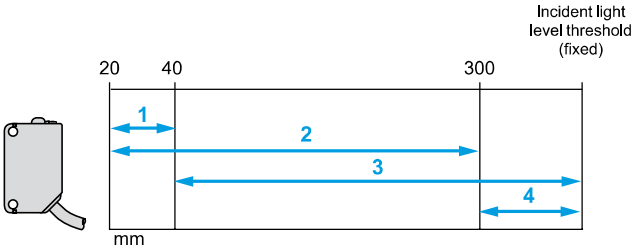
OsiSense XU, general purpose

With adjustable background and foreground suppression

DC supply. Solid-state output

Detection curves

Adjustment ranges in background or foreground suppression mode



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

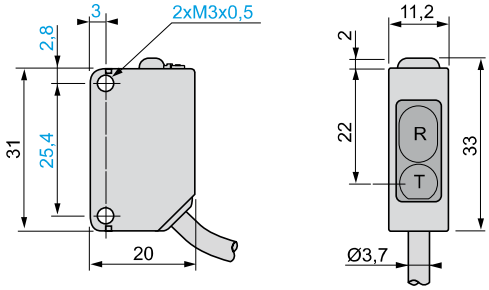
Adjustment in background or foreground suppression mode

Cabling of pink wire determines the detection mode:
- Background detection mode, pink wire not connected to 0 V (blue wire)
- Foreground detection mode, pink wire connected to +V (brown wire)

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

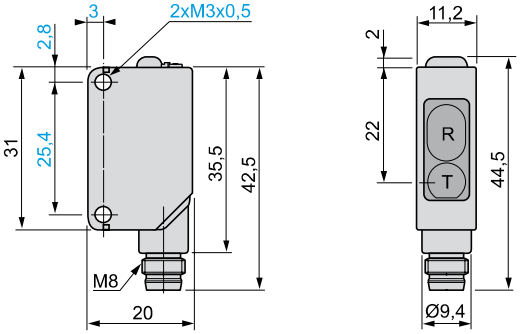
Dimensions

XUM8APCNL2, XUM8ANCNL2 and XUM8APCNL03M12

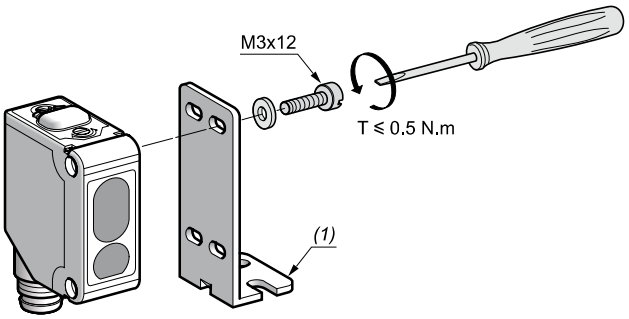


R: Reception, T: Transmission

XUM8APCNM8 and XUM8ANCNM8

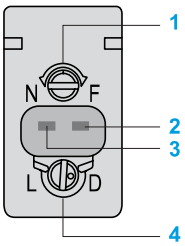


Mounting

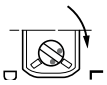
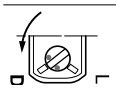


(1) ***XUZA50***, ***XUZAM02*** *or* ***XUZAM03*** *metal bracket (see page 34).*

Functions

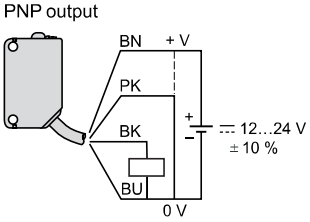


1 Remote adjustment potentiometer (5 turns).
2 Operation indicator (orange)
The LED is lit when the detection output has been activated.
3 Power ON and stability indicator (green)
The LED is lit in stable light or dark conditions.
4 NO/NC operating mode selector switch.

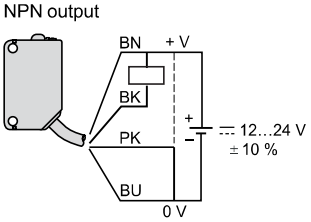
Selector switch	Function	Description
	NO (position L)	The NO output is activated when the selector switch is turned fully clockwise.
	NC (position D)	The NC output is activated when the selector switch is turned fully anticlockwise.

Wiring schemes (3-wire ⎓)

PNP output



NPN output



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

Cable connections

XUM8A●CNL2

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

Connector schemes

XUM8A●CNM8

M8 connector

3 (–)
1 (+)
4 Output
2 Mode/Input

XUM8APCNL03M12

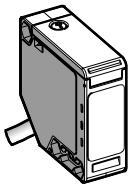
M12 connector

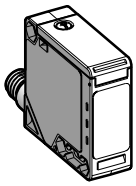
3 (–)
1 (+)
4 Output
2 Mode/Input

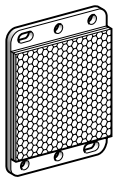
Please refer to our "Cabling accessories OsiSense XZ" catalogue.

Photo-electric sensors

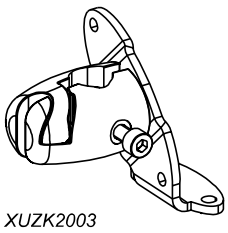
OsiSense XU, general purpose, single mode function
Compact design, 50 x 50
Five-wire AC or DC, 1 CO relay output
Three-wire DC, solid-state output

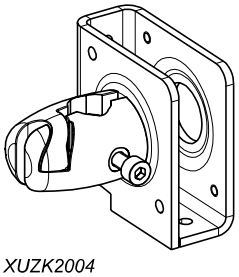

XUK●A●●●L2

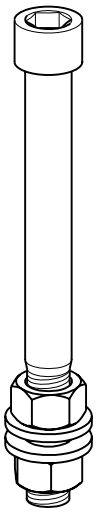

XUK●A●●●M12

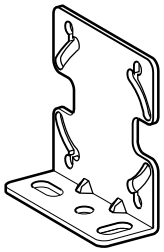

XUZC50

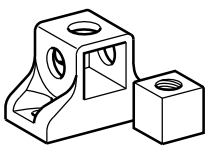
Sensing distance (Sn) m	Function	Output	Connection	Reference	Weight kg
Diffuse system with adjustable sensitivity					
DC					
1	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XUK5APANL2**	0.190
			M12 connector	**XUK5APANM12**	0.070
		NPN	Pre-cabled (L = 2 m) *(1)*	**XUK5ANANL2**	0.190
			M12 connector	**XUK5ANANM12**	0.070
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XUK5APBNL2**	0.190
			M12 connector	**XUK5APBNM12**	0.070
		NPN	Pre-cabled (L = 2 m) *(1)*	**XUK5ANBNL2**	0.190
			M12 connector	**XUK5ANBNM12**	0.070
AC or DC					
1	NO + NC	Relay	Pre-cabled (L = 2 m) *(1)*	**XUK5ARCNL2**	0.190
Polarised reflex system					
DC					
6	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XUK9APANL2**	0.190
			M12 connector	**XUK9APANM12**	0.070
		NPN	Pre-cabled (L = 2 m) *(1)*	**XUK9ANANL2**	0.190
			M12 connector	**XUK9ANANM12**	0.070
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XUK9APBNL2**	0.190
			M12 connector	**XUK9APBNM12**	0.070
		NPN	Pre-cabled (L = 2 m) *(1)*	**XUK9ANBNL2**	0.190
			M12 connector	**XUK9ANBNM12**	0.070
DC or AC					
6	NO + NC	Relay	Pre-cabled (L = 2 m) *(1)*	**XUK9ARCNL2**	0.190
Reflector 50 x 50 mm *(2)*		–	–	**XUZC50**	0.020
Reflex system					
DC					
7	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XUK1APANL2**	0.070
			M12 connector	**XUK1APANM12**	0.070
		NPN	Pre-cabled (L = 2 m) *(1)*	**XUK1ANANL2**	0.070
			M12 connector	**XUK1ANANM12**	0.070
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XUK1APBNL2**	0.070
			M12 connector	**XUK1APBNM12**	0.070
		NPN	Pre-cabled (L = 2 m) *(1)*	**XUK1ANBNL2**	0.070
			M12 connector	**XUK1ANBNM12**	0.070
AC or DC					
7	NO + NC	Relay	Pre-cabled (L = 2 m) *(1)*	**XUK1ARCNL2**	0.175
Reflector 50 x 50 mm *(2)*		–	–	**XUZC50**	0.020
Thru-beam system					
DC					
Transmitter 30	–	–	Pre-cabled (L = 2 m) *(1)*	**XUK2AKSNL2T**	0.190
	–	–	M12 connector	**XUK2AKSNM12T**	0.070
Receiver 30	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XUK2APANL2R**	0.140
			M12 connector	**XUK2APANM12R**	0.075
		NPN	Pre-cabled (L = 2 m) *(1)*	**XUK2ANANL2R**	0.140
			M12 connector	**XUK2ANANM12R**	0.075
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XUK2APBNL2R**	0.140
			M12 connector	**XUK2APBNM12R**	0.075
		NPN	Pre-cabled (L = 2 m) *(1)*	**XUK2ANBNL2R**	0.140
			M12 connector	**XUK2ANBNM12R**	0.075
AC or DC					
Transmitter, 30	–	–	Pre-cabled (L = 2 m) *(1)*	**XUK2ARCNL2T**	0.140
Receiver, 30	NO + NC	Relay	Pre-cabled (L = 2 m) *(1)*	**XUK2ARCNL2R**	0.070


XUZK2003


XUZK2004


XUZ2001


XUZA51


XUZ2003

Fixing accessories *(2)*

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

*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**. Example: XUK5APANL2 becomes **XUK5APANL5** or **XUK5APANL10**.*
For availability, please consult our Customer Care Centre.

Characteristics, schemes, curves, dimensions

Photo-electric sensors

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

Characteristics

Sensor type			XUK●●●●●M12	XUK●●●●●L2
Product certifications			UL, CSA, CE	
Connection			M12 connector	Pre-cabled, length: 2 m
Sensing distance **nominal Sn / maximum** (excess gain = 2) (excess gain = 1)		**m**	PNP/NPN or relay output **1 / 1.5 diffuse**	
		m	PNP/NPN or relay output **6 / 8 polarised reflex**	
		m	PNP/NPN or relay output **7 / 10 reflex**	
		m	PNP/NPN or relay output **30 / 45 thru-beam**	
Type of transmission			Infrared, except polarised reflex (red)	
Degree of protection	Conforming to IEC 60529		IP 65, double insulation ⧈	
Storage temperature		**°C**	- 40…+ 70	
Operating temperature		**°C**	- 25…+ 55	
Materials	Case		PBT	
	Lens		PMMA	
	Cable		–	PVC
Vibration resistance	Conforming to IEC 60068-2-6		7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms	
Indicator lights	Output state		Yellow LED (except for **XUK2●●●●●●T**)	
	Supply on		Green LED (only for **XUK2●●●●●●T**)	
Rated supply voltage	PNP/NPN	**V**	12…24 with protection against reverse polarity	
	Relay output	**V**	–	≂ 24…240
Voltage limits (including ripple)	PNP/NPN	**V**	⎓ 10…36	
	Relay output	**V**	–	≂ 20…264
Current consumption, no-load	PNP/NPN	**mA**	⩽ 35	
Power consumption	Relay output	**W**	–	≂ 2
Switching capacity	PNP/NPN	**mA**	⩽ 100 with overload and short-circuit protection	
	Relay output	**A**	–	≂ 3
Voltage drop, closed state		**V**	⩽ 1.5	
Maximum switching frequency	PNP/NPN	**Hz**	250	
	Relay output	**Hz**	–	20
Delays	First-up	**ms**	< 15 (PNP/NPN); < 60 (relay output)	
	Response	**ms**	< 2 (PNP/NPN); < 25 (relay output)	
	Recovery	**ms**	< 2 (PNP/NPN); < 25 (relay output)	

Wiring schemes

M12 connector

3 (-)
1 (+)
4 OUT/Output
2 Beam break input *(1)*

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

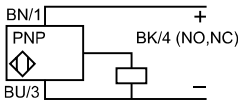
Pre-cabled, PNP/NPN

(-) BU (Blue)
(+) BN (Brown)
OUT/Output BK (Black)
Beam break input *(1)* VI (Violet)

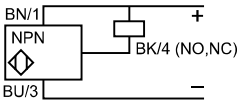
Pre-cabled, relay output

(≂) BU (Blue), (≂) BN (Brown)
Relay common/GY (Grey)
NO BK (Black)
NC WH (White)

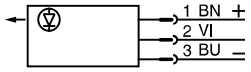
Receiver, PNP output



Receiver, NPN output

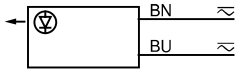


Thru-beam transmitter ⎓

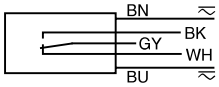


Input 2/VI:
- not connected: *beam made*
- connected to –: *beam broken*

Thru-beam transmitter ≂

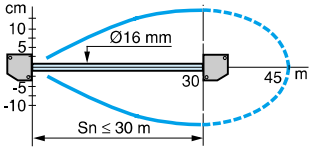


Relay output



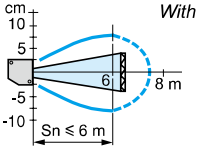
Detection curves

Thru-beam system



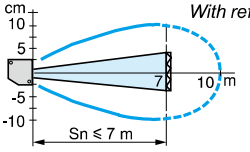
Polarised reflex system

With reflector XUZC50

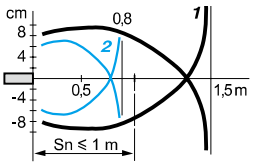


Reflex system

With reflector XUZC50



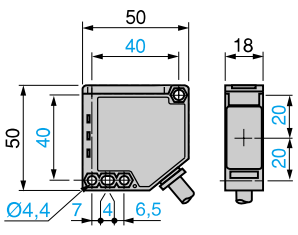
Diffuse system



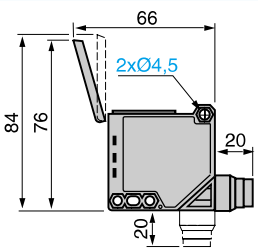
Object: 10 x 10 cm,
1: white 90%, 2: grey 18%

Dimensions

XUK●●●●●L2



XUK●●●●●M12



Possible orientation of elbowed connector

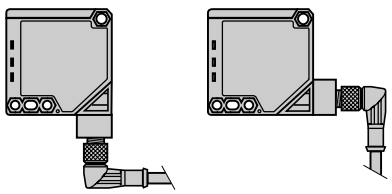
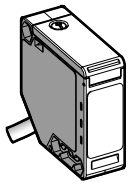


Photo-electric sensors

OsiSense XU, general purpose, multimode function. Compact design 50 x 50

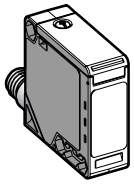
Five-wire AC or DC, 1 CO relay output
Three-wire DC, solid-state output

523273



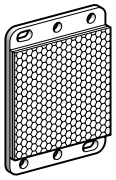
XUK0AKSAL2

523272



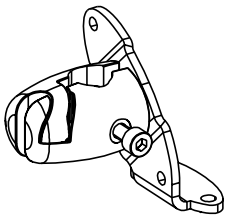
XUK0AKSAM12

805799



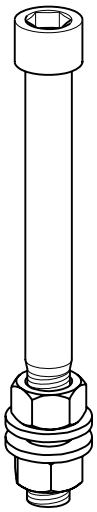
XUZC50

550028



XUZK2003

520312



XUZ2001

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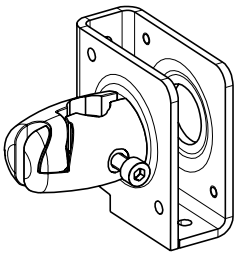
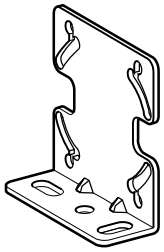


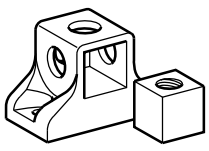
XUZK2004

550030



XUZA51

520684



XUZ2003

References

DC

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

Accessories

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

AC or DC

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

Accessories

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

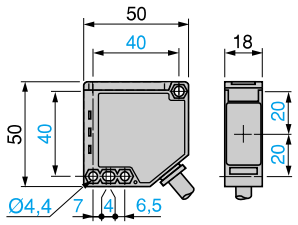
Fixing accessories *(2)*

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

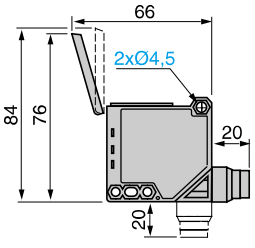
*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: XUK0AKSAL2 becomes **XUK0AKSAL5** or **XUK0AKSAL10**.*
(2) For further information, see page 164.

Dimensions (mm)

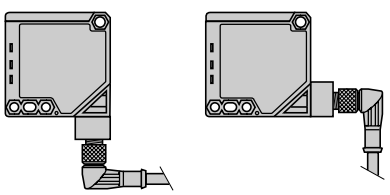
XUK0A●●●L2



XUK0A●●●M12



Possible orientation of elbowed connector



Characteristics, schemes, curves

Photo-electric sensors

OsiSense XU, general purpose, multimode function. Compact design 50 x 50

Five-wire AC or DC, 1 CO relay output

Three-wire DC, solid state output

Characteristics

Sensor type			XUK●●●●●M12	XUK●●●●●L2
Product certifications			UL, CSA, CE	
Connection			M12 connector	Pre-cabled, length: 2 m
Sensing distance		m	**0.28 / 0.28 without accessory (diffuse with background suppression)**	
nominal Sn / maximum (excess gain = 2) (excess gain = 1)		m	**0.8 / 1.2 without accessory (diffuse)**	
		m	**4 / 5.7 with reflector (polarised reflex)**	
		m	**30 / 35 with transmitter for thru-beam function (thru-beam)**	
Type of transmission			Infrared, except polarised reflex (red)	
Degree of protection	Conforming to IEC 60529		IP 65, double insulation ⧈	
Storage temperature		°C	- 40…+ 70	
Operating temperature		°C	- 25…+ 55	
Materials	Case		PBT	
	Lens		PMMA	
	Cable		–	PvR
Vibration resistance	Conforming to IEC 60068-2-6		7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms	
Indicator lights	Output state		Yellow LED (transmission present for **XUK0●●●●●●T**)	
	Supply on		Green LED	
	Optical alignment aid/dirty		Red LED (except for **XUK0●●●●●●T**)	
Alarm output		mA	⩽ 50 with overload and short-circuit protection (except XUK0ARCT●)	
Rated supply voltage	PNP/NPN	V	12…24 ⎓ with protection against reverse polarity	
	Relay output	V	–	≂ 24…240
Voltage limits (including ripple)	PNP/NPN	V	10…36 ⎓	
	Relay output	V	–	≂ 20…264
Current consumption, no-load	PNP/NPN	mA	⩽ 35; 20 for **XUK0AK●●●●T**	
Power consumption	Relay output	W	–	3 ∿ or ⎓
Switching capacity	PNP/NPN	mA	⩽ 100 with overload and short-circuit protection	
	Relay output	A	–	3 ∿ or ⎓
Voltage drop, closed state		V	⩽ 1.5	
Time delay		s	0…10 on-delay, off-delay, monostable	
Maximum switching frequency	PNP/NPN	Hz	250 (200 for diffuse with background suppression)	
	Relay output	Hz	–	20
Delays	First-up	ms	< 200 (PNP/NPN); < 300 (relay output)	
	Response	ms	< 2 (PNP/NPN); < 25 (relay output) (< 2.5 for diffuse with background suppression)	
	Recovery	ms	< 2 (PNP/NPN); < 25 (relay output) (< 2.5 for diffuse with background suppression)	

Wiring schemes

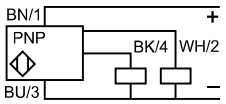
M12 connector

3 (-)
1 (+)
4 OUT/Output
2 Alarm or beam break input *(1)*

Pre-cabled

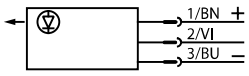
(-) BU (Blue)
(+) BN (Brown)
OUT/Output BK (Black)
Alarm/WH (White)
Beam break input *(1)*VI (Violet)

Receiver, PNP output



Thru-beam transmitter ⎓

Transmitter



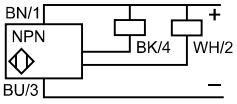
Input 2/VI:
- not connected: *beam made*
- connected to –: *beam broken*

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

Pre-cabled, relay output

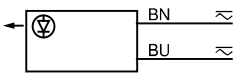
(≂) BU (Blue)
(≂) BN (Brown)
Relay common/GY (Grey)
NO BK (Black)
NC WH (White)

Receiver, NPN output

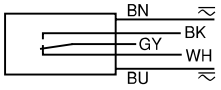


Thru-beam transmitter ∿

Transmitter

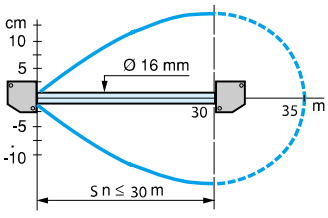


Relay output

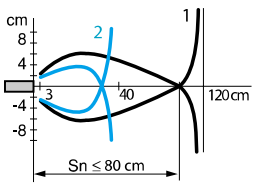


Detection curves

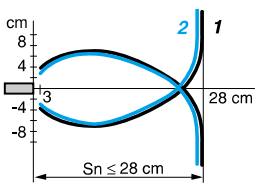
With thru-beam accessory (thru-beam)



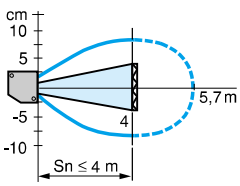
Without accessory (diffuse)



Without accessory (diffuse with background suppression)



With reflector (polarised reflex)

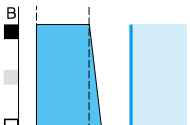


*Object 10 x 10 cm; **1** White 90%; **2** Grey 18%*

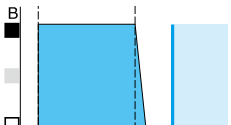
With reflector XUZC50

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

Teach mode at minimum



Teach mode at maximum



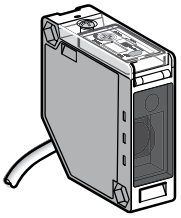
A-B: *object reflection coefficient*
Black 6%
Grey 18%
White 90%
Sensing range
Non sensing zone (matt surfaces)

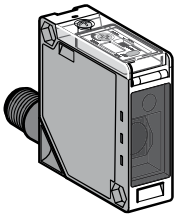
Photo-electric sensors

OsiSense XU, general purpose

With adjustable background suppression
Mechanical display of setting
DC supply. Solid-state output

Compact design





System		**Diffuse with adjustable background suppression, long sensing distance with high accuracy** (size of object ≥ 2 mm)	
Type of transmission		Infrared	
Nominal sensing distance (Sn)		**1 m**	
References			
3-wire, PNP or NPN programmable	NO or NC programmable function	**XUK8AKSNL2**	**XUK8AKSNM12**
Weight (kg)		0.190	0.070
Characteristics			
Product certifications		CE, UL, CSA	
Ambient air temperature		For operation: - 25…+ 55°C. For storage: - 30…+ 70°C	
Vibration resistance	Conforming to IEC 60068-2-6	7 gn (f = 10…55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27	10 gn, duration 11 ms	
Degree of protection	Conforming to IEC 60529	IP 65 (IP 30 with cover open). NEMA 4X indoor use, 12 and 13 double insulation	
Materials		Case: PC, lenses: PMMA, cable: PVC	
Connection *(1)*		Pre-cabled, diameter 6 mm, length 2 m, wire c.s.a.: 5 x 0.34 mm²	M12 male connector, 4-pin, can be set at 2 positions (suitable female connectors, including pre-wired versions)
Rated supply voltage		**12…24 V ⎓ with protection against reverse polarity**	
Voltage limits		10…36 V ⎓ (including ripple)	
Switching capacity (sealed)		**≤ 100 mA with overload and short-circuit protection**	
Voltage drop, closed state		≤ 1.5 V	
Current consumption, no-load		35 mA	
Maximum switching frequency		250 Hz	
Delays		First-up: ≤ 80 ms; response: ≤ 2 ms; recovery: ≤ 2 ms	

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

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

Curves, dimensions, schemes

Photo-electric sensors

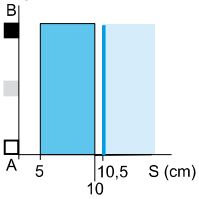
OsiSense XU, general purpose

With adjustable background suppression
Mechanical display of setting
DC supply. Solid-state output

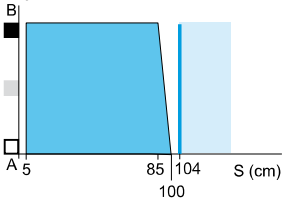
Detection curves

Variation of usable sensing distance Su

Adjustment at 10 cm



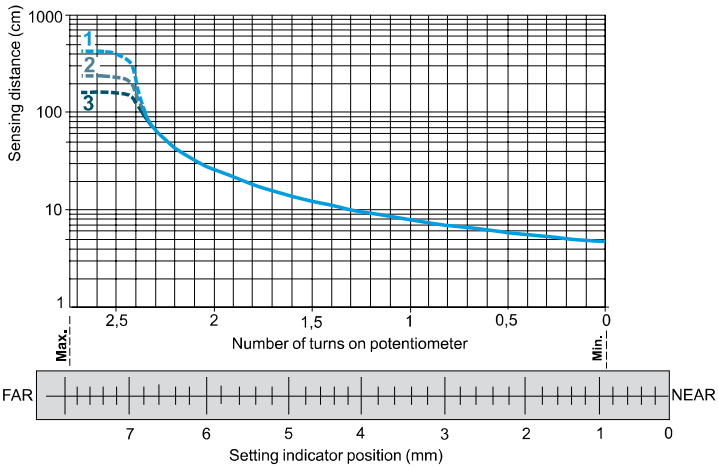
Adjustment at 1 m



A-B: Object reflection coefficient

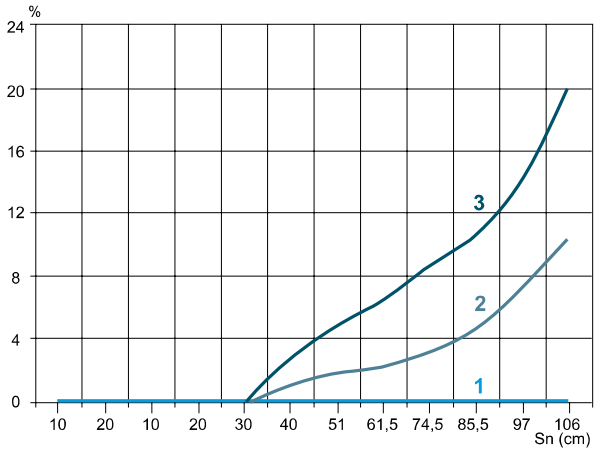
- Black 6%
- Grey 18%
- White 90%
- Sensing range
- Non sensing zone (matt surfaces)

Sensing distance adjustment



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

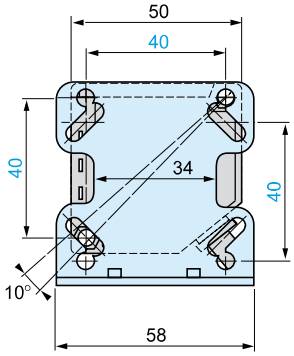
Relative difference in sensing distances according to object colour



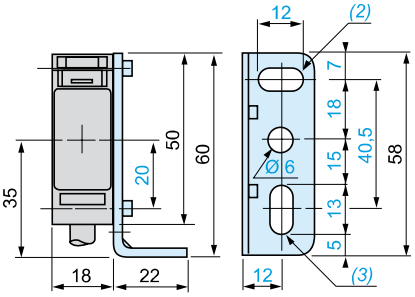
1 White 90%
2 Grey 18%
3 Black 6%

Dimensions

XUK8AKSNL2 *(1)*



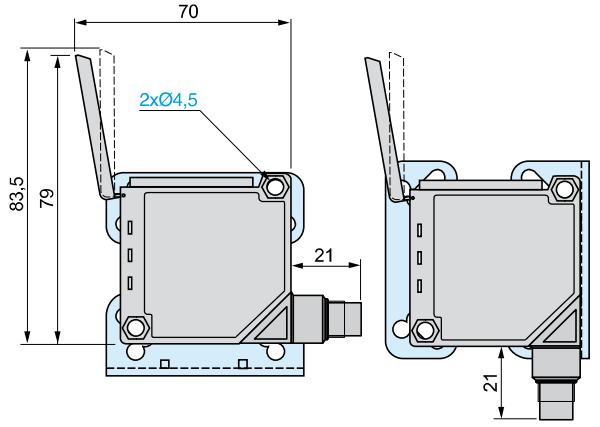
Bracket fixing *(1)*



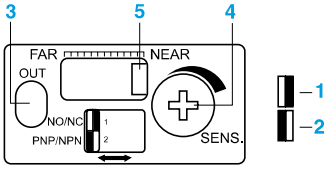
*(1) The bracket **XUZA51** is included with the sensor.*

(2) 1 elongated hole Ø 6 x 12.
(3) 1 elongated hole Ø 6 x 13.

XUK8AKSNM12 with cover open *(1)*



Functions



Switches

1 NO/NC programming
2 PNP or NPN output

LED

3 Yellow LED, output

Potentiometer

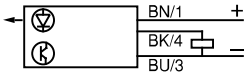
4 Sensing distance adjustment

Setting indicator

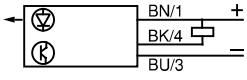
Wiring schemes (3-wire ⎓)

NO/NC programming

PNP output



NPN output



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

Cable connections

XUK8AKSNL2

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

Connector schemes

XUK8AKSNM12

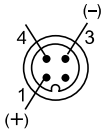
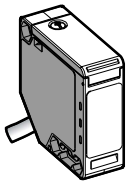


Photo-electric sensors

OsiSense XU, general purpose

With adjustable background suppression
Compact design, 50 x 50
Five-wire AC or DC, 1 “C/O” relay output

Compact design



System		**Diffuse with adjustable background suppression**
Type of transmission		Infrared
Nominal sensing distance (Sn)		**0.75 m**

References

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

Characteristics

Product certifications		CE, UL, CSA
Ambient air temperature		For operation: - 25…+ 55°C. For storage: - 30…+ 70°C
Vibration resistance	Conforming to IEC 60068-2-6	7 gn (f = 10…55 Hz)
Shock resistance	Conforming to IEC 60068-2-27	10 gn, duration 11 ms
Degree of protection	Conforming to IEC 60529	IP 65 double insulation ⧈ (IP 30 with cover open)
Materials		Case: PBT Lenses: PMMA Cable: PVC
Indicator lights	Output state	Yellow LED
	Supply on	Green LED
	Optical alignment aid/dirty	Red LED
Connection		Pre-cabled, diameter 6 mm, length 2 m, wire c.s.a.: 5 x 0.34 mm²
Rated supply voltage		24…240 V ∼ or ⎓
Voltage limits		20…264 V ∼ or ⎓ (including ripple)
Switching capacity		3 A: cos φ = 1 0.5 A: cos φ = 0.4
Voltage drop, closed state		≤ 1.5 V
Power consumption		3 W (∼ or ⎓)
Maximum switching frequency		200 Hz (⎓); 20 Hz (∼)
Time delay		0…15 s: on-delay, off-delay, monostable
Delays		First-up: ≤ 300 ms; response: ≤ 2 ms; recovery: ≤ 2 ms

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

Curves, dimensions, schemes

Photo-electric sensors

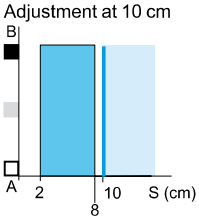
OsiSense XU, general purpose

With adjustable background suppression
Compact design, 50 x 50
Five-wire AC or DC, 1“C/O” relay output

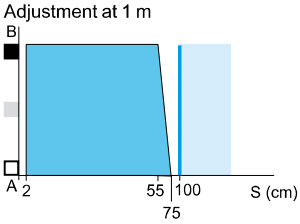
Detection curves

Variation of usable sensing distance Su

Adjustment at 10 cm



Adjustment at 1 m



A-B: Object reflection coefficient

Black 6%

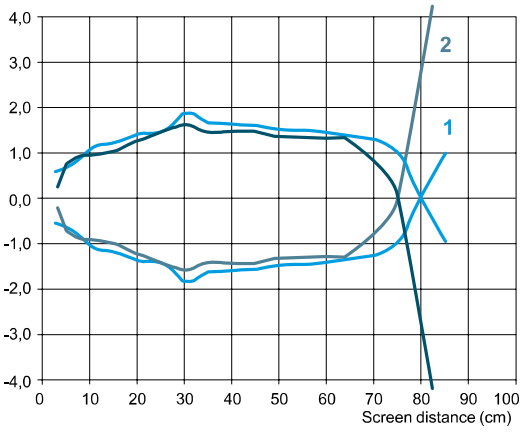
Grey 18%

White 90%

Sensing range

Non sensing zone
(Matt surfaces)

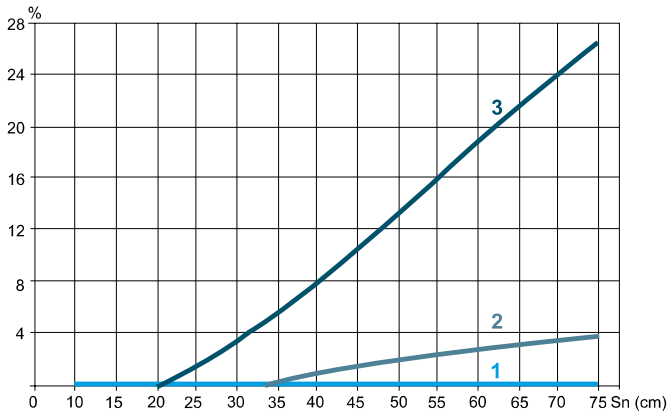
Detection curves



Screen: 20 x 20 cm

1 White 90%
2 Grey 18%

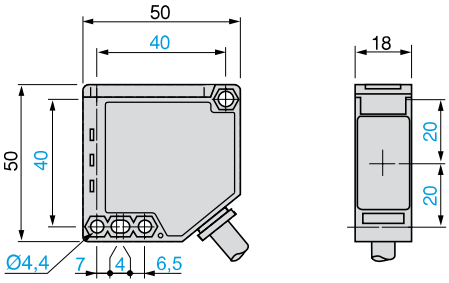
Relative difference in sensing distances according to object colour



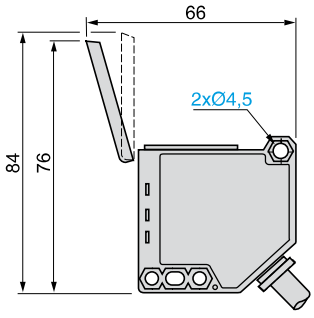
1 White 90%
2 Grey 18%
3 Black 6%

Dimensions

XUK8ARCTL2



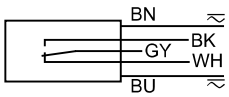
XUK8ARCTL2 with cover open



Connections

Wiring scheme

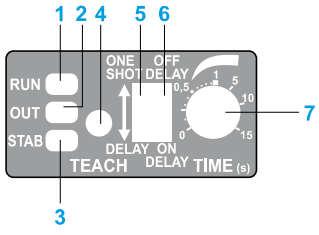
Cable connection, relay output



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

Description

Indicators and settings



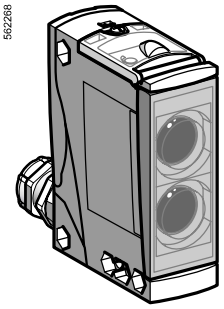
1 RUN (Supply on): Green LED
2 OUT (Output state): Yellow LED
3 STAB (Optical alignment aid/dirty): Red LED
4 TEACH: Teach mode button
5 ONE SHOT or DELAY (monostable or time delay)
6 ON DELAY, OFF DELAY (on-delay, off-delay)

Photo-electric sensors

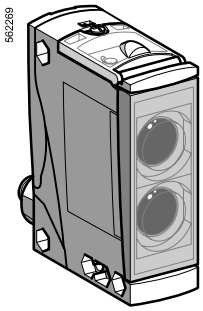
OsiSense XU, general purpose, single mode function. Compact design

Five-wire AC or DC, 1 CO relay output

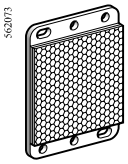
Three-wire DC, solid-state output



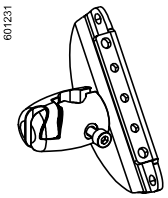
XUX●A●●●T16



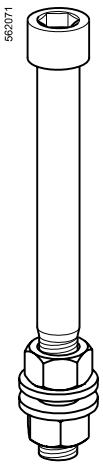
XUX●A●●●M12



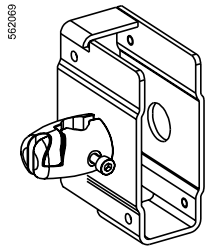
XUZC50



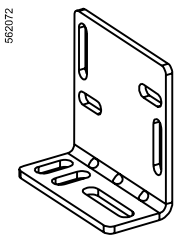
XUZX2003



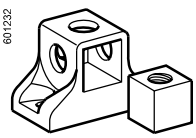
XUZ2001



XUZX2004



XUZX2000



XUZ2003

Sensing distance (Sn) m	Function	Output	Connection	Reference	Weight kg
Diffuse system *(1)*					
DC					
2.1	NO	PNP	Screw terminals *(3)*	**XUX5APANT16**	0.200
			M12 connector	**XUX5APANM12**	0.200
		NPN	Screw terminals *(3)*	**XUX5ANANT16**	0.200
			M12 connector	**XUX5ANANM12**	0.200
	NC	PNP	Screw terminals *(3)*	**XUX5APBNT16**	0.200
			M12 connector	**XUX5APBNM12**	0.200
		NPN	Screw terminals *(3)*	**XUX5ANBNT16**	0.200
			M12 connector	**XUX5ANBNM12**	0.200
AC or DC					
2.1	NO + NC	Relay	Screw terminals *(3)*	**XUX5ARCNT16**	0.200
Polarised reflex system *(1)*					
DC					
11	NO	PNP	Screw terminals *(3)*	**XUX9APANT16**	0.200
			M12 connector	**XUX9APANM12**	0.200
		NPN	Screw terminals *(3)*	**XUX9ANANT16**	0.200
			M12 connector	**XUX9ANANM12**	0.200
	NC	PNP	Screw terminals *(3)*	**XUX9APBNT16**	0.200
			M12 connector	**XUX9APBNM12**	0.200
		NPN	Screw terminals *(3)*	**XUX9ANBNT16**	0.200
			M12 connector	**XUX9ANBNM12**	0.200
AC or DC					
11	NO + NC	Relay	Screw terminals *(3)*	**XUX9ARCNT16**	0.200
Reflector 50 x 50 mm *(2)*		–	–	**XUZC50**	0.020
Reflex system *(1)*					
DC					
14	NO	PNP	Screw terminals *(3)*	**XUX1APANT16**	0.200
			M12 connector	**XUX1APANM12**	0.200
		NPN	Screw terminals *(3)*	**XUX1ANANT16**	0.200
			M12 connector	**XUX1ANANM12**	0.200
	NC	PNP	Screw terminals *(3)*	**XUX1APBNT16**	0.200
			M12 connector	**XUX1APBNM12**	0.200
		NPN	Screw terminals *(3)*	**XUX1ANBNT16**	0.200
			M12 connector	**XUX1ANBNM12**	0.200
AC or DC					
14	NO + NC	Relay	Screw terminals *(3)*	**XUX1ARCNT16**	0.200
Reflector 50 x 50 mm *(2)*		–	–	**XUZC50**	0.020
Thru-beam system *(1)*					
DC					
Transmitter 40			Screw terminals *(3)*	**XUX0AKSAT16T**	0.200
			M12 connector	**XUX0AKSAM12T**	0.200
Receiver 40	NO	PNP	Screw terminals *(3)*	**XUX2APANT16R**	0.200
			M12 connector	**XUX2APANM12R**	0.200
		NPN	Screw terminals *(3)*	**XUX2ANANT16R**	0.200
			M12 connector	**XUX2ANANM12R**	0.200
	NC	PNP	Screw terminals *(3)*	**XUX2APBNT16R**	0.200
			M12 connector	**XUX2APBNM12R**	0.200
		NPN	Screw terminals *(3)*	**XUX2ANBNT16R**	0.200
			M12 connector	**XUX2ANBNM12R**	0.200
AC or DC					
Transmitter 40			Screw terminals *(3)*	**XUX0ARCTT16T**	0.200
Receiver 40	NO + NC	Relay	Screw terminals *(3)*	**XUX2ARCNT16R**	0.200

Fixing accessories *(2)*		
Description	**Reference**	**Weight kg**
3D fixing kit for use on M12 rod, for XUX or XUZC50	**XUZX2003**	0.220
3D fixing kit for use on M12 rod, with protective cover for XUX	**XUZX2004**	0.420
M12 rod	**XUZ2001**	0.050
Support for M12 rod	**XUZ2003**	0.150
Fixing bracket	**XUZX2000**	0.120

(1) With adjustable sensitivity.

Characteristics, schemes, curves, dimensions

Photo-electric sensors

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

Five-wire AC or DC, 1 CO relay output

Three-wire DC, solid-state output

Characteristics

Sensor type			XUX●●●●●M12	XUX●AN●NT16, ●AP●NT16	XUX●ARC●T16
Product certifications			UL, CSA, CE		
Connection			M12 connector	Screw terminals, ISO 16 cable gland	
Sensing distance **nominal Sn / maximum** (excess gain = 2) (excess gain = 1)		**m**	**2.1 / 3 diffuse with adjustable sensitivity**		
		m	**11 / 15 polarised reflex with adjustable sensitivity** (with reflector XUZC50)		
		m	**14 / 19 reflex with adjustable sensitivity**		
		m	**40 / 60 thru-beam with adjustable sensitivity**		
Type of transmission			Infrared, except polarised reflex (red)		
Degree of protection	Conforming to IEC 60529		IP 65, IP 67, double insulation ⧈		
Storage temperature		**°C**	- 40…+ 70		
Operating temperature		**°C**	- 25…+ 55		
Materials	Case		PBT		
	Lens		PMMA		
Vibration resistance	Conforming to IEC 60068-2-6		7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms		
Indicator lights	Output state		Yellow LED (transmission present for **XUX0●●●●●●●T** ⎓)		
	Supply on		Green LED		
	Instability		Red LED (for **XUX9ARCNT16**)		
Rated supply voltage	PNP/NPN	**V**	12…24 with protection against reverse polarity		
	Relay output	**V**	–		24…240 ∿ or ⎓
Voltage limits (including ripple)	PNP/NPN	**V**			
	Relay output	**V**	–		20…264 ∿ or ⎓
Current consumption, no-load	PNP/NPN	**mA**	⩽ 35 (20 for **XUX0●●●●●●●T**)		
Power consumption	Relay output	**W**	–		2 ∿ or ⎓
Switching capacity	PNP/NPN	**mA**	⩽ 100 with overload and short-circuit protection		
	Relay output	**A**	–		500 000 operating cycles 3 A: cos φ = 1/0.5 A: cos φ = 0.4
Voltage drop, closed state		**V**	⩽ 1.5		
Maximum switching frequency	PNP/NPN	**Hz**	250		
	Relay output	**Hz**	–		20
Delays	First-up	**ms**	< 15 (PNP/NPN); < 60 (relay output)		
	Response	**ms**	< 2 (PNP/NPN); < 25 (relay output)		
	Recovery	**ms**	< 2 (PNP/NPN); < 25 (relay output)		

Wiring schemes

M12 connector

Relay output ∿

Terminals	
1	∿
2	∿
3	NO
4	Relay common
5	NC

PNP/NPN ⎓

M12		Terminals	
1	●	1	+
3	●	2	-
4	●	3	Output

Transmitter ⎓

M12		Terminals	
1	●	1	+
3	●	2	-
2	●	3	Beam break input *(1)*

(1) Input not connected: beam made.
Input connected to –: beam broken.

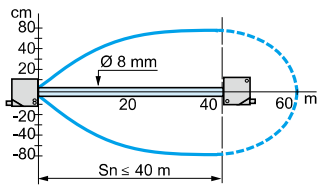
Transmitter ∿

Terminals	
1	∿
2	∿

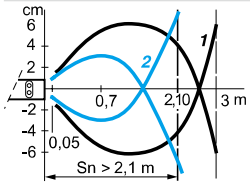
Maximum permissible conductor c.s.a.: 1 x 1.5 mm² or 1 x 0.75 mm² with cable end.

Detection curves

Thru-beam system

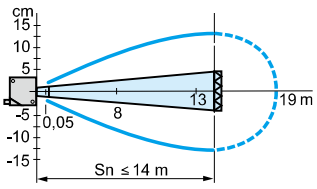


Diffuse system



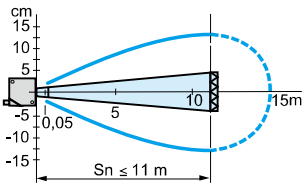
*Object 10 x 10 cm; **1** White 90%; **2** Grey 18%*

Reflex system



With reflector XUZC50

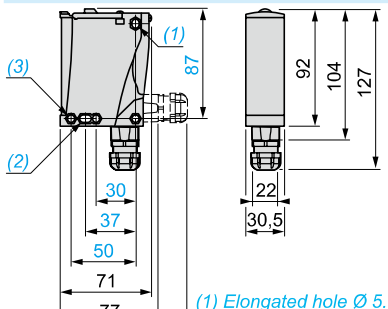
Polarised reflex system



With reflector XUZC50

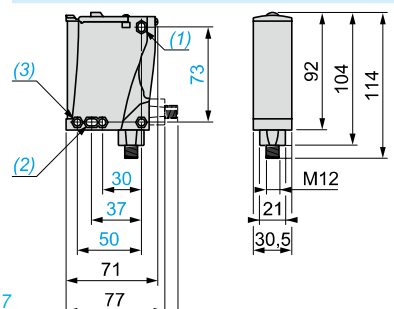
Dimensions

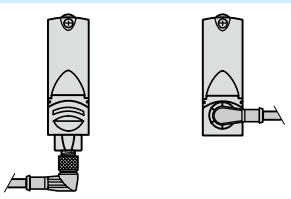
XUX●●●●●T16



(1) Elongated hole Ø 5.5 x 7

XUX●●●●●M12

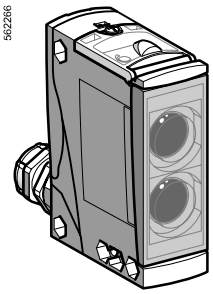




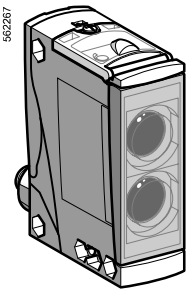
Possible orientation of elbowed connector
(rear view)

Photo-electric sensors

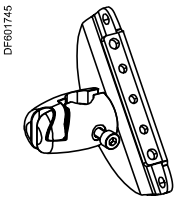
OsiSense XU, general purpose, multimode function *(1)*
Compact design
Five-wire AC or DC, 1 CO relay output
Three-wire DC, solid-state output


562266

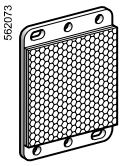
XUX0ARCTT16


562267

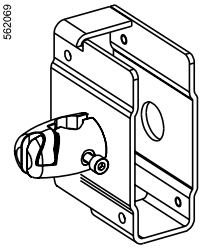
XUX0AKSAM12


DF601745

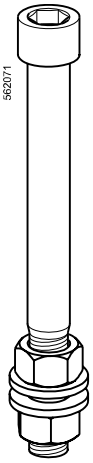
XUZX2003


562073

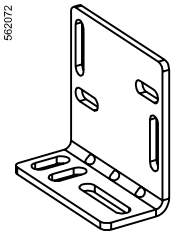
XUZC50


562069

XUZX2004


562071

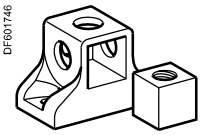
XUZ2001


562072

XUZX2000


562074

XUZX2001


DF601746

XUZ2003

References

DC

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

Accessories

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

AC or DC

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

Accessories

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

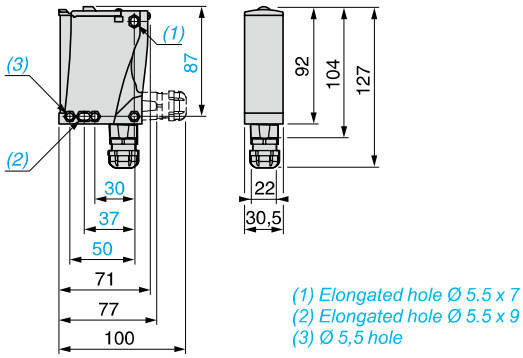
Fixing accessories *(2)*

Description	Reference	Weight kg
3D fixing kit for use on M12 rod, for XUX or XUZC50	**XUZX2003**	0.220
3D fixing kit for use on M12 rod, with protective cover for XUX	**XUZX2004**	0.420
M12 rod	**XUZ2001**	0.050
Support for M12 rod	**XUZ2003**	0.150
Fixing bracket	**XUZX2000**	0.120
Adaptor, ISO 16 - 1/2" NPT	**XUZX2001**	0.050
Adaptor, ISO 16 - ISO 20	**XUZX2002**	0.050

*(1) For further information on **the multimode function**, see page 14.*
(2) For further information, see page 162.
(3) For Ø 7 to 10 mm cable.

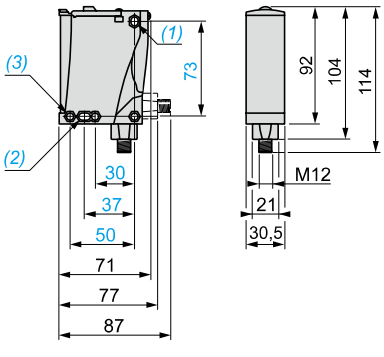
Dimensions

XUX●●●●●T16

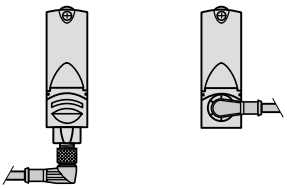


(1) Elongated hole Ø 5.5 x 7
(2) Elongated hole Ø 5.5 x 9
(3) Ø 5,5 hole

XUX●●●●●M12



Possible orientation of elbowed connector (rear view)



Characteristics, schemes, curves

Photo-electric sensors

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

Characteristics

Sensor type			XUX●●●●●M12	XUX●●●●●T16
Product certifications			UL, CSA, CE	
Connection			M12 connector	Screw terminals, ISO 16 cable gland
Sensing distance		**m**	**1.3 / 1.3 without accessory (diffuse with background suppression)**	
nominal Sn / maximum		**m**	**2 / 3 without accessory (diffuse)**	
(excess gain = 2) (excess gain = 1)		**m**	**15 / 18 with reflector (polarised reflex)**	
		m	**40 / 60 with transmitter for thru-beam function (thru-beam)**	
Type of transmission			Infrared, except for polarised reflex (red)	
Degree of protection	Conforming to IEC 60529		IP 65, IP 67, double insulation ⧈	
Storage temperature		**°C**	- 40…+ 70	
Operating temperature		**°C**	- 25…+ 55	
Materials	Case		PBT	
	Lens		PMMA	
Vibration resistance	Conforming to IEC 60068-2-6		7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60067-2-27		30 gn, duration 11 ms	
Indicator lights	Output state		Yellow LED (transmission present for **XUX0●●●●●●●T**)	
	Supply on		Green LED	
	Stability		Red LED (except for **XUX0●●●●●●●T**)	
Rated supply voltage	PNP/NPN	**V**	⎓ 12…24 with protection against reverse polarity	
	Relay output	**V**	–	24…240 ∿ or ⎓
Voltage limits (including ripple)	PNP/NPN	**V**	⎓ 10...36	
	Relay output	**V**	–	20…264 ∿ or ⎓
Current consumption, no-load	PNP/NPN	**mA**	≤ 35 (20 for **XUX0●●●●●●●T**)	
Power consumption	Relay output	**W**	–	2 ∿ or ⎓
Alarm output		**mA**	≤ 100 with overload and short-circuit protection	
Switching capacity	PNP/NPN	**mA**	≤ 100 with overload and short-circuit protection	
	Relay output	**A**	–	500 000 operating cycles 3 A: cos φ = 1/0.5 A: cos φ = 0.4
Voltage drop, closed state		**V**	≤ 1.5	
Maximum switching frequency	PNP/NPN	**Hz**	240	
	Relay output	**Hz**	–	20
Time delay	Relay output	**s**	–	0.02…15 on-delay, off-delay, monostable
Delays	First-up	**ms**	< 200	
	Response	**ms**	< 2 (PNP/NPN); < 25 (relay output)	
	Recovery	**ms**	< 2 (PNP/NPN); < 25 (relay output)	

Wiring schemes

M12 connector

Relay output ≂

Terminals	
1	≂
2	≂
3	NO
4	Relay common
5	NC

PNP/NPN ⎓

M12		Terminals		
1	●	1	⊘	+
3	●	2	⊘	-
4	●	3	⊘	Output
2	●	4	⊘	Alarm

Transmitter ⎓

M12		Terminals		
1	●	1	⊘	+
3	●	2	⊘	-
2	●	3	⊘	Beam break input *(1)*

(1) Input not connected: beam made.
Input connected to –: beam broken.

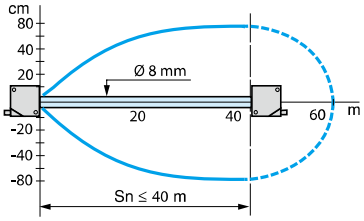
Transmitter ≂

Terminals		
1	⊘	≂
2	⊘	≂

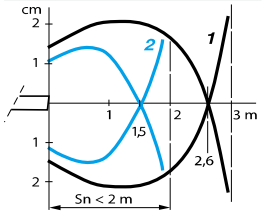
Maximum permissible conductor c.s.a.: 1 x 1.5 mm² or 1 x 0.75 mm² with cable end.

Detection curves

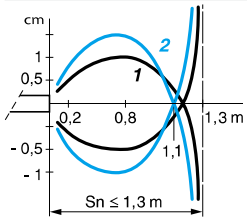
With thru-beam accessory (thru-beam)



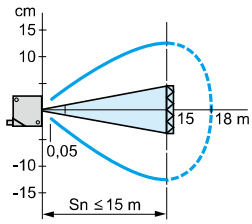
Without accessory (diffuse)



Without accessory(diffuse with background suppression)



With reflector (polarised reflex)

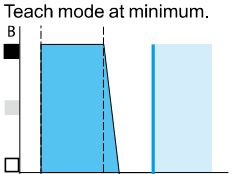


*Object: 10 x 10 cm, **1**: white 90%, **2**: grey 18%*

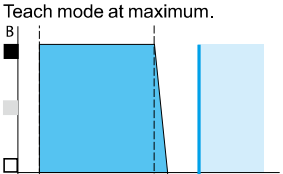
With reflector XUZC50

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

Teach mode at minimum.



Teach mode at maximum.



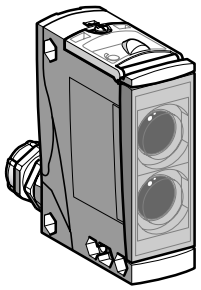
A-B: *object reflection coefficient*
- *Black 6%*
- *Grey 18%*
- *White 90%*
- *Sensing range*
- *Non sensing zone (matt surfaces)*

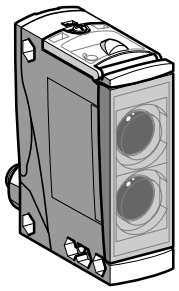
Photo-electric sensors

OsiSense XU, general purpose

With adjustable background suppression
Five-wire AC or DC, 1 CO relay output
Three-wire DC, solid-state output

Compact design





System		**Diffuse with adjustable background suppression, long sensing distance with high accuracy**		
Type of transmission		Infrared		
Nominal sensing distance (Sn)		**2 m**		

References

5-wire, AC/DC with terminal connections and ISO 16 cable gland	NO or NC programmable function	**XUX8ARCTT16**	–	
3-wire, PNP or NPN programmable	NO or NC programmable function	–	**XUX8AKSAT16**	**XUX8AKSAM12**
Weight (kg)		0.200	0.200	0.200

Characteristics

Product certifications		CE, UL, CSA		
Ambient air temperature		For operation: - 25…+ 55 °C. For storage: - 40…+ 70 °C		
Vibration resistance	Conforming to IEC 60068-2-6	7 gn (f = 10…55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27	10 gn, duration 11 ms		
Degree of protection	Conforming to IEC 60529	IP 65, IP 67, double insulation (IP 30 with cover open)		
Materials		Case: PC, lenses: PMMA		
Connection		Terminal connections via ISO 16 cable gland (7 to 10 mm cable)		M12 male connector, 4-pin, can be set at 2 positions
Rated supply voltage		**~ or ⎓ 24…240 V**	**⎓ 12…24 V with protection against reverse polarity**	
Voltage limits		~ or ⎓ 20…264 V (including ripple)	⎓ 10…0.36V (including ripple)	
Switching capacity (sealed)	Relay output	500 000 operating cycles; 3A Cos φ = 1; 0.5 A Cos φ = 0.4		
	PNP/NPN	–	⩽ 100 mA with overload and short-circuit protection	
Indicator light	Output state	Yellow LED		
	Supply on	Green LED		
	Stability	Red LED		
Voltage drop, closed state		⩽ 1.5 V		
Current consumption, no-load		35 mA		
Maximum switching frequency	Relay output	20 Hz	–	
	PNP/NPN	–	150 Hz	
Time delay	Relay output	0.02...15 s monostable, on delay or off-delay		
Delays	Relay output	First-up: ⩽ 200 ms; response: ⩽ 25 ms; recovery: ⩽ 25 ms		
	PNP/NPN	–		First-up: ⩽ 200 ms; response: ⩽ 3.5 ms; recovery: ⩽ 2.5 ms

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

Curves, dimensions, schemes

Photo-electric sensors

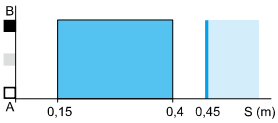
OsiSense XU, general purpose

With adjustable background suppression
Five-wire AC or DC, 1 CO relay output
Three-wire DC, solid-state output

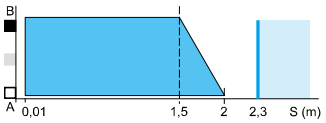
Detection curves

Variation of usable sensing distance Su

Teach mode at minimum



Teach mode at maximum



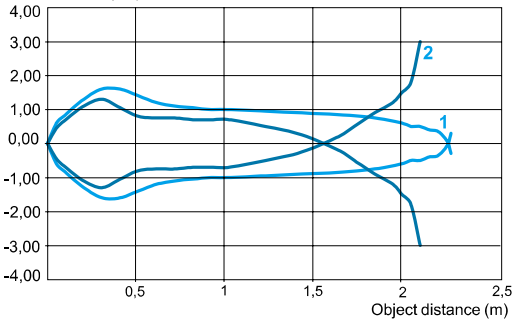
A-B: Object reflection coefficient

- Black 6%
- Grey 18%
- White 90%

- Sensing range
- Non sensing zone (Matt surfaces)

Detection curves

Detection lobe (cm)

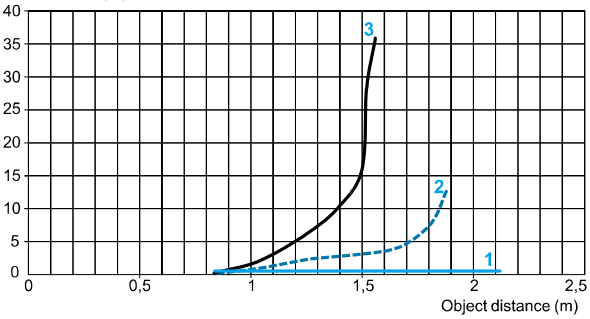


Object: 10 x 10 cm

1 white 90%
2 grey 18%

Relative difference in sensing distances according to object colour

Relative error (%)

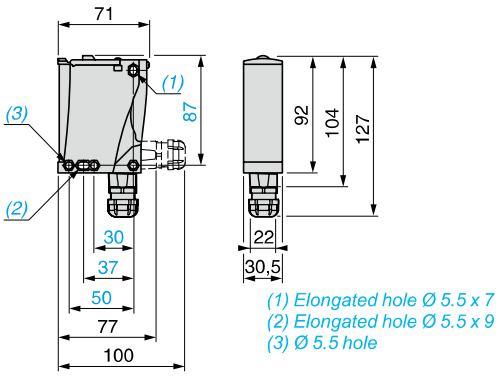


Object: 10 x 10 cm

1 white 90%
2 grey 18%
3 black 6%

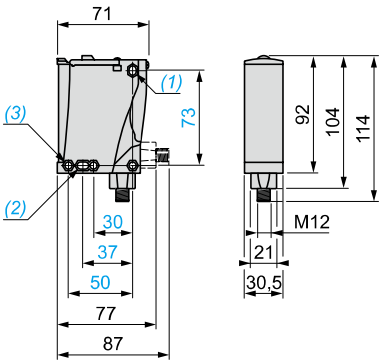
Dimensions

XUX●●●●●T16

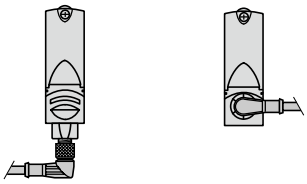


(1) Elongated hole Ø 5.5 x 7
(2) Elongated hole Ø 5.5 x 9
(3) Ø 5.5 hole

XUX●●●●●M12



Possible orientation of elbowed connector (rear view)



Wiring schemes

M12 connector

Relay output ≂

Terminals		
1	⊘	≂
2	⊘	≂
3	⊘	NO
4	⊘	Relay common
5	⊘	NC

PNP/NPN ⎓

M12		Terminals		
1	•	1	⊘	+
3	•	2	⊘	-
4	•	3	⊘	Output
2	•	4	⊘	Alarm inactive

Maximum permissible conductor c.s.a.: 1 x 1.5 mm² or 1 x 0.75 mm² with cable end.

Typical application

Wrapping system/outer wrapping

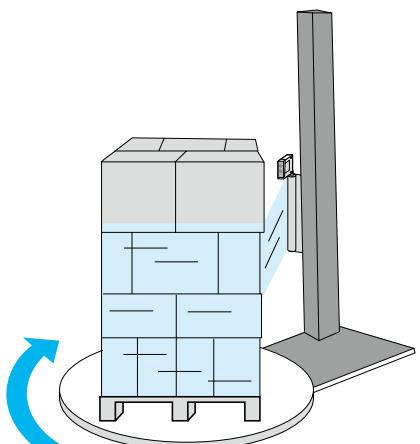
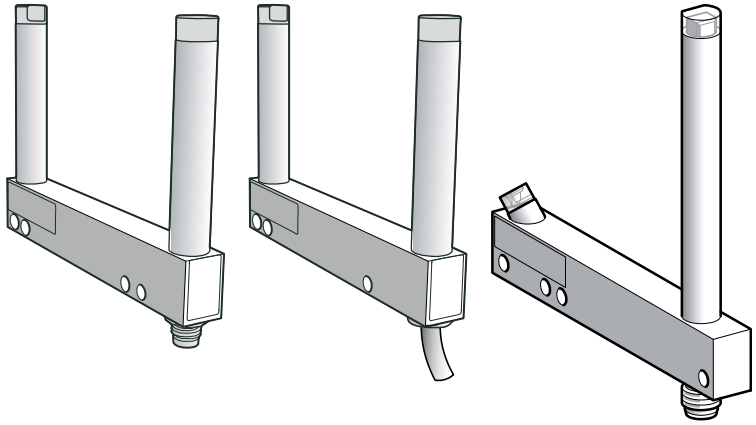


Photo-electric sensors

OsiSense XU

Optical fork without adjustment
DC supply. Solid-state output

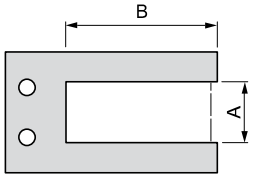
Optical fork without adjustment	Connector	Pre-cabled	Angular fork



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**	**1.2 mm**	
Passageway ⩾ 150 mm	**1 mm**	**1.5 mm**	
Fork type	**XUVR●**	**XUVA●**	

References of forks type XUVR●

3-wire
NO or NC function
PNP or NPN output



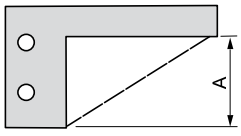
A = Passageway
B = Depth

Passageway (A)	Function	Output	Pre-cabled, length 2 m. Depth (B): 40 mm
30 mm	NO	PNP	**XUVR0303PANL2**
Passageway (A)	**Function**	**Output**	**M8 connector, 3-pin. Depth (B): 60 mm**
50 mm	NO	PNP	**XUVR0605PANM8**
		NPN	**XUVR0605NANM8**
	NC	PNP	**XUVR0605PBNM8**
		NPN	**XUVR0605NBNM8**
80 mm	NO	PNP	**XUVR0608PANM8**
		NPN	**XUVR0608NANM8**
	NC	PNP	**XUVR0608PBNM8**
		NPN	**XUVR0608NBNM8**
Passageway (A)	**Function**	**Output**	**M8 connector, 3-pin. Depth (B): 120 mm**
120 mm	NO	PNP	**XUVR1212PANM8**
		NPN	**XUVR1212NANM8**
	NC	PNP	**XUVR1212PBNM8**
		NPN	**XUVR1212NBNM8**
180 mm	NO	PNP	**XUVR1218PANM8**
		NPN	**XUVR1218NANM8**
	NC	PNP	**XUVR1218PBNM8**
		NPN	**XUVR1218NBNM8**

Weight (kg)	0.080 to 0.190 depending on model

References of forks type XUVA●

3-wire
NO function, PNP output



A = Passageway

Type	Function	Output	**M8 connector, 3-pin**
50 mm	NO	PNP	**XUVA0505PANM8**
80 mm	NO	PNP	**XUVA0808PANM8**
120 mm	NO	PNP	**XUVA1212PANM8**
150 mm	NO	PNP	**XUVA1515PANM8**

Weight (kg)	0.100 to 0.195 depending on model

Other versions: please consult our Customer Care Centre.

Applications: detection on conveyor, detection on vibrating rail.

Accessories

Description	Details	Length of cable	Reference	Weight kg
Pre-wired M8 connector	Straight	2 m	**XZCP0566L2**	0.060
	Elbowed (90°)	2 m	**XZCP0666L2**	0.060
	Straight	5 m	**XZCP0566L5**	0.120

Characteristics, dimensions, schemes

Photo-electric sensors

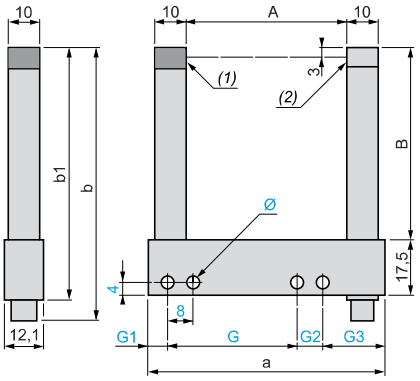
OsiSense XU

Optical fork without adjustment
DC supply. Solid-state output

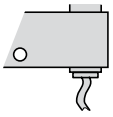
Characteristics		XUVR●	XUVA
Product certifications		CE, UL, CSA	CE
Ambient air temperature	For operation	- 10…+ 60 °C	
	For storage	- 40…+ 80 °C	
Degree of protection	Conforming to IEC 60529	IP 65 and IP 67	
Vibration resistance	Conforming to IEC 60068-2-6	7 gn, amplitude ± 0.75 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27	30 gn, duration 11 ms	
Materials	Case	Painted aluminium and polyamide	
Rated supply voltage		⎓ **12…24 V with protection against reverse polarity**	
Voltage limits (including ripple)		⎓ **10…30 V**	
Immunity to ambient light	Natural light	10 000 lux	
	Incandescent bulb	5000 lux	
Switching capacity		**100 mA with overload and short-circuit protection**	
Voltage drop, closed state		< 1.5 V	
Current consumption, no-load		< 20 mA	
Maximum switching frequency		**4000 Hz**	
Delays	First-up	140 ms max.	
	Stability	± 15 µs	
Indicator lights	Yellow LED	Output signal	

Dimensions

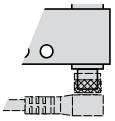
XUVR●



XUVR0303● (pre-cabled version detail)

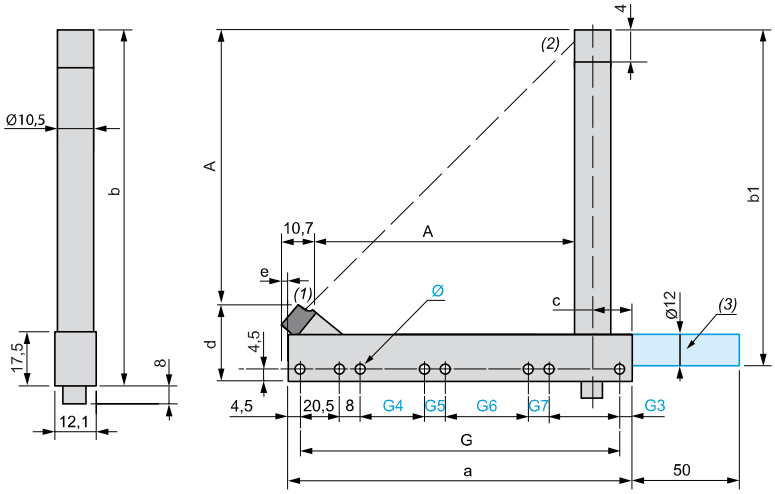


Orientation of elbowed connector



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

XUVA●



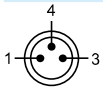
(1) Transmission LED
(2) Yellow LED: output signal
(3) Optional fixing rod available on request. Please consult our Customer Care Centre.

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 schemes

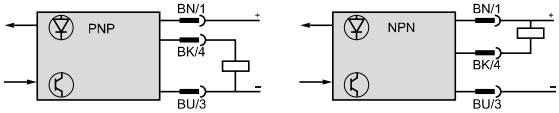
M8 connector



Pin n° - colour

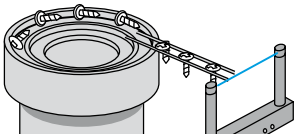
1 BN
3 BU
4 BK

Cabling

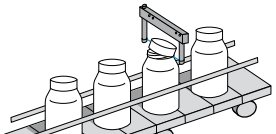


Application examples

Vibrating bowl



Monitoring height of objects passing on a conveyor



Detecting position of object on a conveyor

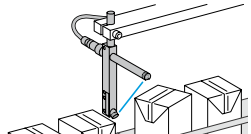
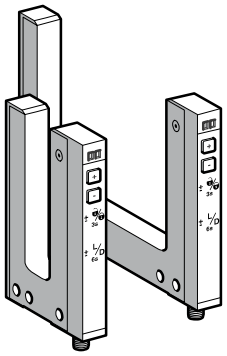
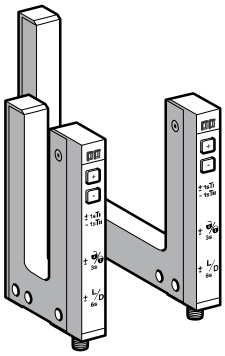


Photo-electric sensors

OsiSense XU Application

Optical fork with teach mode

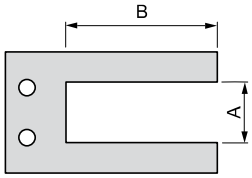
DC supply. Solid-state output

Optical fork with teach mode	+/- numeric potentiometer mode Green keypad	Teach mode Yellow keypad
		

System		**Thru-beam**	
Type of transmission		Infrared LED, modulated	
Nominal sensing distance (Sn)		**2…120 mm**	
Minimum size of object detected	Passageway 2…120 mm	**0.2 mm**	
Fork type		**XUYFNEP●**	**XUYFANEP●**

References

4-wire, PNP/NPN independent outputs	NO/NC function, selectable	**Passageway (A)**	**Depth (B)**			**Depth (B)**		
		mm	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					



A = Passageway
B = Depth

Characteristics

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

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

Accessories

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

Presentation, dimensions, schemes

Photo-electric sensors

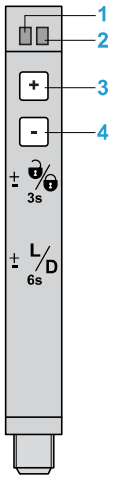
OsiSense XU Application

Optical fork with teach mode

DC supply. Solid-state output

Presentation

XUYFNEP●●●



1 Yellow LED “ON”: Output activated

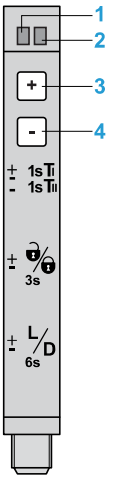
2 Red LED “ON”: Adjustments and keypad locking

3, 4 Sensitivity adjustment

3 + 4 Keypad locking (3 s ≤ press time < 6 s)

3 + 4 NO/NC (press time ≥ 6 s)

XUYFANEP●●●



1 Yellow LED “ON”: Output activated

2 Red LED “ON”: Adjustments and keypad locking

3, 4 Sensitivity adjustment

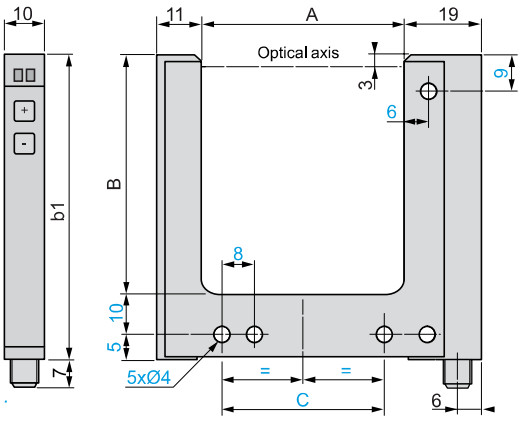
3 + 4 Teach mode and automatic adjustment of sensitivity (press time < 3 seconds)

3 + 4 Keypad locking (3 s ≤ press time < 6 s)

3 + 4 NO/NC (press time ≥ 6 s)

Dimensions

XUYFNEP●●● / XUYFANEP●●●



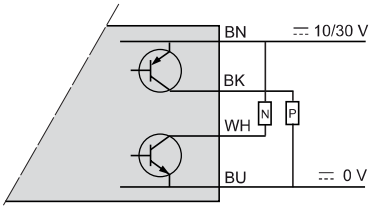
XUY	Passageway	Depth		
	A	B	b1	C
FNEP/FANEP●002	2	42, 59, 95	57, 74, 110	14
FNEP/FANEP●005	5	42, 59, 95	57, 74, 110	14
FNEP/FANEP●015	15	42, 59, 95	57, 74, 110	27
FNEP/FANEP●030	30	42, 59, 95	57, 74, 110	42
FNEP/FANEP●050	50	42, 59, 95	57, 74, 110	40
FNEP/FANEP●080	80	42, 59, 95	57, 74, 110	70
FNEP/FANEP●120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

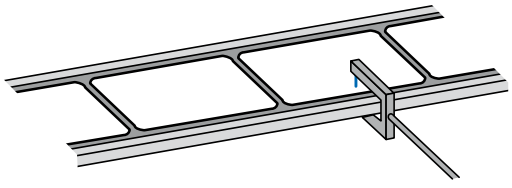
M8 connector



Application examples

Green keypad: Potentiometer mode

Detection of labels on belt



Yellow keypad: Teach mode

Detection of sheet feed on printing machine

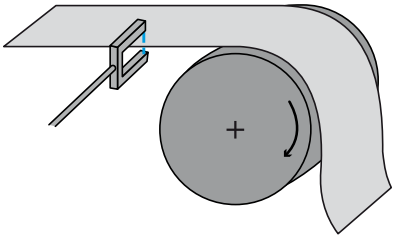
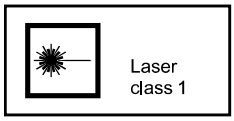


Photo-electric sensors

OsiSense XU Application

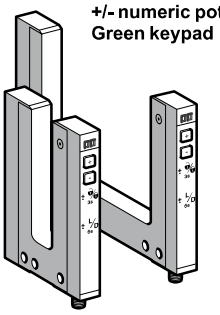
Optical fork with laser transmission, with teach mode
DC supply. Solid-state output

High sensitivity fork range

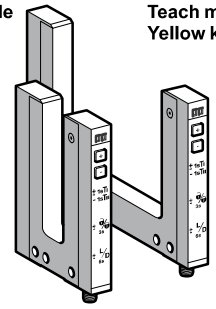


Laser class 1, conforming to IEC 60825-1

+/- numeric potentiometer mode
Green keypad



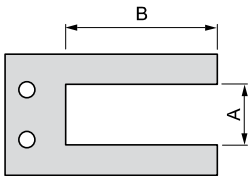
Teach mode
Yellow keypad



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

References

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



A = Passageway
B = Depth

Passageway (A)	Depth (B)			Depth (B)		
mm	42	59	95	42	59	95
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

Product certifications		CE,cULus. This product is UL Listed if supplied by a class II or isolated supply delivering ⎓ 30 V max. (isolated transformer for example) and protected by a UL fuse rated at 3 A max.
Ambient air temperature	For operation	- 20…+ 50 °C
	For storage	- 30…+ 80 °C
Degree of protection	Conforming to IEC 60529	IP 65
Connection		M8, 4-pin male connector
Vibration resistance	Conforming to IEC 60068-2-6	7 gn, amplitude ± 0.75 mm (f = 10 to 55 Hz)
Shock resistance	Conforming to IEC 60068-2-27	30 gn, duration 11 ms
Materials	Case	Painted aluminium and polyamide/glass
Rated supply voltage		⎓ **12…24 V with protection against reverse polarity**
Voltage limits (including ripple)		⎓ **10…30 V**
Immunity to ambient light	Natural light	10 000 lux
	Incandescent bulb	5000 lux
Outputs	PNP/NPN	By wiring
	NO/NC	Using teach mode
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		+/- 20 µs
Indicator 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)	References	Weight kg
Pre-wired M8 connector	Straight	2	**XZCP0941L2**	0.080
	Elbowed (90°)	2	**XZCP1041L2**	0.080
	Straight	5	**XZCP0941L5**	0.180

Presentation, dimensions, schemes

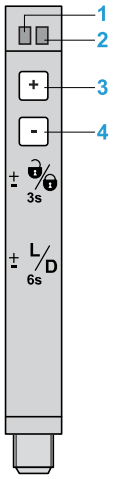
Photo-electric sensors

OsiSense XU Application

Optical fork with laser transmission, with teach mode
DC supply. Solid-state output

Presentation

XUYFLNEP●



1 Yellow LED "ON": Output activated

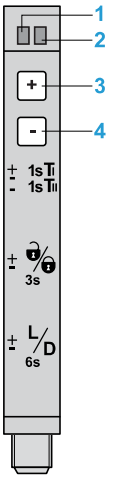
2 Red LED "ON": Adjustments and keypad locking

3, 4 Sensitivity adjustment

3 + 4 Keypad locking (3 s ≤ press time < 6 s)

3 + 4 NO/NC (press time ≥ 6 s)

XUYFALNEP●



1 Yellow LED "ON": Output activated

2 Red LED "ON": Adjustments and keypad locking

3, 4 Sensitivity adjustment

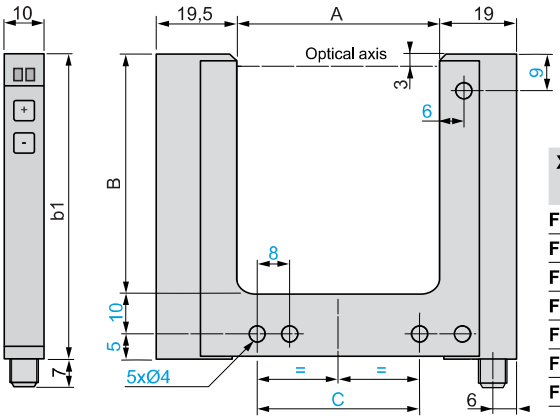
3 + 4 Teach mode and automatic adjustment of sensitivity (press time < 3 seconds)

3 + 4 Keypad locking (3 s ≤ press time < 6 s)

3 + 4 NO/NC (press time ≥ 6 s)

Dimensions

XUYFLNEP●/XUYFALNEP●



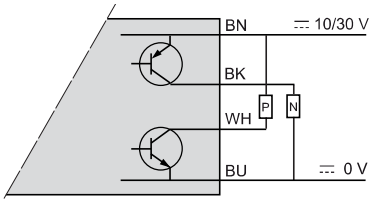
XUY	Passageway A	Depth B	b1	C
FLNEP/FALNEP●2	2	42, 59, 95	57, 74, 110	14
FLNEP/FALNEP●5	5	42, 59, 95	57, 74, 110	14
FLNEP/FALNEP●15	15	42, 59, 95	57, 74, 110	27
FLNEP/FALNEP●30	30	42, 59, 95	57, 74, 110	42
FLNEP/FALNEP●50	50	42, 59, 95	57, 74, 110	40
FLNEP/FALNEP●80	80	42, 59, 95	57, 74, 110	70
FLNEP/FALNEP●120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

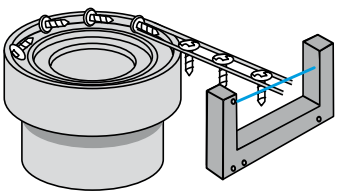
M8 connector



Application examples

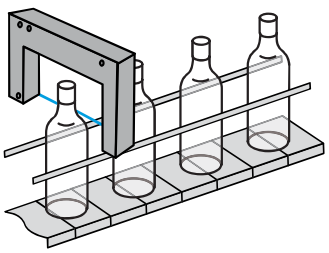
Green keypad: Potentiometer mode

Detection of an object exiting a vibrating bowl



Yellow keypad: Teach mode

Detection of transparent bottles (glass, PET…)



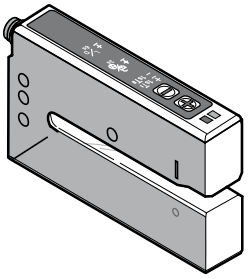
Ultrasonic sensors

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		
Depth		69 mm		

References

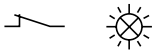
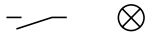
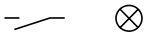
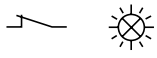
4-wire		**XUVU06M3KSNM8**	**XUVU06M3PSNM8**	**XUVU06M3NSNM8**
	NC or NO programmable function	PNP/NPN	PNP	NPN
Remote adjustment		No	Yes	
Adjustment		By numeric potentiometer (+/- buttons), static and dynamic teach modes.		
Protection of settings		By locking keypad		
Weight (kg)		0.130		

Characteristics

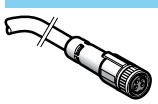
Product certifications		CE, IEC 60947-5-2
Materials		Aluminium case
Connection		M8, 4-pin connector
Detection performance	Minimum length of label	2 mm
	Minimum distance between 2 labels	2 mm
	Maximum flow rate	180 m/min
	Detection accuracy	+/- 0.20 mm at 120 m/min
Supply	Rated supply voltage	⎓ **12…24 V with protection against reverse polarity**
	Voltage limits	⎓ **10…30 V (including ripple)**
	Current consumption, no-load	45 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	**1500 Hz**
	Indicator light	
	Output state	Yellow LED
	Adjustment and keypad locking	Red LED
Delay		300 µs, response and recovery
Environment	Operating temperature	+ 5….+ 55° C
	Storage temperature	- 20° C..+ 70° C
	Degree of protection	IP 65

Function table

Output state (PNP or NPN) indicator: yellow LED
(illuminated when sensor output is ON)

Function	**Thru-beam system**	
	No label present in the beam (output inactive)	**Label present in the beam (output active)**
NC		
NO		

References of pre-wired connectors



XZCP0941L●

Type of connector	**For use with forks**	**Type**	**Cable length (m)**	**Reference**	**Weight kg**
Female, M8, 4 pins	XUVU06M3KSNM8, XUVU06M3PSNM8, XUVU06M3NSNM8.	Straight	2	**XZCP0941L2**	0.080
			5	**XZCP0941L5**	0.180
		Elbowed	2	**XZCP1041L2**	0.080
			5	**XZCP1041L5**	0.180

Presentation, connections, dimensions

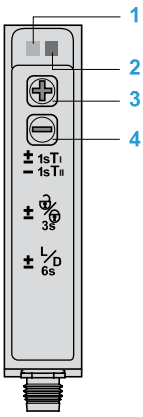
Ultrasonic sensors

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

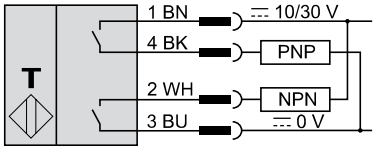
Connector

Pin no. - colour

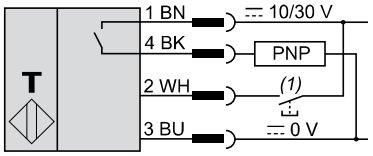
1 BN: Brown
2 WH: White (remote teaching)
3 BU: Blue
4 BK: Black

Wiring schemes

PNP/NPN: XUVU06M3KSNM8

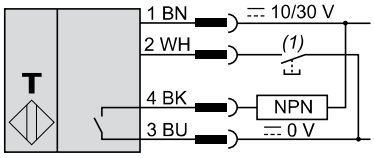


PNP: XUVU06M3PSNM8



(1) Remote teaching.

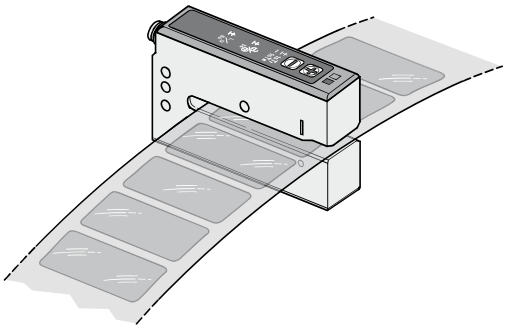
NPN: XUVU06M3NSNM8



(1) Remote teaching.

Application example

Detection of transparent labels on opaque or transparent strip



Dimensions (in mm)

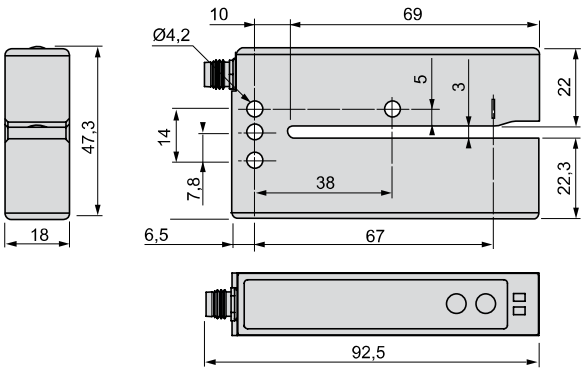
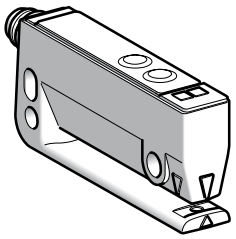


Photo-electric sensors

OsiSense XUVE Application, packaging series

Optical fork for detection of opaque labels
DC supply. Solid-state output

Fork design



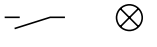
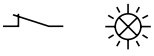
System		Thru-beam		
Type of transmission		Infrared		
Nominal sensing distance (Sn)		3 mm		
Depth		40 mm		

References

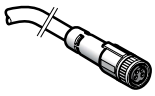
4-wire		**XUVE04M3KSNM8**	**XUVE04M3PSNM8**	**XUVE04M3NSNM8**
	NO or NC programmable function	PNP/NPN	PNP	NPN
Remote adjustment		No	Yes	
Adjustment		By numeric potentiometer (+/- buttons) and red LED		
Protection of settings		By locking keypad		
Weight (kg)		0.035		

Characteristics

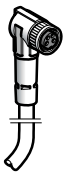
Product certifications		CE, cULus
Material		Thermoplastic case (PA12)
Connection		M8, 4-pin connector
Detection performance	Minimum length of label	2 mm
	Minimum distance between 2 labels	2 mm
	Maximum flow rate	200 m/min
	Detection accuracy	**+/- 50 µm at 150 m/min**
Supply	Rated supply voltage	12…24 V with protection against reverse polarity
	Voltage limits	10…30 V ⎓ (including ripple)
	Current consumption, no-load	35 mA
	Residual voltage at 100 mA	< 2 V
Output	Maximum rated current	100 mA with overload and short-circuit protection
	Maximum switching frequency	**10 kHz**
	Indicator lights	
	Output state	Yellow LED
	Adjustment and keypad locking	Red LED
	Delay (response and recovery)	50 µs
Environment	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



XZCP0941L●



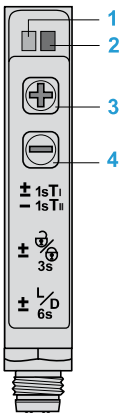
Type of connector	For use with forks	Type	Cable length (m)	Reference	Weight kg
Female, M8, 4 pins	XUVE04M3KSNM8, XUVE04M3PSNM8, XUVE04M3NSNM8,	Straight	2	**XZCP0941L2**	0,080
			5	**XZCP0941L5**	0,180
		Elbowed	2	**XZCP1041L2**	0,080
			5	**XZCP1041L5**	0,180

Presentation, connections, dimensions

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

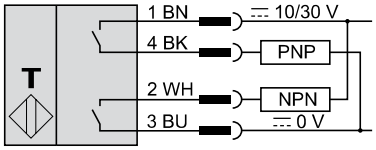
Connector

Pin no. - colour

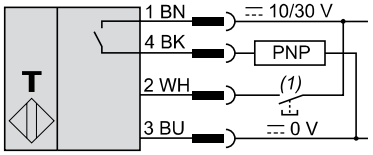
1 BN: Brown
2 WH: White (remote teaching)
3 BU: Blue
4 BK: Black

Wiring schemes

PNP/NPN: XUVE04M3KSNM8

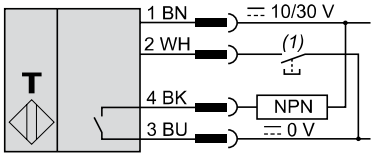


PNP: XUVE04M3PSNM8



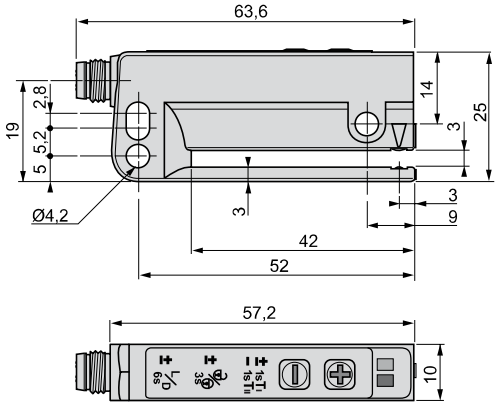
(1) Remote teaching.

NPN: XUVE04M3NSNM8



(1) Remote teaching.

Dimensions



Application example

Detection of opaque labels before application to a package

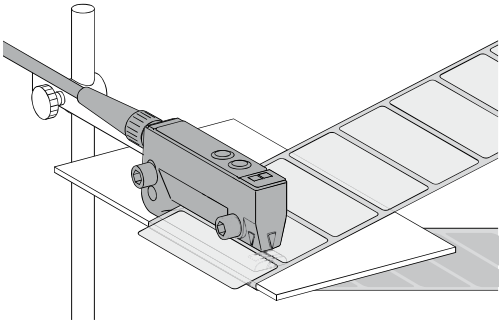
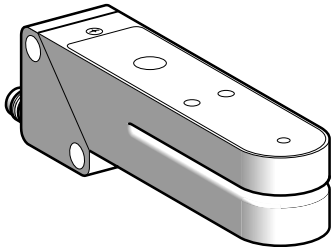


Photo-electric sensors

OsiSense XU Application, packaging series

For detection of labels *(1)*
DC supply. Solid-state output

Fork design



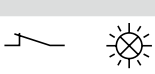
System		Thru-beam	
Type of transmission		Infrared	Red/green
Nominal sensing distance (Sn)		2 mm	

References

3-wire, PNP and NPN	NO or NC programmable function *(2)*	**XUVK0252S**	**XUVK0252VS**
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)
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 **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 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, page 67).

Presentation, dimensions, schemes

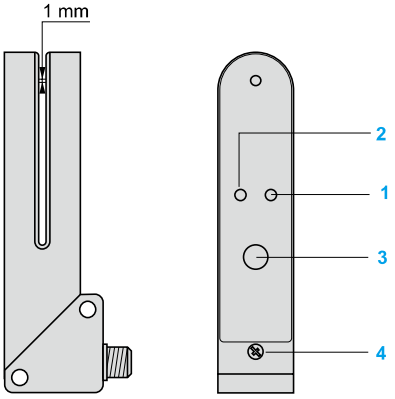
Photo-electric sensors

OsiSense XU Application, packaging series

For detection of labels

DC supply. Solid-state output

Presentation



Programming using teach mode

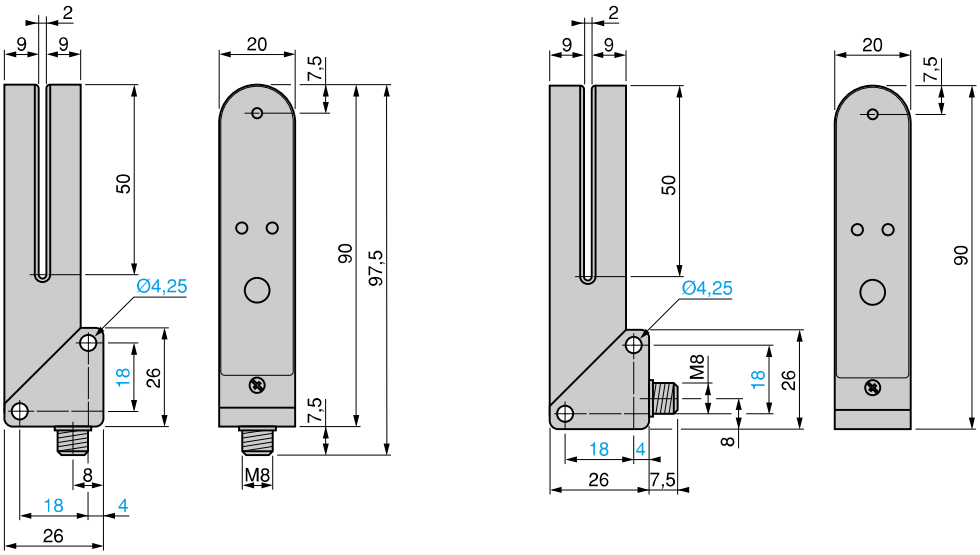
■ Place the label to be detected in the beam of the optical fork. Press the SET button and hold down until the green LED 2 goes out,

■ 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)

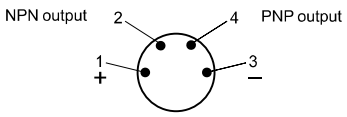
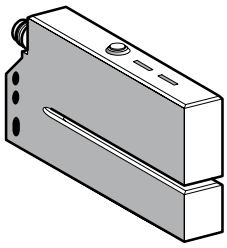


Photo-electric sensors

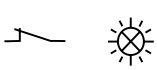
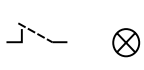
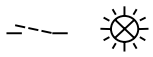
OsiSense XU Application, packaging series

Optical fork with teach mode
For detection of labels
DC supply. Solid-state output

Fork design



System		Thru-beam	
Type of transmission		Infrared, continuous	
Nominal sensing distance (Sn)	(Passageway)	3 mm	5 mm
References			
4-wire, PNP and NPN	NO or NC programmable function *(1)* Automatic adjustment using teach mode	**XUYFA983003COS**	**XUYFA983005COS**
Weight (kg)		0.07	0.07
Characteristics			
Product certifications		CE, cULus	
Ambient air temperature	For operation	- 20…+ 60 °C	
	For storage	- 30…+ 80 °C	
Degree of protection	Conforming to IEC 60529	IP 65	
Connection		M8, 4-pin connector (for pre-cabled version please consult our Customer Care Centre)	
Materials		Anodised aluminium	
Rated supply voltage		⎓ **12…24 V with protection against reverse polarity**	
Voltage limits (including ripple)		⎓ **10…30 V**	
Switching capacity (sealed)		**≤ 100 mA with overload and short-circuit protection**	
Immunity to ambient light	Natural light	3000 lux	
	Incandescent bulb	3000 lux	
Voltage drop, closed state		< 2 V	
Current consumption, no-load		40 mA	
Maximum switching frequency		**10 kHz**	
Delays		Response: 50 µs; recovery: 50 µs	
Indicator lights		Green LED: no object present Red LED: keypad locking and adjustments.	

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

(1) By reversing supply connections.

Presentation, dimensions, schemes

Photo-electric sensors

OsiSense XU Application, packaging series
Optical fork with teach mode
For detection of labels
DC supply. Solid-state output

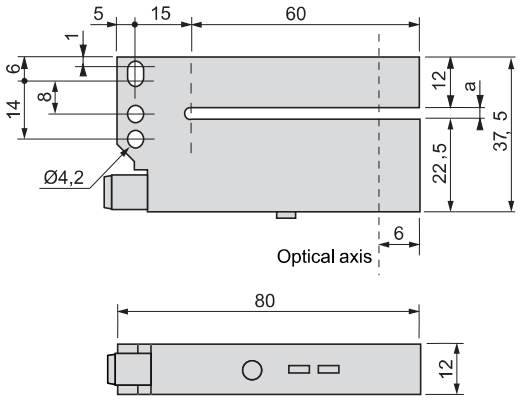
Presentation (adjustment and indicators)

Teaching is performed on the item to which the label is affixed

1 Teach mode button
- 1 press: standard teaching (red LED flashes for 2 s)
- 2 presses: fine teaching (green LED flashes for 2 s)
- 1 prolonged press: keypad locking (red LED on)

2 Red LED and green LED flash: short-circuit or object too opaque.

Dimensions



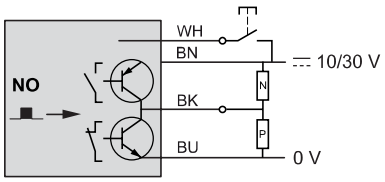
Reference	a (passageway)
XUYFA98●●●3COS	3
XUYFA98●●●5COS	5

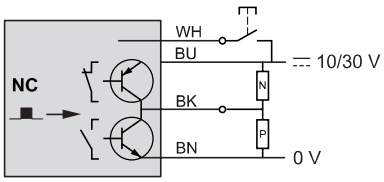
Wiring schemes (sensor connector pin view)

Connector

Pin n° - colour

1 BN: Brown
2 WH: White (input)
3 BU: Blue
4 BK: Black (PNP and NPN outputs)

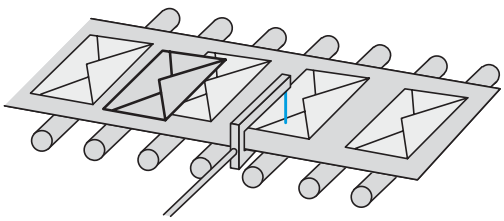




Object detected
If the white wire is not used, connect to 0 V.

Application examples

Detection of overlapping envelopes



Detection of labels on belt

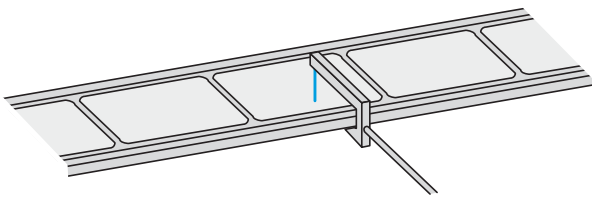
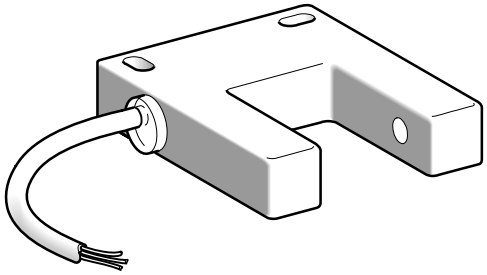


Photo-electric sensors

OsiSense XU Application, material handling series

Optical fork with integrated amplifier
DC supply. Solid-state output

Fork design



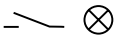
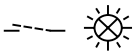
System		**Thru-beam**
Type of transmission		Infrared
Nominal sensing distance (Sn)		**30 mm**

References

3-wire, PNP	NO function	**XUVH0312**
3-wire, NPN	NO function	**XUVJ0312**
Weight (kg)		0.130

Characteristics

Product certifications		CE
Ambient air temperature	For operation	- 5…+ 55 °C
	For storage	- 20…+ 70 °C
Vibration resistance	Conforming to IEC 60068-2-6	Amplitude ±1 mm up to 42 Hz, 7 gn (f = 10…42 Hz)
Shock resistance	Conforming to IEC 60068-2-27	30 gn, duration 11 ms
Degree of protection	Conforming to IEC 60529	IP 54
Connection		Pre-cabled: diameter 5 mm, length 2 m, wire c.s.a.: 3 x 0.34 mm²
Materials	Case	PC/ABS
	Lenses	PMMA
	Cable	PvR
Rated supply voltage		⎓ **24 V with protection against reverse polarity**
Voltage limits		⎓ 19…38 V (including ripple)
Switching capacity (sealed)		⩽ **150 mA with overload and short-circuit protection**
Voltage drop, closed state		⩽ 1.5 V
Current consumption, no-load		⩽ 20 mA
Maximum switching frequency		1000 Hz
Delays	First-up	⩽ 30 ms
	Response	500 µs
	Recovery	500 µs

Function table **NO function**	**Function**	**Thru-beam system** **No object present in the beam**	**Object present in the beam**
Output state (PNP or NPN) indicator: red LED (illuminated when sensor output is ON)	NO		

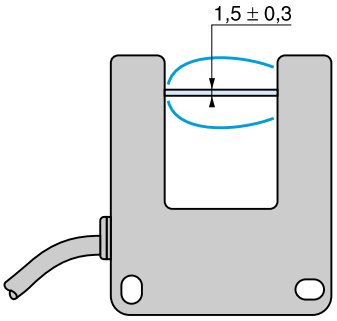
Curves, dimensions, schemes

Photo-electric sensors

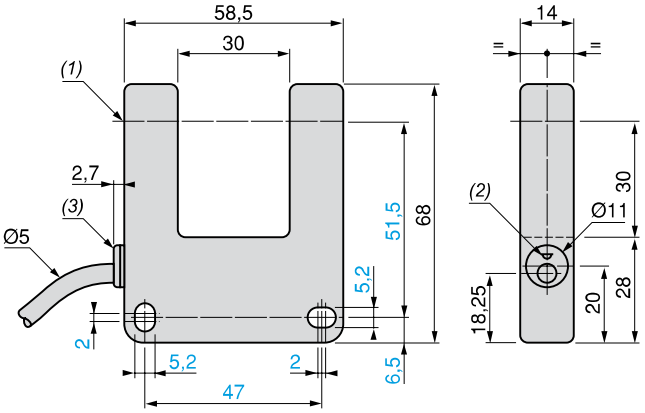
OsiSense XU Application, material handling series

Optical fork with integrated amplifier
DC supply. Solid-state output

Detection curve



Dimensions

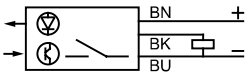


(1) Optical axis
(2) Red LED
(3) Diffuser
Max. tightening torque of fixing screws: 3 N.m

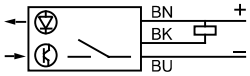
Wiring schemes (3-wire ⎓)

NO function

PNP output



NPN output

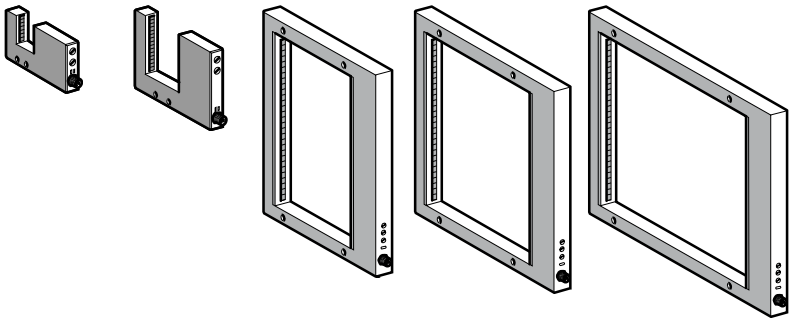


References characteristics

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



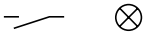
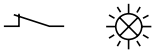
System			**Thru-beam**				
Type of transmission			**Infrared**				
Passageway dimensions			**30 x 30 mm**	**60 x 60 mm**	**200 x 120 mm**	**200 x 180 mm**	**200 x 250 mm**
References							
4-wire, PNP or NPN NO or NC programmable function	Minimum size of object detected						
	Dynamic mode	Static mode					
	Ø 2 mm	–	**XUVF30M8**	**XUVF60M8**	–	–	–
	Ø 4 mm	Ø 6 mm	–	–	**XUVF120M12**	**XUVF180M12**	**XUVF250M12**
	Ø 10 mm	Ø 15 mm	–	–	**XUYFRS120S**	**XUYFRS180S**	**XUYFRS250S**
Weight (kg)			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: XUVF120M12 becomes **XUVF120M12U**.

Characteristics

Product certifications		CE, cULus	
Ambient air temperature		For operation: 0…+ 60°C. For storage: - 20…+ 80°C	
Vibration resistance		7 gn, amplitude ± 1 mm (f = 10…55 Hz), conforming to IEC 60068-2-6	
Shock resistance		30 gn, duration 11 ms, conforming to IEC 60068-2-27	
Degree of protection	Conforming to IEC 60529	IP 65	
Connection		M8 connector (suitable female connectors, including pre-wired versions, refer to our "OsiSense XZ" catalogue)	M12 connector (suitable female connectors, including pre-wired versions, please refer to our "Cabling accessories OsiSense XZ" catalogue)
Materials	Case	Painted aluminium	
	Lenses	Polycarbonate	Altuglass
Immunity to ambient light		Sunlight: 4000 lux max. Incandescent light: 400 lux max.	Sunlight: 10,000 lux max. Incandescent light: 3000 lux max.
Passing speed of object		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)
Rated supply voltage		**24 V ⎓ with protection against reverse polarity**	
Voltage limits		18…30 V ⎓ (including ripple)	
Switching capacity (sealed)		**≤ 100 mA with overload and short-circuit protection**	
Voltage drop, closed state		< 2 V	
Current consumption, no-load		≤ 120 mA	≤ 150 mA
Maximum switching frequency		500 Hz	5000 Hz
Delays		Response: < 1 ms Recovery: < 1 ms	Response: < 0.1 ms Recovery: < 0.1 ms
Time delay		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 orange 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 colour.
XUVF120M12, XUVF180M12 and XUVF250M12 frames can be used:
- In dynamic mode for counting parts or monitoring the passing of parts on injection moulding machines.

Photo-electric sensors

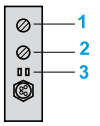
OsiSense XU Application, conveying series

Dynamic/static detection of passage of objects
For detecting and counting parts
DC supply. Solid-state output

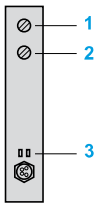
Presentation

1 Sensitivity adjustment potentiometer
2 Time delay adjustment potentiometer (XUV only)
3 Indicators:
■ Orange LED:
□ For 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 orange LEDs flash
4 Dynamic mode (NO or NC) or static mode (NO or NC) selector switch

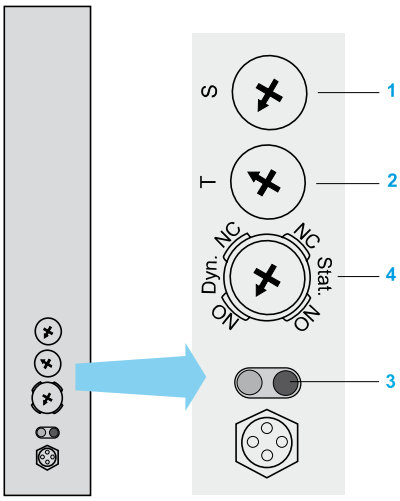
XUVF30M8



XUVF60M8

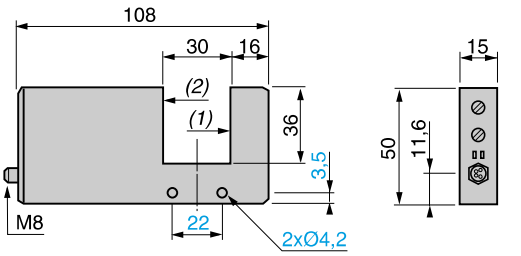


XUVF●●0M12, XUYFRS●●0S

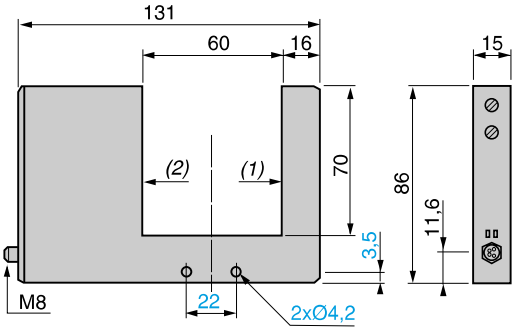


Dimensions

XUVF30M8

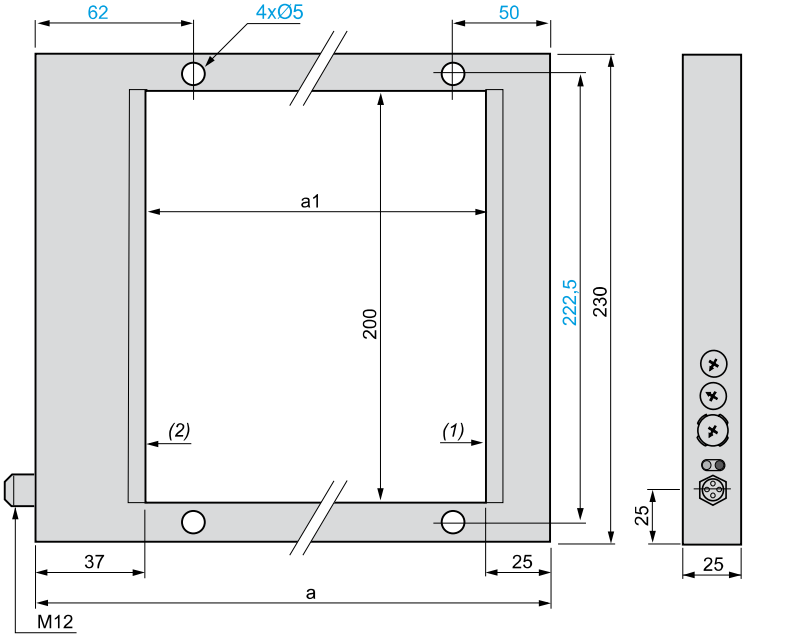


XUVF60M8



(1) *Transmitting face*
(2) *Reception face*

XUVF●●0M12, XUYFRS●●0S

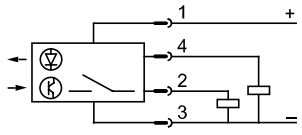


Reference	Reference	a	a1
XUVF120M12	XUVFRS120S	182	120
XUVF180M12	XUVFRS180S	242	180
XUVF250M12	XUVFRS250S	312	250

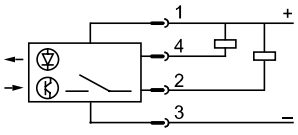
Connections

Wiring schemes (4-wire ⎓)

PNP output

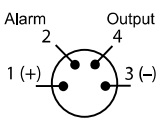


NPN output

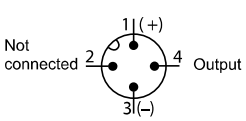


Connector scheme (sensor connector pin view)

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.*

Photo-electric sensors

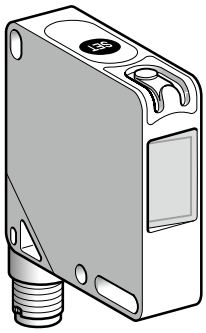
OsiSense XU Application, packaging series

Compact design, 50 x 50

Colour mark readers *(1)*

DC supply. Solid-state output

Compact design, 50 x 50



System	**Diffuse**
Type of transmission	White LED (400-700 nm)
Nominal sensing distance (Sn)	**19 mm**

References

Description		Reference
3-wire, PNP or NPN	PNP output	**XUKR1PSMM12**
	NPN output	**XUKR1NSMM12**
Weight (kg)		0.045

Characteristics

Product certifications		CE, cULus
Ambient air temperature	For operation	- 10…+ 55 °C
	For storage	- 20…+ 70 °C
Vibration resistance	Conforming to IEC 60068-2-6	Amplitude ± 0.5 mm, f = 10...55 Hz for each axis
Shock resistance	Conforming to IEC 60068-2-27	30 gn, duration 11 ms, 6 shocks on each axis
Degree of protection	Conforming to IEC 60529	IP 67
Connection		M12, 4-pin connector; can be set at 90°
Materials	Case	ABS
	Lenses	Glass (window tilted, anti-reflective glass)
Spot diameter		At 19 mm: Ø 3.5 mm
Resolution		0.5 mm
Depth of field		± 2 mm
Adjustment		Teach mode using button or remotely using “remote” wire
Indicator lights	Output	Yellow LED
	Stability	Green LED: Ready Flashing green/red: error
Rated supply voltage		**⎓ 12…24 V**
Voltage limits		⎓ 10…30 V (including ripple)
Switching capacity (sealed)		**≤ 100 mA with protection against reverse polarity, overload and short-circuit**
Voltage drop, closed state (saturation voltage)		≤ 2 V
Current consumption, no-load		≤ 30 mA
Maximum linear speed of mark		2.5 m/s for 1 mm wide mark
Maximum switching frequency		5 kHz
Delay		100 µs for response and recovery
Time delay	Time delay function	Minimum time output active: 20 ms
	Auxiliary functions	Remote teaching via “remote” wire; teach mode button locking
	Operating mode	Standard teaching: output activated on dark mark

(1) Applications: detection of contrasting colours on reflective, matt or embossed surfaces. Colour mark and index mark reading function on automated packaging and filling systems and on labelling, heat sealing, thermo-forming and printing machines, etc.

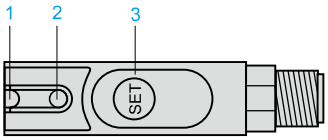
Presentation, dimensions, schemes

Photo-electric sensors

OsiSense XU Application, packaging series
Compact design, 50 x 50
Colour mark readers
DC supply. Solid-state output

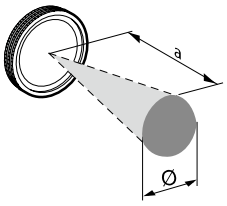
Presentation

Description



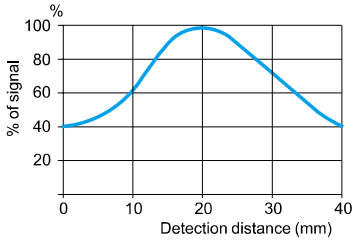
1 Output LED
2 Dual colour stability LED
3 SET button

Detection zone and spot size



	a (mm)	Ø (mm)
XUKR1●SMM12	19	3.5

Detection curve

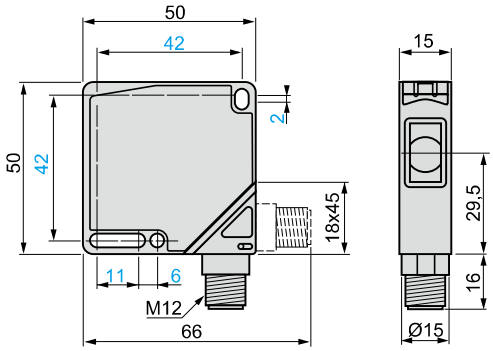


Fixing accessories

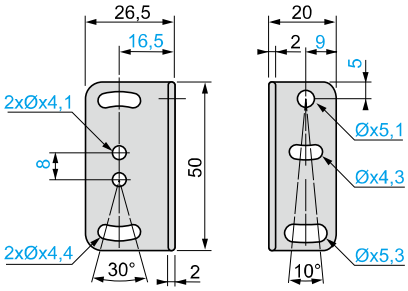
Description	Reference	Weight kg
Metal fixing bracket (2 screws, 2 nuts and 2 washers included)	**XUZK2000**	0.040
Metal fixing bracket (2 screws, 2 nuts, 2 washers and 1 screwdriver included)	**XUZA51**	0.050

Dimensions

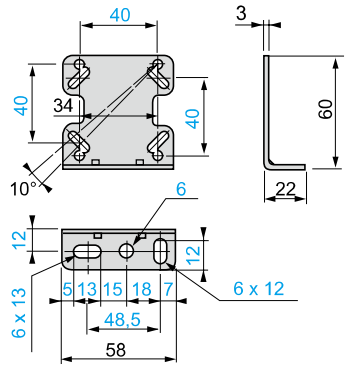
XUKR1●SMM12



Fixing bracket XUZK2000



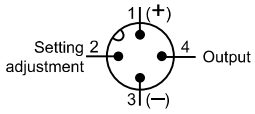
Fixing bracket XUZA51



Schemes

Connector scheme

Sensor connector pin view



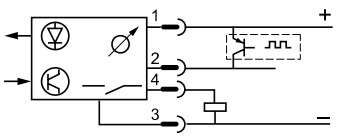
Pin N°	Type	Colour
1	⎓ 10...30 V	Brown
2	Adjustment input *(1)*	White
3	0 V	Blue
4	Output	Black

(1) Connecting the "Remote" adjustment input to + V DC is equivalent to pressing the SET button.

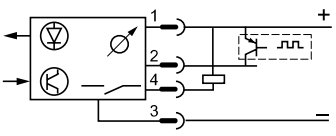
Wiring schemes

Automatic NC or NO selection depending on chronological order of teaching for the mark and the background.

PNP output



NPN output



References, characteristics, accessories

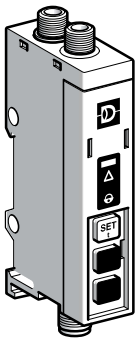
Photo-electric sensors

OsiSense XU Application, packaging series

Colour mark readers
With teach mode
DC supply. Solid-state output

Colour mark reading using plastic fibre optic

Remote reading by coaxial fibre optic



System		**Diffuse**
Type of transmission		White LED (450 - 650 nm)
Nominal sensing distance (Sn)		**18 mm with fibre optic XUYFPDC61/101** **4 mm with fibre optic XUYFPDCM861/M8101**

References

4-wire, PNP/NPN output	NO/NC function	**XUYDCFCO966S** *(1)*
Weight (kg)		0.047

Characteristics

Product certifications		CE
Ambient air temperature	For operation	0…+ 40 °C
	For storage	- 20…+ 80 °C
Degree of protection	Conforming to IEC 60529	IP 65
Connection		M8 male connector
Materials	Case	Polyamide
	Lens	Polyamide
Rated supply voltage		⎓ **24 V**
Spot diameter		1.5 mm
Modulation frequency		40 kHz
Depth of field		FPDC: + 7/- 5 mm Black/White, + 1/- 3 mm Grey/White FPDCM8: ± 1 mm
Adjustment		By teaching background and mark
Voltage limits (including ripple)		⎓ **10…30 V with protection against reverse polarity**
Immunity to ambient light	Incandescent bulb	10 000 lux
	Natural light	20 000 lux
Switching capacity		**100 mA with overload and short-circuit protection**
Voltage drop, closed state		< 2 V
Current consumption, no-load		50 mA
Maximum switching frequency		**20 kHz**
Delays	Response and recovery	25 µs
Output state indication		LED

Accessories

(1) Sensor XUYDCFCO966S only operates with fibres XUYFPDC●●●● and XUYFPDCM8●●●, to be ordered separately.

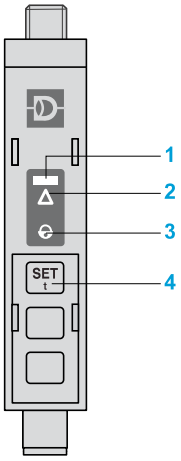
Description	Details	Length of fibre	Length of cable	References	Weight
		mm	m		kg
Integrated fibre optic *to be ordered at the same time as the amplifier*	M18	600	–	**XUYFPDC61**	0.100
		1000	–	**XUYFPDC101**	0.115
	M8	600	–	**XUYFPDCM861**	0.060
		1000	–	**XUYFPDCM8101**	0.075
Pre-wired M8 connector	Straight	–	2	**XZCP0941L2**	0.080
	Elbowed (90°)	–	2	**XZCP1041L2**	0.080
	Straight	–	5	**XZCP0941L5**	0.180
	Elbowed (90°)	–	5	**XZCP1041L5**	0.180

Presentation, dimensions, schemes

Photo-electric sensors

OsiSense XU Application, packaging series
Colour mark readers
With teach mode
DC supply. Solid-state output

Presentation



1 Detection of the lightest shade

2 Programming assistance

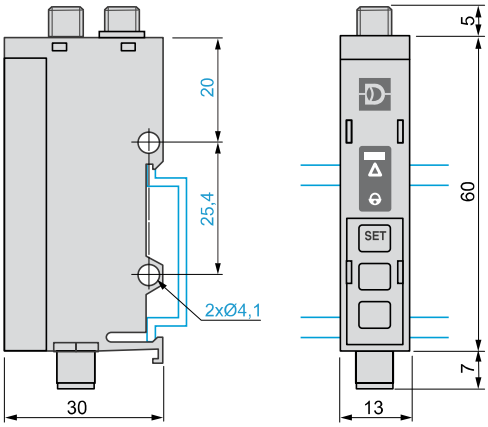
3 Alarm/press button

4 Programming button

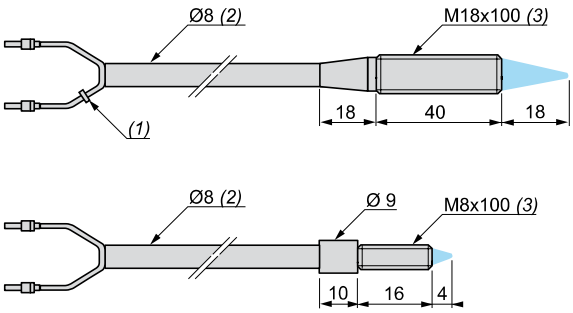
Dimensions

XUYDCFCO966S

Mounting on 35 mm ⊔ rail



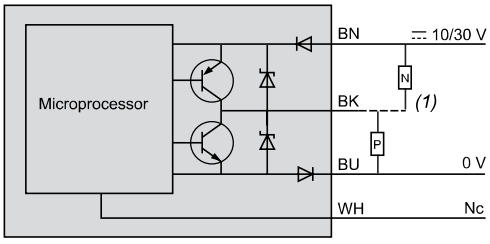
XUYFPDC●●●●●



(1) The ring indicates that the fibre is transmitting.
(2) Bend radius: 15 mm.
(3) 2 nuts included with fibre optic.

Wiring schemes

Cabling



(1) High level on first shade "taught".
Nc: Not connected

M8 connector

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

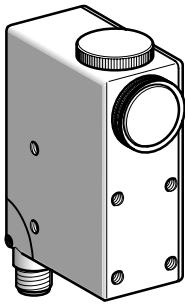
Photo-electric sensors

OsiSense XU Application, packaging series

Colour mark readers *(1)*

DC supply. Solid-state output

Compact design



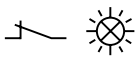
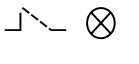
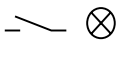
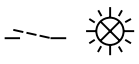
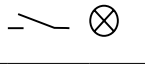
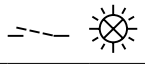
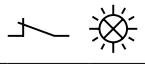
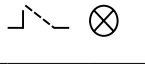
System	**Diffuse**
Type of transmission (line of sight along case axis or at 90° depending on position of lens)	Red or green, automatically selected when using teach mode
Nominal sensing distance (Sn)	**9 mm (7 mm with XURZ02 or 18 mm with XURZ01)** *(2)*
Sensitivity adjustment	Automatic when using teach mode

References

3-wire, PNP or NPN programmable	NO or NC programmable function *(3)*	**XURK1KSMM12**
Weight (kg)		0.550

Characteristics

Product certifications		CE
Ambient air temperature		For operation: - 10…+ 55 °C. For storage: - 20…+ 70 °C
Vibration resistance	Conforming to IEC 60068-2-6	7 gn, amplitude ± 0.6 mm (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 67
Connection		M12 connector, can be set at 3 positions (suitable female connectors, including pre-wired versions, refer to our "Cabling accessories OsiSense XZ" catalogue)
Materials		Case: zinc alloy; lenses: glass
Spot dimensions		At 9 mm: 1.5 x 5 mm (with lens **XURZ0●** see table on page 79)
Minimum detectable width of mark		0.5 mm
Maximum vertical inclination of reader		20°
Maximum linear speed of mark		10 m/s (for 1 mm wide mark)
Rated supply voltage		⎓ **12…24 V with protection against reverse polarity**
Voltage limits		⎓ 10…30 V (including ripple)
Switching capacity (sealed)		≤ **200 mA with overload and short-circuit protection**
Voltage drop, closed state		≤ 1 V (NPN); ≤ 2 V (PNP)
Current consumption, no-load		≤ 80 mA
Maximum switching frequency		10 kHz
Delays		First-up: ≤ 100 ms; response: ≤ 50 µs; recovery: ≤ 50 µs
Time delay		"OFF delay": 20 ms, activated/deactivated by internal switch
Analogue output		⎓ 0…5.5 V (voltage proportional to light reflected by the object)

Function table	**Function**	**Detection of dark mark on light background**		**Function**	**Detection of light mark on dark background**	
		No mark present in the beam	**Mark present in the beam**		**No mark present in the beam**	**Mark present in the beam**
Output state (PNP or NPN) indicator: red LED (illuminated when sensor output is ON)	NC			NO		
	NO			NC		

(1) Applications: detection of contrasting colours on reflective, matt or embossed surfaces. Colour mark and index mark reading function on automated packaging and filling systems and on labelling, heat sealing, thermo-forming and printing machines, etc.

(2) Lenses for reduction or magnification of spot (see page 165 and spot size table on page 79).

(3) Automatic programming depending on chronological order of teaching for the mark and the background.

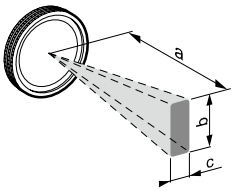
Photo-electric sensors

OsiSense XU Application, packaging series

Colour mark readers
DC supply. Solid-state output

XURK1KSMM12

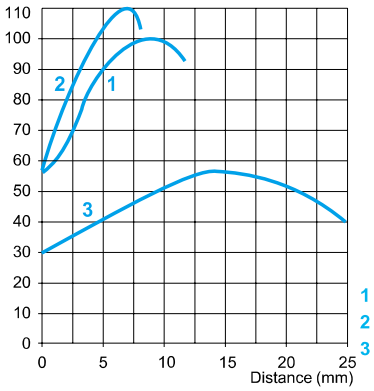
Detection zone and spot size (mm)



XUR	a	b	c
K●●●●●●●	9	5	1.5
K●●●●●●● + XURZ01	18	7	2
K●●●●●●● + XURZ02	7	4	1

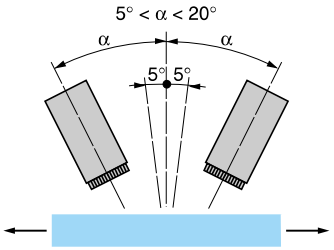
Lenses **XURZ0●**, see page 165

Detection curve



1 **XURK●●●●●●●**
2 **XURK●●●●●●● + XURZ02**
3 **XURK●●●●●●● + XURZ01**

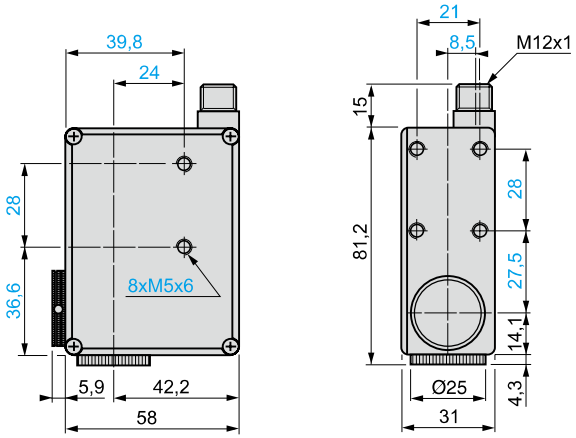
Vertical inclination



An angle of 5 to 10° from vertical is recommended for reflective or transparent surfaces.
Maximum vertical inclination: 20°.

Dimensions

XURK1KSMM12

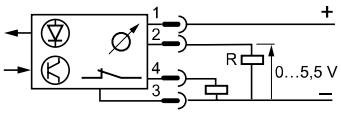


Wiring schemes (3-wire ⎓)

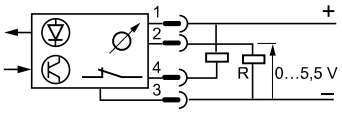
XURK1KSMM12

Automatic NC or NO selection depending on chronological order of teaching for the mark and the background

PNP output



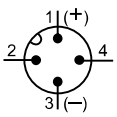
NPN output



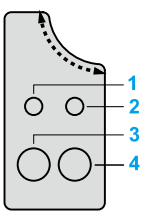
R = 2.2 kΩ

Connector scheme

(sensor connector pin view)



Functions



PNP/NPN programming
and time delay by internal switches

1 Green LED, sensor in teach mode
2 Red LED, output state
3 Teach mode button for mark
Teach mode button for
4 background

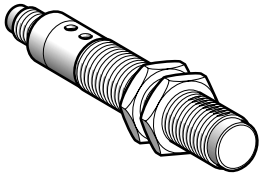
Photo-electric sensors

OsiSense XU Application, packaging series

Luminescence sensor *(1)*

DC supply. Solid-state output

Design 18



System		**Diffuse**
Type of transmission		Ultraviolet (370 nm)
Nominal sensing distance (Sn)		**20 mm** for colour mark reading, **0...80 mm** in diffuse mode
Sensitivity adjustment		By potentiometer

References

3-wire, PNP	NO function *(2)*	**XU5M18U1D**
Weight (kg)		0.075

Characteristics

Product certifications		CE, CSA, UL
Ambient air temperature	For operation	- 25…+ 55 °C
	For storage	- 40…+ 70 °C
Vibration resistance	Conforming to IEC 60068-2-6	7 gn, amplitude ± 0.6 mm (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 67
Connection		M12 connector (suitable female connectors, including pre-wired versions)
Materials	Case	Nickel plated brass
	Lenses	PMMA
Spot diameter		At 20 mm: Ø 3 x 1 mm
Auxiliary functions		External synchronisation, locking
Indicator lights	Output state	Green LED
	Teach mode	–
Rated supply voltage		⎓ **12…24 V with protection against reverse polarity**
Voltage limits		⎓ 10…30 V (including ripple)
Switching capacity (sealed)		≤ **100 mA** **with protection against reverse polarity, overload and short-circuit**
Voltage drop, closed state		≤ 1.5 V (PNP)
Current consumption, no-load		≤ 20 mA
Maximum switching frequency		1 kHz
Delays	First-up	≤ 100 ms
	Response	≤ 500 µs
	Recovery	≤ 500 µs
Time delay		"OFF delay": 20 ms, activated/deactivated by cabling method

(1) Applications: detection of invisible reference marks, markings, glues or varnishes containing bluing agents.
(2) Output activated when a blued mark on a non blued background is present.

Curves, dimensions, schemes

Photo-electric sensors

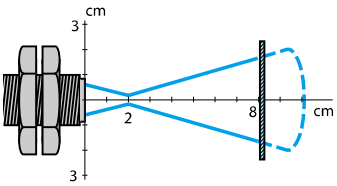
OsiSense XU Application, packaging series

Luminescence sensor *(1)*
DC supply. Solid-state output

Curves

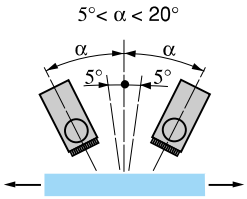
XU5M18U1D

Detection curves



Object 5 x 5 cm, white 90%
Spot size at 20 mm: oval, Ø 3 x 1 mm

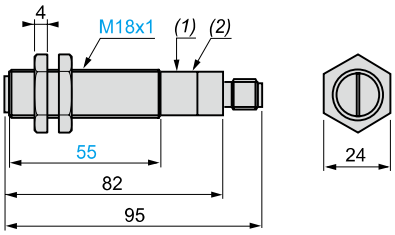
Vertical inclination



An angle of 5 to 10° from vertical is recommended for reflective or transparent surfaces
Maximum vertical inclination: 20°

Dimensions

XU5M18U1D



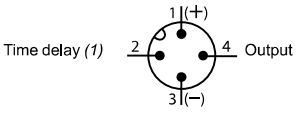
(1) Potentiometer
(2) Green LED
Fixing nut tightening torque: 15 N.m.

Wiring schemes

XU5M18U1D

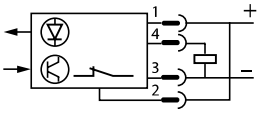
Connector scheme

(Sensor connector pin view)

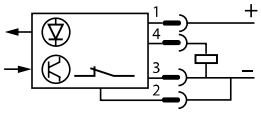


Wiring schemes (3-wire ⎓)

PNP output
Without output signal time delay



With output signal time delay (20 ms)



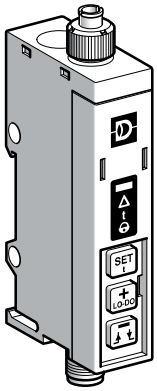
(1) "OFF delay" of output signal:
- no time delay: connect contact 2 to (+)
- 20 ms time delay: connect contact 2 to (-)

Photo-electric sensors

OsiSense XU Application, packaging series

Detection of illumination using plastic fibre optic and teach mode
Four-wire DC. Solid-state output

Fibre design



Nominal sensing distance (Sn)	**Depending on fibre optic used**

References

4-wire, PNP/NPN output	NO/NC programmable function	**XUYAFLCO966S**
Weight (kg)		0.054

Characteristics

Product certifications		CE
Ambient air temperature	For operation	0…+ 60 °C
	For storage	- 20…+ 80 °C
Degree of protection	Conforming to IEC 60529	IP 65
Connection		M8, 4-pin male connector
Materials	Case	Polycarbonate
Rated supply voltage		**⎓ 12…24 V with protection against reverse polarity**
Voltage limits (including ripple)		**⎓ 10…30 V**
Switching capacity		**100 mA with overload and short-circuit protection**
Voltage drop, closed state		2 V
Current consumption, no-load		< 40 mA
Maximum switching frequency		**< 5 Hz**
External input	Active	< 1.4 V
	Inactive	> 3 V
Delays	Response and recovery	< 100 ms
Output time delay	Range	0…5 s in 11 adjustment increments
	Duration of each increment	First increment 40 ms then 500 ms for each press
Indicator lights	Output signal	Green LED
	Limit of detection	Red LED
	Time delay active	Red LED
Sensitivity adjustment		Using teach (fine mode or standard mode) Adjustment possible using +/- button Remote teaching using external input (fine mode)

■ Applications
□ Verifying operation of indicator lights on electrical appliances
□ Testing car headlights on production line

Accessories

Description	Details	Length of cable	References	Weight
		m		kg
Plastic fibre optic *(1)*	Ø 2.2 mm	1	**XUYA005**	0.007
Pre-wired M8 connector	Straight	2	**XZCP0941L2**	0.080
	Elbowed (90°)	2	**XZCP1041L2**	0.080
	Straight	5	**XZCP0941L5**	0.180
	Elbowed (90°)	5	**XZCP1041L5**	0.180

(1) End fitting, see page148.

Presentation, dimensions, schemes

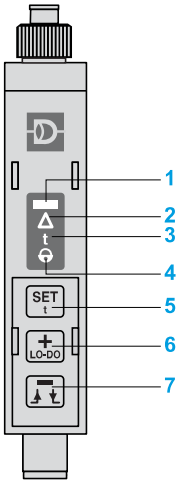
Photo-electric sensors

OsiSense XU Application, packaging series

Detection of illumination using plastic fibre optic and teach mode

Four-wire DC. Solid-state output

Presentation



1 Output signal

2 Limit of detection
Positioning assistance

3 Time delay active

4 Action keypad
Keypad locking

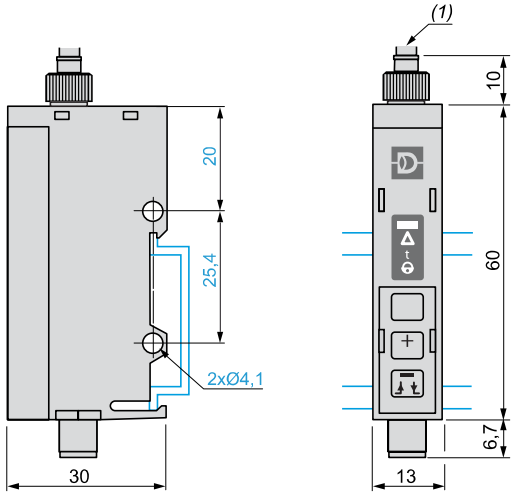
5 Automatic adjustment of threshold
Access to special functions

6 Sensitivity increase
NO/NC output
Time delay increase

7 Sensitivity decrease
On-delay, Off-delay inversion
Time delay decrease

Dimensions

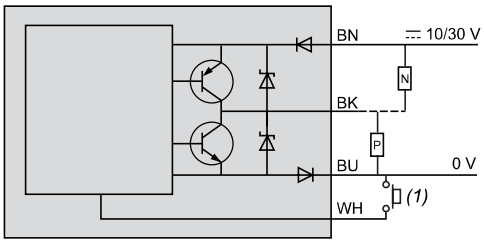
Mounting on 35 mm ⊥r rail



(1) Ø 2.2 mm plastic fibre optic.

Wiring schemes

Scheme



M8 connector

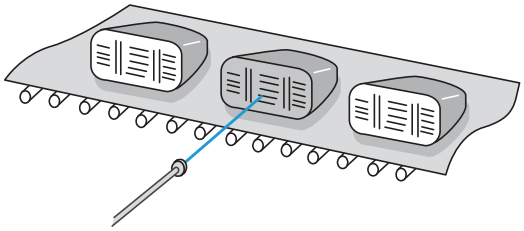
Pin n° - colour

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

(1) Remote teaching. If not used: connect to +.

Application examples

Verifying operation of car headlights on an assembly line



Verifying operation of indicator lights on electrical appliances

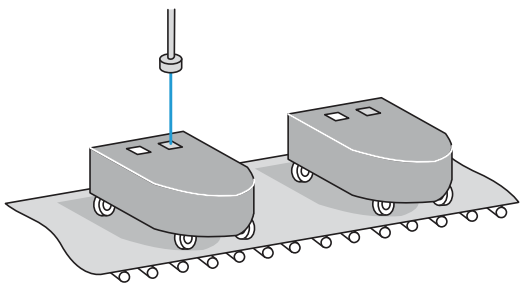
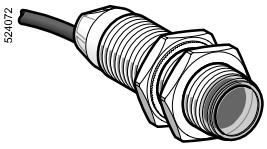


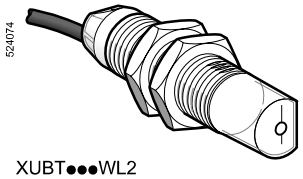
Photo-electric sensors

OsiSense XU Application, packaging series

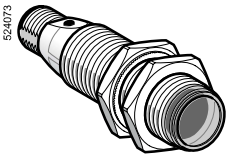
For detection of transparent materials
Design 18, plastic or stainless steel
Three-wire DC, solid-state output



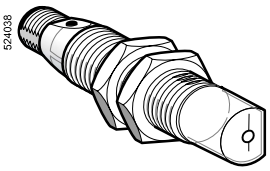
XUBT●●●NL2



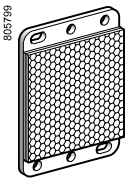
XUBT●●●WL2



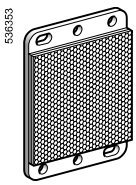
XUBT●●●NM12



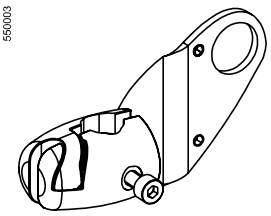
XUBT●●●WM12



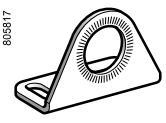
XUZC50



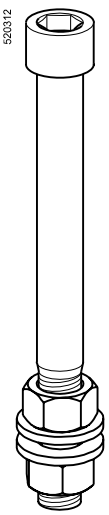
XUZC50HP



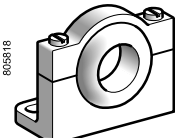
XUZB2003

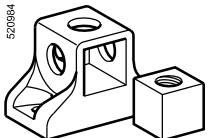


XUZA118



XUZ2001





Ø 18 plastic, coaxial polarised reflex with teach mode

Sensing distance (Sn) m	Function	Line of sight	Output	Reference	Weight kg
Pre-cabled *(2)*					
0…1.4 With reflector XUZC50/C50HP	NO or NC, by programming	Along case axis	PNP	**XUBTAPSNL2** ***(1)***	0.110
			NPN	**XUBTANSNL2** ***(1)***	0.110
0…0.8 With reflector XUZC50/C50HP	NO or NC, by programming	90° to case axis	PNP	**XUBTAPSWL2** ***(1)***	0.113
			NPN	**XUBTANSWL2** ***(1)***	0.113
M12 connector					
0…1.4 With reflector XUZC50/C50HP	NO or NC, by programming	Along case axis	PNP	**XUBTAPSNM12** ***(1)***	0.045
			NPN	**XUBTANSNM12** ***(1)***	0.045
0...0.8 With reflector XUZC50/C50HP	NO or NC, by programming	90° to case axis	PNP	**XUBTAPSWM12** ***(1)***	0.048
			NPN	**XUBTANSWM12** ***(1)***	0.048

Ø 18 stainless steel, coaxial polarised reflex with teach mode

Sensing distance (Sn) m	Function	Line of sight	Output	Reference	Weight kg
Pre-cabled *(2)*					
0…1.4 With reflector XUZC50/C50HP	NO or NC, by programming	Along case axis	PNP	**XUBTSPSNL2** ***(1)***	0.135
			NPN	**XUBTSNSNL2** ***(1)***	0.135
0...0.8 With reflector XUZC50/C50HP	NO or NC, by programming	90° to case axis	PNP	**XUBTSPSWL2** ***(1)***	0.138
			NPN	**XUBTSNSWL2** ***(1)***	0.138
M12 connector					
0…1.4 With reflector XUZC50/C50HP	NO or NC, by programming	Along case axis	PNP	**XUBTSPSNM12** ***(1)***	0.070
			NPN	**XUBTSNSNM12** ***(1)***	0.070
0...0.8 With reflector XUZC50/C50HP	NO or NC, by programming	90° to case axis	PNP	**XUBTSPSWM12** ***(1)***	0.073
			NPN	**XUBTSNSWM12** ***(1)***	0.073

Ø 18 plastic, reflex with teach mode

Sensing distance (Sn) m	Function	Line of sight	Output	Reference	Weight kg
Pre-cabled *(2)*					
0.1…0.8 With reflector XUZC50	NO or NC, by programming	Along case axis	PNP	**XUBT1PSNL2**	0.103
			NPN	**XUBT1NSNL2**	0.103
M12 connector					
0.1…0.8 With reflector XUZC50	NO or NC, by programming	Along case axis	PNP	**XUBT1PSNM12**	0.045
			NPN	**XUBT1NSNM12**	0.045

Accessories for XUBT●●●●● *(3)*

Description	Dimensions	Reference	Weight kg
Universal reflector	50 x 50 mm	**XUZC50**	0.020
Application reflector (accuracy, detection sensitivity)	50 x 50 mm	**XUZC50HP**	0.020

Fixing accessories *(4)*

Description	Reference	Weight kg
3D fixing kit for use on M12 rod, for XUBT or XUZC50/C50HP	**XUZB2003**	0.170
M12 rod	**XUZ2001**	0.050
Support for M12 rod	**XUZ2003**	0.150
Stainless steel fixing bracket	**XUZA118**	0.045
Plastic fixing bracket with adjustable ball-joint	**XUZA218**	0.035

(1) ***Application reflector XUZC50HP included with sensor.***
(2) For a 5 m long cable, replace L2 by ***L5****.*
Example: XUBTAPSNL2 becomes ***XUBTAPSNL5****.*
(3) For further information, see page 162.
(4) For further information, see page 164.

Characteristics, schemes, curves, dimensions

Photo-electric sensors

OsiSense XU Application, packaging series

For detection of transparent materials
Design 18, plastic or stainless steel
Three-wire DC, solid-state output

Characteristics

Sensor type			XUBT●●●●M12/XUBT●●●●L2	XUBT1●●●●M12/XUBT1●●●●L2
Product certifications			UL, CSA, CE	
Connection	Connector		M12 (male)	
	Pre-cabled		Length: 2 m, wire c.s.a.: 3 x 0.34 mm²	
Nominal sensing distance Sn	Line of sight along case axis	**m**	0 to 1.4 with reflector XUZC50/C50HP	0.1 to 0.8 with reflector XUZC50
	Line of sight 90° to case axis	**m**	0 to 0.8 with reflector XUZC50/C50HP	–
Beam divergence			1.5° (Ø 37mm spot at 1.4 m)	
Blind zone		**m**	0	0.1
Preferred object approach direction			Any	Lenses on horizontal plane for horizontal passage of object
Type of transmission			Coaxial polarised red	Dual lens red
Degree of protection	Conforming to IEC 60529		IP 65, IP 67, double insulation ⧈ IP 69K for connector version **XUBT●●●●M12** *(1)*	
Temperature	Storage	**°C**	- 40…+ 70	
	Operation	**°C**	0…+ 55	
Materials	Case		**XUBTA and XUBT1 ●●●●●**: plastic PBT **XUBTS●●●●●**: stainless steel (grade 304Cu)	
	Lens		PMMA	
	Cable		PvR	
Vibration resistance	Conforming to IEC 60068-2-6		7 gn, amplitude ± 1 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms	
Indicator lights	Output state		Yellow LED	
	Supply on		Green LED	
	Stability		Red LED	Red LED for alignment only
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10…32	
Current consumption, no-load		**mA**	45	30
Switching capacity		**mA**	≤ 100 with overload and short-circuit protection	
Voltage drop, closed state		**V**	≤ 1.5	
Maximum switching frequency		**Hz**	1000	250
Delays	First-up	**ms**	< 200	< 200
	Response and recovery	**µs**	< 500	< 2000

(1) IP69K also available with PVC cable, please consult our Customer Care Center for specific adaptation.

Wiring schemes

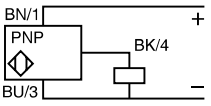
M12 connector

3 (-)
1 (+)
4 OUT/Output
2 Not connected

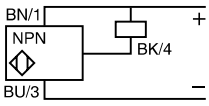
Pre-cabled

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

PNP



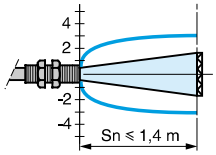
NPN



Detection curves

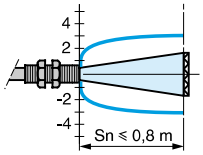
With reflector XUZC50●●

Line of sight along case axis



Sn ≤ 1.4 m (**XUBT**)
Sn ≤ 0. m (**XUBT1**)

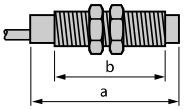
Line of sight 90° to case axis



Sn ≤ 0,8 m (**XUBT** only)

Dimensions

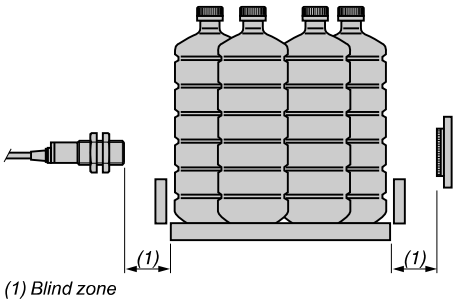
XUBT●●●●



	Pre-cabled (mm)		Connector (mm)	
	a	**b**	**a**	**b**
Ø 18, line of sight along case axis	64	44	78	44
Ø 18, line of sight 90° to case axis	78	44	92	44

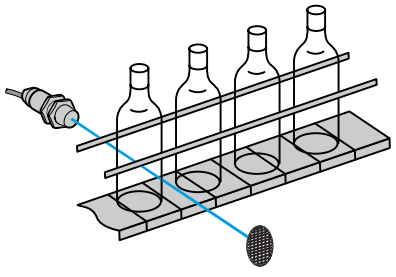
Setting-up

Recommended distances and application restraints

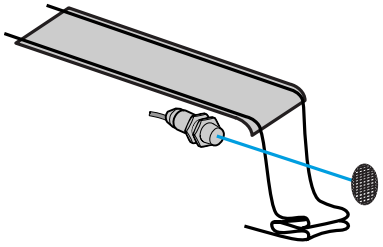


(1) Blind zone

Application examples



Detection of transparent bottles



Detection of plastic film

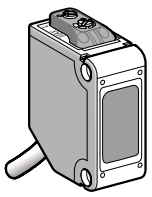
For precise detection or magnifying glass effect cases, it is advisable to use

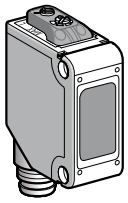
Photo-electric sensors

OsiSense XU, Application, packaging series

For detection of transparent materials
DC supply. Solid-state output

Compact design

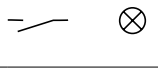
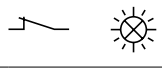
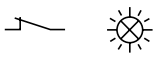
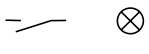




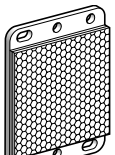
System		**Reflex**				
Type of transmission		Infra-red				
Nominal sensing distance (Sn)		**0.1…1 m with reflector XUZC50CR** *(1)* **0.8…2 m with reflector XUZC50** *(1)*				
Adjustment		270° potentiometer				
References						
3-wire	NO or NC programmable function	PNP **XUMTAPCNL2**	NPN **XUMTANCNL2**	PNP **XUMTAPCNM8**	NPN **XUMTANCNM8**	PNP **XUMTAPCNL03M12**
Weight (kg)		0.155	0.155	0.055	0.055	0.055

Characteristics

Product certifications		CE, cURus		
Ambient air temperature		For operation: - 25…+ 55°C. For storage: - 30…+ 70°C		
Vibration resistance	Conforming to IEC 60068-2-8	20 gn max., amplitude: 3 mm, frequency: 10…500 Hz		
Shock resistance	Conforming to IEC 60068-2-27	50 gn		
Degree of protection	Conforming to IEC 60529	IP 67		
Material		Case: PBT Lenses: polycarbonate		
Indicator lights	Output state	Orange LED		
	Power on, help with setting	Green LED		
Connection		2 m cable Conductor c.s.a.: 0.2 mm²	M8 4-pin connector	Remote M12 connector 0.3 m cable Conductor c.s.a.: 0.2 mm²
Rated supply voltage		**12…24 V ⎓ with protection against reverse polarity**		
Voltage limits		10…30 V ⎓ (including ripple)		
Switching capacity		**≤ 100 mA with overload and short-circuit protection**		
Immunity to ambient light	Natural light	3000 lux		
	Incandescent bulb	3000 lux		
Voltage drop, closed state		< 2 V		
Current consumption		≤ 10 mA		
Response time		≤ 1 ms		

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

Accessories



XUZC50
XUZC50CR

Description	**Dimensions**	**Reference**	**Weight kg**
Standard reflector Reflector distance from the product: 0.8 to 2 m	50 x 50 mm	**XUZC50**	0.020
Application reflector Reflector distance from the product: 0.2 to 1 m	50 x 50 mm	**XUZC50CR**	0.020

(1) Reflector to be ordered separately.

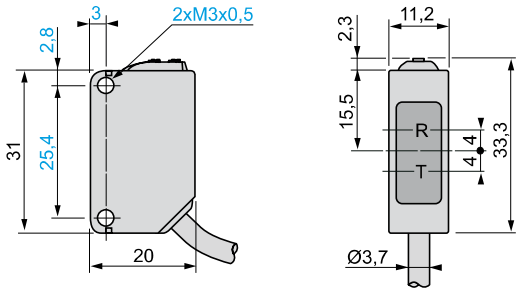
Photo-electric sensors

OsiSense XU, Application, packaging series

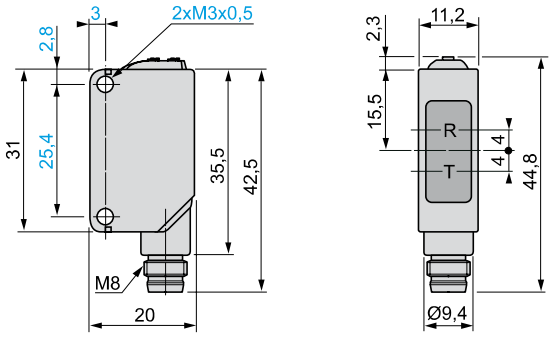
For detection of transparent materials
DC supply. Solid-state output

Dimensions

XUMTAPCNL2, XUMTANCNL2 and XUMTAPCNL03M12

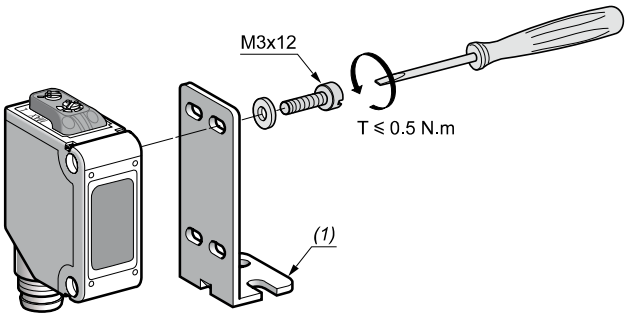


XUMTAPCNM8 and XUMTANCNM8



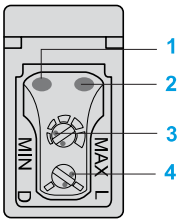
R: Reception, T: Transmission

Mounting



(1) ***XUZA50****,* ***XUZAM02*** *or* ***XUZAM03*** *metal bracket (see page 34).*

Functions

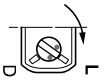


1 Stability indicator (green). LED on in stable detection conditions (NO or NC).

2 Change indicator (orange). LED lit when the detection output has been activated.

3 Sensitivity adjustment potentiometer.

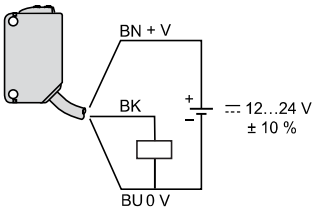
4 NO/NC operating mode selector switch.

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

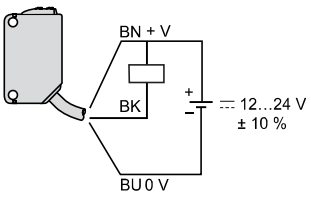
Connections

Wiring schemes (3-wire ⎓)

PNP output



NPN output



Cable connections

XUMTA●CNL2

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

Connector schemes

XUMTA●CNM8

M8 connector

3 (–)
1 (+)
4 Output
2 Not connected

XUMTAPCNL03M12

M12 connector

3 (–)
1 (+)
4 Output
2 Not connected

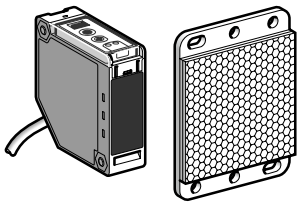
Please refer to our "Cabling accessories OsiSense XZ" catalogue.

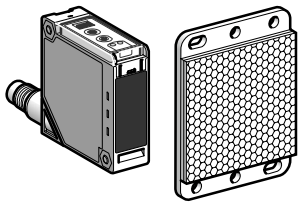
Photo-electric sensors

OsiSense XU Application, packaging series

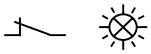
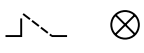
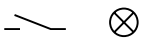
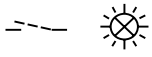
For detection of transparent materials, with teach mode and automatic compensation for accumulation of dirt *(1)*
Solid-state output

Compact design





System		**Reflex**	
Type of transmission		Red	
Nominal sensing distance (Sn)		**1.5 m** (with 50 x 50 mm reflector)	
References			
3-wire, PNP or NPN	NO or NC programmable function	**XUKT1KSML2** *(2)*	**XUKT1KSMM12** *(2)*
Weight (kg)		0.280	0.120
Characteristics			
Product certifications		CE, UL, CSA	
Ambient air temperature	For operation	- 25…+ 55 °C	
	For storage	- 30…+ 70 °C	
Vibration resistance	Conforming to IEC 60068-2-6	7 gn (f = 10…55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27	10 gn, duration 11 ms	
Degree of protection	Conforming to IEC 60529	IP 65	
Materials	Case	PC	
	Lenses	PMMA	
	Cable	PVC	
Connection		Pre-cabled, diameter 6 mm, length 2 m, wire c.s.a.: 4 x 0.34 mm²	M12 male connector, can be set at 2 positions (suitable female connectors, including pre-wired versions)
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		≤ 2 V	
Current consumption, no-load		≤ 35 mA	
Maximum switching frequency		1500 Hz	
Delays	First-up	≤ 80 ms	
	Response	≤ 0.3 ms	
	Recovery	≤ 0.3 ms	
Time delay		Monostable, on-delay or off-delay (programmable) adjustable from 0.1 to 5 seconds	

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

(1) Sensor memorises, in teach mode, the environmental conditions in which the object is to be detected and adapts to any variations.
*(2) 50 x 50 mm reflector **XUZC50** included with the sensor.*

Dimensions, schemes, operation

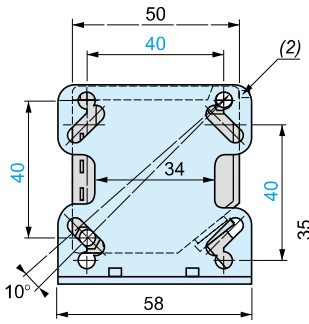
Photo-electric sensors

OsiSense XU Application, packaging series

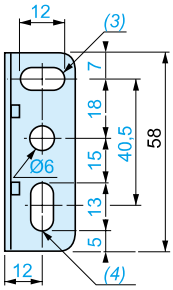
For detection of transparent materials, with teach mode and automatic compensation for accumulation of dirt
Solid-state output

Dimensions

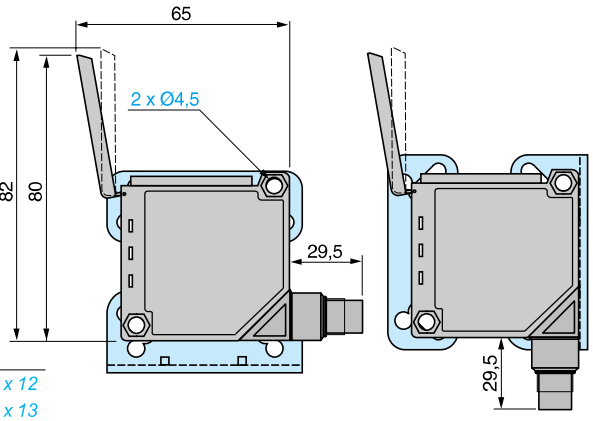
XUKT1KSML2 *(1)*



Bracket fixing *(1)*



XUKT1KSMM12 with cover open
Fixing bracket mounting according to position of connector *(1)*



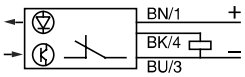
*(1) The bracket **XUZA51** is included with the sensor.*
(2) Cover locking tongue

(3) 1 elongated hole Ø 6 x 12
(4) 1 elongated hole Ø 6 x 13

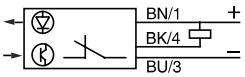
Wiring schemes (3-wire ⎓)

NC programmed

PNP programmed output

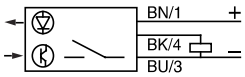


NPN programmed output

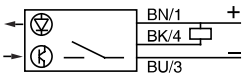


NO programmed

PNP programmed output

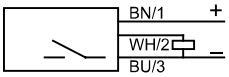


NPN programmed output

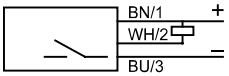


Alarm output

PNP programmed



NPN programmed



Connection

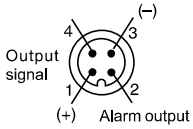
Cable connections

XUKT1KSML2

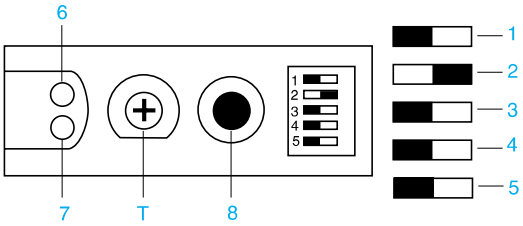
(–)	BU	(Blue)
(+)	BN	(Brown)
(OUT)	BK	(Black)
Alarm	WH	(White)

Connector scheme

XUKT1KSMM12



Functions



Switches

1 NC/NO programming
2 Time delay activated or deactivated
3 Normal time delay or monostable
4 Normal time delay “On-delay” or “Off-delay”
5 PNP or NPN output

LED

6 Yellow LED: output and teach mode aid
7 Red LED: alignment aid and alarm indicator

Potentiometer and button

T Time delay adjustment
8 Teach mode button

Time delays

Switch positions	Without time delay	Normal time delay (T) Time delay on trip “On-delay”	Normal time delay (T) Time delay on reset “Off-delay”	Monostable time delay (T)
= NC or NO function (see below)	or	or	or	or

Receiver state

NC function — Beam intact / Beam broken

NO function — Output “ON” / Output “OFF” / Output “ON” / Output “OFF”

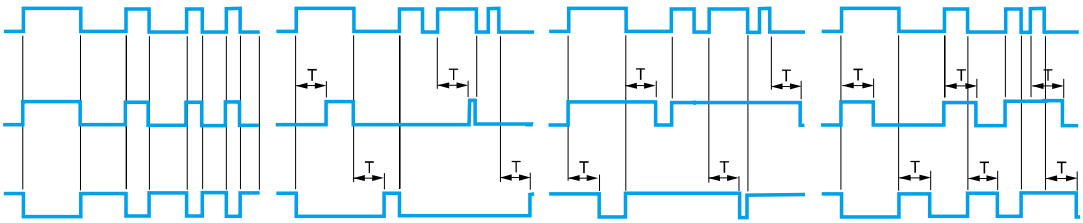
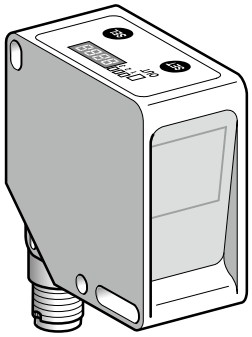


Photo-electric sensors

OsiSense XU Application, packaging series

Compact design, 50 x 50
For colour detection *(1)*
DC supply. Solid-state output

Compact design, 50 x 50



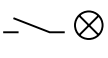
System		**Diffuse**
Type of transmission		White LED (400-700 nm)
Type of colour processing		RGB
Nominal sensing distance (Sn)		**20 mm** (Operational distance, see curve on page 91)

References

3-wire, PNP + 1 synchro input	NO function	**XUKC1PSMM12**
3-wire, NPN + 1 synchro input	NO function	**XUKC1NSMM12**
Weight (kg)		0.085

Characteristics

Product certifications		CE, cULus
Ambient air temperature	For operation	- 10…+ 55 °C
	For storage	- 20…+ 70 °C
Vibration resistance	Conforming to IEC 60068-2-6	7 gn, amplitude ± 0.5 mm (f = 10...55 Hz for each axis)
Shock resistance	Conforming to IEC 60068-2-27	30 gn, duration 11 ms, 6 shocks on each axis
Degree of protection	Conforming to IEC 60529	IP 65
Connection		M12, 8-pin connector; can be set at 90°
Materials	Case	ABS
	Lenses	Glass (window tilted, anti-reflective glass)
Spot diameter		At 20 mm: Ø 4 mm
Adjustment	Teach mode	Teaching using SET (adjustment) and SEL (Selection) buttons
	Operating mode	C (colour) or C+I (colour + intensity), independent for each channel
	Tolerance level	Selectable tolerance for varying shades of colour from TOL 0 to TOL 9
Auxiliary functions		External synchronisation, locking
Indicator lights and display	Display	4-digit
	Output active	3 green LEDs: output 1, 2 or 3
	Output state “OUT”	Yellow LED if one output (1, 2 or 3) activated
Rated supply voltage		⎓ **12…24 V**
Voltage limits		⎓ 10…30 V (including ripple)
Switching capacity (sealed)		≤ **100 mA with protection against reverse polarity, overload and short-circuit**
Voltage drop, closed state		≤ 2 V
Current consumption, no-load		≤ 60 mA
Maximum switching frequency		1.5 kHz
Delay		335 µs for response and recovery
Time delay		Selectable (5, 10, 20, 30 or 40 ms)

Function table for each channel (3 channels) NO function	**Colour recognised by sensor**	**Colour not recognised by sensor**
Output state (PNP or NPN) indicator (illuminated when sensor output is ON)		

(1) Applications: OsiSense XU “Full colour” is a colour sensor that can recognise up to 3 colours. It can be used to sort objects by colour or to monitor colours, and is insensitive to surface finishes (matt or reflective), as well as ambient lighting. The sensor is suitable for use in many industrial sectors, such as packaging machines, printing machines, etc.

Presentation, dimensions, schemes

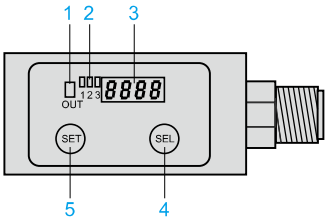
Photo-electric sensors

OsiSense XU Application, packaging series

Compact design, 50 x 50
For colour detection
DC supply. Solid-state output

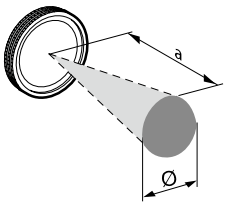
Presentation

Description



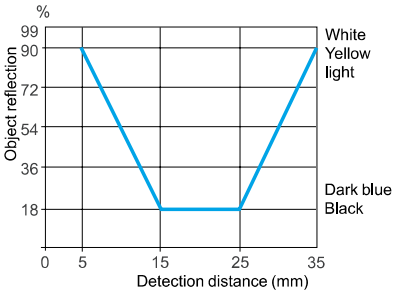
1 Output LED
2 OUT1, OUT2 and OUT3 LEDs
3 Display (green, 4-digit)
4 SEL button (adjustment)
5 SET button

Detection zone and spot size



	a (mm)	Ø (mm)
XUKC1●SMM12	20	4

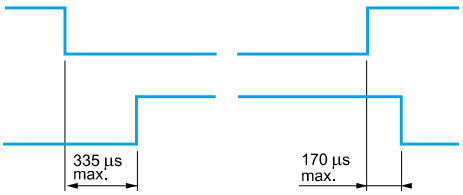
Detection curve



Detection distance related to object's degree of reflection

Diagram

SYNC passive = VDC, SYNC active = 0 V

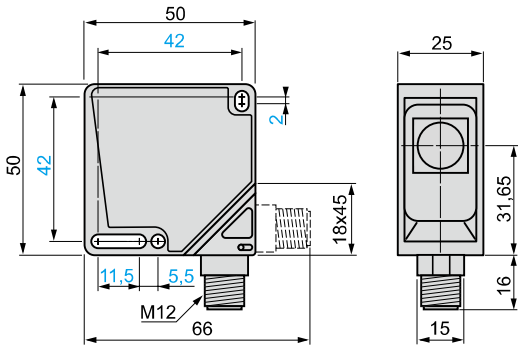


Accessories

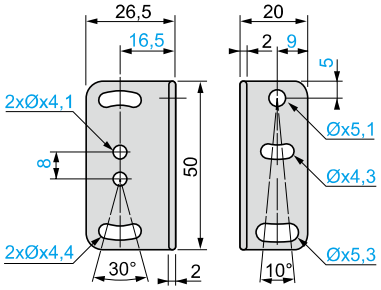
Description	Diameter mm	Length m	Reference	Weight kg
Pre-wired M12, 8-pin connectors, shielded cable *(1)*	6.5	3	**XSZMCR03**	0.230
		10	**XSZMCR10**	0.715
Metal fixing bracket (2 screws, 2 nuts and 2 washers included)	–	–	**XUZK2000**	0.040
Metal fixing bracket (2 screws, 2 nuts, 2 washers and 1 screwdriver included)	–	–	**XUZA51**	0.050

Dimensions

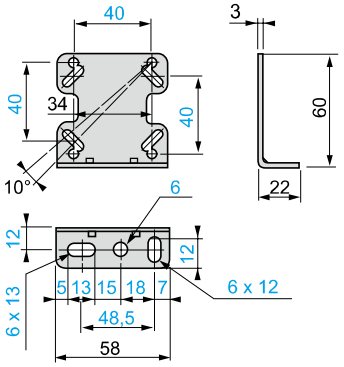
XUKC1●SMM12



Fixing bracket XUZK2000



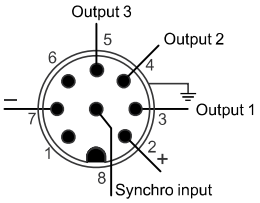
Fixing bracket XUZA51



Wiring schemes

Pre-wired connector XSZMCR●●

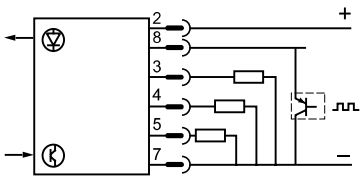
Sensor connector pin view



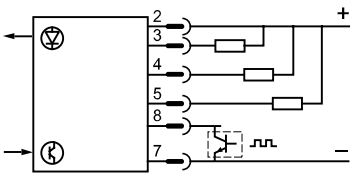
Pin N°	Type	Colour *(2)*
1	–	WH (white)
2	⎓ 10...30 V	BN (brown)
3	Output 1	TAN (tan)
4	Output 2	YE (yellow)
5	Output 3	GY (grey)
6	–	PK (pink)
7	0 V	VT (violet)
8	Synchro	RD (red)
–	Screening	TR (transparent)

Wiring schemes

PNP output + synchro input



NPN output + synchro input



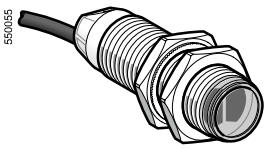
(1) The use of shielded cable is recommended in order ensure correct operation of the sensor, especially in environments subject to electromagnetic interference.

Photo-electric sensors

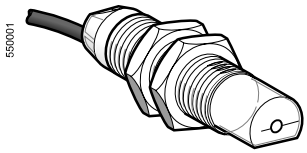
OsiSense XU Application, multimode food and beverage processing series

Design 18, metal, stainless steel

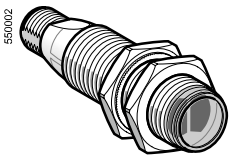
Three-wire DC, solid-state output



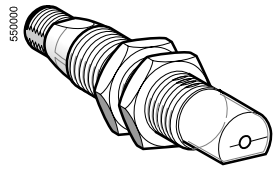
XUB0●●●NL2



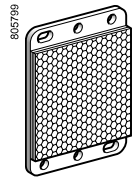
XUB0●●●WL2



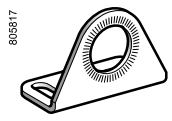
XUB0●●●NM12



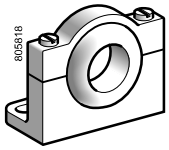
XUB0●●●WM12



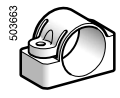
XUZC50



XUZA118



XUZA218



XUZB2005

Ø 18 stainless steel

Pre-cabled *(1)*

Sensing distance (Sn) *(2)* m	Function	Output	Line of sight	Reference	Weight kg
0…20 depending on whether accessories are used	NO or NC, by programming	PNP	Along case axis	**XUB0SPSNL2**	0.105
			90° to case axis	**XUB0SPSWL2** *(3)*	0.110
		NPN	Along case axis	**XUB0SNSNL2**	0.105
			90° to case axis	**XUB0SNSWL2** *(3)*	0.110

M12 connector

0…20 depending on whether accessories are used	NO or NC, by programming	PNP	Along case axis	**XUB0SPSNM12**	0.055
			90° to case axis	**XUB0SPSWM12** *(3)*	0.060
		NPN	Along case axis	**XUB0SNSNM12**	0.055
			90° to case axis	**XUB0SNSWM12** *(3)*	0.060

Accessories

Description	Connecti-on	Line of sight	Reference	Weight kg
Thru-beam accessories (transmitter)	Pre-cabled *(1)*	Along case axis	**XUB0SKSNL2T**	0.105
		90° to case axis	**XUB0SKSWL2T** *(3)*	0.110
	M12 connector	Along case axis	**XUB0SKSNM12T**	0.055
		90° to case axis	**XUB0SKSWM12T** *(3)*	0.060
Reflector 50 x 50 mm	–	–	**XUZC50**	0.020

Fixing accessories *(4)*

Description	Reference	Weight kg
Stainless steel fixing bracket	**XUZA118**	0.045
Plastic fixing bracket with adjustable ball-joint	**XUZA218**	0.035
Plastic fixing clamp, 24.1 mm centres with locking screw	**XUZB2005**	0.007

*(1) For a 5 m long cable, replace L2 by **L5**.*
*Example: XUB0SPSNL2 becomes **XUB0SPSNL5**.*
(2) For further information, see page 32.
(3) For line of sight 90° to case axis versions, see sensing distances on page 32.
(4) For further information, see page 164.

Characteristics, schemes, curves, dimensions

Photo-electric sensors

OsiSense XU Application, multimode food and beverage processing series

Design 18, metal, stainless steel

Three-wire DC, solid-state output

Characteristics

Sensor type			XUB0●●●●M12, XUB0●●●●M12T		XUB0●●●●L2, XUB0●●●●L2T
Product certifications			UL, CSA, CE		
Connection	Connector		M12		–
	Pre-cabled		–		Length: 2 m
Sensing distance nominal Sn / maximum (excess gain = 2) (excess gain = 1)			**Line of sight along case axis**	**Line of sight 90° to case axis**	**Accessory**
		m	**0.12 / 0.12**	**0.11 / 0.11**	**Without (diffuse with background suppression)**
		m	**0.3 / 0.4**	**0.2 / 0.3**	**Without (diffuse)**
		m	**3 / 4.5**	**1.5 / 2**	**With reflector (polarised reflex)**
		m	**20 / 30**	**10 / 14**	**With thru-beam accessory (thru-beam)**
Type of transmission			Infrared, except polarised reflex (red)		
Degree of protection			IP 65, IP 67 conforming to IEC 60529; IP 69K conforming to DIN 40050; double insulation ⧈		
Storage temperature		°C	- 40…+ 70		
Operating temperature		°C	- 25…+ 55		
Materials			Case: stainless steel, grade 304CU; Lens: PMMA; Cable: PvR		
Vibration resistance	Conforming to IEC 60068-2-6		7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms		
Indicator lights	Output state		Yellow LED (transmission present for **XUB0●●●●●●T**)		
	Supply on		Green LED		
	Optical alignment aid / dirty		Red LED (except for **XUB0●●●●●●T**)		
Rated supply voltage		V	⎓ 12…24 with protection against reverse polarity		
Voltage limits (including ripple)		V	⎓ 10…36		
Current consumption, no-load		mA	35 (20 for **XUB0●●●●●●T**)		
Switching capacity		mA	≤ 100 with overload and short-circuit protection		
Voltage drop, closed state		V	1.5		
Maximum switching frequency		Hz	250 (200 for diffuse with background suppression)		
Delays	First-up	ms	< 200		
	Response	ms	< 2 (< 2.5 for diffuse with background suppression)		
	Recovery	ms	< 2 (< 2.5 for diffuse with background suppression)		

Wiring schemes

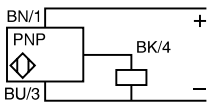
M12 connector

3 (-)
1 (+)
4 OUT/Output
2 Beam break input *(1)*

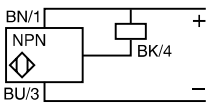
Pre-cabled

(-) BU (Blue)
(+) BN (Brown)
OUT/Output BK (Black)
Beam break input *(1)*
VI (Violet)

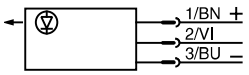
PNP



NPN



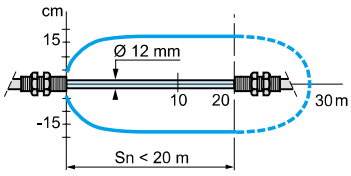
Thru-beam accessory



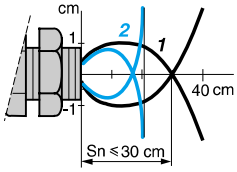
Input 2/VI:
- not connected: *beam made*
- connected to –: *beam broken*

Detection curves (line of sight along case axis)

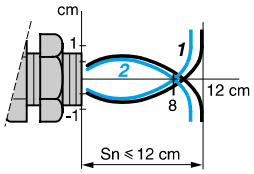
With thru-beam accessory (thru-beam)



Without accessory (diffuse)

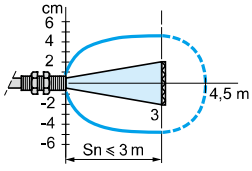


Without accessory (diffuse with bckgrnd. suppression



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

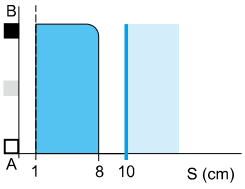
With reflector (polarised reflex)



With reflector XUZC50

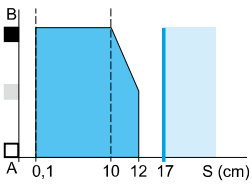
Variation of usable sensing distance Su (without accessory, with adjustable background suppression)

Teach mode at minimum



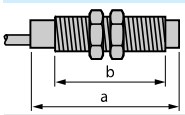
A-B: *object reflection coefficient*
- *Black 6%*
- *Grey 18%*
- *White 90%*
- *Sensing range*
- *Non sensing zone (matt surfaces)*

Teach mode at maximum



Dimensions

XUB



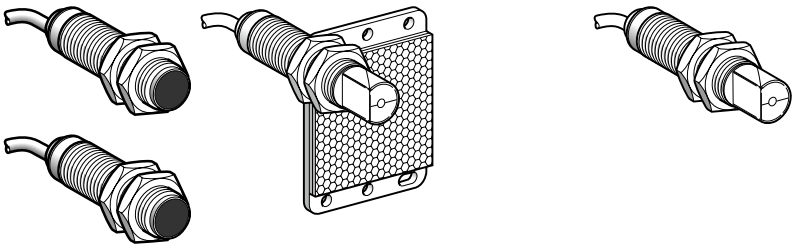
	Pre-cabled (mm)		Connector (mm)	
	a	**b**	**a**	**b**
Ø 18, line of sight along case axis	64 *(2)*	44	78 *(2)*	44
Ø 18, line of sight 90° to case axis	78	44	92	44

Photo-electric sensors

OsiSense XU Application, single mode
food and beverage processing series
Stainless steel case M18 x 1
DC. Solid-state output

Design 18

1 2 3



System		Thru-beam 1	Reflex 2	Polarised reflex 2	Diffuse 3
Type of transmission		Infrared	Infrared	Red	Infrared
Sensing distance	Nominal Sn (excess gain = 2)	15 m	4 m	2 m	0.10 m
	Maximum (excess gain = 1)	20 m	5.5 m (with 50 x 50 mm reflector)	3 m (with 50 x 50 mm reflector)	0.15 m

References of pre-cabled versions *(1)*

3-wire, PNP NO or NC programmable function	Line of sight along case axis	**XU2N18PP341** *(2)*	**XU1N18PP341** *(3)*	**XU9N18PP341** *(3)*	**XU5N18PP341**
	Line of sight 90° to case axis	**XU2N18PP341W** *(2)*	**XU1N18PP341W** *(3)*	**XU9N18PP341W** *(3)*	**XU5N18PP341W**
3-wire, NPN NO or NC programmable function	Line of sight along case axis	**XU2N18NP341** *(2)*	**XU1N18NP341** *(3)*	**XU9N18NP341** *(3)*	**XU5N18NP341**
	Line of sight 90° to case axis	**XU2N18NP341W** *(2)*	**XU1N18NP341W** *(3)*	**XU9N18NP341W** *(3)*	**XU5N18NP341W**
Weight (kg)		0.270	0.155	0.155	0.135

References of connector versions

3-wire, PNP NO or NC programmable function	Line of sight along case axis	**XU2N18PP341D** *(2)*	**XU1N18PP341D** *(3)*	**XU9N18PP341D** *(3)*	**XU5N18PP341D**
	Line of sight 90° to case axis	**XU2N18PP341WD** *(2)*	**XU1N18PP341WD** *(3)*	**XU9N18PP341WD** *(3)*	**XU5N18PP341WD**
3-wire, NPN NO or NC programmable function	Line of sight along case axis	**XU2N18NP341D** *(2)*	**XU1N18NP341D** *(3)*	**XU9N18NP341D** *(3)*	**XU5N18NP341D**
	Line of sight 90° to case axis	**XU2N18NP341WD** *(2)*	**XU1N18NP341WD** *(3)*	**XU9N18NP341WD** *(3)*	**XU5N18NP341WD**
Weight (kg)		0.130	0.085	0.085	0.065

Fixing accessories *(4)*

Description	Reference	Weight kg
Stainless steel fixing bracket	**XUZA118**	0.045
Plastic fixing bracket	**XUZA218**	0.035
Set of 2 stainless steel nuts	**XSZE318**	0.020
Set of 2 plastic nuts	**XSZE218**	0.004

*(1) Sensors available with 5 m long cable: To order, add **L5** to the end of the reference selected from above.*
*Example: sensor **XU1N18PP341** with 5 m cable becomes **XU1N18PP341L5**.*
(2) Reference for both transmitter and receiver for thru-beam system sensors.
(3) 50 x 50 mm reflector included with reflex system sensors.
(4) For further information, see page 164.

Characteristics, curves

Photo-electric sensors

OsiSense XU Application, single mode
food and beverage processing series
Stainless steel case M18 x 1
DC. Solid-state output

Characteristics

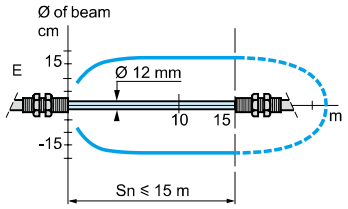
Product certifications		CE, UL, CSA
Ambient air temperature		For operation: - 25...0…+ 55 °C. For storage: - 40...+ 70 °C
Vibration resistance	Conforming to IEC 60068-2-6	25 gn, amplitude ± 1.5 mm (f = 10…55 Hz)
Shock resistance	Conforming to IEC 60068-2-27	30 gn, duration 11 ms
Degree of protection	Conforming to IEC 60529	IP 67
Connection	Pre-cabled	Pre-cabled, diameter 4.2 mm, length 2 m (3), wire c.s.a.: 4 x 0.34 mm²
	Connector	M12 male connector, 4-pin (suitable female connectors, including pre-wired versions)
Materials	Case	Food and beverage processing stainless steel, grade 304 Cu
	Lenses	PMMA
	Cable	PvR
Rated supply voltage		⎓ 12…24 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
Current consumption, no-load		≤ 30 mA (reflex and diffuse), ≤ 50 mA (thru-beam)
Maximum switching frequency		500 Hz
Delays	First-up	≤ 15 ms
	Response	≤ 1 ms
	Recovery	≤ 1 ms
Indicator lights	Supply on	Green LED, on transmitter only
	Output state	Yellow LED, on receiver only

*(1) Sensors available with 5 m long cable: To order, add **L5** to the end of the reference selected from above.*
*Example: sensor **XU1N18PP341** with 5 m cable becomes **XU1N18PP341L5**.*

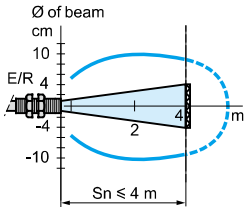
Curves

Detection curves

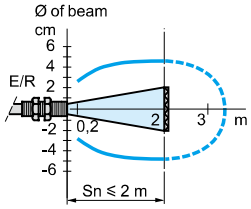
Thru-beam system



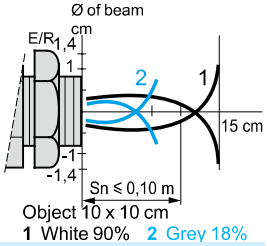
Reflex system with reflector XUZC50



Polarised reflex system with reflector XUZC50



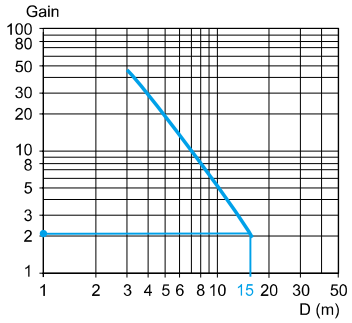
Diffuse system



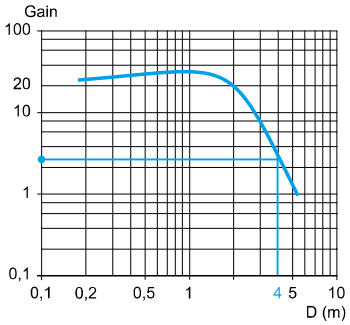
Object 10 x 10 cm
1 White 90% **2** Grey 18%

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

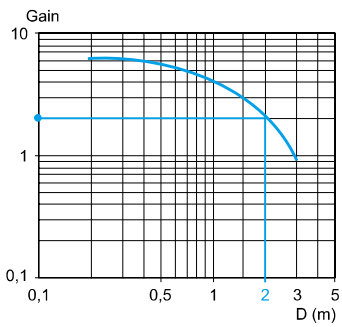
Thru-beam system



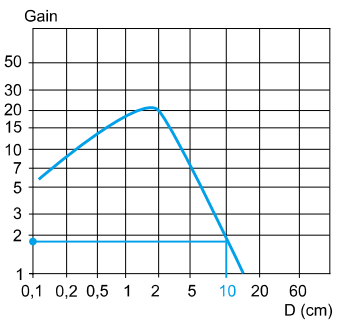
Reflex system with reflector XUZC50



Polarised reflex system with reflector XUZC50



Diffuse system



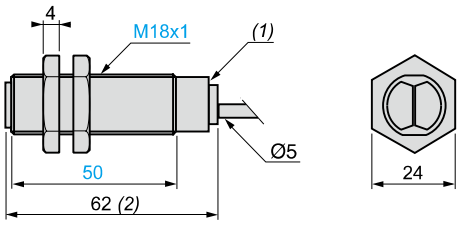
Object 10 x 10 cm
White 90%

Photo-electric sensors

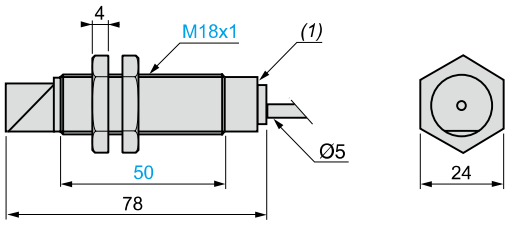
OsiSense XU Application, single mode
food and beverage processing series
Stainless steel case M18 x 1
DC. Solid-state output

Dimensions

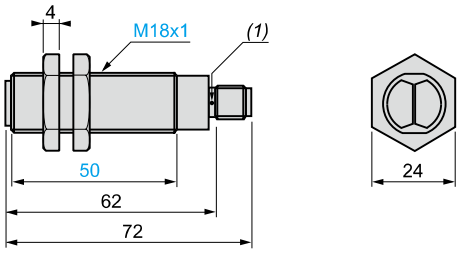
XU●N18●●341



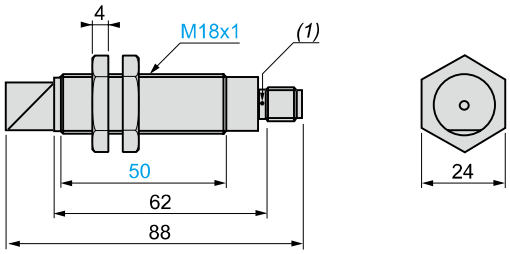
XU●N18●●341W



XU●N18●●341D



XU●N18●●341WD



(1) LED
*(2) 64 for **XU9N18●●341***
Fixing nut tightening torque: < 15 N.m
Connector tightening torque: 2 N.m

Photo-electric sensors

OsiSense XU Application, single mode
food and beverage processing series
Stainless steel case M18 x 1
DC. Solid-state output

Wiring schemes

M12 connector

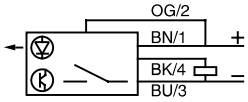
3 (–)
1 (+)
4 OUT/Output
2 Prog (or beam break input for thru-beam transmitter only)

Pre-cabled

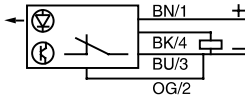
(–) BU (Blue)
(+) BN (Brown)
(Out/Output) BK (Black)
(Prog) OG (Orange)
(Beam break input) VI (Violet) on thru-beam transmitter only

Wiring schemes - diffuse

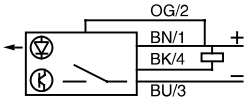
PNP NO



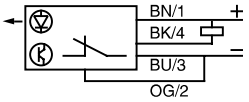
PNP NC



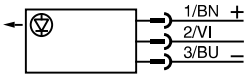
NPN NO



NPN NC

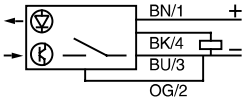


Transmitter

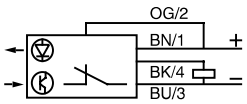


Wiring schemes - reflex and thru-beam

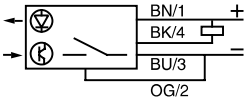
PNP NO



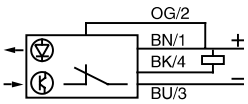
PNP NC



NPN NO

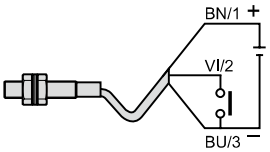


NPN NC



Beam break input on thru-beam transmitter only

Beam made



Beam broken

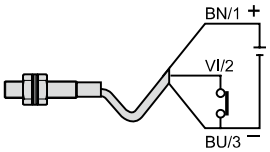


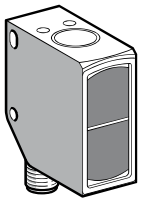
Photo-electric sensors

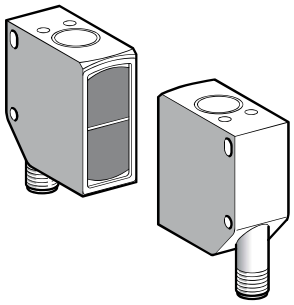
OsiSense XU Application, single mode

food and beverage processing series
Stainless steel 316 case, M12 connector
DC

Compact design

ECOLAB certified





System	Diffuse with background suppression	Polarised reflex	Thru-beam	
Type of transmission conforming to EN 62471 (2008)	Red beam			
Nominal sensing distance (Sn)/Maximum sensing distance	3…550 mm, on white 90% 12…550 mm, on grey 18% 20…550 mm, on black 6% *(1), (2)*	0.4…11/13 m (with reflector XUZC100) 0.4…9 m (with reflector XUZC80) 0.4…6 m (with reflector XUZC50)	0…15/20 m	

References

4-wire, PNP	XUK8SPSMM12	XUK9SPSMM12	Transmitter: XUK2SKSMM12T	Receiver: XUK2SPSMM12R
Weight (kg)	0.150	0.150	0.150	0.150

Characteristics

Product certifications		CE			
Connection		M12, 4-pin connector			
Degree of protection	Conforming to IEC 60529	IP 67			
	Conforming to DIN 40050	IP 69K			
Ambient air temperature	For operation	-20…+60 °C (100 °C for cleaning and sterilization phases whilst not in service)			
	For storage	-20…+80 °C			
Materials	Case	Stainless steel 316L			
	Lenses	PMMA			
Vibration resistance	Conforming to EN/IEC 60947-5-2 and EN/IEC 60947-4-2	Amplitude ±0.5 mm (f = 10 to 55 Hz)			
Shock resistance	Conforming to EN/IEC 60947-5-2 and EN/IEC 60947-4-1	30 gn, duration 11 ms			
Indicator lights	Output state	Yellow LED	Yellow LED	–	Yellow LED
	Supply on	Green LED			
	Unstable	Yellow LED, flashing			Red LED
Rated supply voltage		10…30 V ⎓			
Voltage limits (including ripple)		±10% of rated operational voltage			
Current consumption, no-load		< 30 mA			
Switching capacity		≤ 100 mA, with protection against reverse polarity, overload and short-circuit			
Test function	Breaking red beam	–	–	Yes	–
Voltage drop, closed state		≤ 2.4 V			
Maximum switching frequency		400 Hz	600 Hz	–	500 Hz
Delays	First-up	< 300 ms			
	Response	1.2 ms	0.8 ms	–	1 ms
	Recovery	1.2 ms	0.8 ms	–	1 ms

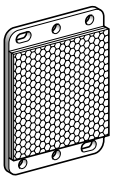
(1) Sensing distance adjustable between 100 and 550 mm.
(2) % of object remission.

Photo-electric sensors

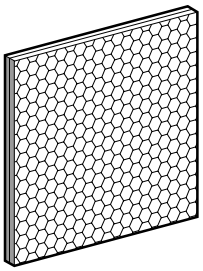
OsiSense XU Application, single mode
food and beverage processing series
Stainless steel 316 case, M12 connector
DC

References of accessories

XUZC80



XUZC50/XUZC50CR



XUZC100

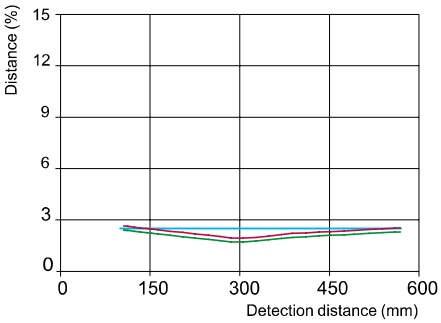
Description	Dimensions	Reference	Weight kg
Fixing bracket stainless steel 316	–	**XUZA51S**	0.050
Reflector	100 x 100 mm	**XUZC100**	0.062
Standard reflector	Ø 80 mm	**XUZC80**	0.029
Universal reflector	50 x 50 mm	**XUZC50**	0.020
Reflector *(1)* resistant to ECOLAB® detergents, up to 140 °C	50 x 50 mm	**XUZC50CR**	0.020
Pre-wired connector, straight PVC cable M12, 4-pin, female connector, stainless steel clamping ring	5 m	**XZCPA1141L5**	0.210
Pre-wired connector, elbowed PVC cable M12, 4-pin, female connector, stainless steel clamping ring	5 m	**XZCPA1241L5**	0.210

(1) Sensing distances are reduced by 50% compared to reflector XUZC50.

Optical curves, excess gain curves

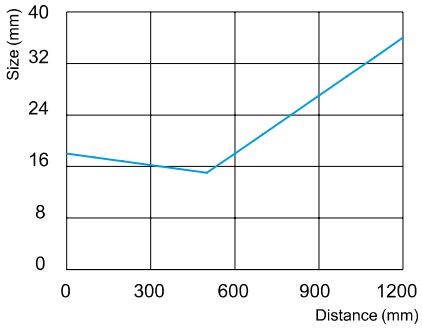
XUK8SPSMM12

Scanning properties



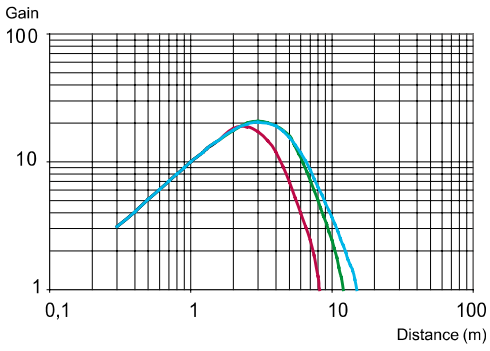
Black/white 6%/90%
Grey/white 18%/90%
White/white 90%/90 %

Size of luminous point



XUK9SPSMM12

Excess gain curve



XUZC50
XUZC80
XUZC100

Size of luminous point

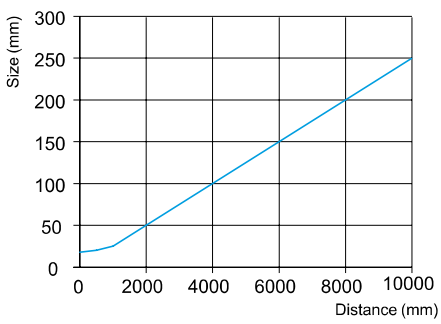


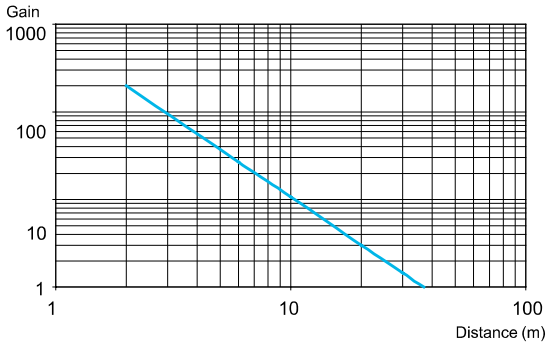
Photo-electric sensors

OsiSense XU Application, single mode
food and beverage processing series
Stainless steel 316 case, M12 connector
DC

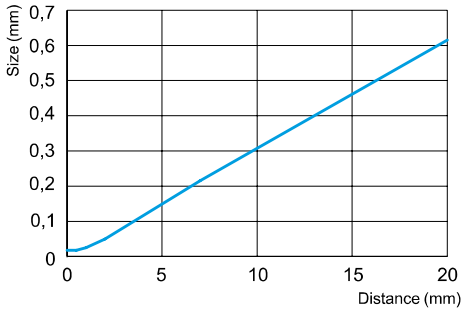
Optical curves, excess gain curves (continued)

XUK2SKSMM12T and **XUK2SPSMM12R**

Excess gain curve



Size of luminous point



Wiring schemes

M12 connector

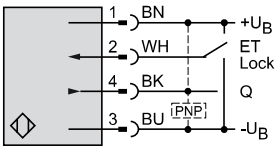
XUK8SPSMM12, XUK9SPSMM12, XUK2SPSMM12R:

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

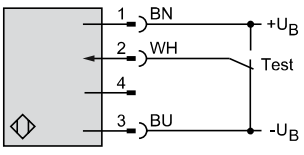
XUK2SKSMM12T:

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

PNP receiver



Thru-beam transmitter ⎓



(1) ET/Lock. ET: External Teach, Lock: pushbutton locking.

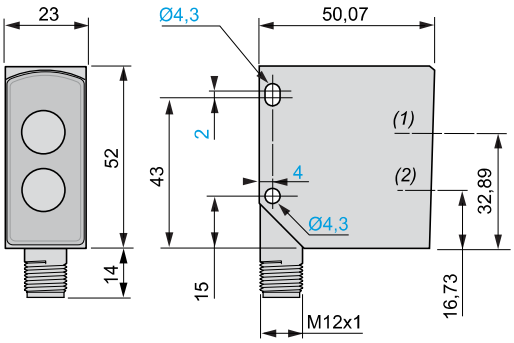
Photo-electric sensors

OsiSense XU Application, single mode
food and beverage processing series
Stainless steel 316 case, M12 connector
DC

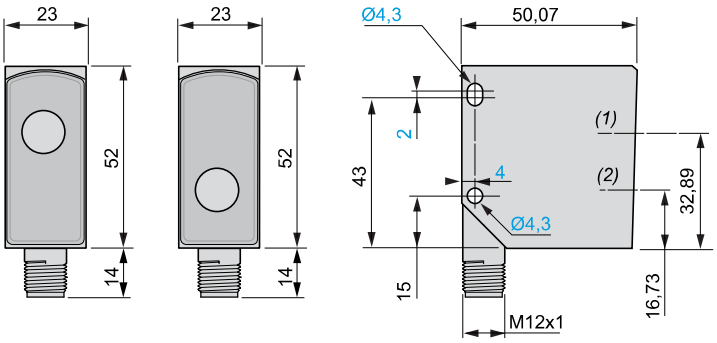
Dimensions

Sensors

XUK8SPSMM12 and **XUK9SPSMM12**



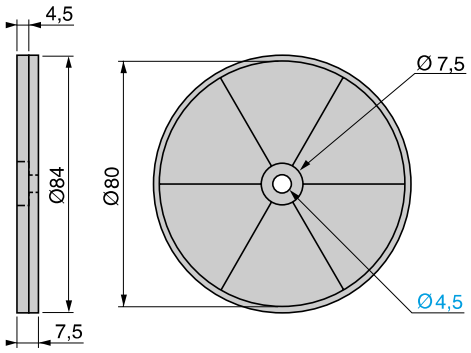
XUK2SKSMM12T and **XUK2SPSMM12R**



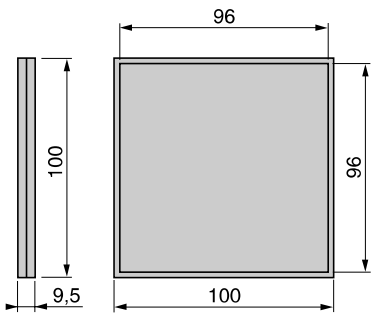
(1) Receiver optical axis.
(2) Transmitter optical axis.

Reflectors

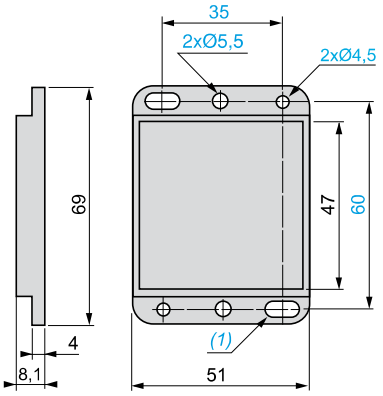
XUZC80



XUZC100



XUZC50 and **XUZC50CR**



(1) 2 elongated holes for M4 screws.

Fixing bracket

XUZA51S

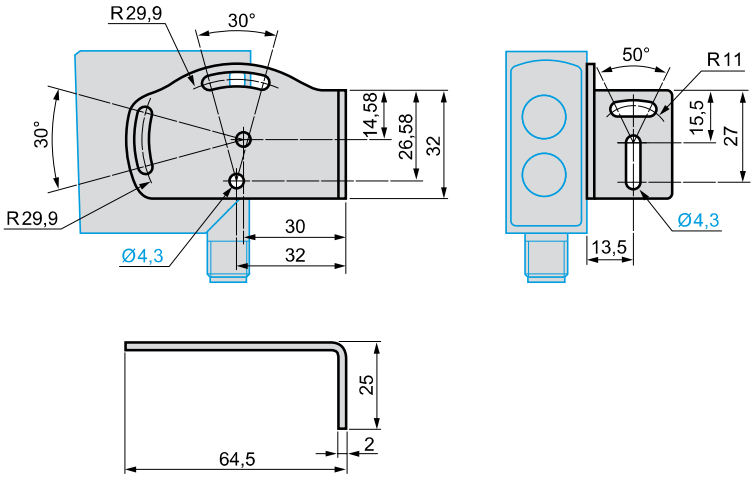


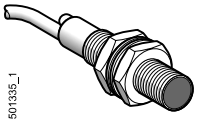
Photo-electric sensors

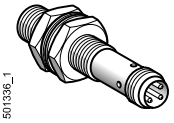
OsiSense XU Application, assembly series

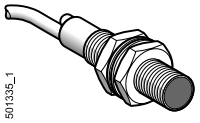
Metal case, cylindrical, threaded M8 x 1

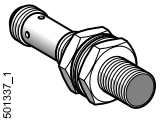
DC supply. Solid-state output

Design 8









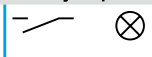
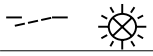
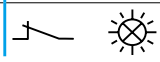
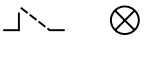
Connection	Pre-cabled	■	–	■	–
	Connector	–	■	–	■
System		Thru-beam	Thru-beam	Diffuse	Diffuse
Type of transmission		Infrared	Infrared	Infrared	Infrared
Nominal sensing distance (Sn)		2 m	2 m	0.05 m	0.05 m

References

3-wire, PNP	NO function	**XUAH0214**	**XUAH0214S**	**XUAH0515**	**XUAH0515S**
	NC function	**XUAH0224**	**XUAH0224S**	**XUAH0525**	**XUAH0525S**
3-wire, NPN	NO function	**XUAJ0214**	**XUAJ0214S**	**XUAJ0515**	**XUAJ0515S**
	NC function	**XUAJ0224**	**XUAJ0224S**	**XUAJ0525**	**XUAJ0525S**
Transmitter		**XUAH0203**	**XUAH0203S**	–	–
Weight (kg)		0.050	0.015	0.50	0.015

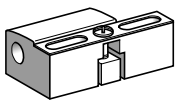
Characteristics

Product certifications		CE, cULus			
Ambient air temperature	For operation	- 25…+ 55 °C			
	For storage	- 30…+ 70 °C			
Vibration resistance	Conforming to IEC 60068-2-6	7 gn, amplitude ± 1 mm (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 67 - IP 65	IP 65	IP 67 - IP 65	IP 65
Connection	Pre-cabled	Ø 3.5 mm, length 2 m, wire c.s.a.: 3 x 0.14 mm²			
	Connector	M8 female connectors, 3-pin			
Materials	Case	Nickel plated brass			
	Cable	PvR	–	PvR	–
	Lenses	PMMA			
Rated supply voltage		**⎓ 12…24 V with protection against reverse polarity**			
Voltage limits (including ripple)		⎓ 10…30 V			
Switching capacity (sealed)		**≤ 100 mA with overload and short-circuit protection**			
Voltage drop, closed state		≤ 1 V			
Current consumption, no-load	Transmitter	≤ 15 mA			
	Receiver	≤ 10 mA			
	Diffuse	≤ 25 mA			
Maximum switching frequency		2000 Hz		1000 Hz	
Delays	First-up	≤ 20 ms			
	Response and recovery	≤ 0.25 ms		≤ 0.5 ms	

Function table	**Function**	**Diffuse or through beam system**	
		No object present in the beam	**Object present in the beam**
Output state (PNP or NPN) indicator: yellow LED (illuminated when sensor output is ON)	NO		
	NC		

Fixing accessories *(1)*

XSAZ108



XSZB108

Description	Reference	Weight kg
Plastic fixing clamp with locking screw	**XSAZ108**	0.007
Plastic fixing clamp for sensor replacement without adjustment	**XSZB108**	0.006

(1) For further information, see page 164.

Curves, dimensions, schemes

Photo-electric sensors

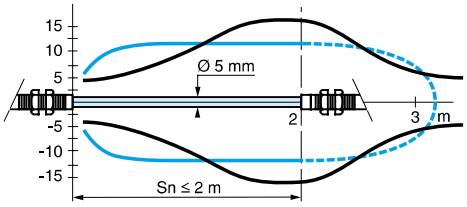
OsiSense XU Application, assembly series

Metal case, cylindrical, threaded M8 x 1
DC supply. Solid-state output

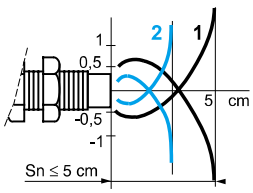
Curves

Detection curves

Thru-beam system



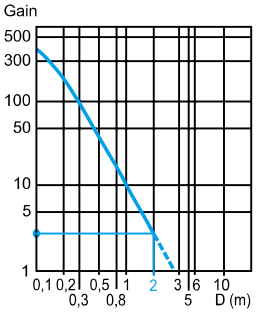
Diffuse system



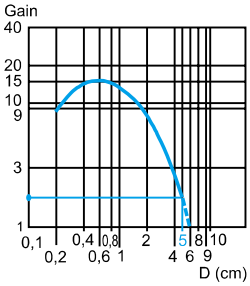
*Object 5 x 5 cm; **1** White 90%; **2** Grey 18%*

Excess gain curves (ambient temperature: ± 25 °C)

Thru-beam system

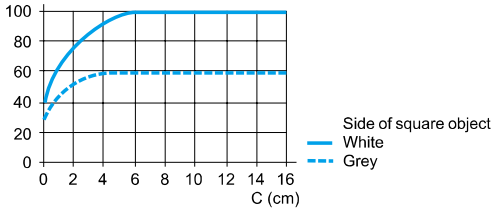


Diffuse system



Object 5 x 5 cm, White 90%

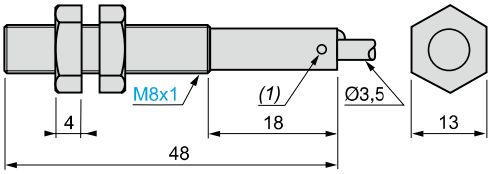
Variation of sensing distance Sn



Detection differential (H) when object approaches from the front: H ≤ 25% of Sn

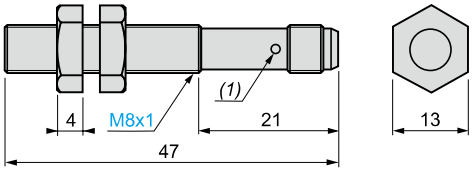
Dimensions

XUA



(1) LED, 4 viewing ports at 90°.

XUA●●●●●S



(1) LED, 4 viewing ports at 90°.

***Note:** fixing nut tightening torque: < 2 N.m*

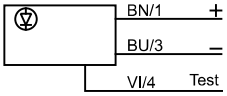
M8 connector

1 +
3 -
4 OUT or test

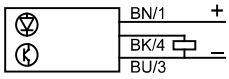
Wiring schemes (3-wire ⎓)

XUA

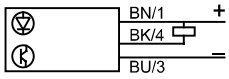
Transmitter



PNP

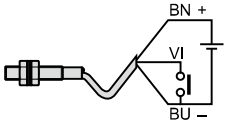


NPN

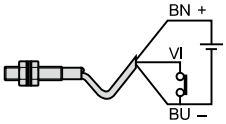


Beam break test

For thru-beam transmitter XUAH0203 only

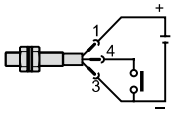


Beam made
LED on (steady light)

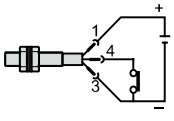


Beam broken
LED flashing

For thru-beam transmitter XUAH0203S only



Beam made
LED on (steady light)

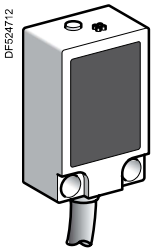


Beam broken
LED flashing

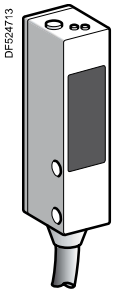
Photo-electric sensors

OsiSense XU Application

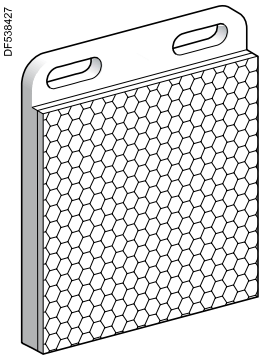
Conveying and access control series
Miniature design
Four-wire DC, solid-state output



XUYPS989S●



XUYB989S●



XUY1111

Diffuse system with background suppression

Sensing dist. (Sn) m	Function	Output	Connection	Reference	Weight kg
0.015…0.08	NO/NC depending on wiring	PNP	Pre-cabled (L = 2 m)	**XUYPS989SP**	0.075
			M8 connector	**XUYPSCO989SP**	0.044
		NPN	Pre-cabled (L = 2 m)	**XUYPS989SN**	0.075
			M8 connector	**XUYPSCO989SN**	0.044

Diffuse system with adjustable sensitivity

Sensing dist. (Sn) m	Function	Output	Connection	Reference	Weight kg
0.03…0.25	NO/NC depending on wiring	PNP	Pre-cabled (L = 2 m)	**XUYP989SP**	0.075
			M8 connector	**XUYPCO989SP**	0.044
		NPN	Pre-cabled (L = 2 m)	**XUYP989SN**	0.075
			M8 connector	**XUYPCO989SN**	0.044

Polarised reflex system

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

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

Accessory	For use with		
Reflector, 50 x 50 mm	**XUYB989S●**	**XUY1111**	0.018

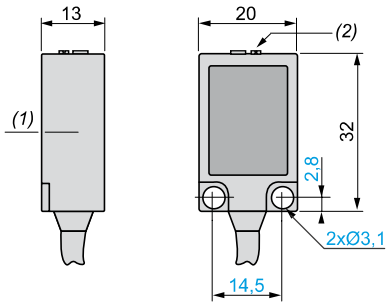
Thru-beam system

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

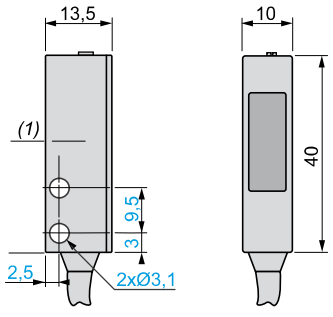
■ Applications:
□ Monitoring position or presence of parts, with background suppression
□ Detection of height of objects on a conveyor
□ Detection of product, pellet, powder levels.

Dimensions

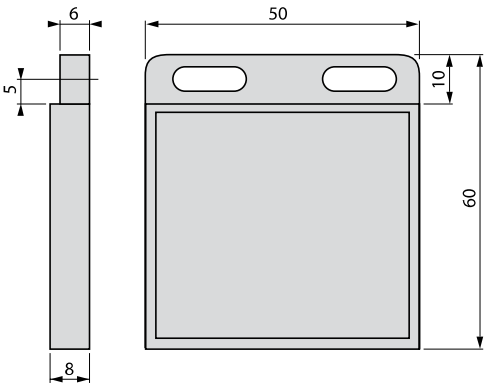
XUYPS989S●



XUYE989 and XUYR989●●

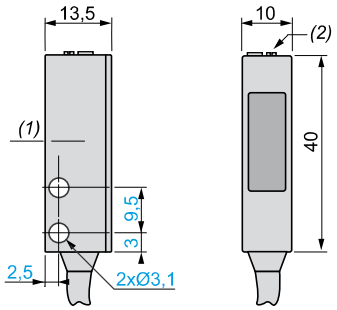


XUY1111



XUY●989S●

Transmitter/Receiver



(1) Optical axis
(2) Accuracy adjustment

Photo-electric sensors

OsiSense XU Application

Conveying and access control series

Miniature design

Four-wire DC, solid-state output

Characteristics

Sensor type			XUY●●●●●	XUY●CO●●●●●
Product certifications			CE, cULus *(1)*	
Connection	Connector		–	M8, 4-pin, on 0.2 m flying lead
	Pre-cabled		Length: 2 m	–
Nominal sensing distance (Sn)		**m**	0.08 diffuse with background suppression	
		m	0.25 diffuse with adjustable sensitivity	
		m	1 polarised reflex (with 50 x 50 mm reflector)	
		m	4 thru-beam	
Type of transmission	LED		Red, pulsed	
	Modulation frequency		6 kHz (4 kHz for XUYPS●●989S●)	
Degree of protection	Conforming to IEC 60529		IP 65 and IP 67	
Ambient air temperature	For storage	**°C**	- 20...+ 80	
	For operation	**°C**	0...+ 50	
Materials	Case		ABS	
	Lens		PMMA	
	Cable		PVC	PUR
Immunity to ambient light	Natural light	**Lux**	10 000 (insensitive for XUYPS●●989S●)	
	Incandescent bulb	**Lux**	5000 (insensitive for XUYPS●●989S●)	
Rated supply voltage		**V**	**⎓ 12...24 with protection against reverse polarity**	
Voltage limits (including ripple)		**V**	**⎓ 10...30**	
Current consumption, no-load		**mA**	< 25	
Switching capacity per output		**mA**	**100 with overload and short-circuit protection**	
Voltage drop, closed state		**V**	At 100 mA: < 2; at 10 mA: < 1	
Maximum switching frequency		**Hz**	**500**	
Delays	Response and recovery	**ms**	1	

(1) This product is UL Listed if supplied by a class II or isolated supply delivering ⎓ 30 V max. (isolated transformer for example) and protected by a UL fuse rated at 3 A max.

Wiring scheme - connector

M8

Pin n° - colour

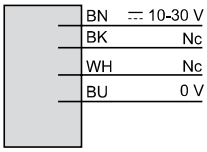
1 BN: Brown

2 WH: White

3 BU: Blue

4 BK: Black

Transmitter

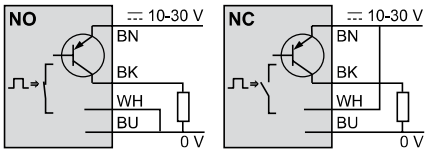


Nc: Not connected

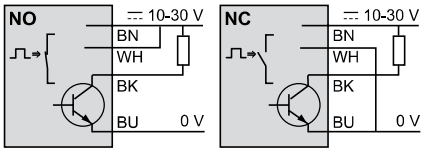
Wiring scheme - pre-cabled

Diffuse

PNP output

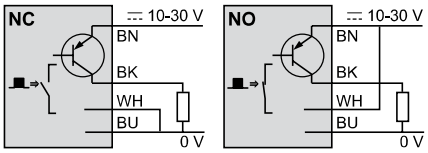


NPN output

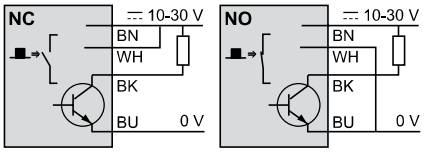


Polarised reflex and thru-beam

PNP output

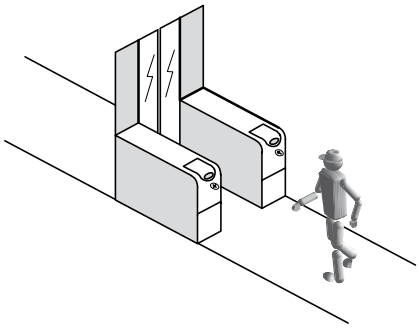


NPN output

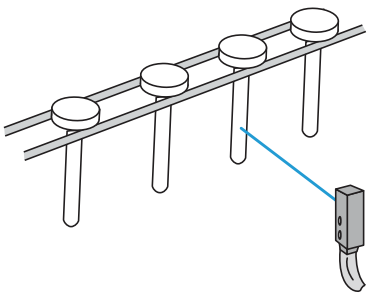


Application examples

Access control



Monitoring metal rods



Detection of tin cans on a conveyor

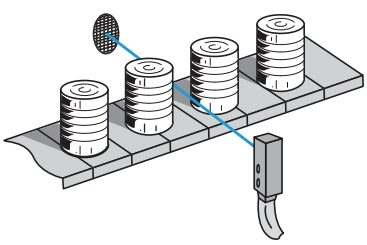
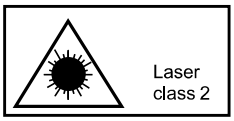


Photo-electric sensors

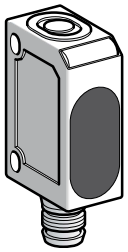
OsiSense XU Application, assembly series

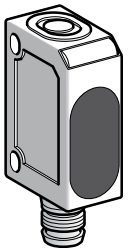
Miniature design
with laser transmission and teach mode
Three-wire DC, solid-state output

Miniature design



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



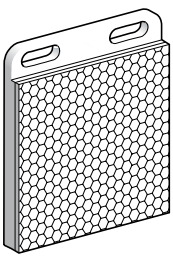


System		Polarised reflex	Diffuse with background suppression		Colour mark reader
Type of transmission		Red laser, pulsed, Class 2, wavelength: 655 nm			
Nominal sensing distance (Sn)		**100…1000 mm** *(1)*	**20…60 mm**	**30…110 mm**	**40…150 mm**
References					
4-wire, PNP output	NO/NC function, selectable	**XUYBCO929LSP**	**XUYPSCO929L1SP**	**XUYPSCO929L2SP**	**XUYPCCO929LSP**
Weight (kg)		0.056	0.056	0.056	0.056
Characteristics					
Product certifications		CE			
Ambient air temperature	For operation	- 20…+ 60 °C			
	For storage	- 20…+ 80 °C			
Degree of protection	Conforming to IEC 60529	IP 67			
Connection		M8, 4-pin male connector			
Vibration resistance	Conforming to IEC 60068-2-6	7 gn, amplitude ± 1,5 mm (f = 10 to 55 Hz)			
Shock resistance	Conforming to IEC 60068-2-27	30 gn, duration 11 ms			
Materials	Case	ABS			
Rated supply voltage		⎓ **12…24 V with protection against reverse polarity**			
Voltage limits (including ripple)		⎓ **10…30 V**			
Immunity to ambient light		5000 lux			
Laser transmission		T pulse: 3 µs, pulse frequency: 5 kHz			
Spot diameter		< 0.7 mm	< 0.3 …40 mm	< 0.7 mm	
Switching capacity		**100 mA with overload and short-circuit protection**			
Voltage drop, closed state		< 2.4 V			
Current consumption, no-load		25 mA	30 mA		25 mA
Maximum switching frequency		**1000 Hz**			
Indicator lights	Supply on/Dirty	Green LED			
	Output signal	Yellow LED			
Adjustment		Using teach mode button or remote teaching (external input)			

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

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

Accessories



XUY1111

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

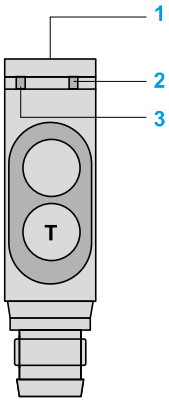
Description, schemes, dimensions

Photo-electric sensors

OsiSense XU Application, assembly series

Miniature design
with laser transmission and teach mode
Three-wire DC, solid-state output

Description



XUYBCO929LSP

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

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

XUYPSCO929L●SP, XUYPCCO929LSP

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

R: Receiver
T: Transmitter

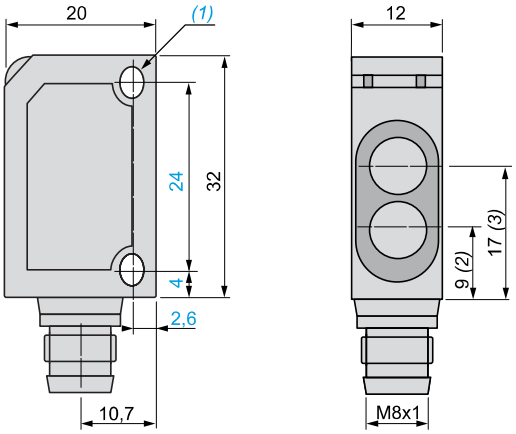
■ **Teach mode** (yellow and green LEDs are on)
□ Line-up with object, press T.I. for 3 seconds: both LEDs flash
□ Insert the object, press T.I. for 1 second: the green LED flashes then remains on (teaching completed)

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

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

Dimensions

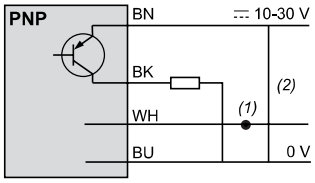
XUYBCO929LSP, XUYPSCO929L●SP



(1) 2 elongated holes Ø 3.2 x 4.2.
(2) Transmitter optical axis.
(3) Receiver optical axis.

Wiring schemes

Pre-cabled



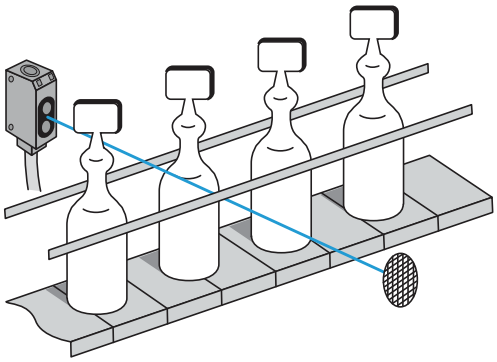
(1) - Connected to +: external teaching,
- Connected to –: locking of functions
(2) Output 100 mA max.

M8 connector

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

Application examples

Detection of pharmaceutical ampoules



Detection of connection tags on integrated circuits passing on rail

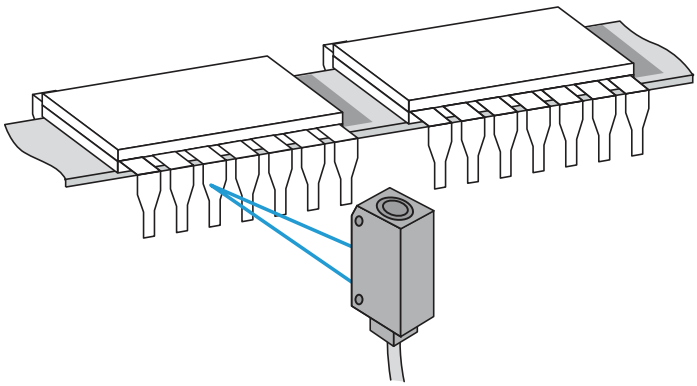
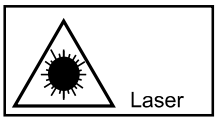


Photo-electric sensors

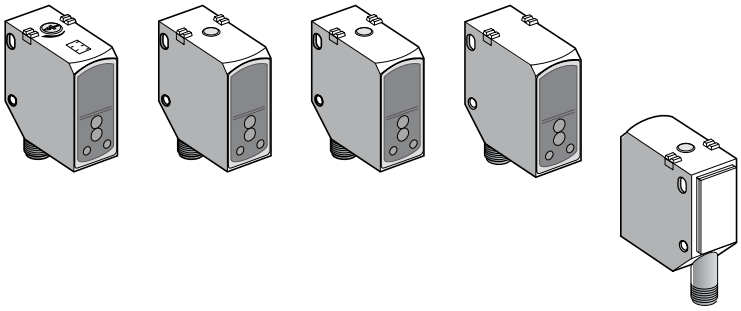
OsiSense XU Application, single mode
Assembly series
Plastic, M12 connector
DC

Compact design

ECOLAB certified



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



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

References

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

Characteristics

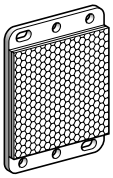
Product certifications		CE				
Connection		M12, 4-pin connector				
Degree of protection	Conforming to IEC 60529	IP 67				
	Conforming to DIN 40050	IP 69K				
Ambient air temperature	For operation	-20…+60°C				
	For storage	-20…+80°C				
Material	Case	PC - ABS anti-shock				
	Lenses	PMMA				
Vibration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

(1) On the minimum setting, the background suppression distance (white) is 70 mm.

Photo-electric sensors

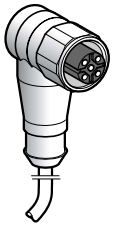
OsiSense XU Application, single mode
Assembly series
Plastic, M12 connector
DC

References of accessories

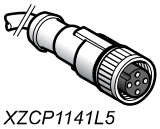


XUZC50HP

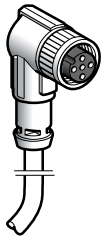
XZCPA1141L5



XZCPA1241L5



XZCP1141L5



XZCPA1241L5

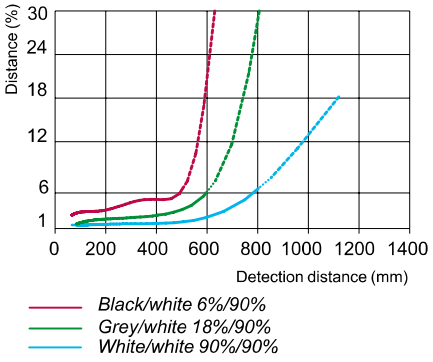
Description	Dimensions	Reference	Weight kg
Fixing bracket 304 stainless steel	–	**XUZA51S**	0.050
Protection bracket 304 stainless steel	–	**XUZASK001**	0.210
Mounting bracket on dovetail	–	**XUZASK002**	0.050
Rigid microprism reflector	50 x 50 mm	**XUZC50HP**	0.020
Pre-wired connectors with PVC cable for food and beverage applications			
Straight pre-wired connector M12, 4-pin, female connector, stainless steel clamping ring	5 m	**XZCPA1141L5**	0.210
Elbowed pre-wired connector M12, 4-pin, female connector, stainless steel clamping ring	5 m	**XZCPA1241L5**	0.210
Pre-wired connectors with PUR cable for industrial applications			
Straight pre-wired connector M12, 4-pin, female connector, nickel-plated brass clamping ring	5 m	**XZCP1141L5**	0.210
Elbowed pre-wired connector M12, 4-pin, female connector, nickel-plated brass clamping ring	5 m	**XZCP1241L5**	0.210

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

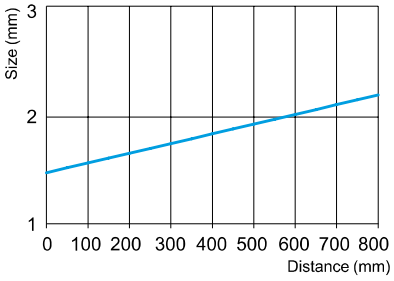
Curves

XUK8LAPPNM12

Scanning properties

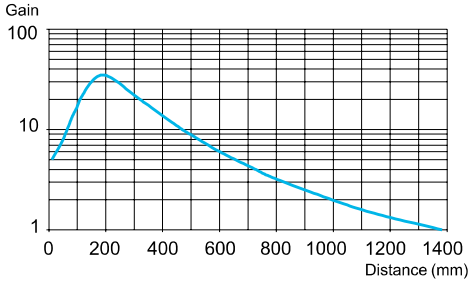


Size of luminous point



XUK5LAPSMM12

Excess gain curve



Size of luminous point

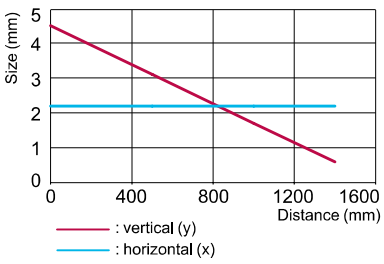
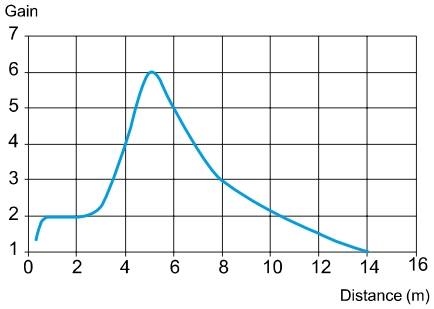


Photo-electric sensors
OsiSense XU Application, single mode
Assembly series
Plastic, M12 connector
DC

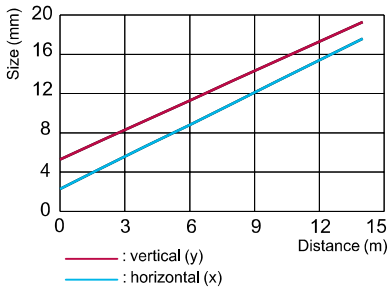
Curves *(continued)*

XUK9LAPSMM12

Excess gain curve

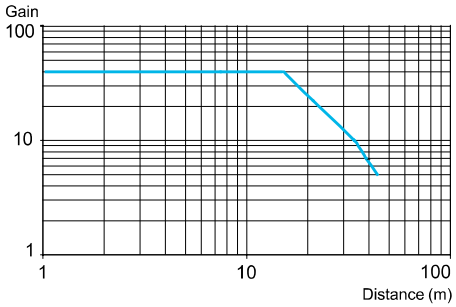


Size of luminous point

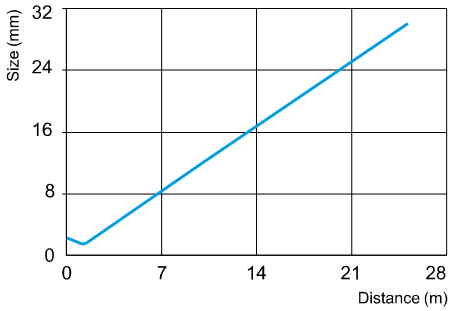


XUK2LAKSMM12T and XUK2LAPSMM12R

Excess gain curve



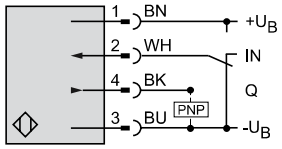
Size of luminous point



Wiring schemes using M12 connector

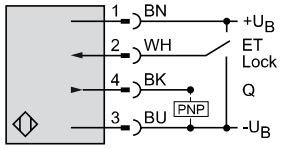
XUK8LAPPNM12

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



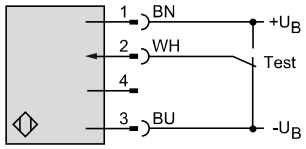
XUK5LAPSMM12, XUK9LAPSMM12 and XUK2LAPSMM12R

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



XUK2LAPSMM12T

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



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

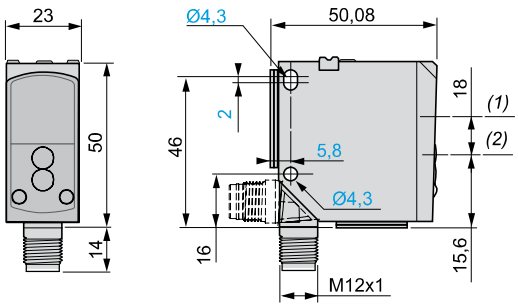
Photo-electric sensors

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

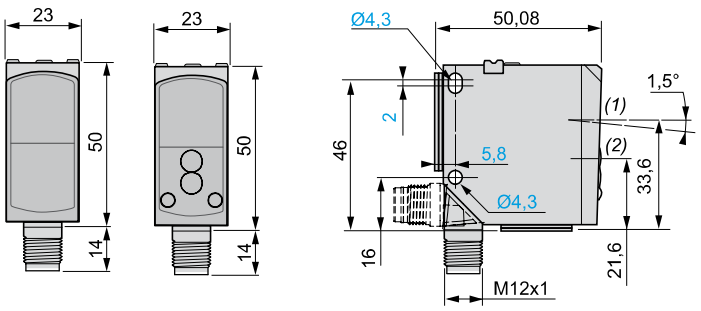
Dimensions

Sensors

XUK8LAPPNM12

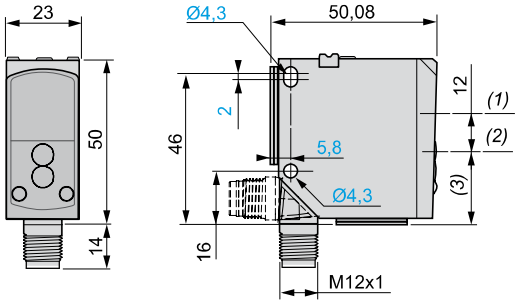


XUK2LAKSMM12T and **XUK2LAPSMM12R**



Sensors *(continued)*

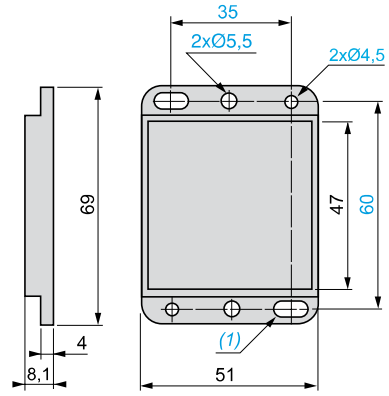
XUK5LAPSMM12 and **XUK9LAPSMM12**



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

Reflector

XUZC50HP

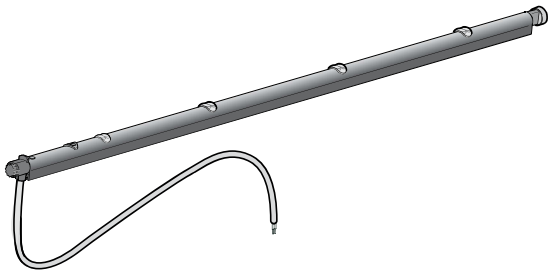


(1) 2 elongated holes for M4 screws.

Photo-electric sensors

OsiSense XU Application, conveying series

For detecting packages on a roller conveyor
DC supply, solid-state output



Nominal sensing distance (Sn)	**0.1 m**
Function	NO/NC programmable
Output	PNP + NPN
Connection	Remote M12 connector, L = 0.3 m

References

3-wire type	**XUY474NB4H03M12** *(1)*
Number of sensors (1 to 6)	4
Weight (kg)	0.075

***Note**: If you require more information about these products, please consult our Customer Care Centre.*

Characteristics

Product certifications		CE, cCSAus
Type of transmission		Infrared
Operating mode		Diffuse
Nominal sensing distance		100 mm (white paper)
Differential travel		< 25%
Degree of protection	Conforming to IEC 60529	IP 50 (IP 65 on request)
Ambient air temperature	For operation	- 10…+ 55°C
	For storage	- 20…+ 80°C
Vibration resistance	Conforming to EN/IEC 60068-2-8	For X, Y and Z: 1 mm from 10 to 42 Hz 7 gn from 42 to 55 Hz 30 mm at resonant frequency or 55 Hz
Shock resistance	Conforming to EN/IEC 60068-2-27	For X, Y and Z: 10 gn for 11 ms
Material	Case	Aluminium and PA
	Lenses	PC
Rated supply voltage		24 V with protection against reverse polarity
Voltage limits (including ripple)		18…30 V of rated operational voltage
Switching capacity		100 mA with overload and short-circuit protection
Voltage drop, closed state		≤ 2 V
Current consumption		≤ 35 mA
Maximum switching frequency		500 Hz
Delay		1 ms response 1 ms recovery
Indicator lights	Output state	1 yellow LED
Detection accuracy		2 mm at 2 m/s

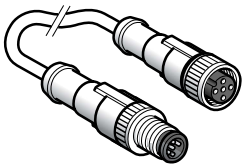
(1) These sensors are suitable for use on a 473-477 mm wide conveyor frame

Photo-electric sensors

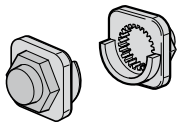
OsiSense XU Application, conveying series

For detecting packages on a roller conveyor
DC supply, solid-state output

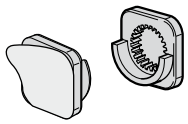
References of accessories



XZCR1511041C●



XUZASY01H



XUZASY01A

Description	Length m	Reference	Weight kg
Fixing accessories			
Pack of 20 hexagonal supports and Ø 8 mm fixing	–	**XUZASY01H**	0.020
Pack of 20 self-adhesive hexagonal supports	–	**XUZASY01A**	0.020
M12-M12 jumper cables			
4-pin, straight connector	1	**XZCR1511041C1**	0.065
	2	**XZCR1511041C2**	0.095
4-pin, elbowed connector	1	**XZCR1512041C1**	0.065
	2	**XZCR1512041C2**	0.095

Connections

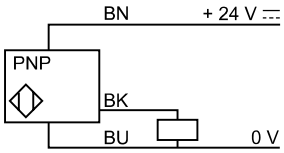
M12 connector

Pin no./colour

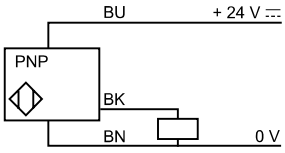
1 BN: Brown
2 WH: White (disconnected)
3 BU: Blue
4 BK: Black

PNP + NPN programmable, NO or NC output

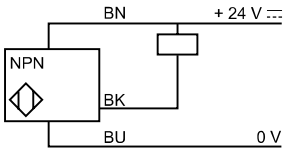
PNP, NO output



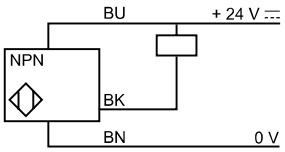
PNP, NC output



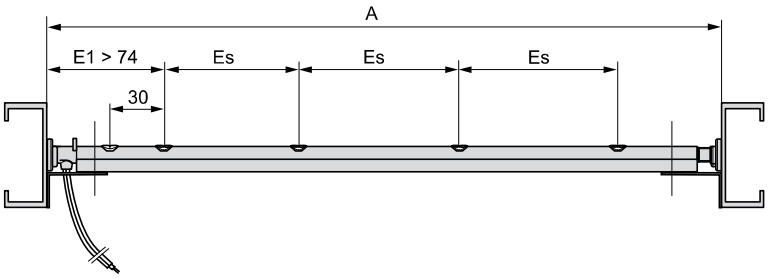
NPN, NO output



NPN, NC output



Dimensions (mm)



***A**: Conveyor width exact distance between lips (250 to 900 mm).*
For dimensions above 900 mm, please consult our Customer Care Centre.

Examples of components in the references

	Conveyor width (A)	Additional functions *(1)*	Spacing between sensors (Es)	Number of sensors	Fixing type	Connection
XUY380NA5D03M8	380 mm	No	54 mm	5	Ø 8 mm	Remote M8 connector with 0.3 m cable
XUY410NC3H1M12	410 mm	No	108 mm	3	11.2 mm hexagonal support	Remote M12 connector with 1 m cable
XUY450NB3N03M8	450 mm	No	93.1 mm	3	–	Remote M8 connector with 0.3 m cable
XUY600NC5H2	600 mm	No	108 mm	5	11.2 mm hexagonal support	2 m cable
XUY707ND4P2	707 mm	No	162 mm	4	Hexagonal support on each side	2 m cable

(1) Timer, special settings, IP65 degree of protection: on request from our Customer Care Centre.

Photo-electric sensors

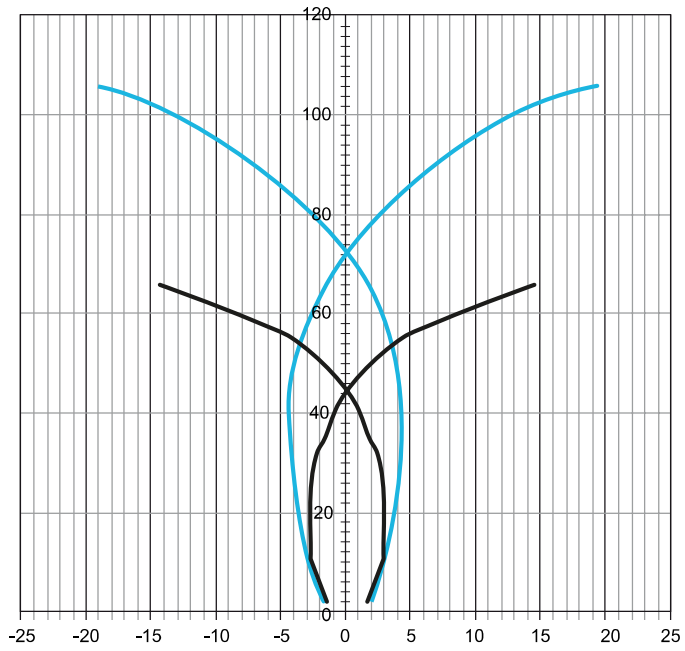
OsiSense XU Application, conveying series

For detecting packages on a roller conveyor
DC supply, solid-state output

Detection curves

Conveyor axis - Load running direction

Distance between the target and the sensor in mm

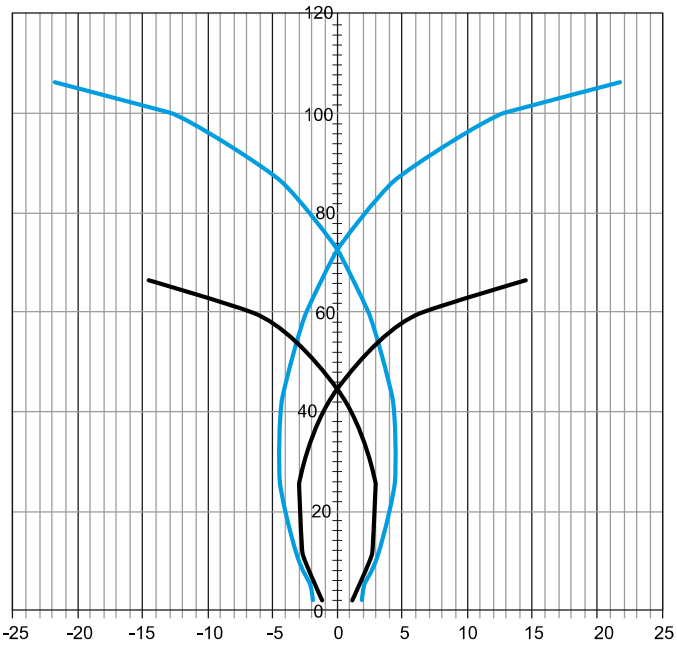


Distance between the target and the optical axis in mm

: Black 6%
: White 92%

Roller axis - Direction at right-angles to load running

Distance between the target and the sensor in mm



Distance between the target and the optical axis in mm

: Black 6%
: White 92%

Mounting, application example

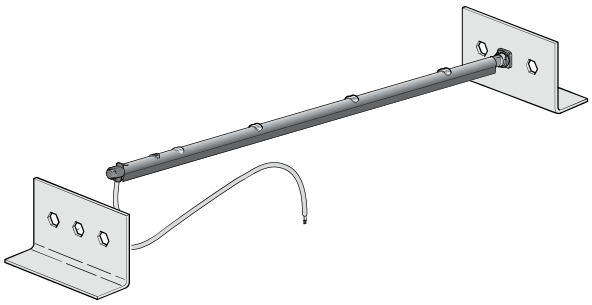
Photo-electric sensors

OsiSense XU Application, conveying series

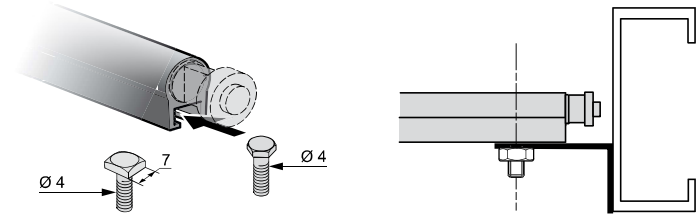
For detecting packages on a roller conveyor
DC supply, solid-state output

Mounting

Mounting on the sides, with XUZASY01H or XUZASY01A hexagonal supports
(2 of each support are supplied with the sensor)

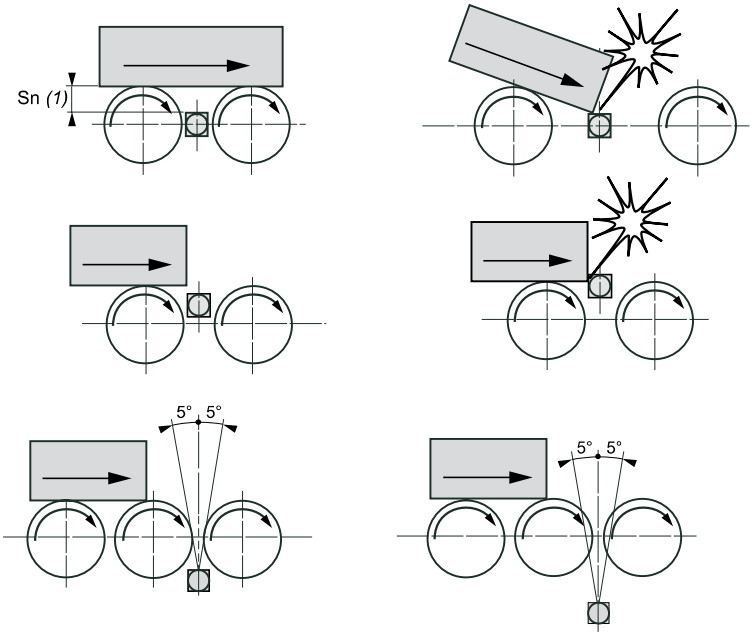


Mounting underneath *(brackets, screws and nuts not supplied)*



Mounting precautions

Recommended mounting	Not recommended



(1) Sn ≤ 100 mm.

Application example

Package detection - sensor mounted between motorized rollers

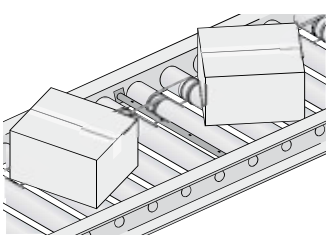
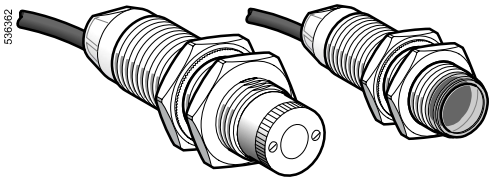


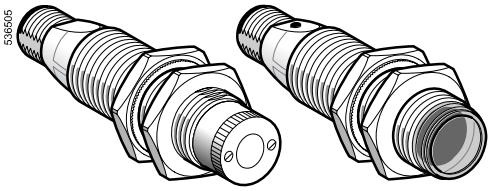
Photo-electric sensors

OsiSense XU Application, material handling series

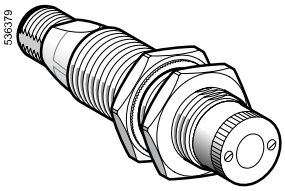
Laser transmission. Design 18, plastic or metal
Three-wire DC. Solid-state output



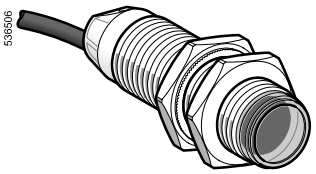
XUBL●●CNL2



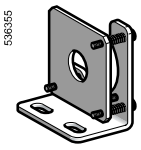
XUBL●●CNM12



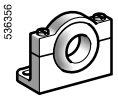
XUBL●●CNM12T



XUBL●●CNL2R



XUZA318



XUZA218

XUZA118

Ø 18, plastic, thru-beam system with teach mode, laser transmission (Transmitter + receiver)

Sensing distance (Sn) m	Function	Connection	Output	Reference	Weight kg
0...100	NO or NC, by programming	Pre-cabled	PNP	**XUBLAPCNL2**	0.180
			NPN	**XUBLANCNL2**	0.180
		M12 connector	PNP	**XUBLAPCNM12**	0.078
			NPN	**XUBLANCNM12**	0.078

Ø 18, metal, thru-beam system with teach mode, laser transmission (Transmitter + receiver)

Sensing distance (Sn) m	Function	Connection	Output	Reference	Weight kg
0...100	NO or NC, by programming	Pre-cabled	PNP	**XUBLBPCNL2**	0.230
			NPN	**XUBLBNCNL2**	0.230
		M12 connector	PNP	**XUBLBPCNM12**	0.130
			NPN	**XUBLBNCNM12**	0.130

Separate components

Ø 18 transmitter

Description	Connection	Output	For use with	Reference	Weight kg
Plastic	Pre-cabled	–	XUBLA●CNL2	**XUBLAKCNL2T**	0.090
	M12 connector	–	XUBLA●CNM12	**XUBLAKCNM12T**	0.040
Metal	Pre-cabled	–	XUBLB●CNL2	**XUBLBKCNL2T**	0.110
	M12 connector	–	XUBLB●CNM12	**XUBLBKCNM12T**	0.060

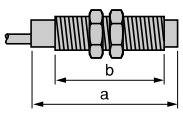
Ø 18 receiver

Description	Connection	Output	For use with	Reference	Weight kg
Plastic	Pre-cabled	PNP	XUBLAPCNL2	**XUBLAPCNL2R**	0.090
		NPN	XUBLANCNL2	**XUBLANCNL2R**	0.090
	M12 connector	PNP	XUBLAPCNM12	**XUBLAPCNM12R**	0.040
		NPN	XUBLANCNM12	**XUBLANCNM12R**	0.040
Metal	Pre-cabled	PNP	XUBLBPCNL2	**XUBLBPCNL2R**	0.120
		NPN	XUBLBNCNM12	**XUBLBNCNL2R**	0.120
	M12 connector	PNP	XUBLBPCNM12	**XUBLBPCNM12R**	0.070
		NPN	XUBLBNCNM12	**XUBLBNCNM12R**	0.070

Fixing accessories for XUBL● *(1)*

Description	Reference	Weight kg
Precision fixing bracket with micrometric adjustment	**XUZA318**	0.170
Plastic fixing bracket with adjustable ball-joint	**XUZA218**	0.035
Stainless steel fixing bracket	**XUZA118**	0.045

Dimensions



	Pre-cabled (mm)		Connector (mm)	
	a	**b**	**a**	**b**
Receiver *(2)*	62	44	76	44
Transmitter *(3)*	52	28	66	28

(1) For further information, see page 162
(2) Yellow, green and red LED on receiver
(3) Green LED on transmitter

Note: *fixing nut tightening torque: < 4 Nm*

Characteristics, schemes, curves

Photo-electric sensors

OsiSense XU Application, material handling series

Laser transmission. Design 18, plastic or metal
Three-wire DC. Solid-state output

Characteristics

Sensor type			XUBL●●●●M12	XUBL●●●●L2
Product certifications			UL, CSA, CE	
Connection	Connector		M12	–
	Pre-cabled		–	Length: 2 m
Nominal sensing distance Sn		**m**	0...100, excess gain 70...3	
Blind zone			0	
Preferred object approach direction			Any	
Type of transmission			Red laser, wavelength 670 nm	
Transmission power			Power < 1 mW, class 1 conforming to IEC 60825-1	
Degree of protection	Conforming to IEC 60529		IP 67, double insulation ⧈	
Temperature	Storage	**°C**	- 40... + 70	
	Operation	**°C**	- 10... + 45	
Materials	Case		**XUBLA●●●●●**: PBT; **XUBLB●●●●●**: nickel plated brass	
	Lens		PMMA	
Vibration resistance	Conforming to IEC 60068-2-6		7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms	
Indicator lights	Output state and alignment aid		Yellow LED	
	Supply on and teaching		Green LED	
	Stability		Red LED	
Rated supply voltage		**V**	⎓ 12...24 with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10...30	
Current consumption, no-load		**mA**	25 for transmitter or receiver	
Switching capacity per output		**mA**	⩽ 100 with overload and short-circuit protection	
Voltage drop, closed state		**V**	⩽ 1.5	
Maximum switching frequency		**Hz**	1500	
Delays	First-up	**ms**	< 80	
	Response and recovery	**ms**	< 0.4	

Wiring schemes

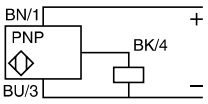
M12 connector

3 (-)
1 (+)
4 OUT/Output
2 Beam break input

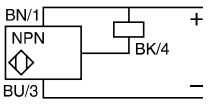
Pre-cabled

(-) BU (Blue)
(+) BN (Brown)
OUT/Output BK (Black)
Beam break input
VI (Violet)

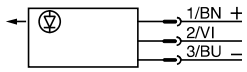
PNP



NPN



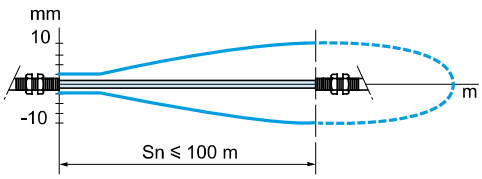
Transmitter



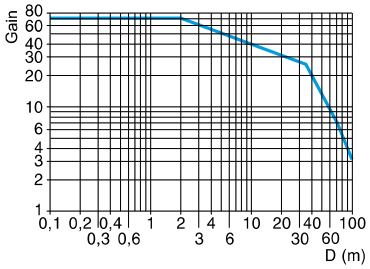
Input 2/VI:
- not connected: beam made
- connected to -: beam broken

Curves

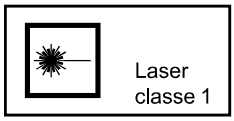
Detection curve (set to infinity)



Excess gain curve

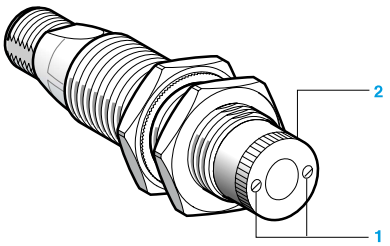


Operating precautions

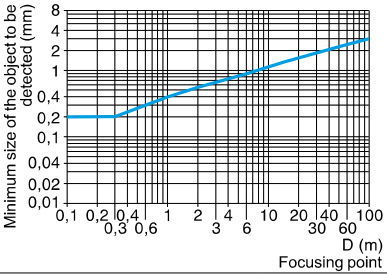


Laser class 1, conforming to IEC 60825-1.

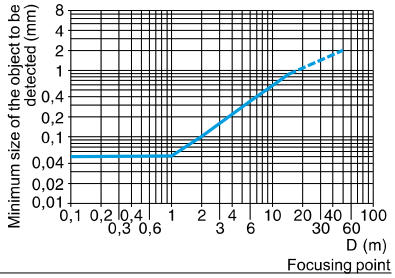
Adjustment



Standard curve



Detection limit curve



The adjustment of the focusing point enables the detection of objects down to a size of < 0.2 mm.
After slackening the fixing screws **1**. adjust the focusing point of the laser beam by rotating the serrated sleeve **2** located on the face of the sensor. Re-tighten fixing screws.

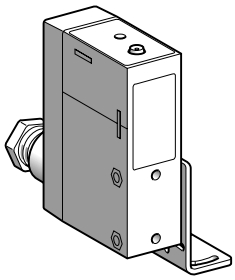
Note: fixing bracket ***XUZA218*** with ball-joint and, in particular, bracket ***XUZA318*** with precise micrometric adjustment and locking by 6 screws, are specially suited

Photo-electric sensors

OsiSense XU Application, material handling series

With analogue output signal 4…20 mA and 0…10 V *(1)*
DC supply. Solid-state output

Compact design



System		Diffuse
Type of transmission		Infrared
Nominal sensing distance (Sn)		20…80 cm

References

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

Characteristics

Product certifications		CE, CSA, UL
Ambient air temperature	For operation	- 25…+ 60 °C
	For storage	- 40…+ 80 °C
Vibration resistance	Conforming to IEC 60068-2-6	7 gn, amplitude ± 1.5 mm (f = 10…55 Hz)
Shock resistance	Conforming to IEC 60068-2-27	20 gn, duration 11 ms
Degree of protection	Conforming to IEC 60529	IP 67
	Conforming to NF C 20-010	IP 671
Connection		Screw terminals, maximum capacity: 2 x 1.5 mm^2 or 1 x 2.5 mm^2
Materials		Case: PEI *(2)*
Rated supply voltage		⎓ 24 V with protection against reverse polarity
Voltage limits (including ripple)		⎓ 20…30 V
Output current	Maximum	20 mA
	Minimum	4 mA
Output voltage (Vs)		⎓ 0…10 V
Output voltage drift in relation to temperature		< 10% between - 25 and + 60 °C
Output voltage drift in relation to object colour		< 10%
Current consumption, no-load		≤ 35 mA
Maximum switching frequency		10 Hz (for an output voltage variation of 1 V)
Delays	First-up	≤ 150 ms
Indicator light		The brightness of the LED is proportional to the output voltage

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

(2) PEI: high quality synthetic resin providing excellent withstand to mechanical shocks, vibration and the effects of external agents frequently encountered in industry: alcohol, salts, petroleum, oils, greases, washing agents (diluted sodium carbonate 4%, nitric acid 2%), formaldehyde vapour, splashing lactic acid, etc.

Curves, dimensions, schemes, connections

Photo-electric sensors

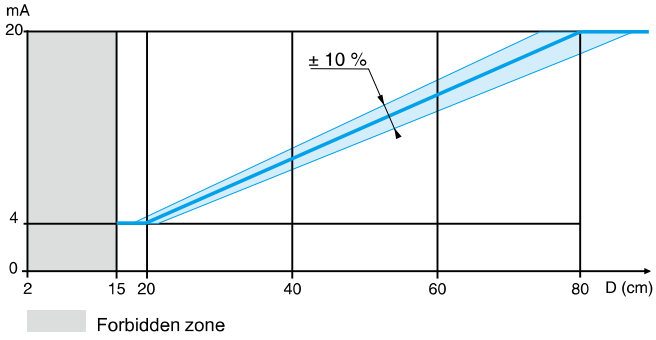
OsiSense XU Application, material handling series

With analogue output signal 4…20 mA and 0…10 V *(1)*
DC supply. Solid-state output

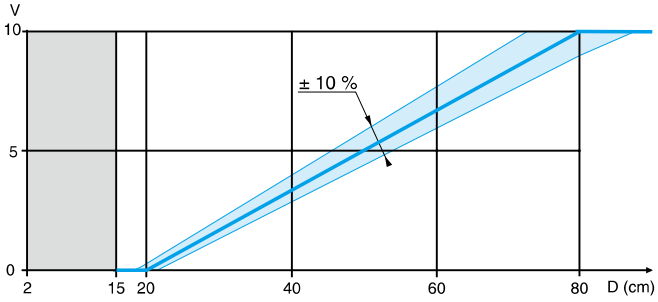
Curves

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

Output current

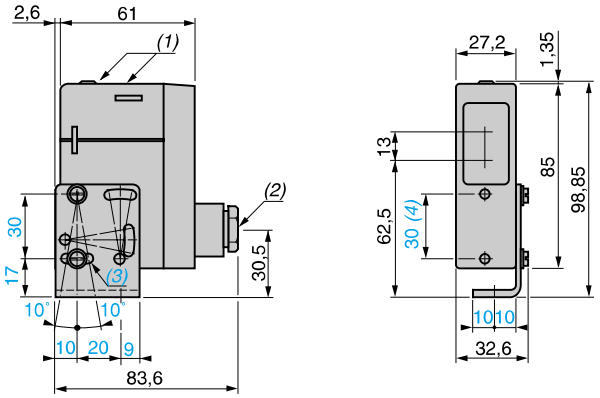


Output voltage



Dimensions

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

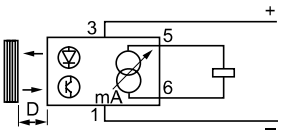


(1) LED.
(2) 11P cable gland.
(3) 1 elongated hole Ø 4.2 x 14.
(4) Front fixing (Ø 4 screws and inserts included).

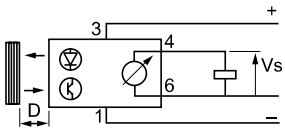
Wiring schemes

Diffuse system

Current output



Voltage output



Load characteristics

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

Terminal connections

1 ⊘ — (–)
2 ⊘
3 ⊘ — (+)
4 ⊘ — Output voltage
5 ⊘ — Output current
6 ⊘ — (–)

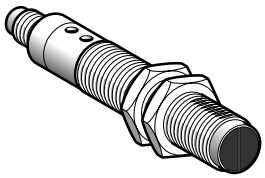
Terminals 1 and 6 connected internally.

Photo-electric sensors

OsiSense XU Application, material handling series

With analogue output signal 4…20 mA *(1)*
DC supply

Design 18



System		**Diffuse**
Type of transmission		Infrared
Nominal sensing distance (Sn)		**5…40 cm**

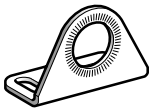
References

3-wire, PNP		**XU5M18AB20D**
Weight (kg)		0.075

Characteristics

Product certifications		CE, CSA, UL
Ambient air temperature		For operation: - 25…+ 55 °C. For storage: - 40…+ 70 °C
Vibration resistance	Conforming to IEC 60068-2-6	25 gn, amplitude ± 2 mm (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 67
Connection		M12 male connector, 4-pin (suitable female connectors, including pre-wired versions, please refer to our catalogue "Cabling accessories OsiSense XZ")
Materials		Case: nickel plated brass, lens: PMAA
Rated supply voltage		⎓ **12…24 V with protection against reverse polarity**
Voltage limits		⎓ 10…30 V (including ripple)
Output current	Maximum	**20 mA**
	Minimum	**4 mA**
Output current drift in relation to temperature		< 10% between - 25 and + 55 °C, < 5% between 0 and + 40 °C
Output current drift in relation to supply		< 3%
Current consumption, no-load		≤ 30 mA
Maximum switching frequency		20 Hz (for an output current variation of 10 mA)
Delays		First-up: ≤ 50 ms
Indicator light		The brightness of the green LED is proportional to the output current Ie = 20 mA: indicator light at maximum intensity Ie = 4 mA: indicator light at minimum intensity

Fixing accessory *(2)*



XUZA118

Description	Reference	Weight kg
Stainless steel fixing bracket	**XUZA118**	0,045

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

(2) For further information, see page 162.

Curves, dimensions, schemes

Photo-electric sensors

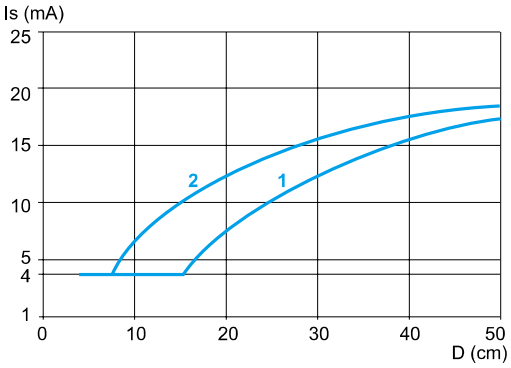
OsiSense XU Application, material handling series

With analogue output signal 4…20 mA
DC supply

Curves

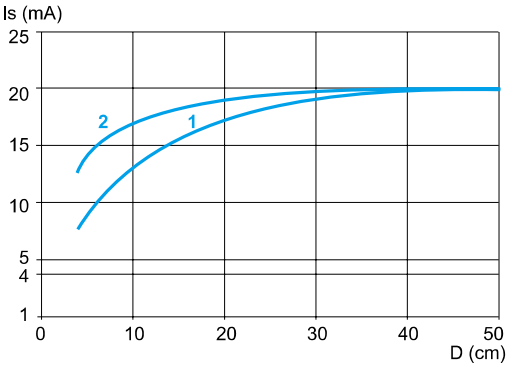
Output signal (related to distance of object)

Potentiometer set at maximum



1 White 90% object
2 Grey 15% object

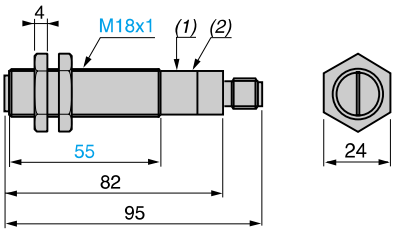
Potentiometer set at minimum



1 White 90% object
2 Grey 15% object

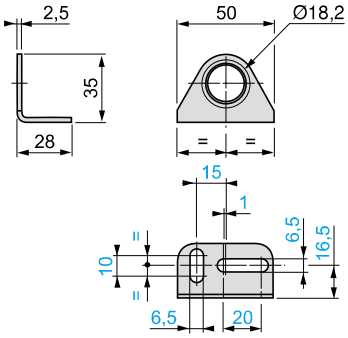
Dimensions

Sensor XU5M18AB20D



(1) Potentiometer.
(2) Green LED.
Fixing nut tightening torque: 15 N.m.
Connector tightening torque: 2 N.m.

Fixing bracket XUZA118

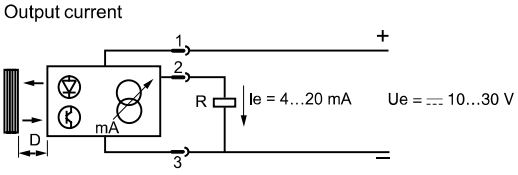


Schemes

Wiring schemes

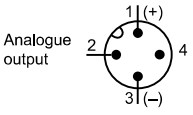
Diffuse system

Output current



Connector scheme

Sensor connector pin view



For suitable female connectors, including pre-wired versions, please refer to our catalogue “Cabling accessories OsiSense XZ”.

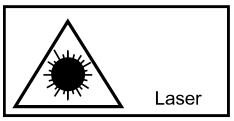
Load characteristics (R)

The output current varies between 4 and 20 mA, depending on the distance of the object, and therefore, the load must be less than 800 Ω for a 24 V supply and less than 300 Ω for a 12 V supply.

Photo-electric sensors

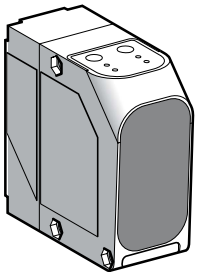
OsiSense XU Application
Material handling series
With solid-state and analogue output signal 4…20 mA
Laser transmission

Design 90 x 90 mm



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

Visible laser radiation:
do not stare into beam



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

References

5-wire solid-state outputs (x 2) analog output (x 1)	PNP, 4…20 mA	**XUE5AA2NM12**	**XUE1AA2NM12**
Weight (kg)		0.2	0.2

Characteristics

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

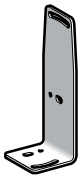
(1) In operating mode, the red laser class 2 pointer can be stopped for working on infrared transmission.
(2) % of object remission.
(3) Information taken into account after 30 minutes.

References, presentation, schemes, dimensions

Photo-electric sensors

OsiSense XU Application
Material handling series
With solid-state and analogue output signal 4…20 mA
Laser transmission

References of accessories



XUZA618

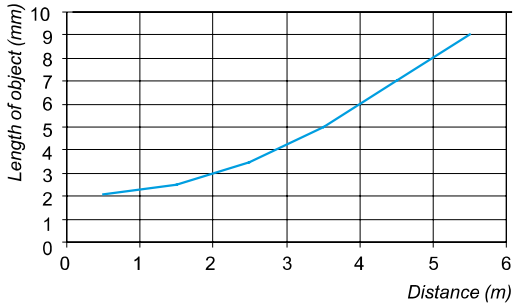
XZCC12FCM50B

Description	For use with	Dimensions (mm)	Reference	Weight kg
Fixing bracket (screws, nuts and washers included)	XUE5AA2NM12 XUE1AA2NM12	–	**XUZA618**	0.062
Adhesive reflector	XUE1AA2NM12	250 x 250	**XUZC250**	0.040
Straight connector, wired by user M12, 5-pin female	XUE5AA2NM12 XUE1AA2NM12	–	**XZCC12FDM50B**	0.020
Elbowed connector, wired by user M12, 5-pin female	XUE5AA2NM12 XUE1AA2NM12	–	**XZCC12FCM50B**	0.020

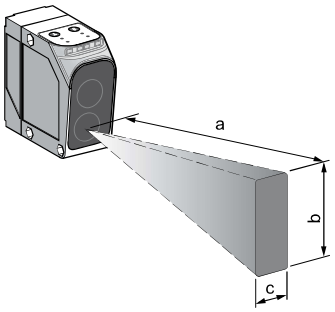
Presentation

Minimum size of detectable object related to distance

XUE5AA2NM12



Light spot size (not visible)

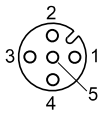


	XUE5AA2NM12				XUE1AA2NM12			
a (m)	0	2	4	6	0	10	20	30
b (mm)	10	7	10	12	10	20	40	60
c (mm)	5	4	3	4	5	15	30	45

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

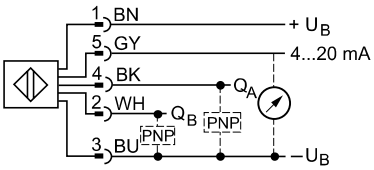
Wiring schemes

M12 connector

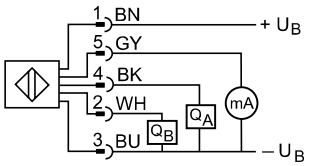


Pin n°/colour
1 BN: Brown
2 WH: White
3 BU: Blue
4 BK: Black
5 GY: Grey

XUE5AA2NM12

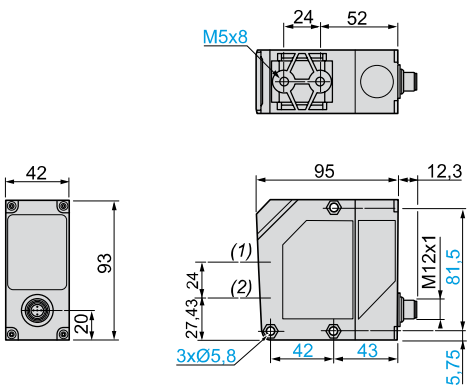


XUE1AA2NM12

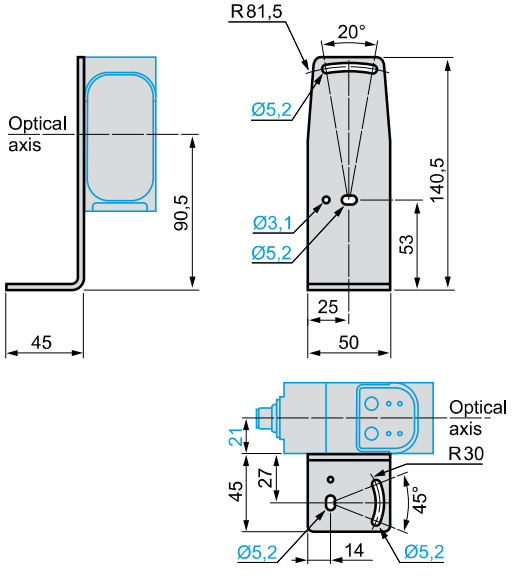


Dimensions

XUE5AA2NM12 and XUE1AA2NM12



XUE5AA2NM12 and XUE1AA2NM12 with fixing bracket XUZA618



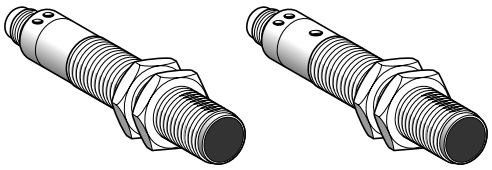
(1) Receiver optical axis.

Photo-electric sensors

OsiSense XU Application, material handling series

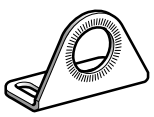
Through beam system with high “excess gain” *(1)*
Solid-state output and analogue output 4…20 mA

Design 18



System		**Thru-beam**
Type of transmission		Infrared
Nominal sensing distance (Sn) / maximum		**50 m /** 70 m (transmitter + receiver)
References		
3-wire, PNP	NO (object detection) + analogue output	**XU2M18AP20D** *(2)*
Weight (kg)		0.155
Characteristics		
Product certifications		CE, CSA, UL
Ambient air temperature	For operation	- 25…+ 55 °C
	For storage	- 40…+ 70 °C
Vibration resistance	Conforming to IEC 60068-2-6	25 gn, amplitude ± 2 mm (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 67
Connection		M12 male connector, 4-pin (suitable female connectors, including pre-wired versions, please refer to our catalogue “Cabling accessories OsiSense XZ”)
Materials	Case	Nickel plated brass
	Lenses	PMMA
Rated supply voltage		**⎓ 12…24 V with protection against reverse polarity**
Voltage limits		⎓ 10…30 V (including ripple)
Solid-state digital output	Switching capacity (sealed)	**≤100 mA with overload and short-circuit protection**
	Voltage drop, closed state	≤ 1.5 V
	Maximum switching frequency	30 Hz
	First-up delay	≤ 50 ms
	Response delay	≤ 15 ms
	Recovery delay	≤ 15 ms
Analogue output	Output current	**4…20 mA** Drift < 5% for temperature between 0 and + 40 °C
	Delay	≤ 15 ms
Current consumption, no-load		≤ 55 mA (transmitter + receiver)
Indicator lights	Transmitter	Green LED, supply on
		Yellow LED illuminated = beam transmission
	Receiver	Yellow LED illuminated = solid-state output ON = object detected within beam
		Green LED: the brightness of the LED is proportional to the output current: - for I = 20 mA, object slightly opaque, intensity at maximum, - for I = 4 mA, object completely opaque, intensity at minimum.

Fixing accessory *(3)*



XUZA118

Description	Reference	Weight kg
Stainless steel fixing bracket	**XUZA118**	0,045

(1) Applications: detection of objects in spite of a difficult environment (smoke, dust, mist, etc.), detection of objects inside packaging, etc.
Example of values:

Object: white sheets of 80 gsm paper. Transmitter-receiver distance = 10 cm				
Number of sheets	1	11	27	31
Analogue output current (mA)	17.3	12	6	5

(2) Reference for both transmitter and receiver for thru-beam system.
(3) For further information, see page 162.

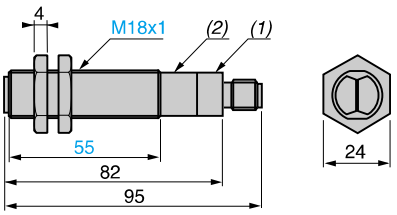
Dimensions, curves, schemes, operation

Photo-electric sensors

OsiSense XU Application, material handling series

Through beam system with high “excess gain”
Solid-state output and analogue output 4…20 mA

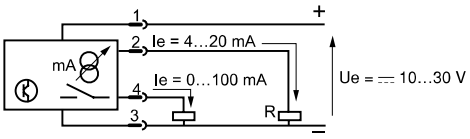
Dimensions



(1) LEDs
(2) Potentiometer (only on receiver)
Fixing nut tightening torque: 15 N.m
Connector tightening torque: 2 N.m

Wiring schemes

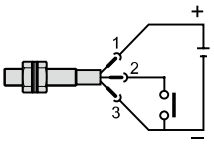
Receiver



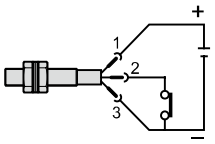
R max. < 800 Ω (Ue = 24 V), < 300 Ω (Ue = 12 V)

Beam break test (only on transmitter)

Beam made



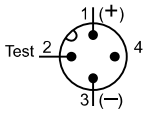
Beam broken



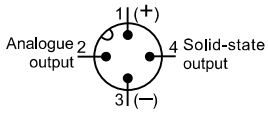
Connector scheme

Sensor connector pin view

Transmitter



Receiver

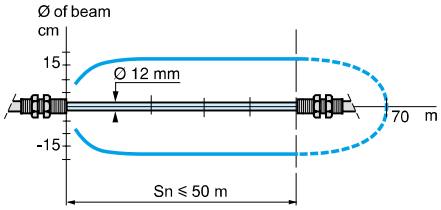


For suitable female connectors, including pre-wired versions, please refer to our catalogue “Cabling accessories OsiSense XZ”.

Curves

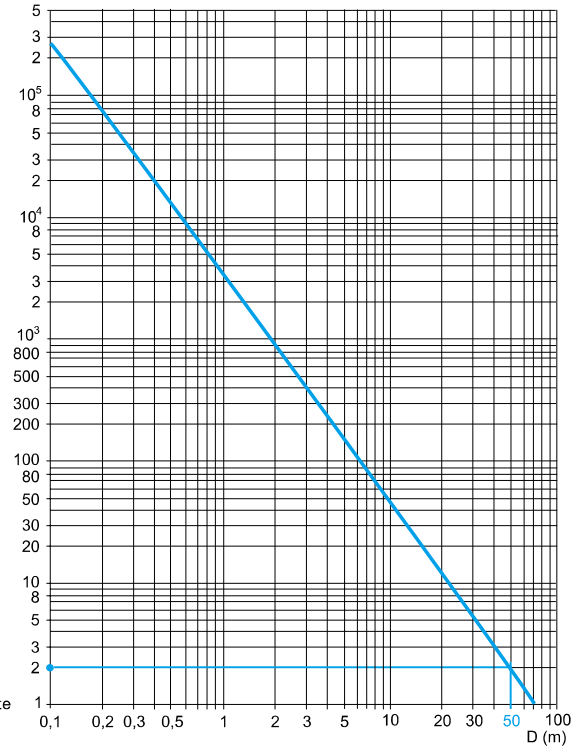
Detection curve

Thru-beam system



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

Thru-beam system



Operation, settings

Type, opacity of object	Analogue output curve	Switching level of digital solid-state PNP output

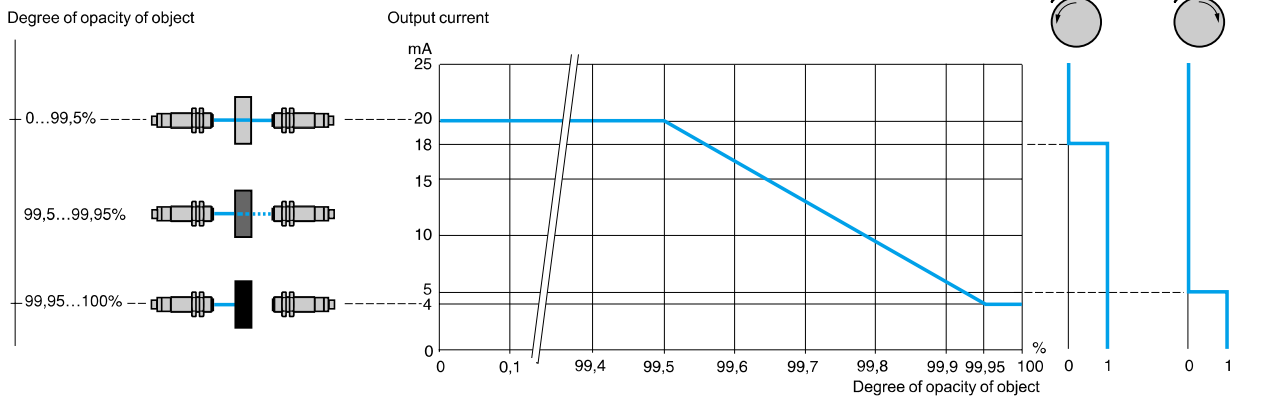
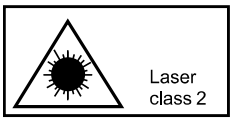


Photo-electric sensors

OsiSense XU Application, material handling series

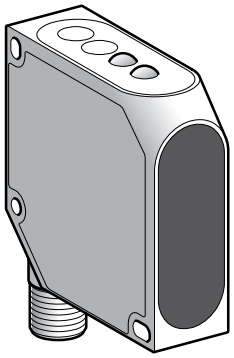
With analogue output signal 0...10 V or 4…20 mA
Laser transmission

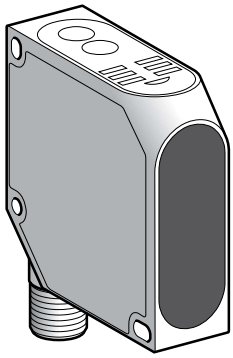
Compact design, 50 x 50



Laser class 2, conforming to IEC 825-1

Visible laser radiation: do not stare into beam.





System		**Diffuse**		
Type of transmission		**Red laser, pulsed, Class 2,** wavelength: 670 nm		
Measuring distance		**40…60 mm**	**45…85 mm**	**80…300 mm**
References				
3-wire, PNP output		**XUYPCO925L1ANSP**	**XUYPCO925L2ANSP**	**XUYPCO925L3ANSP**
Weight (kg)		0.057	0.057	0.057
Characteristics				
Product certifications		CE		
Ambient air temperature	For operation	0…+ 45 °C		
	For storage	- 20…+ 60 °C		
Degree of protection	Conforming to IEC 60529	IP 67		
Resolution		**7 µm**	**20 µm**	**200 µm**
Linearity		< 1%		< 0.25%
Temperature stability		10 µm/K	18 µm/K	22 µm/K
Connection		M12 male connector with alternative orientations		
Vibration resistance	Conforming to IEC 60068-2-6	7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27	30 gn, duration 11 ms		
Materials	Case	ABS, anti-shock		
Rated supply voltage		⎓ **24 V with protection against reverse polarity**		
Voltage limits (including ripple)		⎓ **18…28 V**		
Immunity to ambient light		5000 lux		
Output signal		0…10 V		4…20 mA
Output activation time (from 10 …90%)		30 ms		0.4 ms (fast speed mode) 40 ms (medium speed mode)
Laser transmission		T pulse: 8 µs, pulse frequency: 6 kHz, time base: 250 ms		
Spot diameter		< 1 mm at 50 mm	< 0.8 mm at 65 mm	1.5 x 3.5 mm at 80 mm
Switching capacity		**3 mA with overload and short-circuit protection**		
Voltage drop, closed state		< 2.4 V		
Current consumption, no-load		35 mA		⩽ 40 mA on ⎓ 24 V
Maximum switching frequency		**40 Hz**		
Indicator lights	Dirty	Red LED		
	Supply on	Green LED		
Parametering		–		By buttons

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

Accessories

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

(1) For further information, see page 168.

Presentation, dimensions, schemes, curves

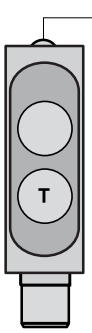
Photo-electric sensors

OsiSense XU Application, material handling series

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

Presentation

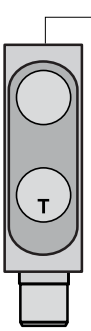
XUYPCO925L1ANSP, XUYPCO925L2ANSP



1 Green/red LED
2 LED display

R: Receiver
T: Transmitter

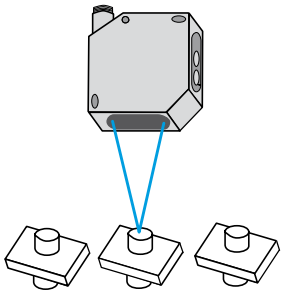
XUYPCO925L3ANSP



1 Green/red LED
2 Parametering by buttons

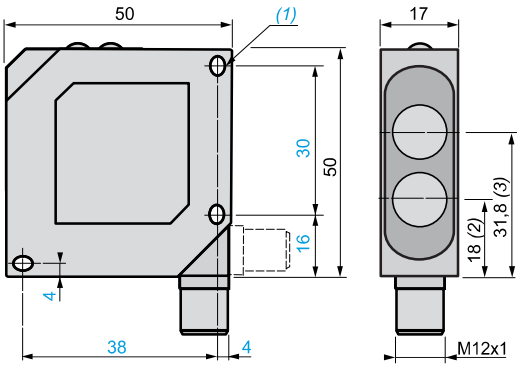
Application example

Monitoring dimensions in series

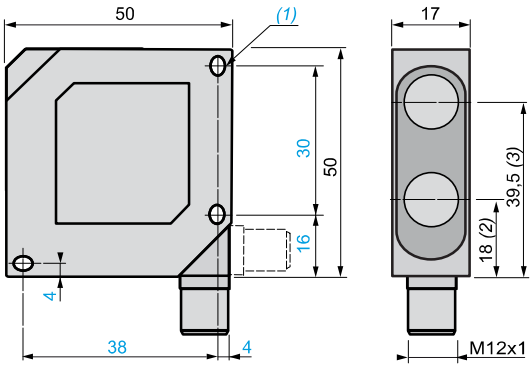


Dimensions

XUYPCO925L1ANSP, XUYPCO925L2ANSP



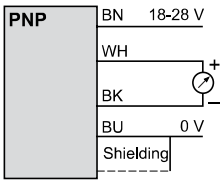
XUYPCO925L3ANSP



(1) 2 elongated holes Ø 4.3 x 4.
(2) Transmitter optical axis.
(3) Receiver optical axis.

Wiring schemes

XUYPCO925L1ANSP, XUYPCO925L2ANSP



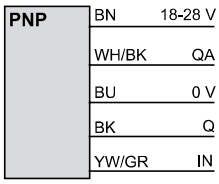
Connector

M12

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

Note: *Shielded cable recommended.*

XUYPCO925L3ANSP



Connector

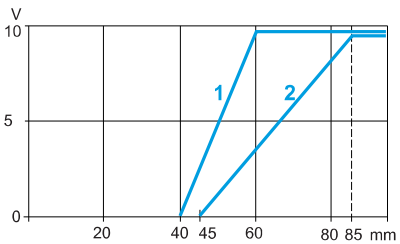
M12

Pin n° - colour
1 BN: Brown
2 WH: White
3 BU: Blue
4 BK: Black
5 GY: Grey

QA: 4-20 mA analogue output (R ⩽ 500 Ω)
Q: Switching output
IN: Control input (YW/GR: Yellow/green)

Adjustment curves

XUYPCO925L1ANSP, XUYPCO925L2ANSP



1 XUYPCO925L1ANSP

XUYPCO925L3ANSP

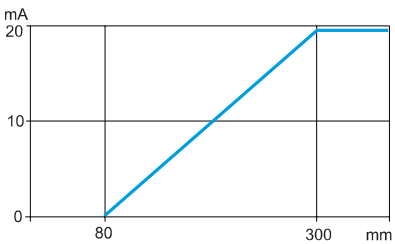
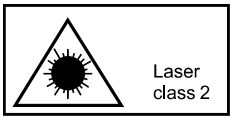


Photo-electric sensors

OsiSense XU Application, material handling series

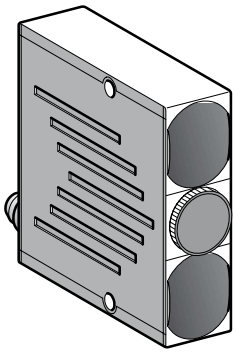
Diffuse, with laser transmission
With background suppression
DC supply. Solid-state output

Compact design



Laser class 2, conforming to IEC 60825-1

Visible laser radiation: do not stare into beam.



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

References

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

Characteristics

Product certifications		CE, cULus *(1)*
Ambient air temperature	For operation	0…+ 50 °C
	For storage	- 20…+ 80 °C
Degree of protection	Conforming to IEC 60529	IP 65
Connection		M8, 4-pin male connector (for pre-cabled version please consult our Customer Care Centre)
Materials	Case	Glass impregnated nylon
	Lens	PMMA
Rated supply voltage		⎓ **12…24 V with protection against reverse polarity**
Voltage limits (including ripple)		⎓ **10…30 V**
Immunity to ambient light	Incandescent bulb	500 lux
	Natural light	10 000 lux
Laser transmission	Pulsed laser LED	T pulse: 6 µs, T period < 50 µs
Spot size		Manual adjustment of focusing
Switching capacity		**100 mA with overload and short-circuit protection**
Voltage drop, closed state		< 2 V
Current consumption, no-load		35 mA
Maximum switching frequency		**5 kHz**
Delays	Response and recovery	< 150 µs
Indicator lights	Time delay active	Red indicator
	Output state	Green indicator
	NO function	Red indicator
	NC function	Indicator off
Output signal time delay		40 ms, depending on wiring

(1) This product is UL Listed if supplied by a class II or isolated supply delivering ⎓ 30 V max. (isolated transformer for example) and protected by a UL fuse rated at 3 A max.

Applications: monitoring of small parts on production machine, detection of components on a printed circuit, monitoring for crack on a component, control of level, suppression of a background.

Accessories

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

Presentation, dimensions, schemes

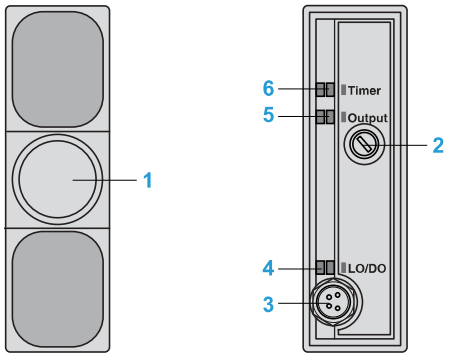
Photo-electric sensors

OsiSense XU Application, material handling series
Diffuse, with laser transmission
With background suppression
DC supply. Solid-state output

Presentation

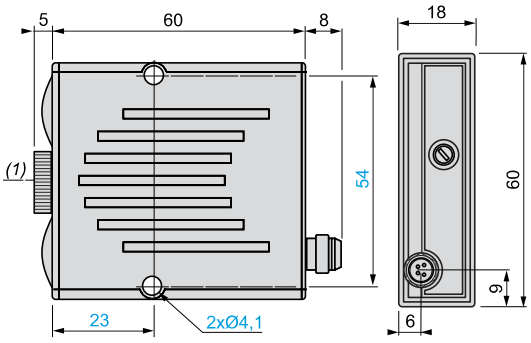
XUYPS1LCO965S

Rear view



1 Adjustment of spot size
2 Detection distance adjustment screw
3 M8 connector
4 On: NO function
Off: NC function
5 Object detected
6 Time delay active

Dimensions

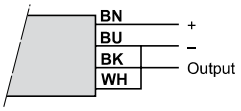


(1) Optical axis of laser

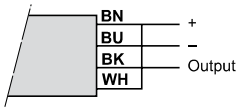
Wiring schemes

NO function

Without time delay

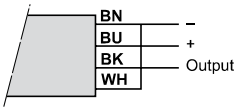


With 40 ms time delay

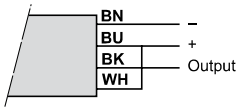


NC function

Without time delay



With 40 ms time delay

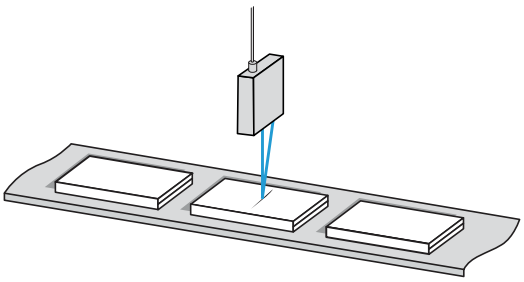


M8 connector

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

Application examples

Monitoring for crack in a component



Monitoring for a broken punch on press tool

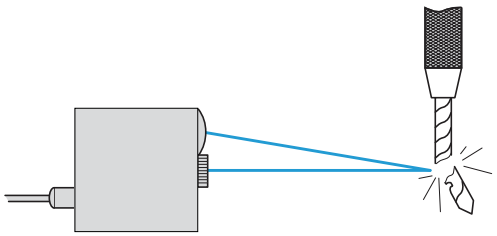
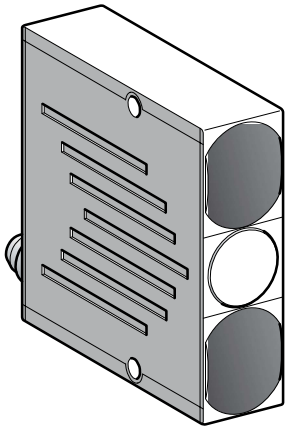


Photo-electric sensors

OsiSense XU Application, material handling series

Diffuse, with 2 channels using triangulation
with background suppression
DC supply. Solid-state output

Compact design



System		**Diffuse with background suppression**	
Type of transmission		Infrared LED, modulated, Ø 15 mm beam	
Detection distance		**Adjustable from 50 to 600 mm**	

References

4-wire, PNP and NPN output	NO/NC programmable function	**XUYPS2945S**	**XUYPS2CO945S**
Weight (kg)		0.135	0.055

Characteristics

Product certifications		CE, cULus *(1)*	
Ambient air temperature	For operation	0…+ 50 °C	
	For storage	- 20…+ 80 °C	
Degree of protection	Conforming to IEC 60529	IP 65	
Connection		Pre-cabled, length 2 m	M8, 4-pin male connector
Materials	Case	Glass impregnated nylon	
Rated supply voltage		⎓ **12…24 V with protection against reverse polarity**	
Voltage limits (including ripple)		⎓ **10…30 V**	
Immunity to ambient light	Incandescent bulb	1300 lux	
	Natural light	10 000 lux	
Switching capacity		**100 mA with overload and short-circuit protection**	
Voltage drop, closed state		< 2 V	
Current consumption, no-load		< 1.5 W	
Maximum switching frequency		**370 Hz**	
Delay	Response and recovery	< 1.8 ms	
Output signal time delay	For A and B/A or B *(2)*	Determined by wiring	
Indicator light	Output signal	Green LED	

(1) This product is UL Listed if supplied by a class II or isolated supply delivering ⎓ 30 V max. (isolated transformer for example) and protected by a UL fuse rated at 3 A max.
(2) See next page

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

Accessories

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

Presentation, description, dimensions, curves, schemes

Photo-electric sensors

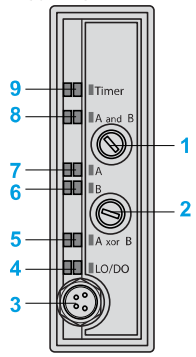
OsiSense XU Application, material handling series

Diffuse, with 2 channels using triangulation
with background suppression
DC supply. Solid-state output

Presentation

XUYPS2945S, XUYPS2CO945S

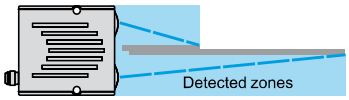
Rear view



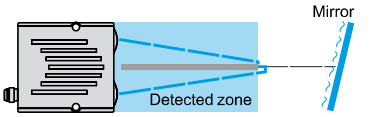
1 Adjustment of zone A detection distance
2 Adjustment of zone B detection distance
3 Pre-cabled connection (XUYPS2945S) or M8 connector
4 (XUYPS2CO945S)
5 On in direct mode
Illuminates when the “exclusive OR” function between the two
6 zones A and B is obtained
On when the object is present
7 in zone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

Description (4 operating modes)

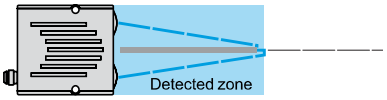
Two independent sensors with triangulation: A, B



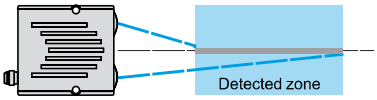
Immunity to reflection: A and B



Detection of contrasting objects: A or B

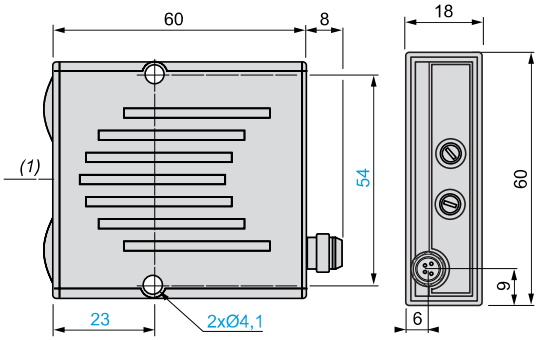


Monitoring of distance: A xor B



Dimensions

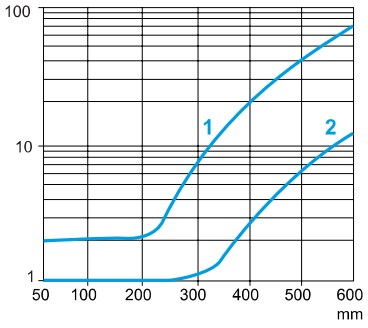
XUYPS2945S, XUYPS2CO945S



(1) Optical axis.

Detection curves (typical)

XUYPS2945S, XUYPS2CO945S

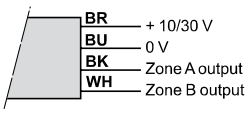


1 Black 6%
2 Grey 18% - *Distance (mm) set on 92% (Kodak 1527795)*

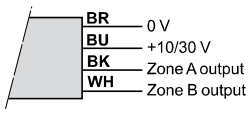
Wiring schemes and outputs

Two independent sensors with triangulation: A, B

NO output



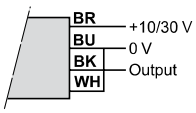
NC output



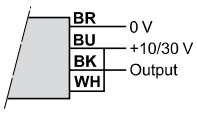
Immunity to reflection: A and B

Without time delay

NO output

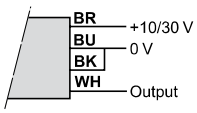


NC output

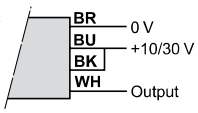


With 40 ms time delay

NO output

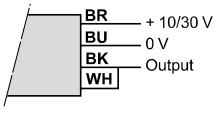


NC output

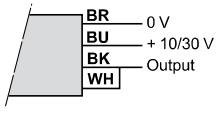


Detection of contrasting objects: A or B

NO output



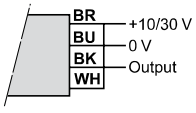
NC output



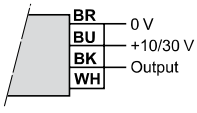
Monitoring of distance: A xor B

Without time delay

NO output

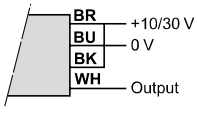


NC output

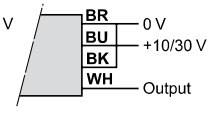


With 40 ms time delay

NO output



NC output



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

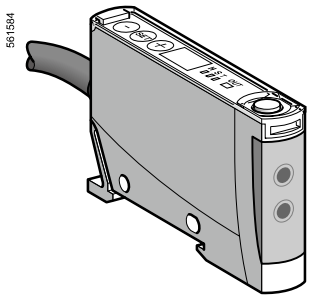
Photo-electric sensors

OsiSense XU Application

Fibre design, amplifiers

Three-wire DC, solid-state output

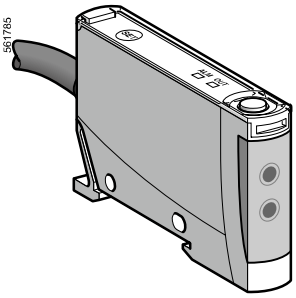
Teach mode



XUDA2

Amplifiers with fine adjustment and 4-digit screen

Sensing distance (Sn) m	Function	Output	Connection	Reference	Weight kg
Depending on fibre	NO/NC Programmable	PNP	Pre-cabled	**XUDA2PSML2**	0.040
			M8 connector	**XUDA2PSMM8**	0.040
		NPN	Pre-cabled	**XUDA2NSML2**	0.040
			M8 connector	**XUDA2NSMM8**	0.040



XUDA1

Amplifiers using teach mode

Sensing distance (Sn) m	Function	Output	Connection	Reference	Weight kg
Depending on fibre	NO/NC Programmable	PNP	Pre-cabled	**XUDA1PSML2**	0.040
			M8 connector	**XUDA1PSMM8**	0.040
		NPN	Pre-cabled	**XUDA1NSML2**	0.040
			M8 connector	**XUDA1NSMM8**	0.040

Characteristics, schemes, dimensions

Photo-electric sensors

OsiSense XU Application

Fibre design, amplifiers

Three-wire DC, solid-state output

Teach mode

Characteristics

Sensor type			XUDA1●●SMM8, XUDA2●●SMM8	XUDA1●●SML2, XUDA2●●SML2
Product certifications			CE, cULus	
Connection	Connector		M8	–
	Pre-cabled		–	Length: 2 m
Sensing distance (Sn)			**Depending on fibre used**,see page 134. Sensing distance halved for XUDA2 configured for fast frequency	
Sensitivity adjustment			Teach mode on **XUDA1**, Teach mode and fine adjustment (+/- button) plus 4-digit screen on **XUDA2**	
Type of transmission			Red	
Degree of protection	Conforming to IEC 60529		IP 65 with Ø 2 mm fibre (IP 64 with Ø 1 mm fibre)	
Storage temperature		**°C**	- 30…+ 70	
Operating temperature		**°C**	- 10…+ 55	
Vibration resistance	Conforming to IEC 60068-2-6		7 gn, amplitude ± 0.5 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms	
Indicator lights	Output state		Yellow LED	
	Stability		Red LED for **XUDA1**	
	Stability		Green LED for **XUDA2**	
Signal level			By 7 segment/4-digit display for **XUDA2**	
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10.8…26.4	
Current consumption, no-load		**mA**	≤ 50	
Switching capacity		**mA**	≤ 100 with overload and short-circuit protection	
Alarm output		**mA**	≤ 50 for **XUDA2** with overload and short-circuit protection	
Protection against mutual interference			Yes for **XUDA2**	
Voltage drop, closed state		**V**	≤ 2 for **XUDA●P●●●●**, ≤ 1 for **XUDA●N●●●●●**	
Maximum switching frequency		**kHz**	1 kHz for **XUDA1**, 1 or 5 kHz configurable for **XUDA2**	
Output time delay		**ms**	0 or 40 on recovery for **XUDA2**	
Delays	First-up	**ms**	< 120	
	Response	**ms**	< 0.5 (0.1 for **XUDA2** in fast frequency mode)	
	Recovery	**ms**	< 0.5 (0.1 for **XUDA2** in fast frequency mode)	

XUDA2 wiring schemes

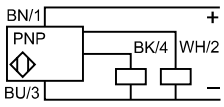
M8 connector

1(+)
3 (-)
4 (OUT/output)
2 (alarm)

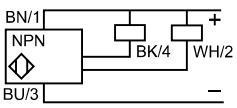
Pre-cabled

BN Brown (+)
BU Blue (-)
BK Black(output)
WH White (alarm)
(WH only on **XUDA2**)

PNP



NPN



XUDA1 wiring schemes

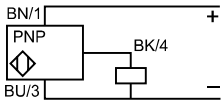
M8 connector

1(+)
3 (-)
4 (OUT/output)
2

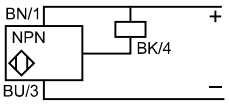
Pre-cabled

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

PNP



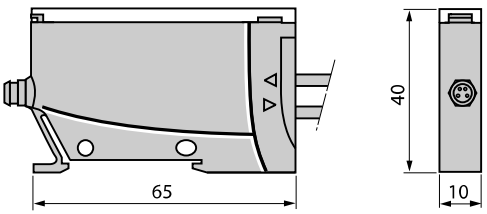
NPN



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

Dimensions

XUDA●



XUDA1

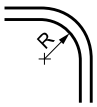
XUDA2

Photo-electric sensors

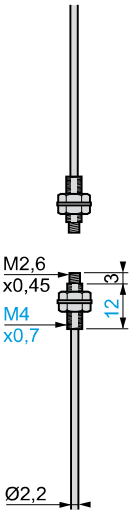
OsiSense XU Application

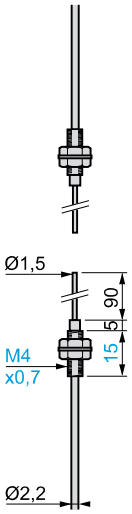
Fibre optics for amplifiers

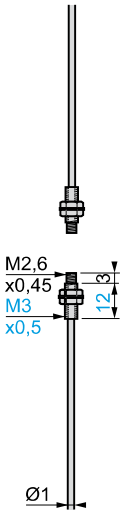
"PLASTIC" fibres with end fittings, thru-beam system



R = minimum bend radius
Fibre of ext. Ø 2.2 mm, R = 25 mm
Fibre of ext. Ø 1 mm, R = 10 mm
XUFN2S01L●, R = 4 mm







Nominal sensing distance (Sn)	With fibre L = 2 m	**200 mm** *(1)*	**180 mm**	**50 mm** *(1)*
	With lens	**1500 mm** *(2)*	–	**1000 mm** *(2)*
Application, features		General purpose		Accurate positioning

References (complete assembly - 2 fibres)

With standard end fittings	L = 2 m	**XUFN12301**	–	**XUFN35301**
	L = 10 m	**XUFN12301L10**	–	–
With 90 mm flexible end fittings, L = 2 m		–	**XUFN12311**	–
Weight (kg)		0.058 (L = 2 m)	0.030	0.045

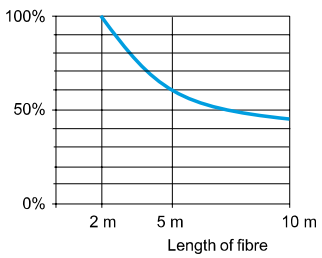
Characteristics

Fibre (view on sensing face)		●	○	●
	Core (Ø mm)	1 x Ø 1	1 x Ø 1	1 x Ø 0.5
	Trimmable to required length (trimmer XUFZ11 included)	Yes	Yes	Yes
Ambient air temperature		For operation: - 25…+ 60 °C. For storage: - 40…+ 80 °C		
Vibration resistance		7 gn, amplitude ± 1.5 mm (f = 10…55 Hz), conforming to IEC 60068-2-6		
Shock resistance		30 gn, duration 11 ms, conforming to IEC 60068-2-27		
Degree of protection		IP 64 conforming to IEC 60529 and IP 641 conforming to NF C 20-010		
Materials		Fibres: PMMA; sheath: PE		

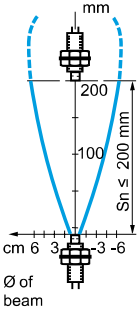
Detection curves

XUFN●●●●●L10

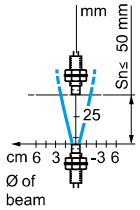
Percentage reduction in sensing distance related to length of fibre



XUFN12301, XUFN12311



XUFN35301



*(1) Can be used with 90° mirror **XUFZ02**, see page 140.*
*(2) With lens accessory **XUFZ01**, see page 140.*

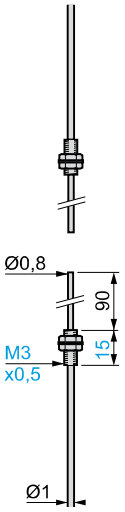
Dimensions, references, characteristics, curves

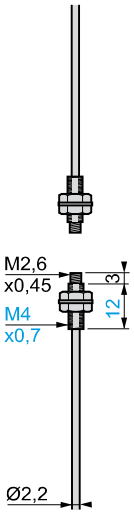
Photo-electric sensors

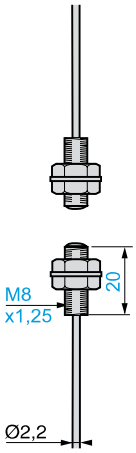
OsiSense XU Application

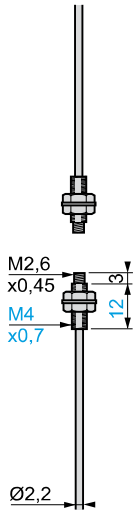
Fibre optics for amplifiers

"PLASTIC" fibres with end fittings, thru-beam system



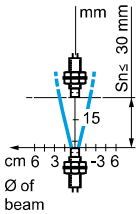




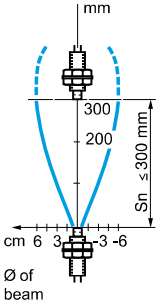


30 mm	**300 mm** *(1)*	**2500 mm**	**100 mm** *(1)*
–	**2000 mm** *(2)*	–	**750 mm** *(2)*
Accurate positioning	Long sensing distance fibres	Fibres with integral lens Resistant to accumulation of dirt	Flexible fibres for cyclic movements, areas with restricted access
–	**XUFN2P01L2**	**XUFN2L01L2**	**XUFN2S01L2**
–	**XUFN2P01L10**	**XUFN2L01L10**	**XUFN2S01L10**
XUFN35311	–	–	–
0.045	0.058 (L = 2 m)	0.060 (L = 2 m)	0.062 (L = 2 m)
1 x Ø 0.5	1 x Ø 1.5	1 x Ø 1	1 x Ø 1
Yes	Yes	Yes	Yes
For operation: - 25…+ 60 °C. For storage: - 40…+ 80 °C			
7 gn, amplitude ± 1.5 mm (f = 10…55 Hz), conforming to IEC 60068-2-6			
30 gn, duration 11 ms, conforming to IEC 60068-2-27			
IP 64 conforming to IEC 60529 and IP 641 conforming to NF C 20-010			
Fibres: PMMA; sheath: PE			

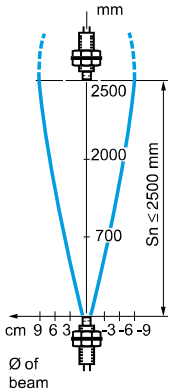
XUFN35311



XUFN2P01L2



XUFN2L01L2



XUFN2S01L2

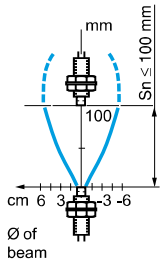
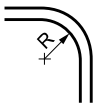
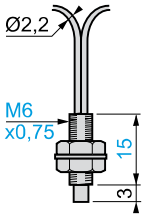
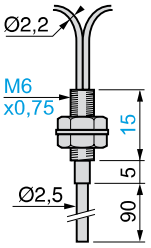


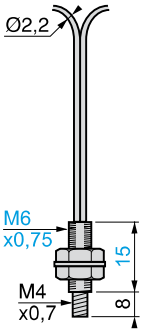
Photo-electric sensors
OsiSense XU Application
Fibre optics for amplifiers
"PLASTIC" fibres with end fittings, diffuse system



R = minimum bend radius
Fibre of ext. Ø 2.2 mm, R = 25 mm
Fibre of ext. Ø 1 mm, R = 10 mm
XUFN5S01L●, R = 4 mm





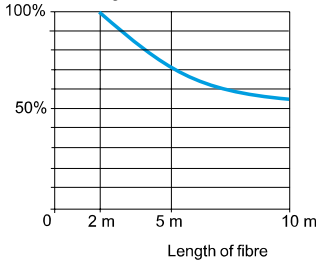


Nominal sensing distance (Sn)		**70 mm**	**60 mm**	**60 mm**
Application, features		General purpose		Positioning
References				
With standard end fittings	L = 2 m	**XUFN05321**	–	**XUFN05323**
	L = 10 m	**XUFN05321L10**	–	–
With 90 mm flexible end fittings, L = 2 m		–	**XUFN05331**	–
Weight (kg)		0.058 (L = 2 m)	0.030	0.060
Characteristics				
Fibre (view on sensing face)				
	Core (Ø mm)	2 x Ø 1	2 x Ø 1	1 x Ø 1 + 16 x Ø 0.265
	Trimmable to required length (trimmer XUFZ11 included)	Yes	Yes	Yes
Ambient air temperature		For operation: - 25…+ 60 °C. For storage: - 40…+ 80 °C		
Vibration resistance		7 gn, amplitude ± 1.5 mm (f = 10…55 Hz), conforming to IEC 60068-2-27		
Shock resistance		30 gn, duration 11 ms, conforming to IEC 60068-2-27		
Degree of protection		IP 64 conforming to IEC 60529 and IP 641 conforming to NF C 20-010		
Materials		Fibres: PMMA; sheath: PE		

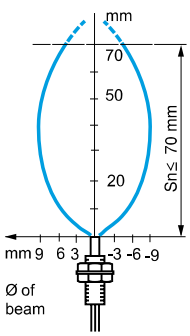
Detection curves (object 10 x 10 cm, white 90%)

XUFN●●●●●L10

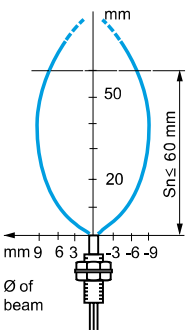
Percentage reduction in sensing distance related to length of fibre



XUFN05321



XUFN05331, XUFN05323



(1) Fixing clamps included with fibre optic.

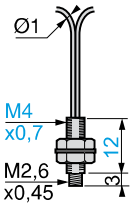
Dimensions, references, characteristics, curves

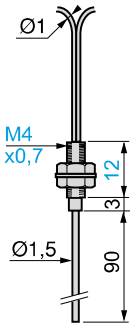
Photo-electric sensors

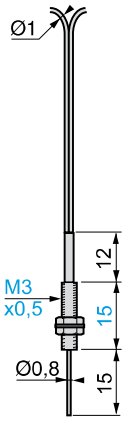
OsiSense XU Application

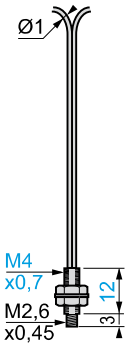
Fibre optics for amplifiers

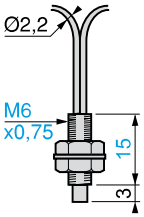
"PLASTIC" fibres with end fittings, diffuse system

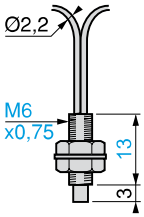






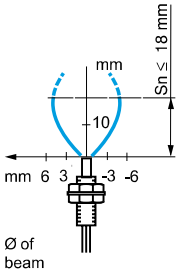




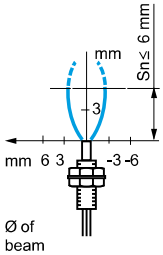


18 mm	18 mm	6 mm	15 mm	95 mm	55 mm
Positioning	Positioning	Areas with restricted access	Positioning	Long sensing distance fibres	Flexible fibres for cyclic movements, areas with restricted access
XUFN01321	–	**XUFN04331**	**XUFN02323**	**XUFN5P01L2**	**XUFN5S01L2**
–	–	–	–	**XUFN5P01L10**	**XUFN5S01L10**
–	**XUFN01331**	–	–	–	–
0.045	0.045	0.045	0.040	0.058 (L = 2 m)	0.062 (L = 2 m)
2 x Ø 0.5	2 x Ø 0.5	2 x Ø 0.265	1 x Ø 0.5 + 4 x Ø 0.25	2 x Ø 1.5	2 x Ø 1
Yes	Yes	Yes	Yes	Yes	Yes
For operation: - 25…+ 60 °C. For storage: - 40…+ 80 °C					
7 gn, amplitude ± 1.5 mm (f = 10…55 Hz), conforming to IEC 60068-2-27		7 gn, amplitude ± 1.5 mm (f = 10…55 Hz), conforming to IEC 60068-2-6			
30 gn, duration 11 ms, conforming to IEC 60068-2-27					
IP 64 conforming to IEC 60529 and IP 641 conforming to NF C 20-010					
Fibres: PMMA; sheath: PE					

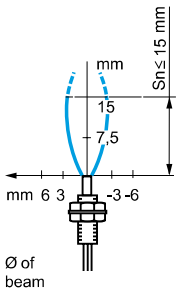
XUFN01321, XUFN01331



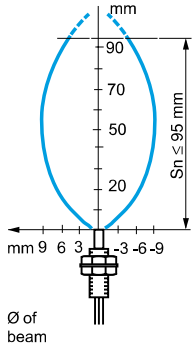
XUFN04331



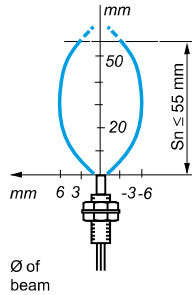
XUFN02323



XUFN5P01L2



XUFN5S01L2



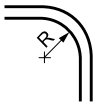
Dimensions, references, characteristics, curves

Photo-electric sensors

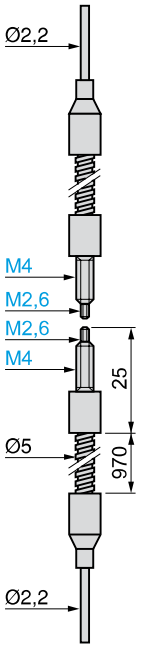
OsiSense XU Application

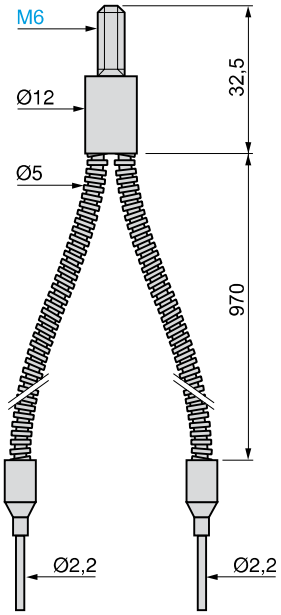
Fibre optics for amplifiers

"GLASS" fibres with end fittings, thru-beam and diffuse systems



R = minimum bend radius
Metal sheath, R = 90 mm





System	Thru-beam	Diffuse
Nominal sensing distance (Sn) with fibre L = 1 m	**200 mm** *(1)* **1500 mm** *(2)*	**70 mm**
Application	High temperatures	

References (complete assembly - 2 fibres for thru-beam system)

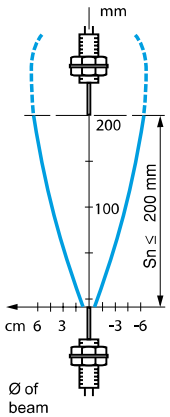
With standard end fittings	L = 1 m	**XUFS2020**	**XUFS0520**
Weight (kg)		0.070	0.075

Characteristics

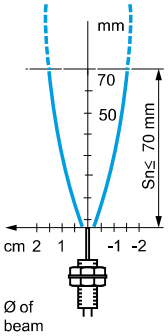
Fibre (view on sensing face)		
Core (Ø mm)	1 x Ø 1	2 x Ø 1
Ambient air temperature	For operation and storage: - 40…+ 180 °C	
Vibration resistance	7 gn, amplitude ± 1.5 mm (f = 10…55 Hz), conforming to IEC 60068-2-6	
Shock resistance	30 gn, duration 11 ms, conforming to IEC 60068-2-27	
Degree of protection	IP 64 conforming to IEC 60529 and IP 641 conforming to NF C 20-010	
Materials	Fibres: glass; sheath: metal	

Detection curves

XUFS2020



XUFS0520



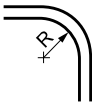
*(1) Can be used with 90° mirror **XUFZ02**, see page 140.*
*(2) With lens accessory **XUFZ01**, see page 140.*

Photo-electric sensors

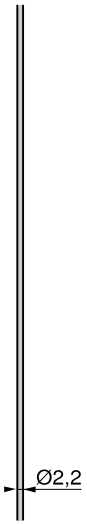
OsiSense XU Application

Fibre optics for amplifiers

"PLASTIC" fibres without end fittings, thru-beam system



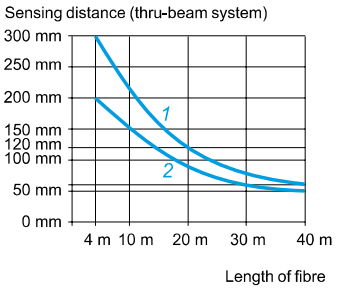
R = minimum bend radius
Fibre of ext. Ø 2.2 mm, R = 25 mm



Nominal sensing distance (Sn) L = 2 m	**See detection curves below** *(1)*			
Application	General purpose			
References				
Fibre without end fitting	**XUFZ910**	**XUFZ920**	**XUFZ911**	**XUFZ921**
Weight (kg)	0.020	0.040	0.040	0.080
Characteristics				
Fibre	●		○	
Core (Ø mm)	1 x Ø 1		1 x Ø 1.4	
Length	10 m	20 m	10 m	20 m
Trimmable to required length (trimmer XUFZ11 included)	Yes		Yes	
Ambient air temperature	For operation: - 25…+ 60 °C. For storage: - 40…+ 80 °C			
Vibration resistance	7 gn, amplitude ± 1.5 mm (f = 10…55 Hz), conforming to IEC 60068-2-6			
Shock resistance	30 gn, duration 11 ms, conforming to IEC 60068-2-27			
Degree of protection	IP 64 conforming to IEC 60529 and IP 641 conforming to NF C 20-010			
Materials	Fibres: PMMA; sheath: PE			

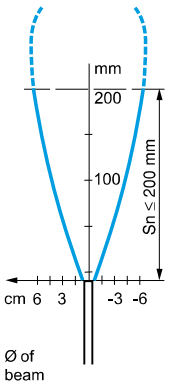
Detection curves

XUFZ911, XUFZ921
XUFZ910, XUFZ920

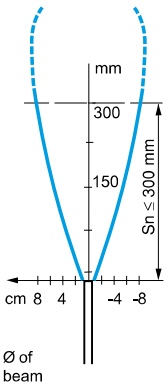


1 XUFZ911, XUFZ921
2 XUFZ910, XUFZ920
Total length = sum of the 2 strands used to constitute a thru-beam system

XUFZ910, XUFZ920



XUFZ911, XUFZ921

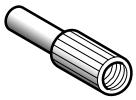


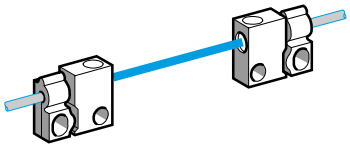
*(1) It is possible to increase the sensing distance of fibres without end fittings by using fixing clamps with lens (**XUFZ03**, **XUFZ04** or **XUFZ05**), see page 140).*

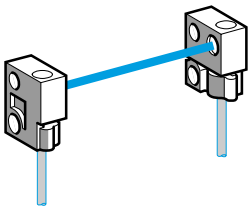
Photo-electric sensors
OsiSense XU Application
Fibre optics for amplifiers
Accessories

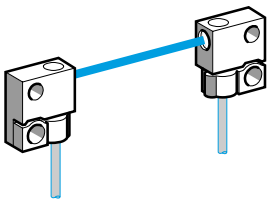

XUFZ02

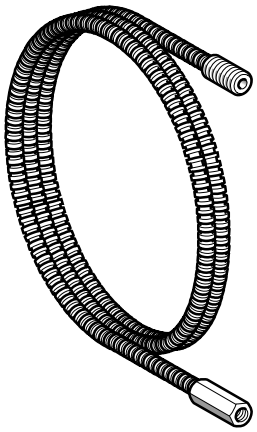

XUFZ01

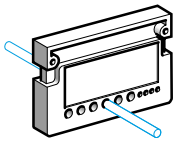

XUFZ06


XUFZ13, XUFZ03


XUFZ14, XUFZ04


XUFZ15, XUFZ05


XUFZ●10


XUFZ11


XUFZ08

Accessories for fibres with threaded end fittings

Description	For use with	Reference	Weight kg
90° mirror (set of 2)	Fibre optics XUFN1●30●, XUFN35301 and XUFS2020 (thru-beam system) XUFN2●01L●●	**XUFZ02**	0.005
Lenses for increasing sensing distance (set of 2)	Fibre optics XUFN1●30●, XUFN35301 and XUFS2020 (thru-beam system)	**XUFZ01**	0.005
Focusing lens for high precision detection. Detection of 0.5 mm objects at a distance of 7 mm. Also enables detection of objects against a background *(1)*	Fibre optics XUFN02323 (diffuse system)	**XUFZ06**	0.001

Accessories for plastic fibres without end fittings

Description	Mounting plane	For use with	Reference	Weight kg
Fixing clamps (set of 2)	Axial	Plastic fibre optics XUFZ	**XUFZ13**	0.002
	Frontal	Plastic fibre optics XUFZ	**XUFZ14**	0.002
	Lateral	Plastic fibre optics XUFZ	**XUFZ15**	0.002
Fixing clamps with lens (set of 2)	Axial	Plastic fibre optics XUFZ	**XUFZ03**	0.002
	Frontal	Plastic fibre optics XUFZ	**XUFZ04**	0.002
	Lateral	Plastic fibre optics XUFZ	**XUFZ05**	0.002

Protection accessories

Description	For use with	Reference	Weight kg
Protective tubing Length 1 m	Plastic fibre optic light guides with M4 threaded end fittings	**XUFZ210**	0.040
	Plastic fibre optic light guides with M6 threaded end fittings	**XUFZ310**	0.065

Other accessories

Description	Sold in lots of	Unit reference	Weight kg
Fibre trimmer	1	**XUFZ11**	0.006
Plastic end adaptor, for connecting Ø 1 mm fibres to amplifiers XUDA	2	**XUFZ08**	0.002

(1) Characteristics obtained when the fibre is fully screwed into the lens (screwing depth = 4 mm).

Photo-electric sensors
OsiSense XU Application
Fibre optics for amplifiers
Accessories

Detection curves for plastic fibre optic light guides with fixing clamps

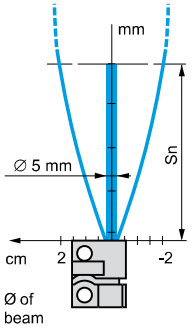
Sensing distance of fibres XUFZ9●●● fitted with fixing clamps XUFZ●●

Fibre type	Clamp type				
	XUFZ13	XUFZ14, Z15	XUFZ03	XUFZ04, XUFZ05	Without clamp
XUFZ910, XUFZ920 (2 fibres L = 2 m) **Sn**	150 mm	100 mm	800 mm	600 mm	200 mm
XUFZ911, XUFZ921 (2 fibres L = 2 m) **Sn**	220 mm	150 mm	1200 mm	900 mm	300 mm

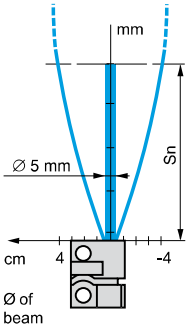
Other fibre lengths:
5 m fibres: reduce the sensing distance by a factor of 0.7.
10 m fibres: reduce the sensing distance by a factor of 0.5.
20 m fibres: reduce the sensing distance by a factor of 0.3.

Detection curves with lens

Fixing clamp XUFZ03, Z04 or Z05 + fibre XUFZ910 or XUFZ920

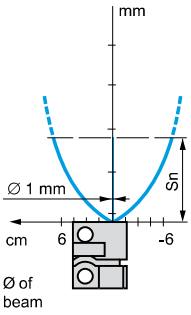


Fixing clamp XUFZ03, Z04 or Z05 + fibre XUFZ911 or XUFZ921

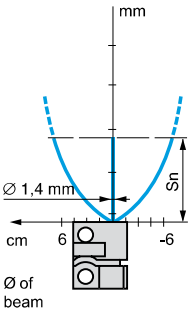


Detection curves without lens

Fixing clamp XUFZ13, Z14 or Z15 + fibre XUFZ910 or XUFZ920

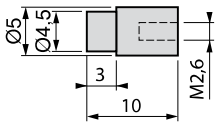


Fixing clamp XUFZ13, Z14 or Z15 + fibre XUFZ911 or XUFZ921

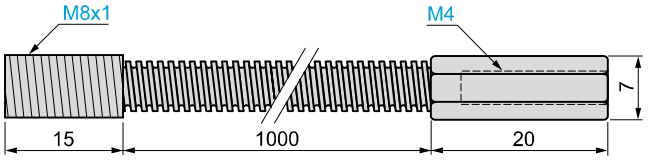


Dimensions

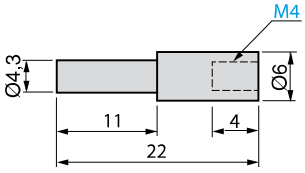
XUFZ01



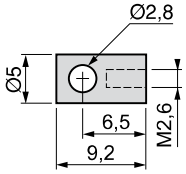
XUFZ210



XUFZ06



XUFZ02



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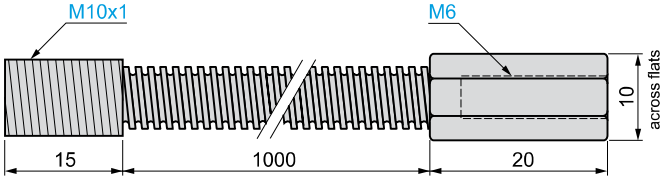
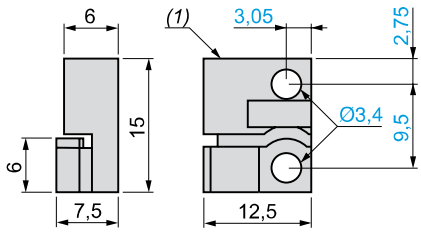
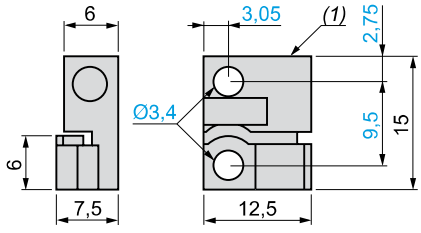
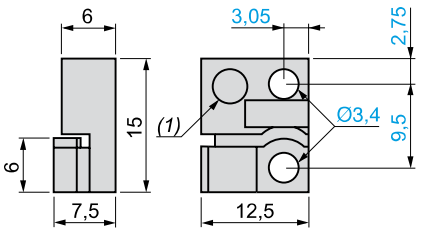


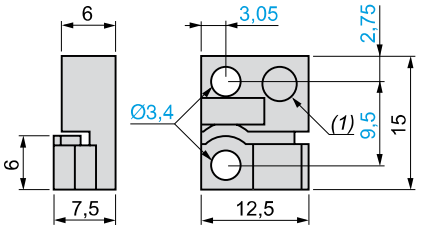
XUFZ03, XUFZ13



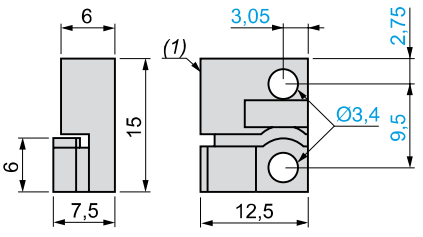


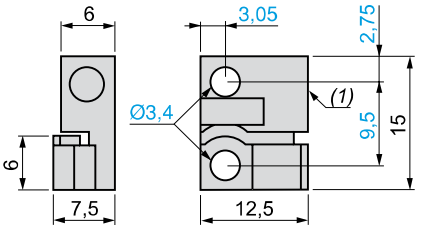
XUFZ04, XUFZ14





XUFZ05, XUFZ15



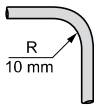


Characteristics, references, dimensions, curves

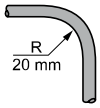
Photo-electric sensors

OsiSense XU Application
Fibre optics for amplifier
“GLASS” fibres with end fittings
For diffuse and thru-beam systems

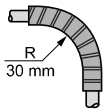
“GLASS” fibre optics for diffuse system



Standard sheath
External Ø
XUYFVP: 5 mm
XUYFVER: 3 mm

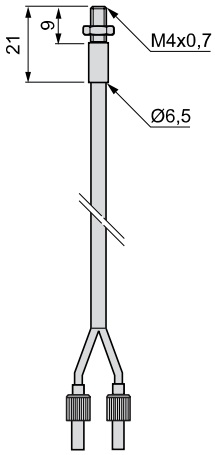


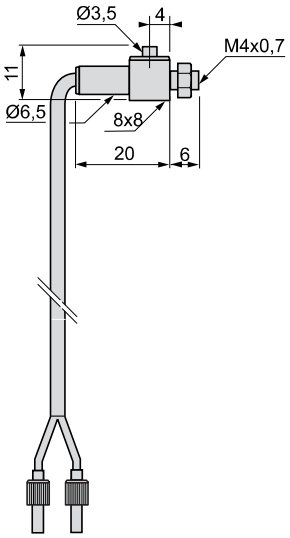
Metal reinforced sheath
XUYFVP: 5 mm
XUYFVER: 3.5 mm



High temperature sheath
XUYFVP: 5 mm
XUYFVER: 5 mm

R = minimum bend radius





Applications
- Detection in high temperature environment (up to 200 °C)
- Detection in aggressive environment
- Application requiring high level of performance

References

Type of end fitting	Straight			Lateral		
Sheath	Standard	Metal reinforced	High temperature	Standard	Metal reinforced	High temperature
References with 0.60 m long fibre *(1)*	**XUYFVPSD61**	**XUYFVPMD61**	**XUYFVPTD61**	**XUYFVPSL61**	**XUYFVPML61**	**XUYFVPTL61**
Nominal sensing distance Sn (mm)	80	80	80	80	80	80
Weight (kg)	0.040	0.045	0.052	0.042	0.056	0.056

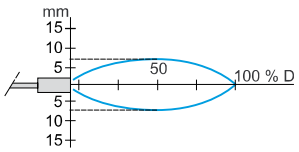
Characteristics

Fibre		400 strands per mm²
Usable diameter of fibre		1.2 mm
Ambient air temperature	For operation	**Standard**: - 25…+ 60 °C **Metal reinforced**: - 25…+ 120 °C **High temperature** :-25…+ 200 °C
Detection end fitting		Nickel plated brass
Materials	Fibre	50 µ glass
	Sheath	**Standard**: PVC + thermo polyolefine, **Metal reinforced**: spiralled metal + polyolefine **High temperature**: flexible stainless steel

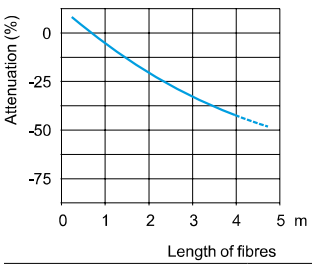
*(1) For 1 m long fibre, replace 61 in the reference by **101**. Example: XUYFVPSD61 becomes **XUYFVPSD101** for a 1 m long fibre.*
*For 1.5 m long fibre, replace 61 in the reference by **151**. Example: XUYFVPMD61 becomes **XUYFVPMD151** for a 1.5 m long fibre.*
*For 2 m long fibre, replace 61 in the reference by **201**. Example: XUYFVPTD61 becomes **XUYFVPTD201** for a 2 m long fibre.*

Detection and attenuation curves

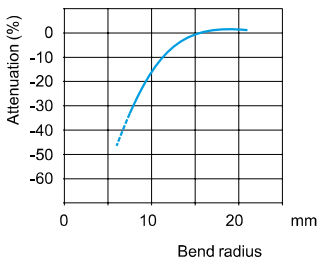
XUYFVP●●61



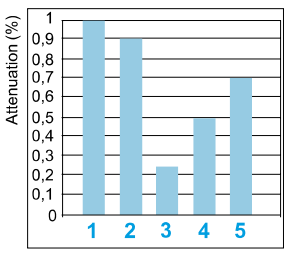
Attenuation related to length



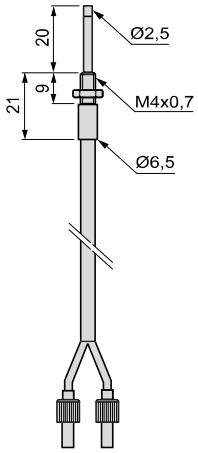
Bending influence

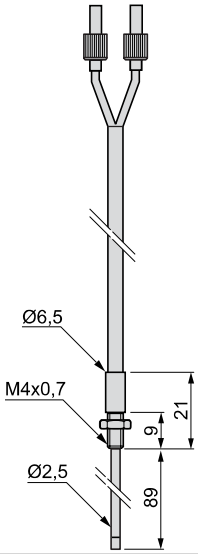


Material influence



1 White paper
2 Wood, beige cardboard
3 Black paper
4 Raw steel
5 Raw aluminium





Extended			Pliable		
Standard	Metal reinforced	High temperature	Standard	Metal reinforced	High temperature
XUYFVPSA61 *(1)*	**XUYFVPMA61** *(1)*	**XUYFVPTA61** *(1)*	**XUYFVPSC61** *(1)*	**XUYFVPMC61** *(1)*	**XUYFVPTC61** *(1)*
80	80	80	80	80	80
0.041	0.046	0.053	0.043	0.057	0.057

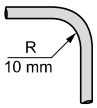
400 strands per mm²
1.2 mm
Standard: - 25…+ 60 °C **Metal reinforced**: - 25…+ 120 °C **High temperature**: - 25…+ 200 °C
Nickel plated brass
50 µ glass
Standard: PVC + thermo polyolefine, **Metal reinforced**: spiralled metal + polyolefine **High temperature**: flexible stainless steel

*(1) For 1 m long fibre, replace 61 in the reference by **101**. Example: XUYFVPSA61 becomes **XUYFVPSA101** for a 1 m long fibre.*
*For 1.5 m long fibre, replace 61 in the reference by **151**. Example: XUYFVPMA61 becomes **XUYFVPMA151** for a 1.5 m long fibre.*
*For 2 m long fibre, replace 61 in the reference by **201**. Example: XUYFVPTA61 becomes **XUYFVPTA201** for a 2 m long fibre.*

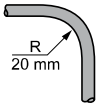
Photo-electric sensors

OsiSense XU Application
Fibre optics for amplifier
"GLASS" fibres with end fittings
For diffuse and thru-beam systems

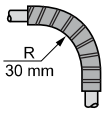
"GLASS" fibre optics for thru-beam system



Standard sheath
External Ø
XUYFVP: 5 mm
XUYFVER: 3 mm

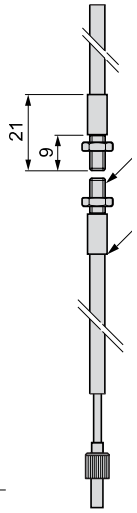


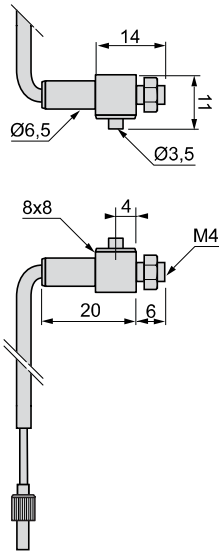
Metal reinforced sheath
XUYFVP: 5 mm
XUYFVER: 3.5 mm



High temperature sheath
XUYFVP: 5 mm
XUYFVER: 5 mm

R = minimum bend radius





Applications
- Detection in high temperature environment (up to 200 °C)
- Detection in aggressive environment
- Application requiring high level of performance

References

Type of end fitting				Lateral		
Sheath	Standard	Metal reinforced	High temperature	Standard	Metal reinforced	High temperature
References with 0.6 m long fibre *(1)*	**XUYFVERSD61**	**XUYFVERMD61**	**XUYFVERTD61**	**XUYFVERSL61**	**XUYFVERML61**	**XUYFVERTL61**
Nominal sensing distance Sn (mm)	200	200	200	200	200	200
Weight (kg)	0.042	0.046	0.060	0.052	0.061	0.075

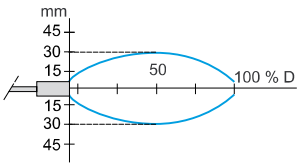
Characteristics

Fibre		400 strands per mm²
Usable diameter of fibre		1.2 mm
Ambient air temperature	For operation	**Standard**: - 25…+ 60 °C, **Metal reinforced**: - 25…+ 120 °C **High temperature**: - 25…+ 200 °C
Detection end fitting		Nickel plated brass
Materials	Fibre	50 µ glass
	Sheath	**Standard**: PVC + thermo polyolefine **Metal reinforced**: spiralled metal + polyolefine **High temperature**: flexible stainless steel

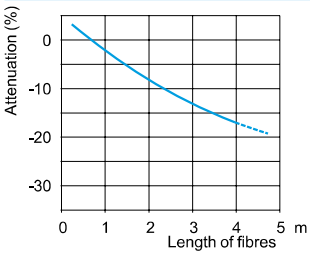
*(1) For 1 m long fibre, replace 61 in the reference by **101**. Example: XUYFVERSD61 becomes **XUYFVERSD101** for a 1 m long fibre.*
*For 1.5 m long fibre, replace 61 in the reference by **151**. Example: XUYFVERMD61 becomes **XUYFVERMD151** for a 1.5 m long fibre.*
*For 2 m long fibre, replace 61 in the reference by **201**. Example: XUYFVERTD61 becomes **XUYFVERTD201** for a 2 m long fibre.*

Detection and attenuation curves

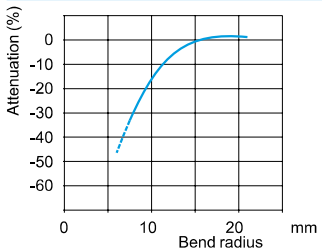
XUYFVER●●61



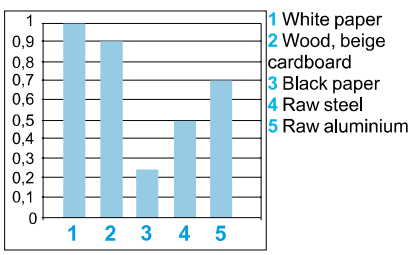
Attenuation related to length

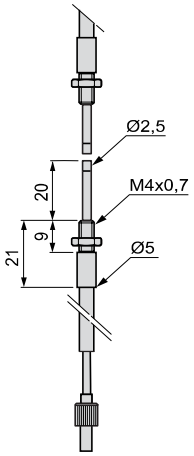


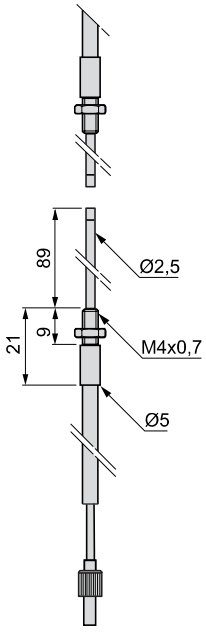
Bending influence



Material influence







Extended			Pliable		
Standard	Metal reinforced	High temperature	Standard	Metal reinforced	High temperature
XUYFVERSA61 *(1)*	**XUYFVERMA61** *(1)*	**XUYFVERTA61** *(1)*	**XUYFVERSC61** *(1)*	**XUYFVERMC61** *(1)*	**XUYFVERTC61** *(1)*
80	80	80	80	80	80
0.043	0.047	0.061	0.053	0.061	0.076

400 strands per mm²
1.2 mm
Standard: - 25…+ 60 °C, **Metal reinforced**: - 25…+ 120 °C **High temperature**: - 25…+ 200 °C
Nickel plated brass
50 µ glass
Standard: PVC + thermo polyolefine **Metal reinforced**: spiralled metal + polyolefine **High temperature**: flexible stainless steel

*(1) For 1 m long fibre, replace 61 in the reference by **101**. Example: XUYFVERSA61 becomes **XUYFVERSA101** for a 1 m long fibre.*
*For 1.5 m long fibre, replace 61 in the reference by **151**. Example: XUYFVERMA61 becomes **XUYFVERMA151** for a 1.5 m long fibre.*
*For 2 m long fibre, replace 61 in the reference by **201**. Example: XUYFVERTA61 becomes **XUYFVERTA201** for a 2 m long fibre.*

Photo-electric sensors
OsiSense XU Application
Fibre optics for amplifier
“GLASS” fibres with end fittings
For diffuse and thru-beam systems

Accessories

Focusers for diffuse system fibre optics

Description	For use with	Nominal sensing distance (Sn)	Unit reference	Weight
		mm		kg
Focusers for pinpoint reading of reference marks, contrasts, faults, etc.	XUYFVERSD61 XUYFVERMD61 XUYFVERTD61	10	**XUY1120**	0.003
		30	**XUY1125**	0.004

Focusers for thru-beam system fibre optics

Description	For use with	Nominal sensing distance (Sn)	Unit reference	Weight
		mm		kg
Focusers for increasing sensing distances (sold in lots of 2)	XUYFVERSD61 XUYFVERMD61 XUYFVERTD61	800	**XUY1121** *(1)*	0.004
		3000	**XUY1124** *(2)*	0.012
		800	**XUY1122** *(1)*	0.006

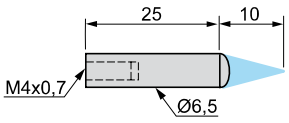
(1) 70° max.
(2) 250° max.

Photo-electric sensors

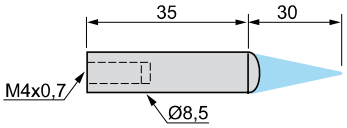
OsiSense XU Application
Fibre optics for amplifier
“GLASS” fibres with end fittings
For diffuse and thru-beam systems

Focusers

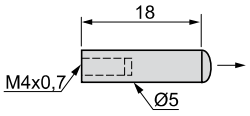
XUY1120



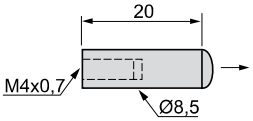
XUY1125



XUY1121



XUY1124



XUY1122R

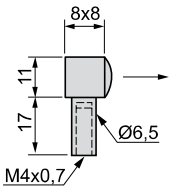


Photo-electric sensors

OsiSense XU Application

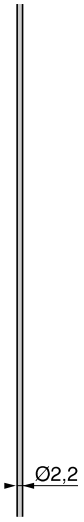
Fibre optics for amplifier

Ecofibre system in “PLASTIC” for customer assembly

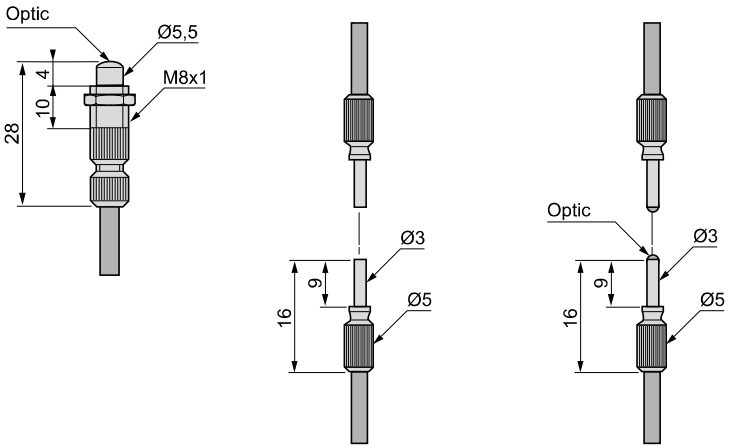
Ecofibre concept

Assemble your own fibre optics.

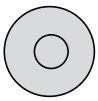
Fibres without end fitting



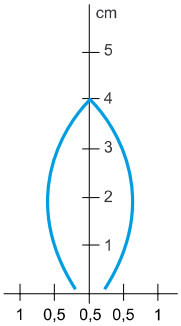
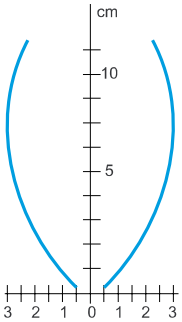
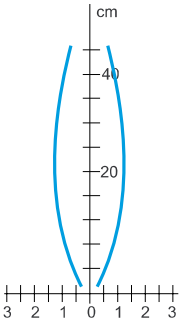
End fittings

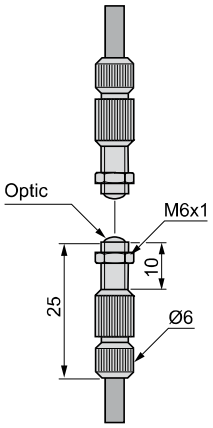


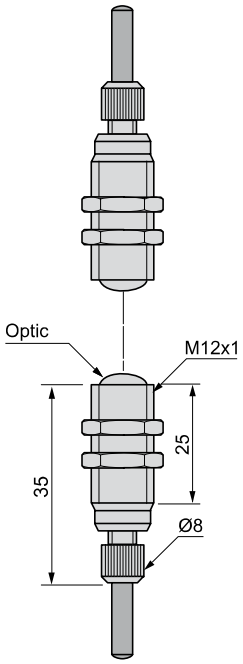
End fittings			
Nominal sensing distance Sn (mm)	70	200	800
Reference	**XUYA110**	**XUYA210**	**XUYA211**
Weight (kg)	0.009	0.004	0.004

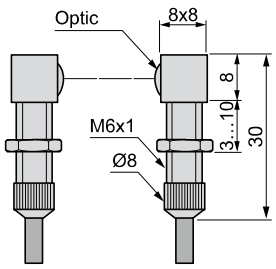
Fibres without end fitting			
Type of fibre	**Single fibre, plastic, single strand** 		
Length (m)	1	10	50
Usable diameter (mm)	1	1	1
External diameter (mm)	2.2	2.2	2.2
Reference	**XUYA005**	**XUYA00510**	**XUYA00550**
Weight (kg)	0.006	0.042	0.220

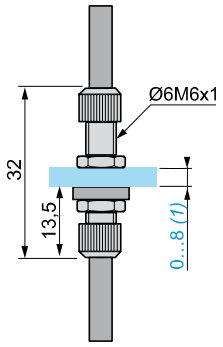
Curves

End fittings	XUYA110	XUYA210	XUYA211
			





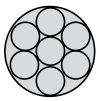
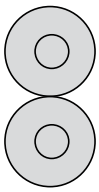




End fitting for passing through partition

(1) Ø 6.2 cut-out

	1200	4000	1200	–
	XUYA212	**XUYA213**	**XUYA220**	**XUYA310**
	0.011	0.045	0.018	0.017

	Single fibre, plastic, multistrand 	**Dual fibre, plastic, single strand** 
	1	1
	1	1
	2.2	2.2
	XUYAU005	**XUYFP2BRINA005B**
	0.006	**0.080**

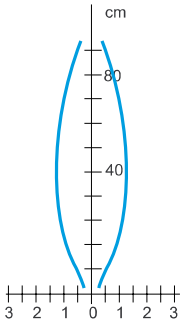
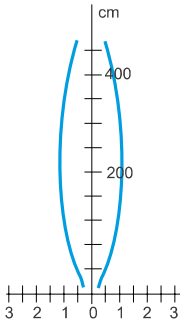
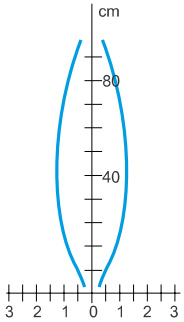
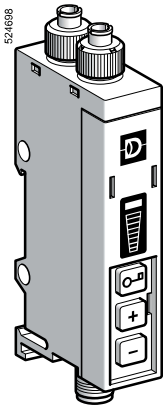
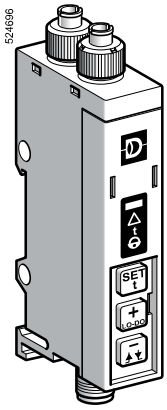
	XUYA212	**XUYA213**	**XUYA220**
			

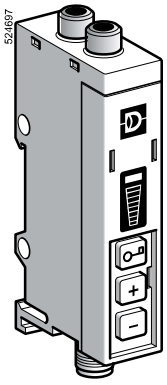
Photo-electric sensors
OsiSense XU Application
Amplifiers for plastic or glass fibre optics



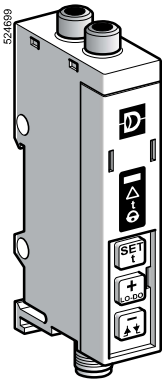
XUYAFP966S



XUYAFP946S



XUYAFV966S



XUYAFV946S

Amplifiers for plastic fibre optics *(1)*

Sensing distance (Sn) m	Function	Output	Connection	Reference	Weight kg
Adjustment using +/- button *(2)*					
Depending on fibre	NO/NC dpg. on wiring	PNP/NPN	Pre-cabled	**XUYAFP966S**	0.124
			M8 connector	**XUYAFPCO966S**	0.056
Adjustment using teach mode *(3)*					
Depending on fibre	NO/NC programmable	PNP/NPN	Pre-cabled	**XUYAFP946S**	0.124
			M8 connector	**XUYAFPCO946S**	0.056

Amplifiers for glass fibre optics

Sensing distance (Sn) m	Function	Output	Connection	Reference	Weight kg
Adjustment using +/- button *(2)*					
Depending on fibre	NO/NC dpg. on wiring	PNP/NPN	Pre-cabled	**XUYAFV966S**	0.116
			M8 connector	**XUYAFVCO966S**	0.047
Adjustment using teach mode *(3)*					
Depending on fibre	NO/NC programmable	PNP/NPN	Pre-cabled	**XUYAFV946S**	0.124
			M8 connector	**XUYAFVCO946S**	0.047

Accessories

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

(1) Fibre trimmer included
(2) Indication of level by bargraph, adjustment by pressing button
(3) Fine mode or standard mode, adjustment using teach

Characteristics

Sensor type			XUYAF●9●6S	XUYAFCO9●6S
Product certifications			CE, cULus *(4)*	
Connection	Connector		–	M8, 4-pin
	Pre-cabled		Length: 2 m	–
Nominal sensing distance (Sn)			Depending on fibre optic used	
Type of transmission	LED		Red LED	
	Modulation frequency		8 kHz	
Sensitivity adjustment			Using teach (fine mode or standard mode) and/or +/- button, depending on model	
Degree of protection	Conforming to IEC 60529		IP 65	
Ambient air temperature	For storage	°C	- 20...+ 80	
	For operation	°C	0...+ 60	
Materials			Polycarbonate	
Immunity to ambient light	Incandescent bulb	Lux	10 000	
	Natural light	Lux	20 000	
Rated supply voltage		V	⎓ **12...24 with protection against reverse polarity**	
Voltage limits (including ripple)		V	⎓ **10...30**	
Current consumption, no-load		mA	< 40	
Switching capacity		mA	**100 with overload and short-circuit protection**	
Voltage drop, closed state		V	< 2	
Maximum switching frequency		kHz	**< 1**	
External input *(5)*	Active	V	< 1.4	
	Inactive	V	> 3	
Delays	Response and recovery	ms	< 0.5	
Output time delay *(5)*	Range	s	0…5 in 11 adjustment increments	
	Duration of each increment	ms	First increment 40 ms then 500 ms for each press	

(4) 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.
(5) Only for models with teach mode.

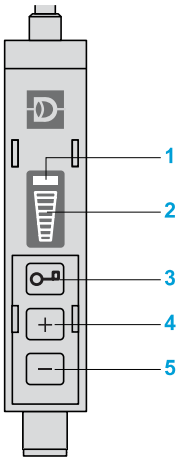
■ **Applications using plastic fibre optics**
□ Monitoring position or presence of parts on an assembly or packing machine
□ Detection of objects on small conveyor
□ Use of fibre optics in vibratory environments (robot arms)

■ **Applications with glass fibre optics**
□ Monitoring position or presence of parts on an assembly or packing machine
□ Detection of presence of parts in a plastic mould
□ Detection in aggressive environments

Photo-electric sensors
OsiSense XU Application
Amplifiers for plastic or glass fibre optics

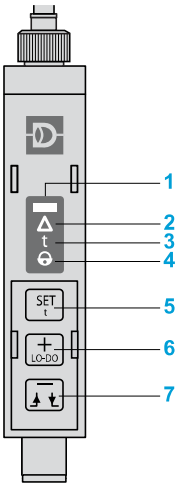
Presentation

XUYAF●, adjustment using button



1 Detection
2 Indication of the level of adjustment
3 Keypad locking
4 Sensitivity increase
5 Sensitivity decrease

XUYAF●, adjustment using teach mode

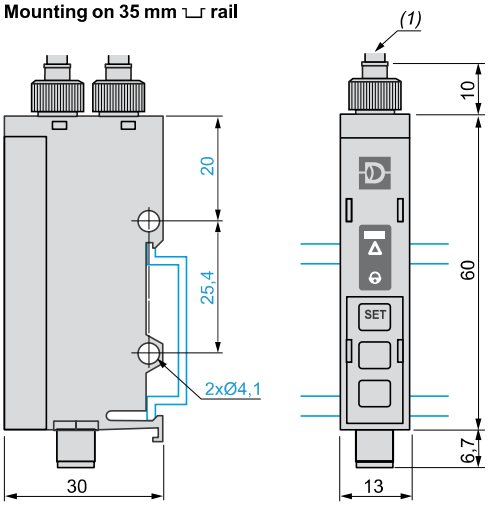


1 Detection
2 Dirty optics, limit of detection, alignment assistance
3 Time delay active
4 Action keypad, keypad locking
5 Automatic adjustment of the threshold, access to special functions
6 Sensitivity increase, direct/inverse output, time delay increase
7 Sensitivity decrease, On-delay, Off-delay inversion, time delay decrease

Dimensions

XUYAFP966S/AFPCO966S

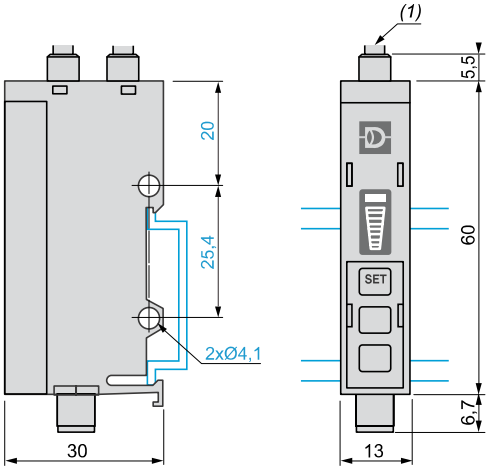
Mounting on 35 mm ⊔ rail



(1) Plastic fibre optic: Ø 2.2 mm

XUYAFV966S/AFVCO966S

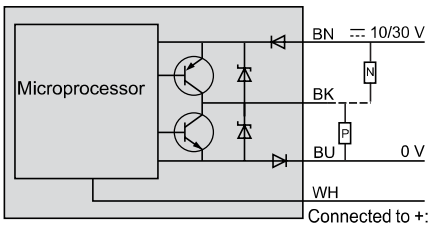
Mounting on 35 mm ⊔ rail



(1) Glass fibre optic: Ø 3 mm

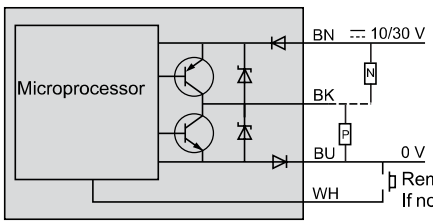
Wiring schemes

XUYAFP966/AFV966



Connected to +: direct function
Connected to –: inverse function

XUYAFP946/AFV946



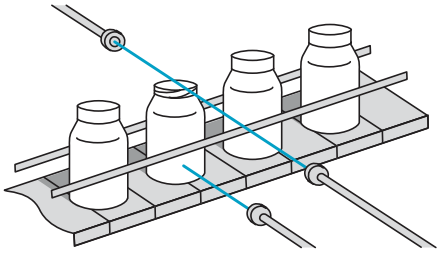
Remote teaching
If not used: connect to +

M8 connector

Pin N°	Colour
1 BN	Brown
2 WH	White
3 BU	Blue
4 BK	Black

Application examples

Thru-beam and diffuse system detection



Thru-beam system detection

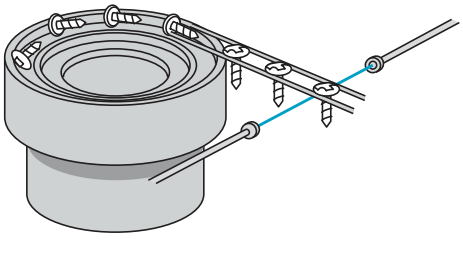


Photo-electric sensors

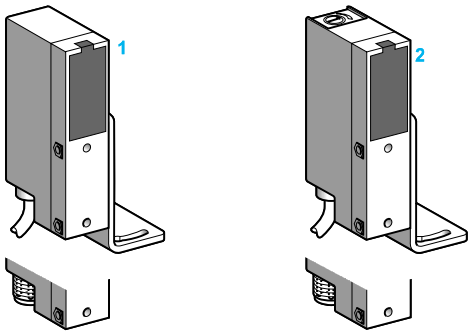
OsiSense XU Application, conveying series

Compact design

Two-wire AC, solid-state output

Compact design

Pre-cabled and connector versions



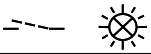
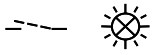
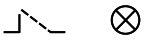
System				**Reflex** 1	**Polarised reflex** 1	**Diffuse** 2
Type of transmission				Infrared	Red	Infrared
Nominal sensing distance (Sn)				**6 m** (with Ø 80 mm reflector)	**4 m** (with Ø 80 mm reflector)	**0.7 m**
References						
2-wire	NC function	Connection	Pre-cabled	**XULA06021**	**XULA040219**	**XULA700115**
			Connector	**XULA06021K**	**XULA040219K**	**XULA700115K**
	NO function	Connection	Pre-cabled	**XULA06011**	**XULA040119**	**XULA700215**
			Connector	**XULA06011K**	**XULA040119K**	**XULA700215K**
Weight (kg)		Connection	Pre-cabled	0.195		
			Connector	0.135		

Characteristics

Product certifications		CE. Special H7 version: UL, CSA
Ambient air temperature	For operation	- 25…+ 60 °C
	For storage	- 40…+ 80 °C
Vibration resistance	Conforming to IEC 60068-2-6	7 gn, amplitude ± 2 mm (f = 10...55 Hz)
Shock resistance	Conforming to IEC 60068-2-27	20 gn, duration 11 ms
Degree of protection	Conforming to IEC 60529	IP 65
	Conforming to NF C 20-010	IP 651
Connection	Pre-cabled	Diameter 6 mm, length 2 m *(1)*, wire c.s.a.: 2 x 0.34 mm²
	Connector	1/2"-20UNF
Materials	Case	ABS/PC
	Lenses	PMMA
	Cable	PVC
Rated supply voltage		**~ or ⎓ 24…240 V**
Voltage limits		~ or ⎓ 20…264 V
Switching capacity *(2)* Sealed	Maximum	**~ 12 or ⎓ 12 (resistive load): 0.5 A/240 V** **~ 140 (inductive load): 0.3 A/240 V** **⎓ 13 (inductive load): 0.1 A/240 V; 0.2 A/110 V; 0.5 A/48 V**
	Minimum	**5 mA**
Inrush		**3000 mA**
Voltage drop, closed state		≤ 3 V (I = 0.1…0.5 A); ≤ 5.5 V (I = 10 mA); ≤ 10 V (I = 5 mA)
Residual current, open state		≤ 1.7 mA (on ~); ≤ 1.5 mA (on ⎓)
Maximum switching frequency		20 Hz
Delays	First-up	≤ 300 ms
	Response	≤ 20 ms
	Recovery	≤ 20 ms

Function table

Output state indicator
(illuminated when sensor output is ON)

Function	Reflex system: No object present in the beam	Reflex system: Object present in the beam	Function	Diffuse system: No object present in the beam	Diffuse system: Object present in the beam
NC			NO		
NO			NC		

*(1) For a sensor with a 5 m long cable add **L05** to the end of the reference; for a 10 m long cable add **L10** to the end of the reference.*
*Example: sensor **XULA06021** with 5 m cable becomes **XULA06021L05***

(2) These sensors do not incorporate overload or short-circuit protection and therefore, it is strongly advised to connect a "quick-blow" fuse in series with the load (see page 165).

Curves, schemes, dimensions

Photo-electric sensors

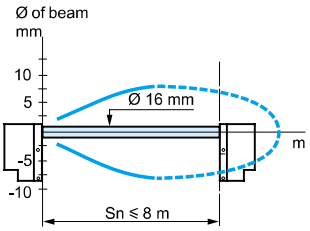
OsiSense XU Application, conveying series

Compact design

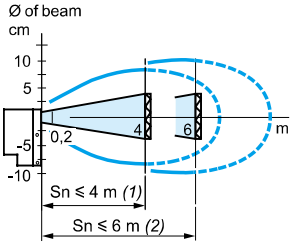
Two-wire AC, solid-state output

Detection curves

Thru-beam system

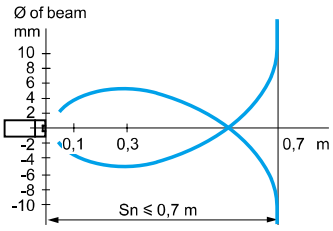


Reflex system



(1) Polarised
(2) Infrared

Diffuse system



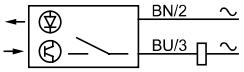
Object 20 x 20 cm
White 90%

Schemes

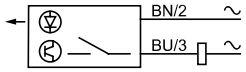
Wiring schemes (2-wire ∿)

NO function (no object present)

Reflex

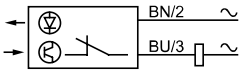


Diffuse

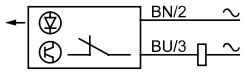


NC function (no object present)

Reflex



Diffuse



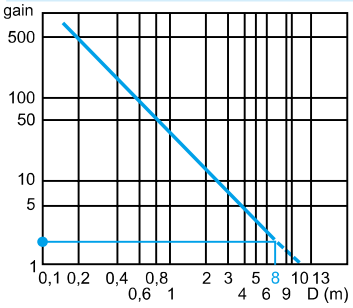
***Attention:** it is essential to connect a load in series with the sensor*

Connector scheme (sensor connector pin view)

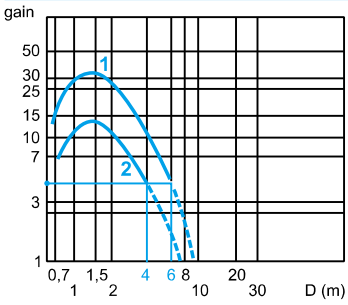
Solid-state output (reflex and diffuse system)

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

Thru-beam system

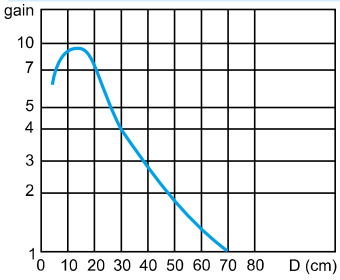


Reflex system

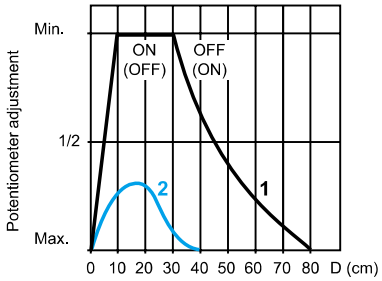


With reflector XUZC80
1 Infrared
2 Polarised

Diffuse system



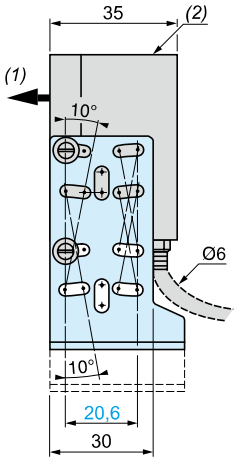
Object 20 x 20 cm
White 90%

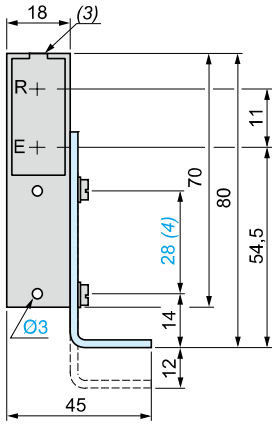


Object 20 x 20 cm
1 White 90 %
2 grey 18 %

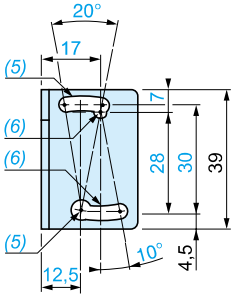
Dimensions (The bracket **XULZ41** is included with the sensor)

Sensor





Bracket fixing

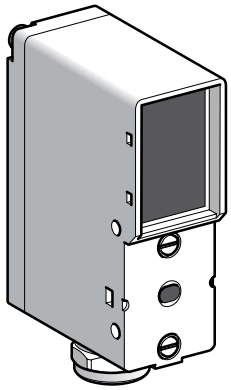


(1) Optical axis
(2) Sensitivity potentiometer (diffuse model)
(3) Output LED indicator
(4) Front fixing (Ø 3 screws and inserts included)
(5) 1 elongated hole Ø 4.1 x 10 and 1 x Ø 4.1
(6) 1 elongated hole Ø 3.1 x 10 and 1 x Ø 3.1

Photo-electric sensors

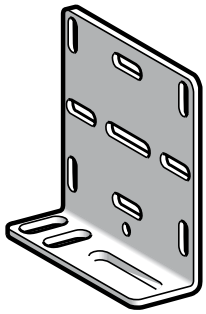
OsiSense XU Application
Conveying and access control series
Compact design with teach mode adjustment
Five-wire AC or DC, 1 CO relay output
Three-wire DC, solid-state output

DF524707



XUY●95●●

DF601821



XUZA49

Diffuse system *(1)*				
Sensing distance (Sn) m	**Function**	**Output**	**Reference**	**Weight kg**
DC				
1.5	NO/NC programmable	PNP/NPN	**XUYP954S**	0.130
4	NO/NC programmable	PNP/NPN	**XUYP952S**	0.130
AC or DC				
1.5	NO/NC programmable	Relay	**XUYP954R**	0.150
4	NO/NC programmable	Relay	**XUYP952R**	0.150

Polarised reflex system *(2)*				
Sensing distance (Sn) m	**Function**	**Output**	**Reference**	**Weight kg**
DC				
6	NO/NC programmable	PNP/NPN	**XUYB954S**	0.130
10	NO/NC programmable	PNP/NPN	**XUYB952S**	0.130
AC or DC				
6	NO/NC programmable	Relay	**XUYB954R**	0.150
10	NO/NC programmable	Relay	**XUYB952R**	0.150

Fixing accessory		
Description	**Reference**	**Weight kg**
Metal fixing bracket	**XUZA49**	0.120

(1) On 300 x 300 mm white paper
(2) With Ø 84 mm reflector

Characteristics

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

■ Applications
□ Detection of belt breakage
□ Material handling
□ Access control

Description, dimensions, schemes

Photo-electric sensors

OsiSense XU Application

Conveying and access control series

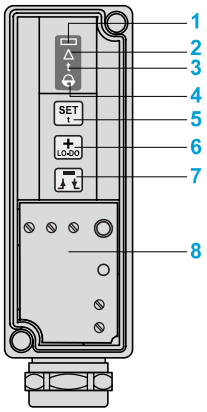
Compact design with teach mode adjustment

Five-wire AC or DC, 1 CO relay output

Three-wire DC, solid-state output

Description

Rear view



Indicator lights

1 - Output signal: Green LED

2 - Dirty optics: Red LED
- Limit of detection: Red LED
- Alignment assistance: flashing red LED

3 - Activation/adjustment of time delay: Red LED

4 - Action keypad
- Keypad: Action/Locking

Controls

5 - Automatic adjustment of threshold
- Access to special functions
- Zero reset of time delay

6 - Sensitivity increase
- NO/NC programming
- Time delay increase

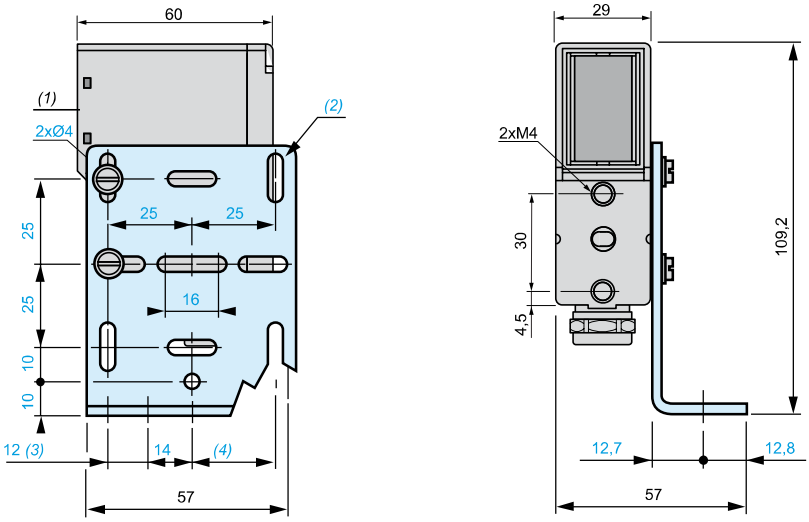
7 - Sensitivity decrease
- Inversion of time delay setting: On-delay, Off-delay
- Time delay decrease

8 - Access to terminals

Note: *Both the red and green LEDs flash in the event of a short-circuit on the output (for XUYP●95●S and XUYB●95●S versions).*

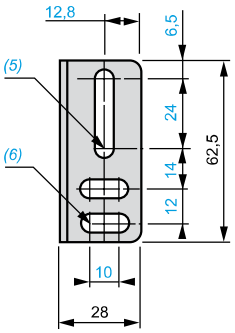
Dimensions

Sensors XUY●95●S and XUY●95●R



(1) Optical axis . *(2) 8 elongated holes Ø 4.2 x 10.*
(3) 2 elongated holes Ø 6.5 x 10. *(4) 1 elongated hole Ø 6.5 x 24.*

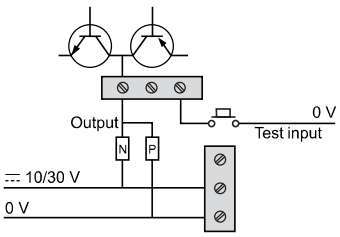
Bracket fixing XUZA49



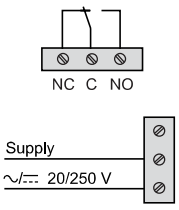
(5) 2 elongated holes Ø 6.5 x 16.5.
(6) 1 elongated hole Ø 6.5 x 30.5.

Wiring schemes

XUY●95●S



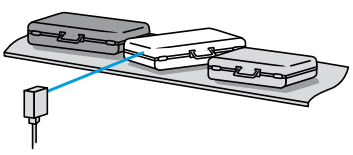
XUY●95●R



250 V, 1.5 mm^2 terminals.

Application examples

Monitoring for blockages on a baggage conveyor



Monitoring of gluing, fastening or labelling operations

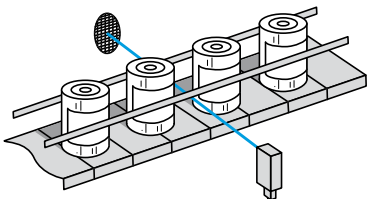
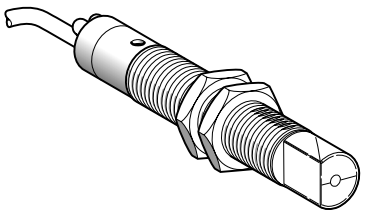


Photo-electric sensors

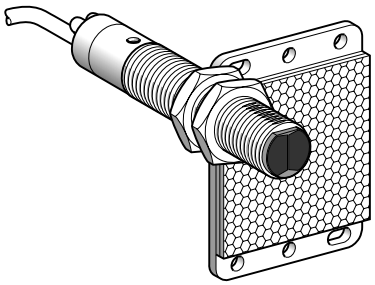
OsiSense XU Application

Design 18

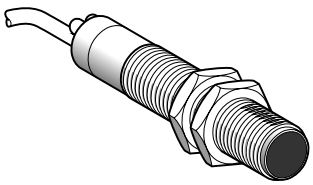
Two-wire AC *(1)* or DC, solid-state output with adjustable sensitivity



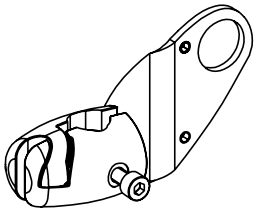
XU5M18M●230W
XU8M18M●230W



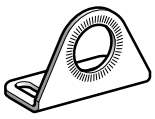
XU9M18M●230



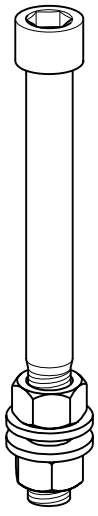
XU2M18M●230



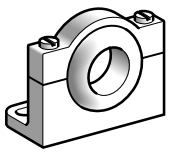
XUZB2003

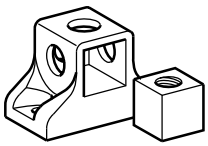


XUZA118



XUZ2001





Diffuse system with adjustable background suppression

Sensing distance (Sn) m	Function	Line of sight	Connection	Reference	Weight kg
0,12	NO	Along case axis	Pre-cabled (L = 2 m) *(2)*	**XU8M18MA230**	0.150
			1/2"-20UNF	**XU8M18MA230K**	0.075
		90° to case axis	Pre-cabled (L = 2 m) *(2)*	**XU8M18MA230W**	0.150
			1/2"-20UNF	**XU8M18MA230WK**	0.075
	NC	Along case axis	Pre-cabled (L = 2 m) *(2)*	**XU8M18MB230**	0.150
			1/2"-20UNF	**XU8M18MB230K**	0.075
		90° to case axis	Pre-cabled (L = 2 m) *(2)*	**XU8M18MB230W**	0.150
			1/2"-20UNF	**XU8M18MB230WK**	0.075

Diffuse system

Sensing distance (Sn) m	Function	Line of sight	Connection	Reference	Weight kg
0.40	NO	Along case axis	Pre-cabled (L = 2 m) *(2)*	**XU5M18MA230**	0.150
			1/2"-20UNF	**XU5M18MA230K**	0.075
		90° to case axis	Pre-cabled (L = 2 m) *(2)*	**XU5M18MA230W**	0.150
			1/2"-20UNF	**XU5M18MA230WK**	0.075
	NC	Along case axis	Pre-cabled (L = 2 m) *(2)*	**XU5M18MB230**	0.150
			1/2"-20UNF	**XU5M18MB230K**	0.075
		90° to case axis	Pre-cabled (L = 2 m) *(2)*	**XU5M18MB230W**	0.150
			1/2"-20UNF	**XU5M18MB230WK**	0.075

Polarised reflex system *(3)*

Sensing distance (Sn) m	Function	Line of sight	Connection	Reference	Weight kg
2	NO	Along case axis	Pre-cabled (L = 2 m) *(2)*	**XU9M18MA230**	0.170
			1/2"-20UNF	**XU9M18MA230K**	0.090
		90° to case axis	Pre-cabled (L = 2 m) *(2)*	**XU9M18MA230W**	0.170
			1/2"-20UNF	**XU9M18MA230WK**	0.090
	NC	Along case axis	Pre-cabled (L = 2 m) *(2)*	**XU9M18MB230**	0.170
			1/2"-20UNF	**XU9M18MB230K**	0.095
		90° to case axis	Pre-cabled (L = 2 m) *(2)*	**XU9M18MB230W**	0.170
			1/2"-20UNF	**XU9M18MB230WK**	0.090

Thru-beam system *(4)*

Sensing distance (Sn) m	Function	Line of sight	Connection	Reference	Weight kg
15	NO	Along case axis	Pre-cabled (L = 2 m) *(2)*	**XU2M18MA230**	0.285
			1/2"-20UNF	**XU2M18MA230K**	0.155
		90° to case axis	Pre-cabled (L = 2 m) *(2)*	**XU2M18MA230W**	0.285
			1/2"-20UNF	**XU2M18MA230WK**	0.155
	NC	Along case axis	Pre-cabled (L = 2 m) *(2)*	**XU2M18MB230**	0.285
			1/2"-20UNF	**XU2M18MB230K**	0.155
		90° to case axis	Pre-cabled (L = 2 m) *(2)*	**XU2M18MB230W**	0.285
			1/2"-20UNF	**XU2M18MB230WK**	0.155

Fixing accessories *(5)*

Description	Reference	Weight kg
3D fixing kit for use on M12 rod, for XU●M18 or XUZC50	**XUZB2003**	0.170
M12 rod	**XUZ2001**	0.050
Support for M12 rod	**XUZ2003**	0.150
Stainless steel fixing bracket	**XUZA118**	0.045
Plastic fixing bracket with adjustable ball-joint	**XUZA218**	0.035

(1) These sensors do not incorporate overload or short-circuit protection and therefore, it is essential to connect a 0.4 A "quick-blow" fuse in series with the load.
*(2) For a 5 m long cable add **L5**.*
*Example: XU2M18MA230 becomes **XU2M18MA230L5**.*
*(3) 50 x 50 mm reflector **XUZC50** included with polarised reflex system.*
(4) Comprising both thru-beam transmitter and receiver.
(5) For further information, see page 164.

Characteristics, schemes, curves, dimensions

Photo-electric sensors

OsiSense XU Application

Design 18

Two-wire AC or DC, solid-state output with adjustable sensitivity

Characteristics

Sensor type			XU2M, XU5M, XU8M, XU9M	XU2M, XU5M, XU8M, XU9M●●●●●●●K
Product certifications			UL, CSA, CE	
Connection	Connector		–	1/2"-20UNF
	Pre-cabled		Length: 2 m	–
Sensing distance				
nominal Sn / maximum		m	**0.12 / 0.12 diffuse with background suppression**	
(excess gain = 2) (excess gain = 1)		m	**0.4 / 0.6 diffuse**	
		m	**2 / 3 polarised reflex**	
		m	**15 / 20 thru-beam**	
Type of transmission			Infrared, except XU9 (red)	
Degree of protection	Conforming to IEC 60529		IP 67, double insulation ⧈	IP 67
Storage temperature		°C	- 40…+ 70	
Operating temperature		°C	- 25…+ 55	
Materials			Case: nickel plated brass; Lens: PMMA; Cable: PvR	
Vibration resistance	Conforming to IEC 60068-2-6		7 gn, amplitude ± 1.5 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms	
Indicator lights	Output state		Yellow LED	
	Stability		Red LED (for reflex and thru-beam only)	
Rated supply voltage		V	∼/⎓ 24…240	
Voltage limits (including ripple)		V	∼/⎓ 20…264	
Residual current, open state		mA	< 1.5	
Switching capacity		mA	10…200 *(1)*	
Voltage drop, closed state		V	6	
Maximum switching frequency		Hz	25	
Delays	First-up	ms	< 300	
	Response	ms	< 20	
	Recovery	ms	< 20	

(1) These sensors do not incorporate overload or short-circuit protection and therefore, it is essential to connect a 0.4 A "quick-blow" fuse in series with the load.

Wiring schemes

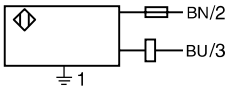
Connector

1/2"-20UNF

Pre-cabled

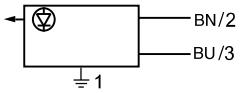
(∼) BU (Blue)
(∼) BN (Brown)

2-wire ∼ or ⎓



⏚ on connector models

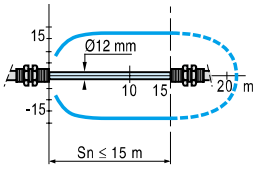
Transmitter



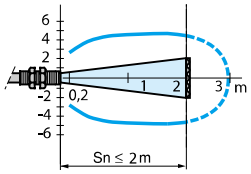
⏚ on connector models

Detection curves

Thru-beam system

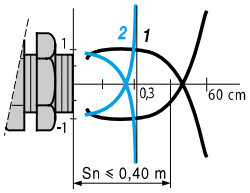


Polarised reflex system



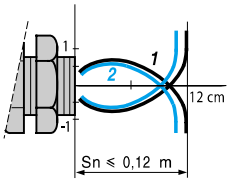
With reflector XUZC50

Diffuse system



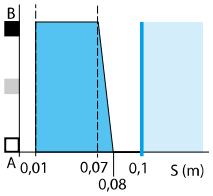
*Object 10 x 10 cm; **1** White 90%; **2** Grey 18%*

Diffuse system with adjustable background suppression

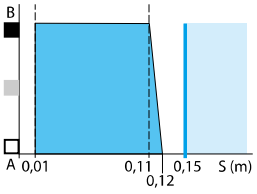


Variation of usable sensing distance Su

Potentiometer set at minimum



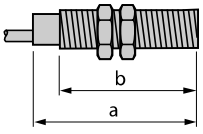
Potentiometer set at maximum



A-B*: object reflection coefficient*
- *Black 6%*
- *Grey 18%*
- *White 90%*
- *Sensing range*
- *Non sensing zone (matt surfaces)*

Dimensions

XU●



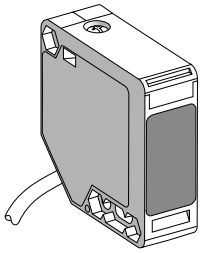
	Pre-cabled (mm)		Connector (mm)	
	a	b	a	b
Ø 18, line of sight along case axis	82	55	95	55

Photo-electric sensors

OsiSense XU Application, tertiary sector series

For access detection
AC or DC supply
1 CO relay output

Compact design



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

References

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

Characteristics

Product certifications		UL, CSA, CE
Ambient air temperature		For operation: - 25…+ 55 °C. For storage: - 40…+ 70 °C
Vibration resistance	Conforming to IEC 60068-2-6	7 gn, amplitude ± 1.5 mm (f = 10…55 Hz)
Shock resistance	Conforming to IEC 60068-2-27	30 gn, duration 11 ms
Degree of protection	Conforming to IEC 60529	IP 65, double insulation ⧈
Connection		Pre-cabled: diameter 6 mm, length 2 m, wire c.s.a.: 5 x 0.34 mm²/ AWG 22
Materials		Case: PBT; lenses: PMMA; cable: PVC
Rated supply voltage		**~ or ⎓ 24…240 V**
Voltage limits		~ or ⎓ 20…264 V
Switching capacity		**3 A**
Maximum voltage on output relay contacts		~ 250 V
Power consumption, no-load		2 W *(1)*
Maximum switching frequency		20 Hz
Delays		First-up: ⩽ 60 ms; response: ⩽ 25 ms; recovery: ⩽ 25 ms

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

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

Curves, dimensions, schemes

Photo-electric sensors

OsiSense XU Application, tertiary sector series

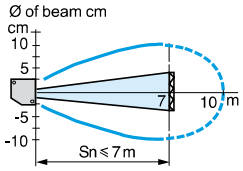
For access detection
AC or DC supply
1 CO relay output

Contents of kits XUK1ARCNL2H60 and XUK1ARCNL2H61

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

Detection curve

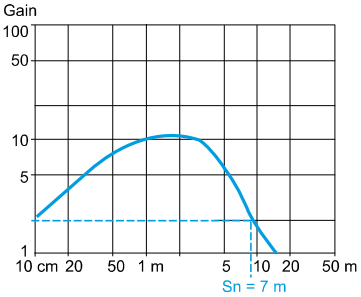
Reflex system ∼ or ⎓



Excess gain curve

(ambient temperature: + 25 °C)

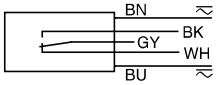
Reflex system ∼ or ⎓



With reflector XUZC50

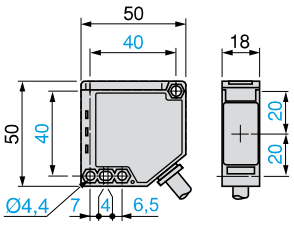
Wiring scheme

5-wire ∼ or ⎓

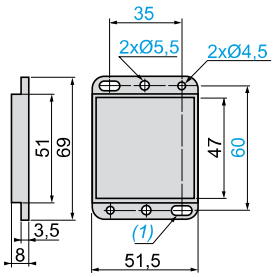


Dimensions

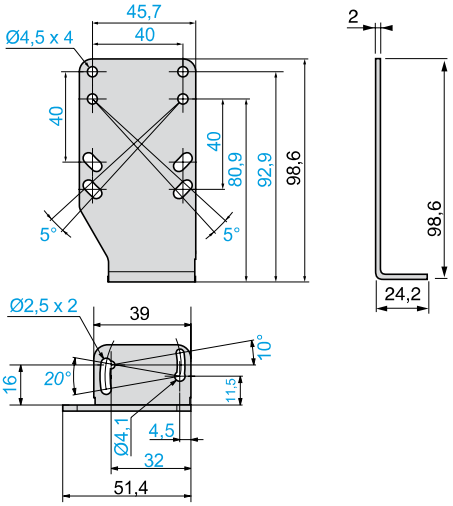
Sensor XUK1ARCNL2



Reflector XUZC50



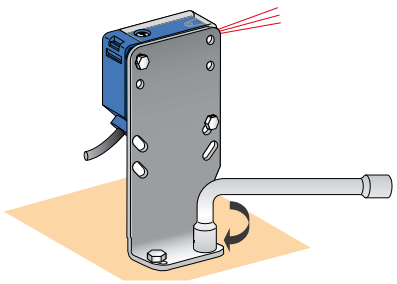
Fixing bracket XUZASK003



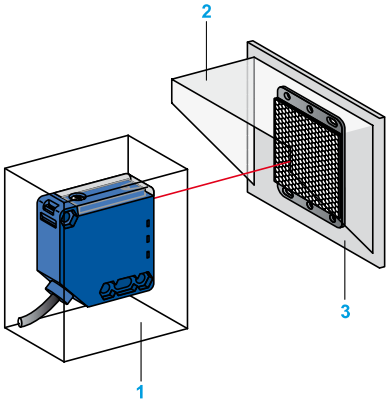
(1) 2 elongated holes Ø 4.5 x 8

Mounting precautions

Rigid fixing for trouble free detection



Outdoor mounting under protective cover



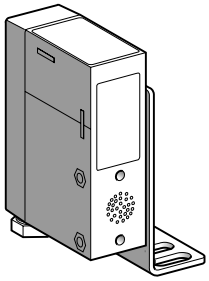
1 Protective housing.
2 Lens hood.
3 Thermal insulator to avoid frost or condensation forming on the optical parts.

Photo-electric sensors

OsiSense XU Application, tertiary sector series

With integral buzzer
AC or DC supply
1 NO relay output

Compact design



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

References

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

Characteristics

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

Function table	**Function**	**Reflex system**	
		No object present in the beam	**Object present in the beam**
Output state of relay contacts indicator: yellow LED (illuminated when relay energised)	NO	5 4 Relay de-energised ⊗ yellow	5 4 Relay energised ⊗ yellow

(1) PEI: high quality synthetic resin providing excellent withstand to mechanical shocks, vibration and the effects of external agents frequently encountered in industry: alcohol, salts, petroleum, oils, greases, washing agents (diluted sodium carbonate 4%, nitric acid 2%), formaldehyde vapour, splashing lactic acid, etc.

Curves, dimensions, schemes

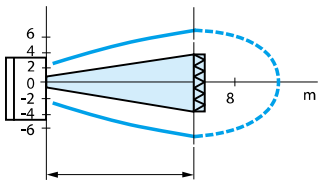
Photo-electric sensors

OsiSense XU Application, tertiary sector series

With integral buzzer
AC or DC supply
1 NO relay output

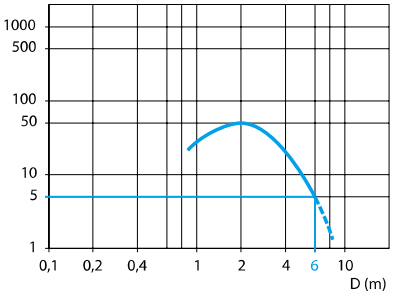
Detection curve

Reflex system



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

Infrared reflex system



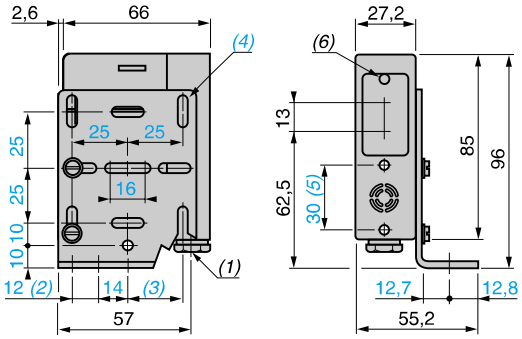
With reflector XUZC80

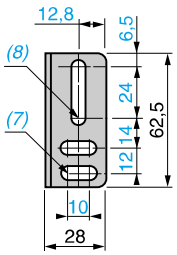
Contents of kit XUJB06031H60

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

Dimensions

XUJB06031H60 **Face view** **Bracket fixing**





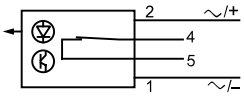
(1) 9P cable gland.
(2) 2 elongated holes Ø 6.5 x 10.
(3) 1 elongated hole Ø 6.5 x 24.
(4) 8 elongated holes Ø 4.2 x 10.
(5) Front fixing (Ø 4 screws and inserts included).
(6) Yellow LED.

(7) 2 elongated holes Ø 6.5 x 16.5.
(8) 1 elongated hole Ø 6.5 x 30.5.

Wiring schemes (~ or ⎓)

NO function

Object present



Terminal connections

1 NO relay output

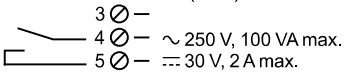


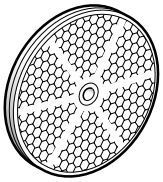
Photo-electric sensors

OsiSense XU

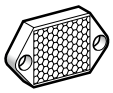
Accessories

XUZC21

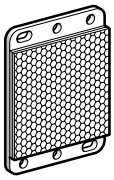
XUZC31



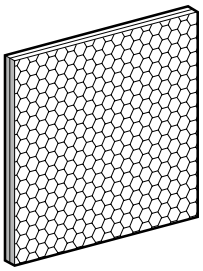
XUZC80



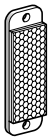
XUZC24



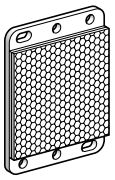
XUZC50



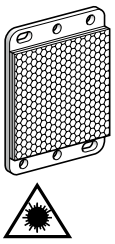
XUZC100



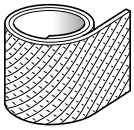
XUZCR0402CR



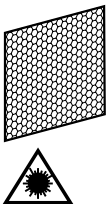
XUZC50CR



XUZC50HP



XUZCB11



XUZCB501HP

Reflectors

Description	Dimensions mm	Fixing mode	Chemical resistance	Micro-prism *(1)*	Reference	Weight kg
Rigid reflectors						
Rigid circular reflectors	Ø 21	–	No	No	**XUZC16**	0.002
	Ø 25	–	No	No	**XUZC21**	0.002
	Ø 35	–	No	No	**XUZC31**	0.005
	Ø 46	–	No	No	**XUZC39**	0.008
	Ø 84	1 hole	No	No	**XUZC80**	0.029
Rigid square reflectors	20 x 32	2 holes	**Ecolab**	Yes	**XUZCR0201CRHP** *(2)*	0.004
	13 x 33	2 inserts	No	No	**XUZC08**	0.010
	23 x 40	Adhesive	No	No	**XUZC40S22**	0.015
	29 x 45	2 holes	No	No	**XUZC24**	0.007
	19 x 60	2 holes	**Ecolab**	Yes	**XUZCR0401CRHP** *(2)*	0.010
		2 holes	No	Yes	**XUZCR0401HP** *(2)*	0.010
	18 x 60	2 holes	**Ecolab**	No	**XUZCR0402CR** *(2)*	0.015
		2 holes	No	No	**XUZCR0402**	0.015
	30 x 82	2 holes	No	No	**XUZC30**	0.015
	50 x 70	6 holes	**Ecolab**	No	**XUZC50CR** *(2)*	0.020
			No	No	**XUZC50**	0.020
			No	Yes	**XUZC50HP**	0.020
	40 x 60	2 holes	No	No	**XUZC60S11**	0.022
	42 x 182	2 holes	No	No	**XUZC180S21**	0.080
	100 x 100	2 brackets	No	No	**XUZC100**	0.062
Adhesive tape						
For polarized reflex sensor	1 x 22	Adhesive	No	No	**XUZB11**	0.020
	5 x 22	Adhesive	No	No	**XUZB15**	0.085
For laser sensor	50 x 50	Adhesive	No	Yes	**XUZCB0501HP**	–
	250 x 250	Adhesive	No	Yes	**XUZC250**	–

Note: *All reflectors are IP 67 and IP 69K. They are suitable for use at operating temperatures between - 20 °C and + 60 °C except Ecolab certified products (- 20°C…+ 140 °C).*

(1) Microprism: enables effective short distance detection. Used with laser beams.
(2) Operating temperature between - 20 °C and + 140 °C.

Photo-electric sensors

OsiSense XU

Accessories: sensors/reflectors table

	Blind zone	XUZC16 Ø 16	XUZC24 20x25	XUZC39 Ø 39	XUZC50 50x50	XUZC80 Ø 80	XUZC100 100x100
XUB0 	5 mm	0.9 m	1 m	2.5 m	3 m	4 m	4.5 m
XUB1 	10 mm	1 m	2 m	3 m	4 m	5 m	5 m
XUB9 	10 mm	0.6 m	0.6 m	1.4 m	2 m	4 m	4 m
XUM0 	10 mm	0.9 m	1.4 m	2 m	3 m	4 m	4.5 m
XUM9 	10 mm	1.5 m	2.5 m	3.2 m	5 m	6.5 m	6.5 m
XUK0 	4 cm	1 m	1 m	2.6 m	4 m	5.5 m	6.5 m
XUK1 	5 cm	2.5 m	4 m	7.5 m	7 m	14 m	16 m
XUK9 	5 cm	1.2 m	2 m	3.7 m	6 m	7.5 m	10 m
XUX0 	10 cm	3.5 m	5 m	8 m	15 m	21 m	22 m
XUX1 	10 cm	5.5 m	5.5 m	10 m	14 m	17.5 m	21 m
XUX9 	10 cm	4.5 m	4.5 m	8 m	11 m	13.5 m	17 m

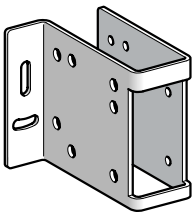
	XUZCR0402CR Ecolab 16x40	XUZC50CR Ecolab 50x50	XUZC50 50x50	XUZCR0401CRHP Ecolab Laser 16x40	XUZCB501HP Tape Laser 50x50	XUZC50HP Laser 50x70
XUK9S 	2.1 m	3 m	6 m	–	–	–
XU9N18 	0.7 m	1 m	2 m	–	–	–
XUK9L 	–	–	–	1.8 m	6 m	12 m
XUBTA 	–	–	–	0.35 m	0.7 m	1.4 m

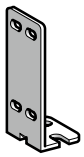
Nominal standard value

Photo-electric sensors
OsiSense XU
Accessories

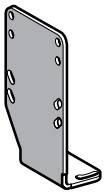

XUZA118

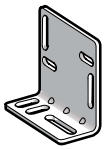

XUZASK002

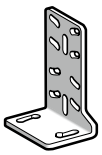

XUZASK001

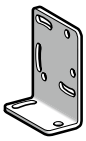

XUZA50


XUZA51


XUZASK003


XUZX2000


XULZ41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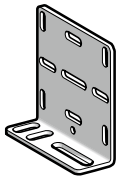
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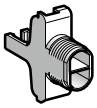
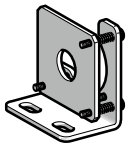
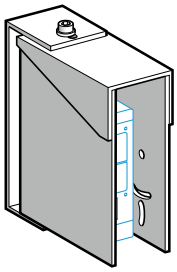

XUZASM001


XUZA218

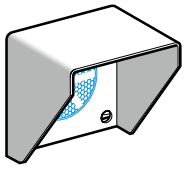

XUZA318

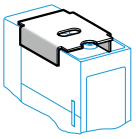

XSAZ1●●


XSZB1●●


XUZD25


XUZB2005


XUZD15


XUJZ01

Fixing accessories

Description	For use with sensors		Reference	Weight kg
Stainless steel grade 304 fixing brackets	XUB (Ø 18)		**XUZA118**	0.045
	XUK●L and XUK●S		**XUZASK001**	0.130
Stainless steel grade 316 fixing brackets	XUB (Ø 18)		**XUZASB001**	0.018
	XUK●L and XUK●S		**XUZA51S**	0.050
Aluminium dovetail	XUK●L and XUK●S		**XUZASK002**	0.030
Metal fixing brackets	XUM		**XUZA50**	0.025
	XUK (except XUK●L and XUK●S)		**XUZA51**	0.050
			XUZASK003 *(1)*	0.060
	XUX		**XUZX2000**	0.065
	XUL		**XULZ41**	0.050
	XUJ		**XUZA41**	0.050
	XUJB		**XUZA49**	0.120
Plastic fixing bracket	XUM (except XUM0)		**XUZASM001**	0.010
Plastic fixing bracket with adjustable ball-joint	XU● (Ø 18 mm)		**XUZA218**	0.035
Precision fixing bracket with micrometric adjustment	XU● (Ø 18 mm) with laser transmission		**XUZA318**	0.170
Plastic fixing clamps with locking screw	XUA (Ø 8 mm)		**XSAZ108**	0.007
			XSZB108	0.006
	XU● (Ø 18 mm)	With indexing pin	**XSAZ118**	0.020
		With position reference	**XSZB118**	0.010
		With 24.1 mm centres	**XUZB2005**	0.007
Set of 2 plastic nuts	XU● (Ø 18 mm)		**XSZE218**	0.004
Set of 2 metal nuts	XU● (Ø 18 mm)		**XSZE118**	0.015
Set of 2 stainless steel nuts	XU● (Ø 18 mm)		**XSZE318**	0.015

Protective covers

Description	For use with	Reference	Weight kg
Protective cover	XUK and XUJ sensors	**XUZD25**	0.920
Potentiometer protective covers	XUZC80 or XUZC24 reflectors	**XUZD15**	0.270
	XUJ sensors	**XUJZ01**	0.015

*(1) Bracket **XUZASK003** can be used to replace an XUL sensor with an XUK sensor.*

Photo-electric sensors
OsiSense XU
Accessories


XUZB2003

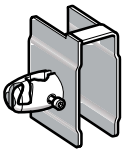

XUZM2003


XUZK2003

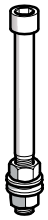

XUZX2003

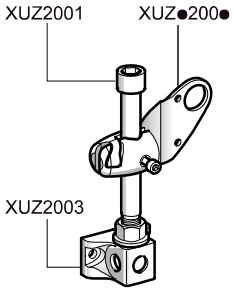

XUZM2004


XUZK2004


XUZX2004


XUZ2003

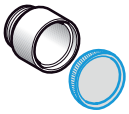

XUZ2001

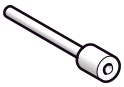


3D fixing kit example


XUZX2001


XURZ01


XURZ02


XUFZ08

3D fixing kit *(1)*

Description	For use with sensor type	Reference	Weight kg
Ball-joint mounted fixing bracket for mounting on M12 rod	XUB or XUZC50	**XUZB2003**	0.170
	XUM 0 or XUZC50	**XUZM2003**	0.140
	XUK or XUZC50	**XUZK2003**	0.170
	XUX or XUZC50	**XUZX2003**	0.220
Ball-joint mounted fixing bracket with protective cover for mounting on M12 rod	XUM0	**XUZM2004**	0.155
	XUK	**XUZK2004**	0.270
	XUX	**XUZX2004**	0.420
Support for M12 rod	–	**XUZ2003**	0.150
M12 rod (adjustment possible over complete height)	–	**XUZ2001**	0.050

(1) To obtain a 3D fixing kit, order:
- *rod support **XUZ2003***
- *M12 rod **XUZ2001***
- *ball-joint mounted fixing bracket **XUZ●200●***

Cabling accessories

Description	Reference	Weight kg
Adaptor, ISO 16 - 1/2" NPT	**XUZX2001**	0.050
Adaptor, ISO 16 - ISO 20	**XUZX2002**	0.050

Lenses

Description	For use with	Reference	Weight kg
Lens for spot enlargement	XUR sensors	**XURZ01**	0.010
Lens for spot reduction	XUR sensors	**XURZ02**	0.015

Spare parts

Description	For use with	Sold in lots of	Unit reference	Weight kg
Plastic end adaptor for connecting Ø 1 mm optical fibres	Amplifiers XUDA	2	**XUFZ08**	0.002

Protection fuses

Description	For use with	Sold in lots of	Unit reference	Weight kg
Cartridge fuse 5 x 20 0.4 A “quick-blow”	Sensors without short-circuit protection	10	**XUZE04**	0.001
Fuse terminal block	Cartridge fuses XUZE0●	50	**AB1FU10135U**	0.040

Photo-electric sensors

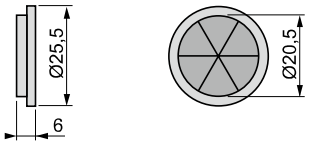
OsiSense XU

Accessories

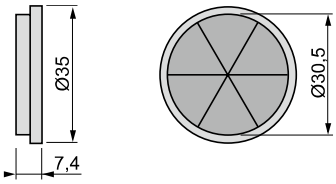
Rigid circular reflectors

XUZC16

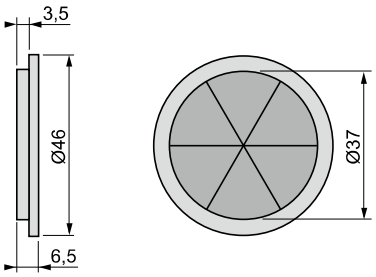
XUZC21



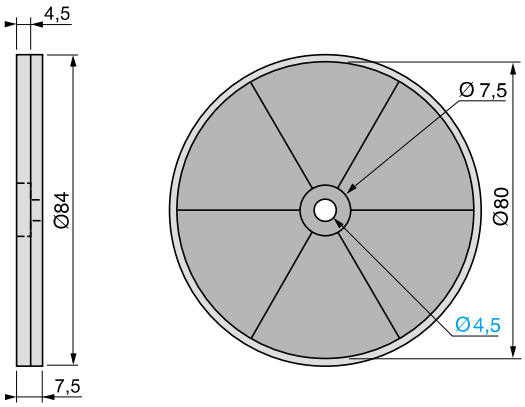
XUZC31



XUZC39

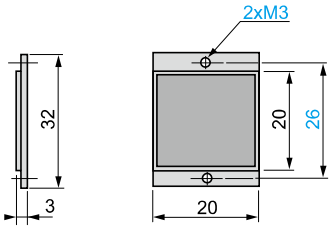


XUZC80

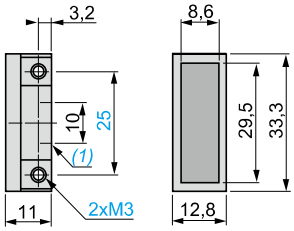


Rigid square reflectors

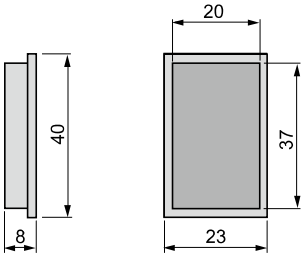
XUZCR0201CRHP



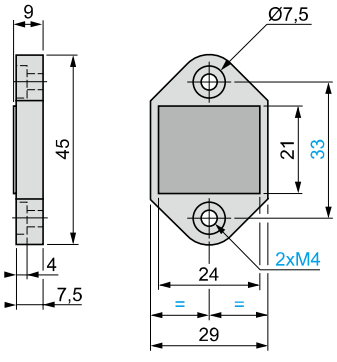
XUZC08



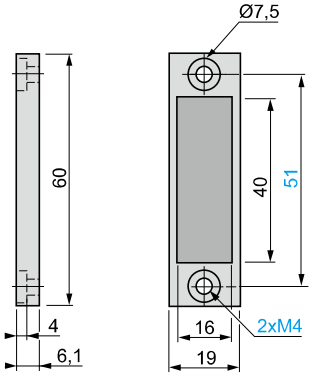
XUZC40S22



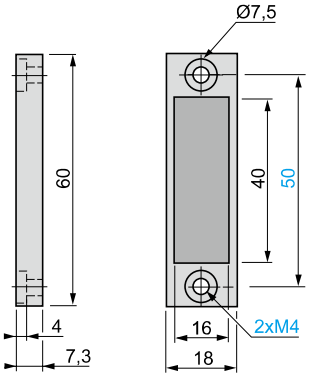
XUZC24



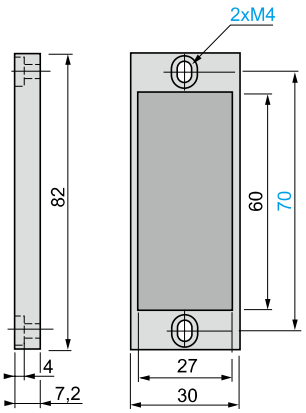
XUZCR0401●●●●



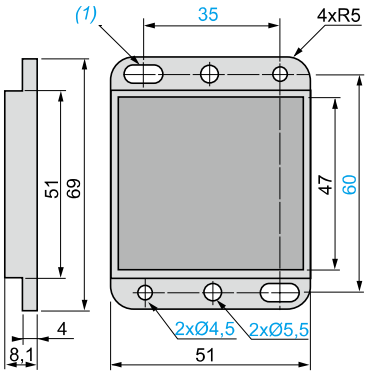
XUZCR0402●●



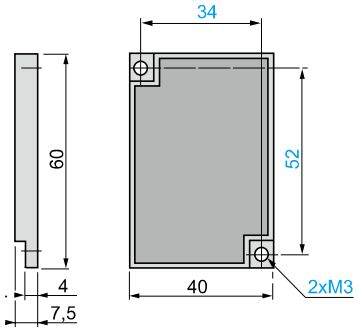
XUZC30



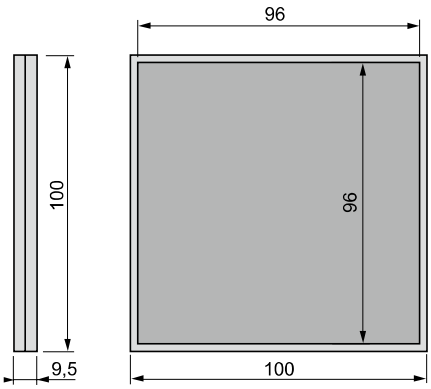
XUZC50, XUZC50●●



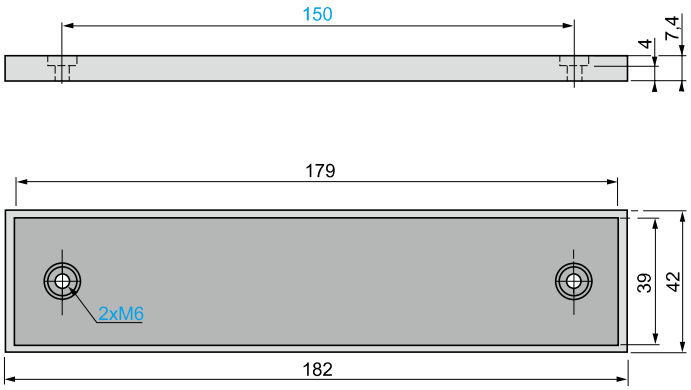
XUZC60S11



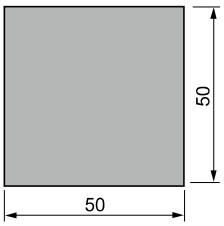
XUZC100



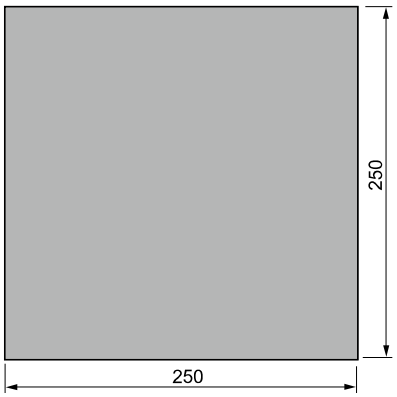
XUZC180S21



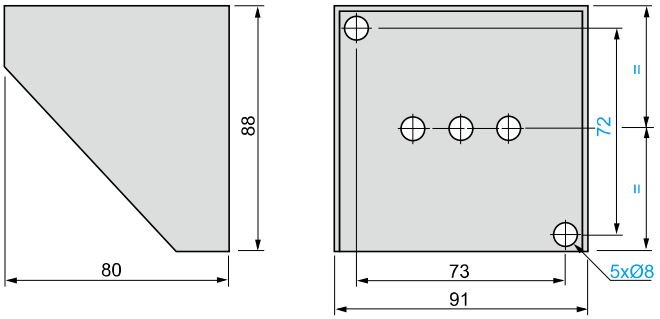
XUZCB0501HP



XUZC250



XUZD15



XUZM2003 + XUZ2001 + XUZ2003 + XUZC50

Mounting example

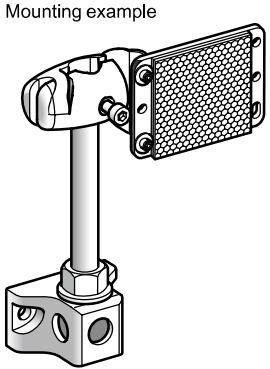


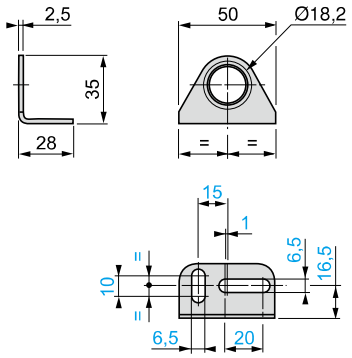
Photo-electric sensors

OsiSense XU

Accessories

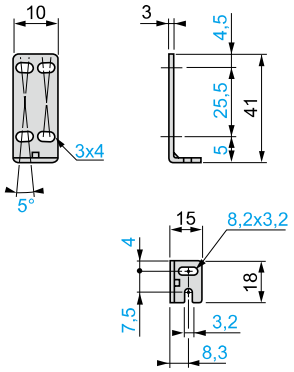
XUZA118

Fixing bracket for XUB

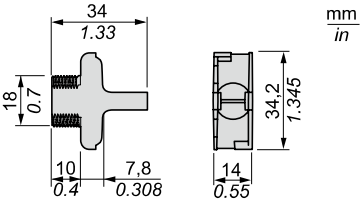


XUZA50

Fixing bracket for XUM *(1)*

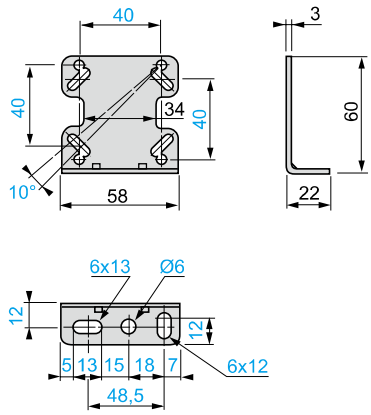


XUZASM001

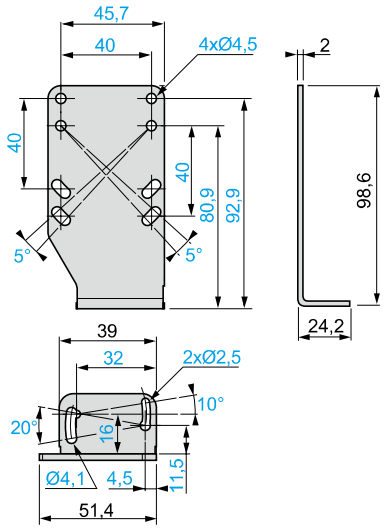


XUZA51

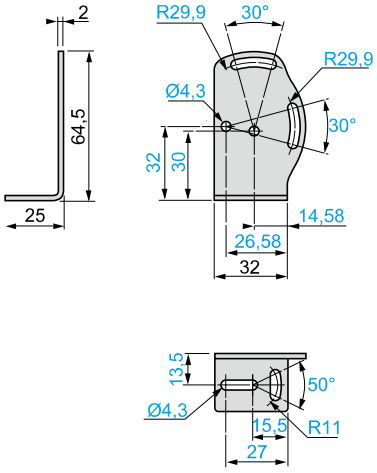
Fixing bracket for XUK *(1)*



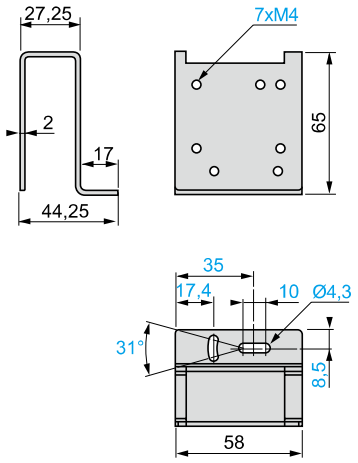
XUZASK003



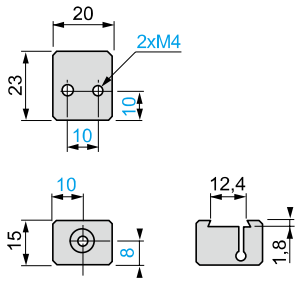
XUZA51S



XUZASK001

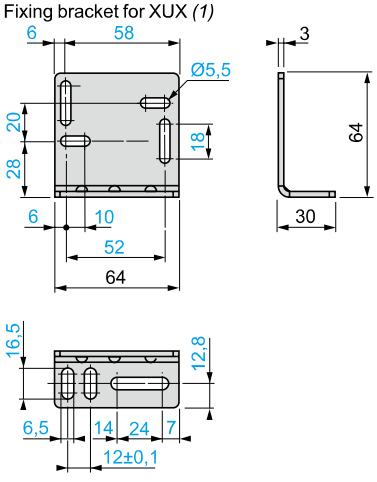


XUZASK002



XUZX2000

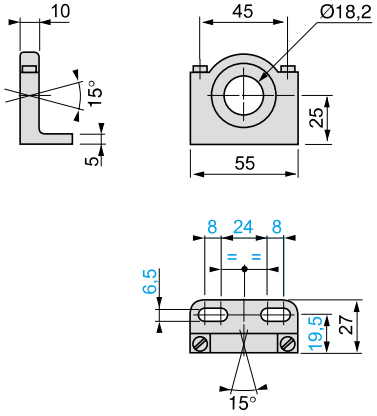
Fixing bracket for XUX *(1)*



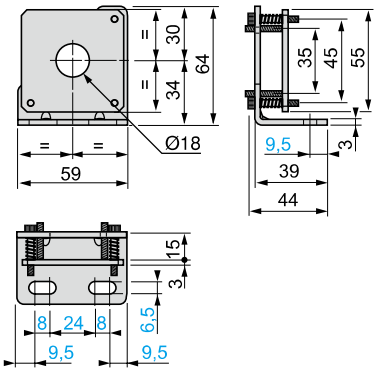
(1) Accessory fixing screws included.

Photo-electric sensors
OsiSense XU
Accessories

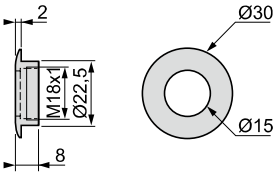
XUZA218
Fixing bracket with adjustable ball-joint for XU● (Ø 18)



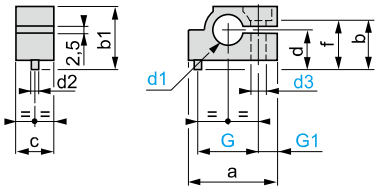
XUZA318
Fixing bracket with micrometric adjustment for XU2 (Ø 18) with laser transmission



XUZASB001

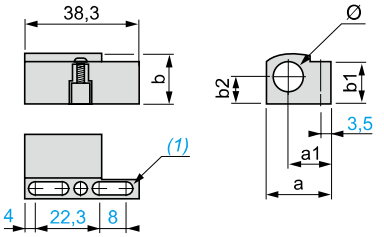


XSAZ1●●
Fixing clamps for XUA, XU● (Ø 18), XUF



XSA	a	b	b1	c	d	Ød1	Ød2	Ød3	f	G	G1
Z108	23.5	14.2	16.7	10	8	8.1	2	4	10.5	16	5
Z118	41	30	33	17	18	18.1	3.9	6	24	30	7
Z145	23.5	14.2	16.7	10	8	4.7	2	4	10.5	16	5
Z155	23.5	14.2	16.7	10	8	5.7	2	4	10.5	16	5
Z185	23.5	14.2	16.7	10	8	8.6	2	4	10.5	16	5

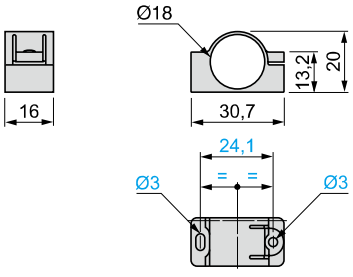
XSZB108, XSZB118
Fixing clamps for XUA and XU● (Ø 18)



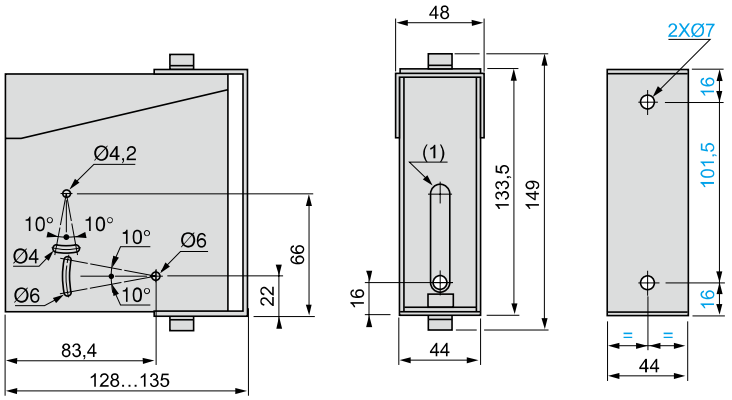
XCZ	a	a1	b	b1	b2	Ø
B108	21.1	14.5	14.2	12.8	7.5	8
B118	26	15.7	22.3	20.1	11.5	18

(1) 2 elongated holes Ø 4 x 8

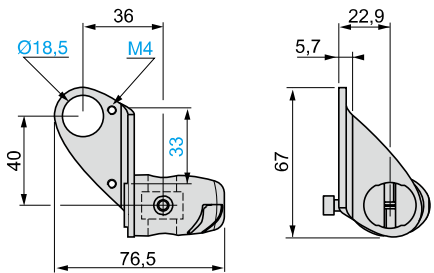
XUZB2005
Fixing clamps with 24.1 mm centres for XU● (Ø 18)



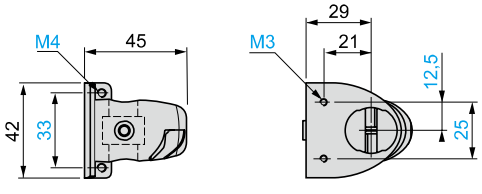
XUZD25
Protective cover for XUX or XUJ



XUZB2003
Ball-joint mounted fixing bracket for XUB or XUZC50



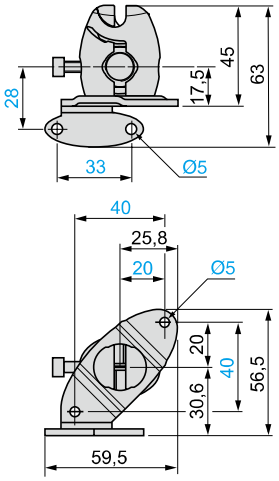
XUZM2003
Ball-joint mounted fixing bracket for XUM *(1)* or XUZC50



(1) Accessory fixing screws included

XUZK2003

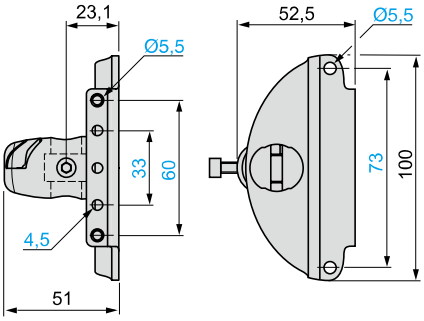
Ball-joint mounted fixing bracket for XUK *(1)* or XUZC50



(1) Accessory fixing screws included.

XUZX2003

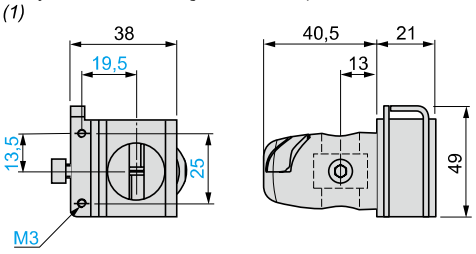
Ball-joint mounted fixing bracket for XUX *(1)* or XUZC50



(1) Accessory fixing screws included.

XUZM2004

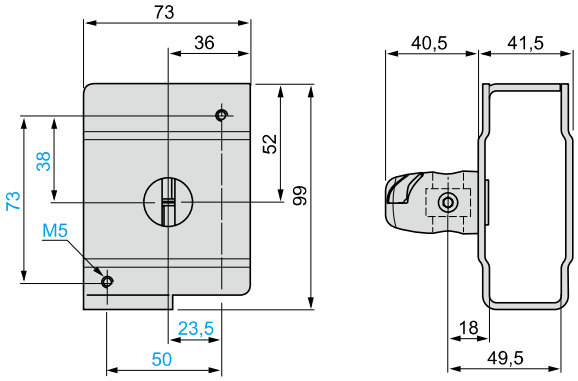
Ball-joint mounted fixing bracket with protective cover for XUM *(1)*



(1) Accessory fixing screws included.

XUZX2004

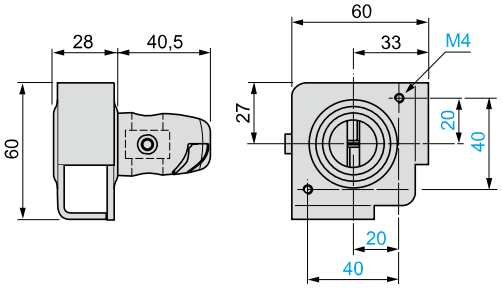
Ball-joint mounted fixing bracket with protective cover for XUX *(1)*



(1) Accessory fixing screws included.

XUZK2004

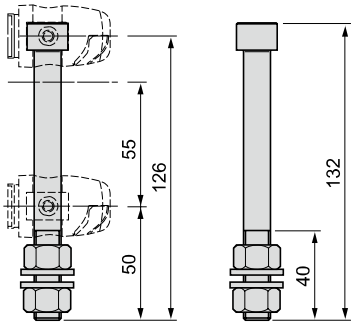
Ball-joint mounted fixing bracket with protective cover for XUK *(1)*



(1) Accessory fixing screws included.

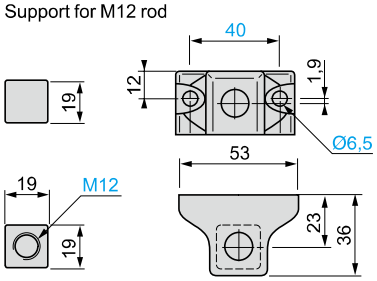
XUZ2001

M12 rod

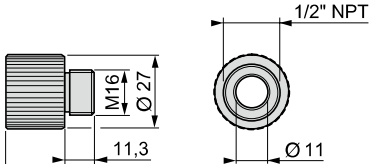


XUZ2003

Support for M12 rod



XUZX2001



XUZX2002

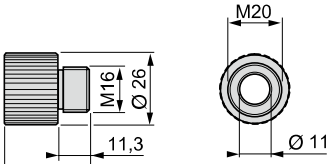
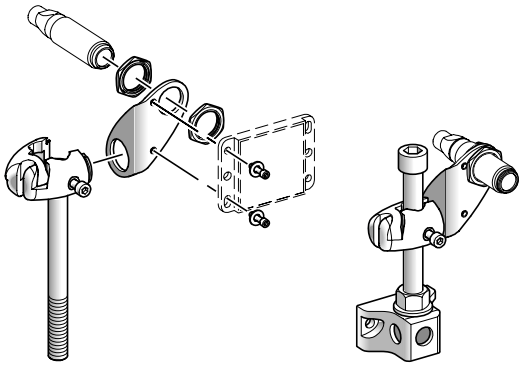
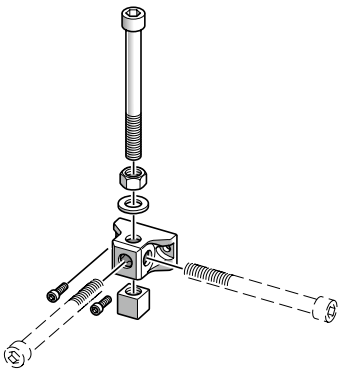


Photo-electric sensors
OsiSense XU
Accessories

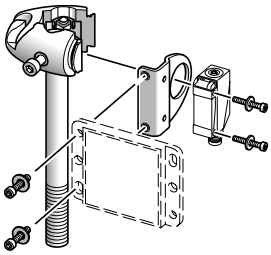
XUZB2003 + XUZ2001 + XUZ2003
3D fixing kit for XUB or XUZC50



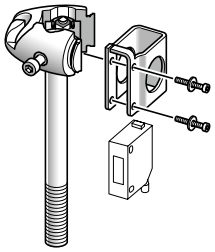
XUZ2001 + XUZ2003
M12 rod + rod support



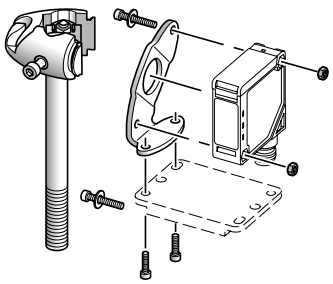
XUZM2003 + XUZ2001
3D fixing kit for XUM or XUZC50



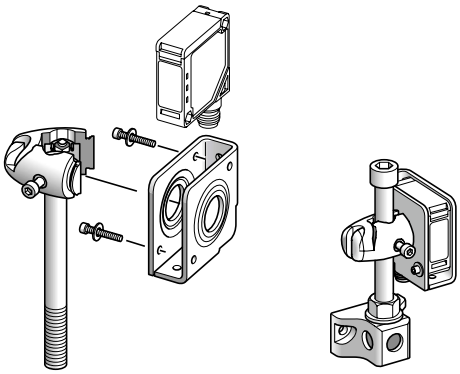
XUZM2004 + XUZ2001
3D fixing kit with protective cover for XUM



XUZK2003 + XUZ2001
3D fixing kit for XUK or XUZC50

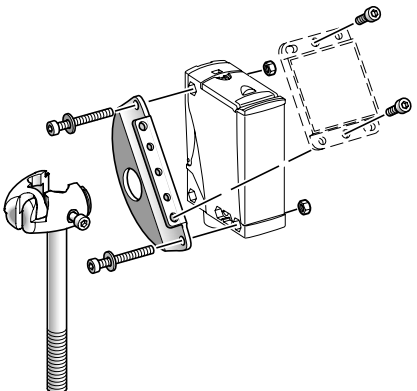


XUZK2004 + XUZ2001 + XUZ2003
3D fixing kit with protective cover for XUK



Mounting example

XUZX2003 + XUZ2001
3D fixing kit for XUX or XUZC50



XUZX2004 + XUZ2001
3D fixing kit with protective cover for XUX

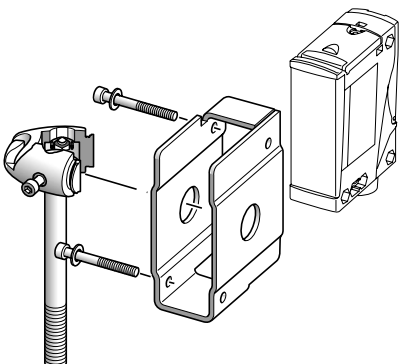


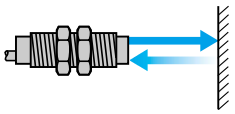
Photo-electric sensors

OsiSense XU, general purpose

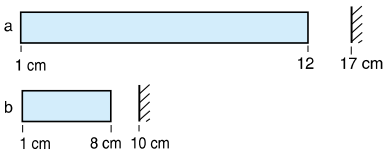
XUB0 Multimode function with line of sight along case axis

Sensing distance and operating margin

Background suppression mode

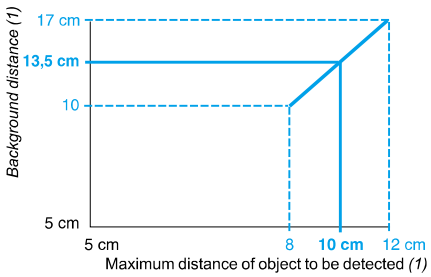


Without accessory



Background

a: with background teaching at maximum recommended distance.
b: with background teaching at minimum recommended distance.

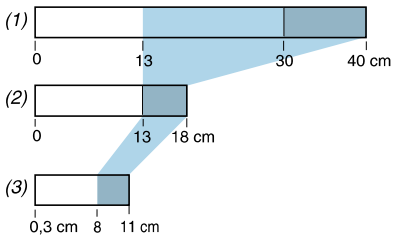


Example: teaching against a background located at 13.5 cm enables detection of an object at 1 to 10 cm.

(1) From white 90% to black 6%.

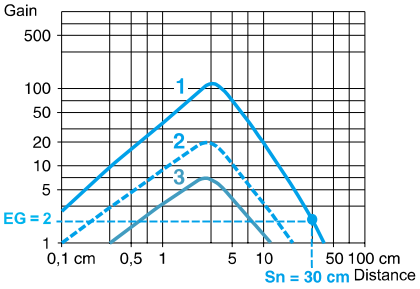
Diffuse mode

Without accessory



(1) White 90%. (2) Grey 18%. (3) Black 6%.

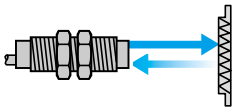
Object teaching zone



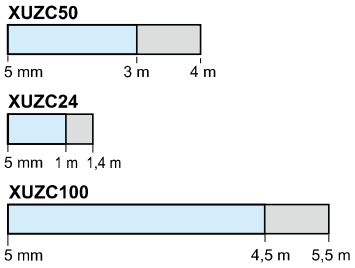
1 White object
2 Grey object
3 Black object

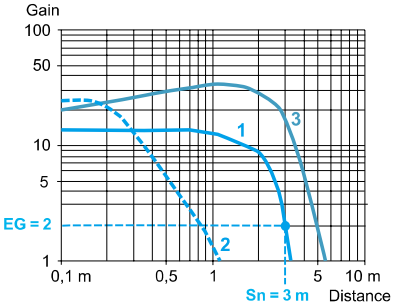
In diffuse mode, teaching of the position of the object to be detected, located between 0 and 12 cm, automatically configures the product to “background suppression” mode. This provides a constant usable sensing distance, whatever the colour of the object.

Polarised reflex mode



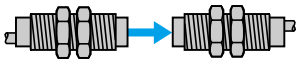
With reflector



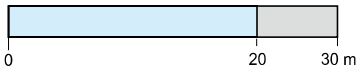


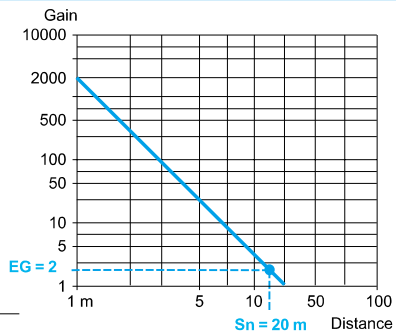
1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

Thru-beam mode



With thru-beam accessory





Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

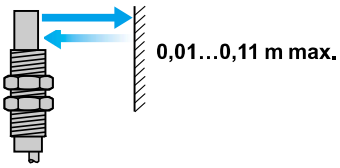
Photo-electric sensors

OsiSense XU, general purpose

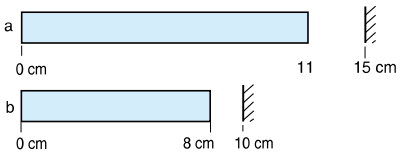
XUB0 Multimode function with line of sight 90° to case axis

Sensing distance and operating margin

Background suppression mode

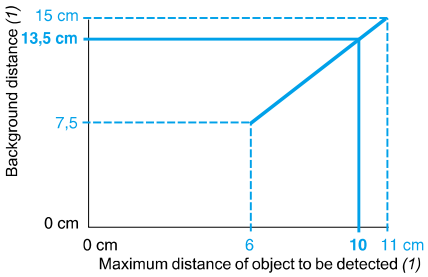


Without accessory



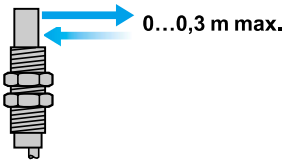
Background

a: with background teaching at maximum recommended distance.
b: with background teaching at minimum recommended distance.

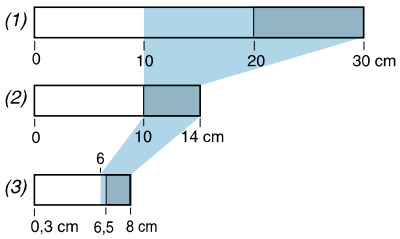


Example: teaching against a background located at 13.5 cm enables detection of an object at 0 to 10 cm.
(1) From white 90% to black 6%.

Diffuse mode

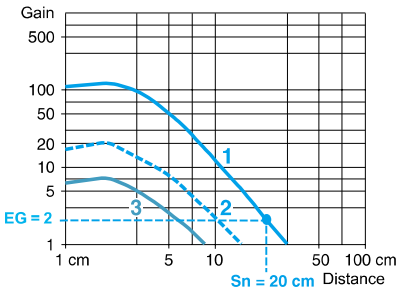


Without accessory



(1) White 90%. (2) Grey 18%. (3) Black 6%.

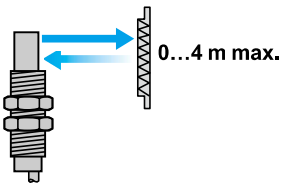
Object teaching zone



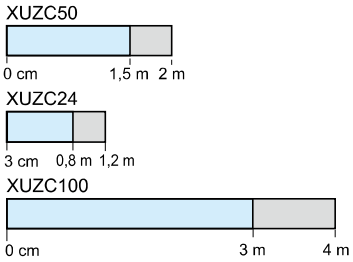
1 White object
2 Grey object
3 Black object

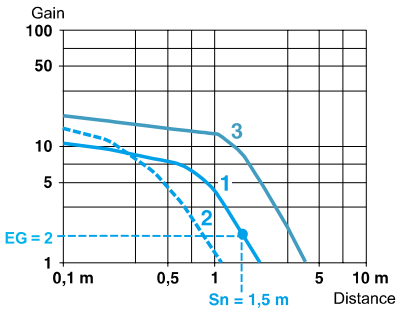
In diffuse mode, teaching of the position of the object to be detected, located between 0 and 11 cm, automatically configures the product to “background suppression” mode. This provides a constant usable sensing distance, whatever the colour of the object.

Polarised reflex mode



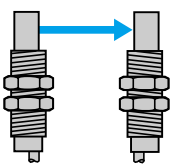
With reflector



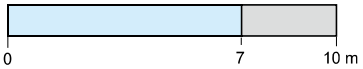


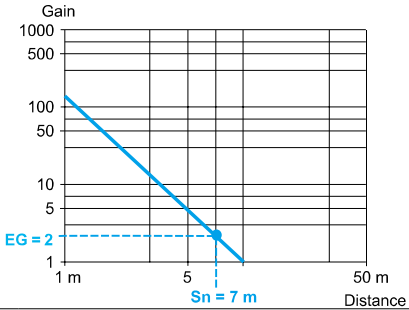
1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

Thru-beam mode



With thru-beam accessory





Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

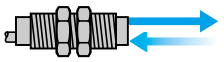
Photo-electric sensors

OsiSense XU, general purpose, single mode function

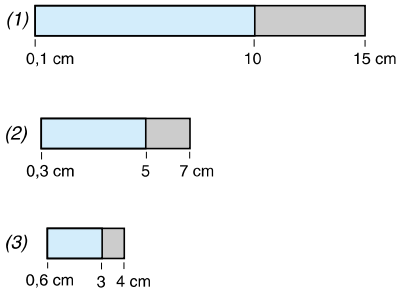
XUB●●●●● with line of sight along or at 90° to case axis

Sensing distance and operating margin

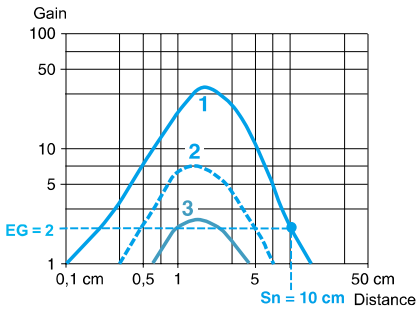
Diffuse sensor XUB4●●●●●●● with line of sight along case axis



0,001…0,15 m max.

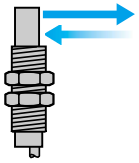


(1) White 90%. (2) Grey 18%. (3) Black 6%.

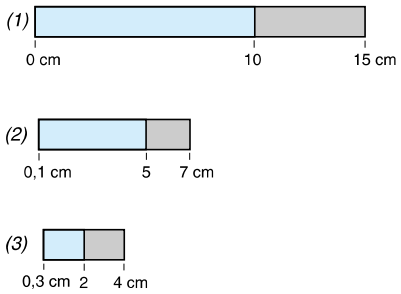


1 White object
2 Grey object
3 Black object

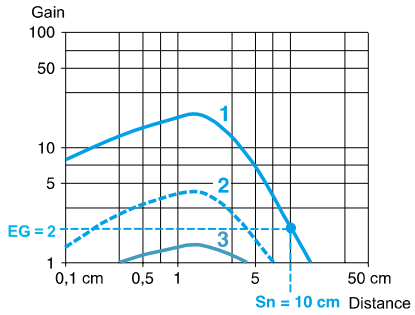
Diffuse sensor XUB4●●●●●●● with line of sight 90° to case axis



0…0,15 m max.

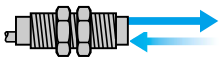


(1) White 90%. (2) Grey 18%. (3) Black 6%.

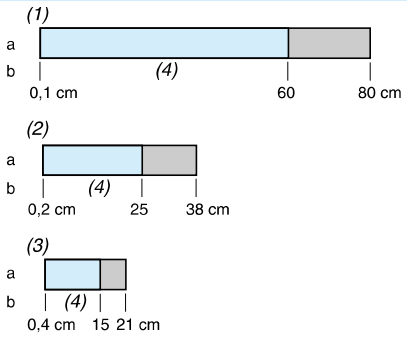


1 White object
2 Grey object
3 Black object

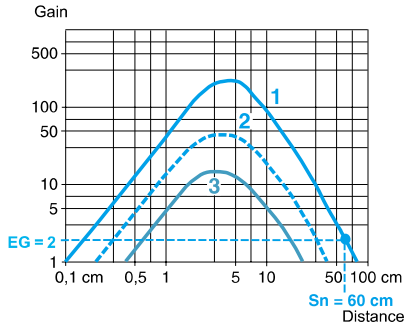
Diffuse sensor XUB5●●●●●●● with line of sight along or at 90° to case axis



0,001…0,8 m max.



(1) White 90%. (2) Grey 18%. (3) Black 6%.
(4) No detection.



1 White object
2 Grey object
3 Black object

Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

EG: Excess gain, operating margin.
a: Potentiometer set at maximum.
b: Potentiometer set at minimum.

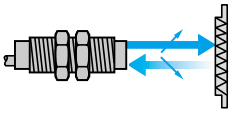
Photo-electric sensors

OsiSense XU, general purpose, single mode function

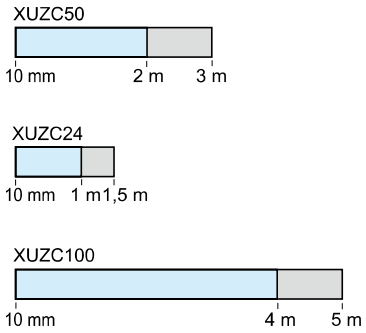
XUB●●●●● with line of sight along or at 90° to case axis

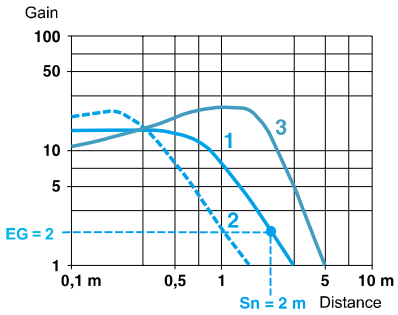
Sensing distance and operating margin

Polarised reflex sensor XUB9●●●●●●● with line of sight along or at 90° to case axis



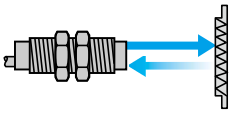
With reflector



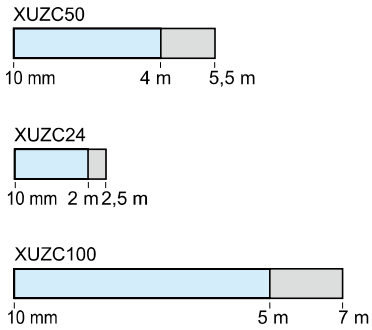


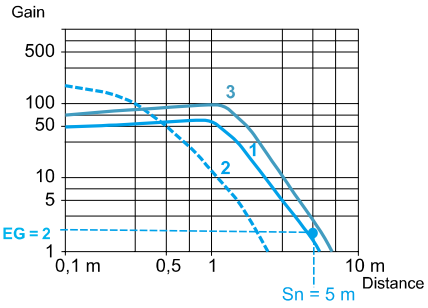
1 With reflector XUZ C50
2 With reflector XUZ C24
3 With reflector XUZ C100

Reflex sensor XUB1●●●●●●● with line of sight along or at 90° to case axis



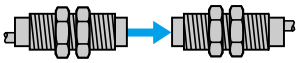
With reflector



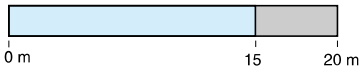


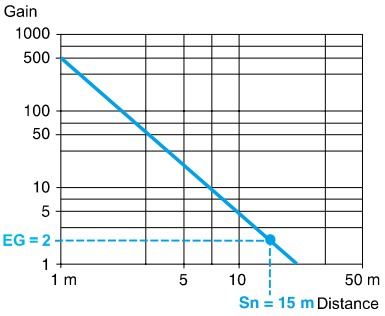
1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

Thru-beam sensor XUB2●●●●●●● with line of sight along or at 90° to case axis



With thru-beam accessory





Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

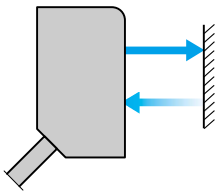
EG: Excess gain, operating margin.

Photo-electric sensors

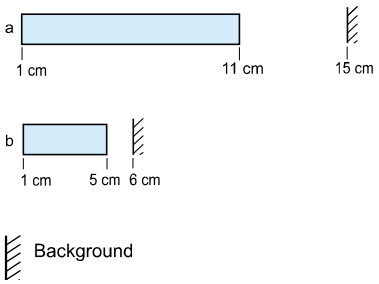
OsiSense XU, general purpose
XUM0 multimode function

Sensing distance and operating margin

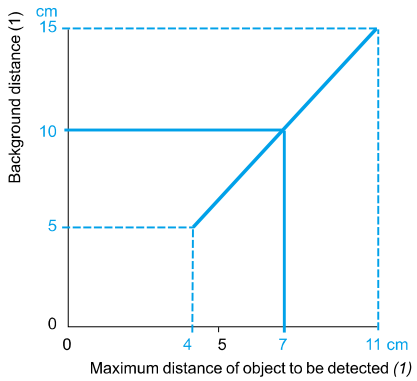
Background suppression mode



Without accessory



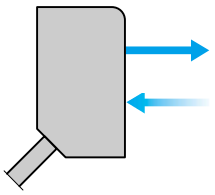
a: with background teaching at maximum recommended distance.
b: with background teaching at minimum recommended distance.



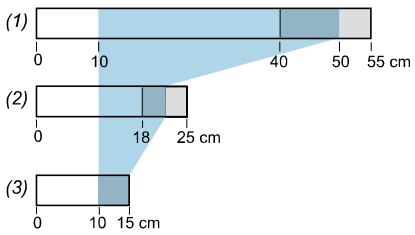
Example: teaching against a background located at 10 cm enables detection of an object at 1 to 7 cm.

(1) From white 90% to black 6%.

Diffuse mode

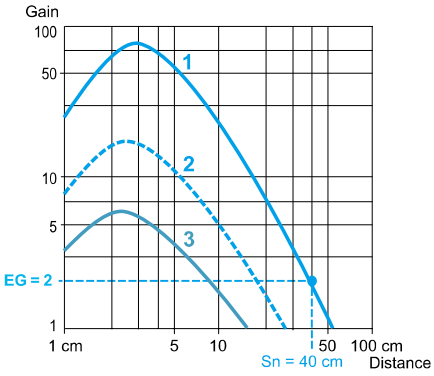


Without accessory



(1) White 90%. (2) Grey 18%. (3) Black 6%.

Object teaching zone



1 White object
2 Grey object
3 Black object

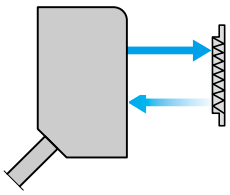
In diffuse mode, teaching of the position of the object to be detected, located between 0 and 10 cm, automatically configures the product to “background suppression” mode. This provides a constant usable sensing distance, whatever the colour of the object.

Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

EG: Excess gain, operating margin.

Sensing distance and operating margin *(continued)*

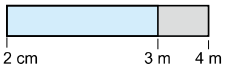
Polarised reflex mode



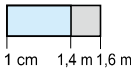
0,01…6,5 m max.

With reflector

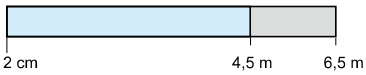
XUZC50

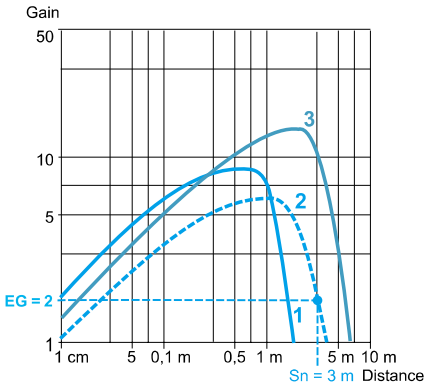


XUZC24



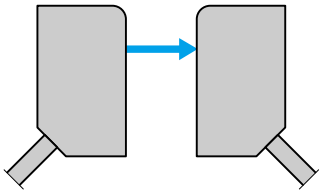
XUZC100





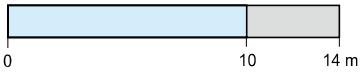
1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

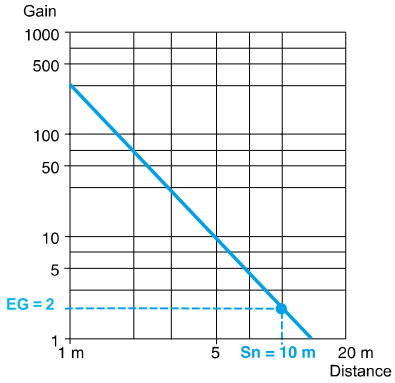
Thru-beam mode



0…14 m max.

With thru-beam accessory





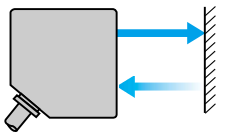
Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

EG: Excess gain, operating margin.

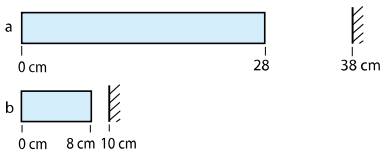
Photo-electric sensors
OsiSense XU, general purpose
Multimode function
XUK0

Sensing distance and operating margin

Background suppression mode

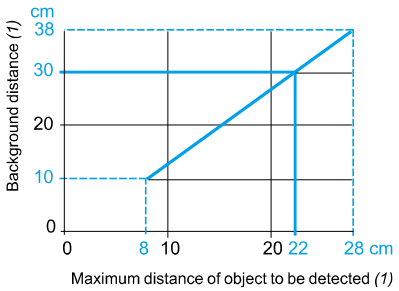


Without accessory



Background

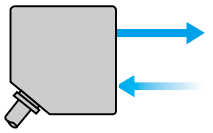
a: with background teaching at maximum recommended distance.
b: with background teaching at minimum recommended distance.



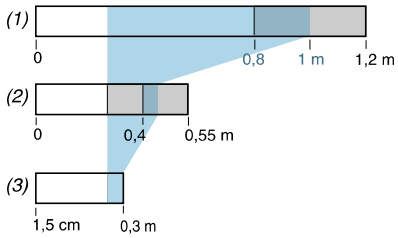
Example: teaching against a background located at 30 cm enables detection of an object at 0 to 22 cm.

(1) From white 90% to black 6%.

Diffuse mode



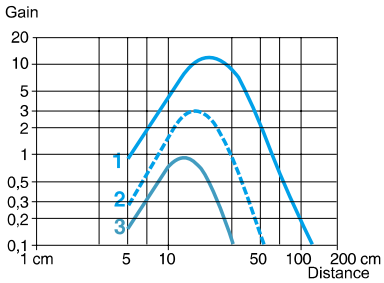
Without accessory



(1) White 90%. (2) Grey 18%. (3) Black 6%.

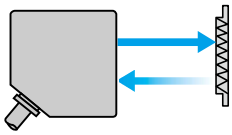
Object teaching zone

In diffuse mode, teaching of the position of the object to be detected, located between 0 and 0.3 m, automatically configures the product to "background suppression" mode. This provides a constant usable sensing distance, whatever the colour of the object.

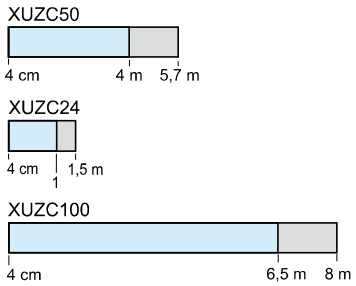


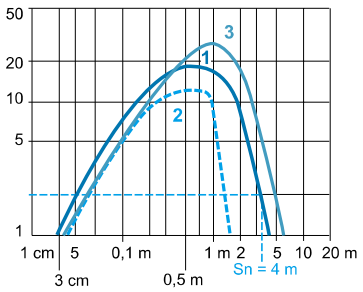
1 White object
2 Grey object
3 Black object

Polarised reflex mode



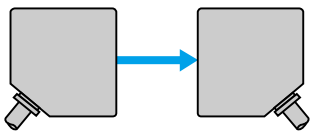
With reflector



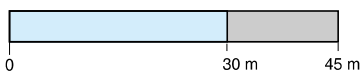


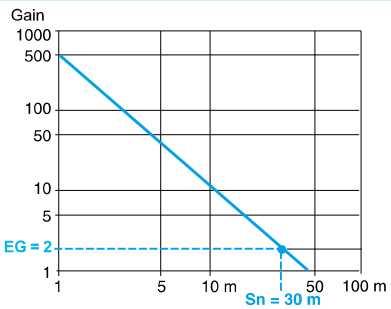
1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

Thru-beam mode



With thru-beam accessory





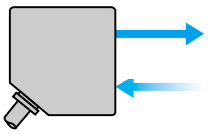
Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

EG: Excess gain, operating margin.

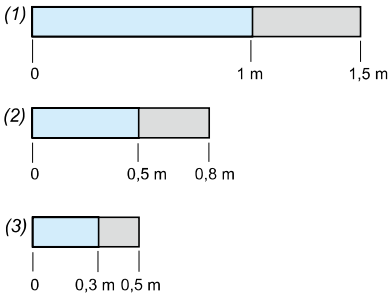
Photo-electric sensors
OsiSense XU, general purpose
Multimode function
XUK●A●●●

Sensing distance and operating margin

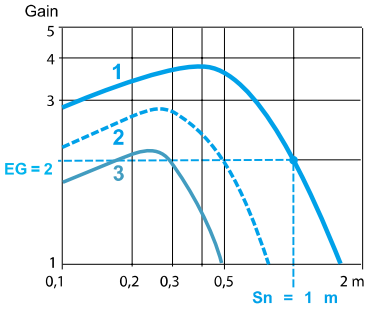
Diffuse sensor XUK5A●●●



Without accessory

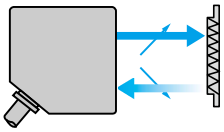


(1) White 90%.
(2) Grey 18%.
(3) Black 6%.

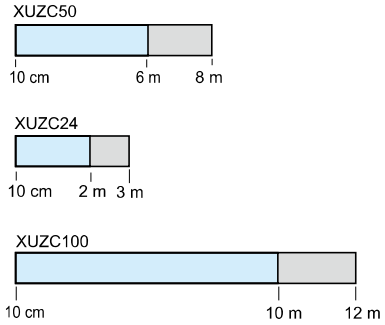


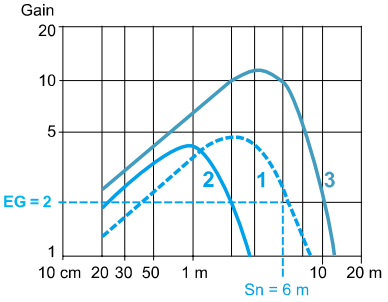
1 White object
2 Grey object
3 Black object

Polarised reflex sensor XUK9A●●●



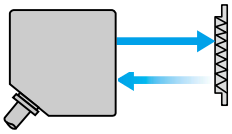
With reflector



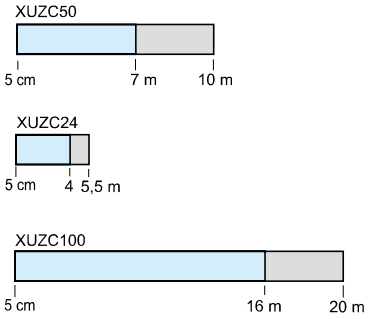


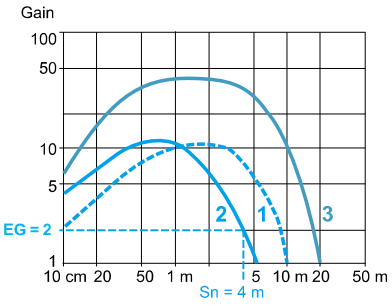
1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

Reflex sensor XUK1A●●●



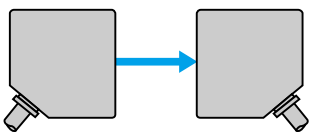
With reflector



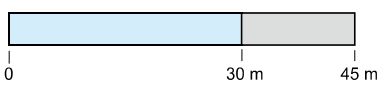


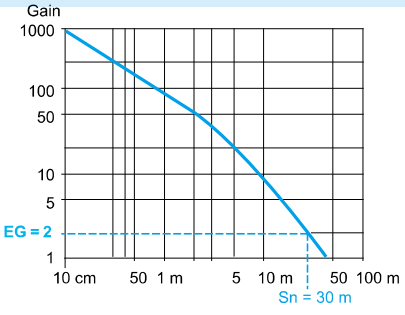
1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

Thru-beam sensor XUK2A●●●



With thru-beam accessory



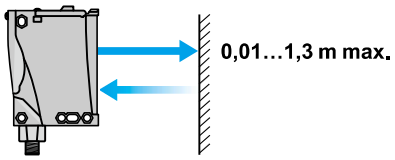


Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

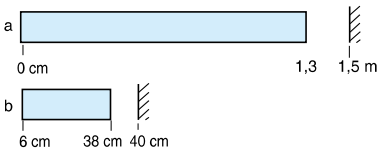
Photo-electric sensors
OsiSense XU, general purpose
Multimode function
XUX0●●●

Sensing distance and operating margin

Background suppression mode

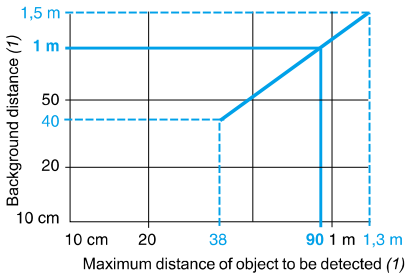


Without accessory



Background

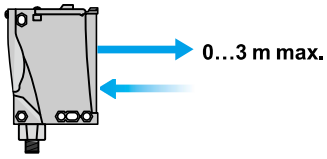
a: with background teaching at maximum recommended distance.
b: with background teaching at minimum recommended distance.



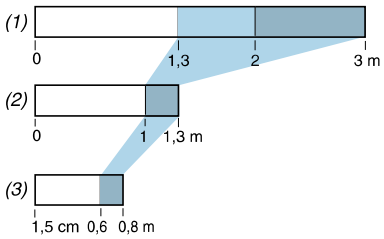
Example: teaching against a background located at 1 m enables detection of an object at 0 to 90 cm.

(1) From white 90% to black 6%.

Diffuse mode

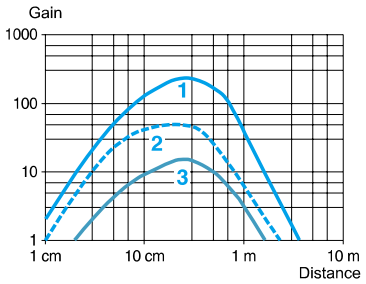


Without accessory



(1) White 90%. (2) Grey 18%. (3) Black 6%.

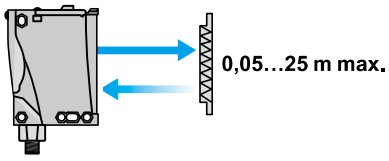
Object teaching zone



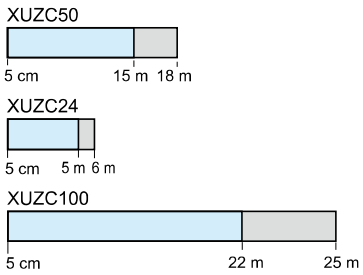
1 White object
2 Grey object
3 Black object

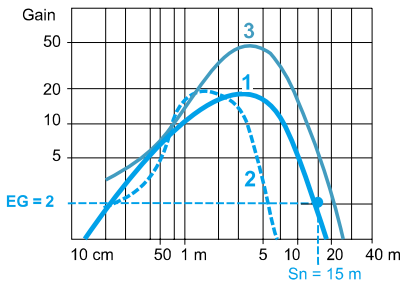
In diffuse mode, teaching of the position of the object to be detected, located between 0 and 1.3 m, automatically configures the product to “background suppression” mode. This provides a constant usable sensing distance, whatever the colour of the object.

Polarised reflex mode



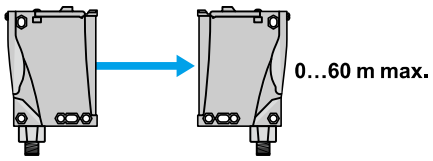
With reflector



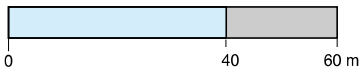


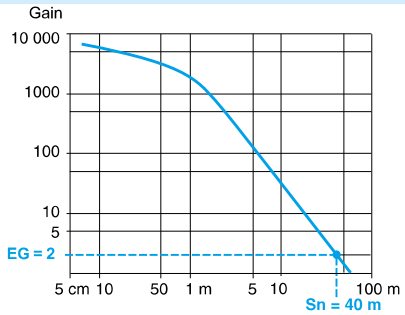
1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

Thru-beam mode



With thru-beam accessory





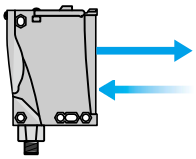
Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

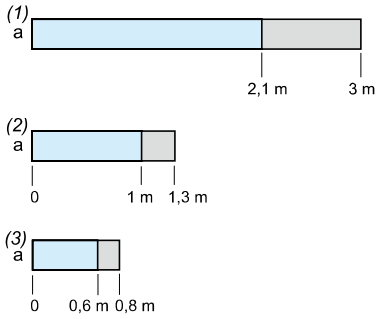
Photo-electric sensors

OsiSense XU, general purpose
Single mode function
XUX●A●●●

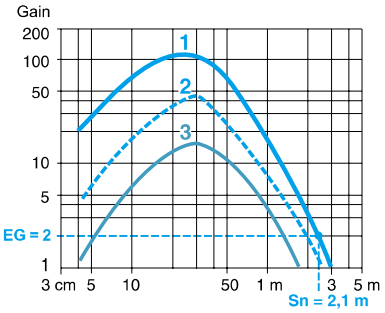
Sensing distance and operating margin

Diffuse sensor XUX5A●●●●●●



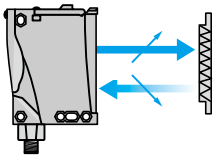


(1) White 90%. (2) Grey 18%. (3) Black 6%.

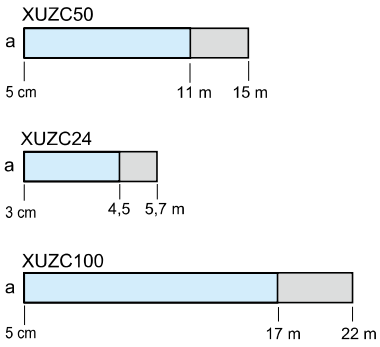


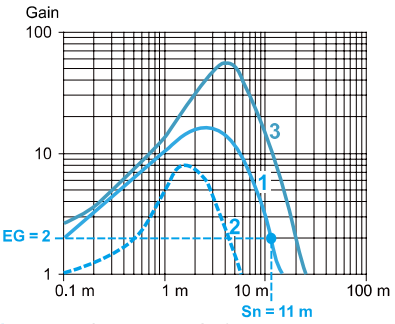
1 White object
2 Grey object
3 Black object

Polarised reflex sensor XUX9A●●●●●●



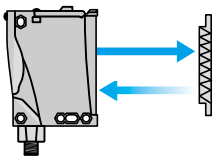
With reflector



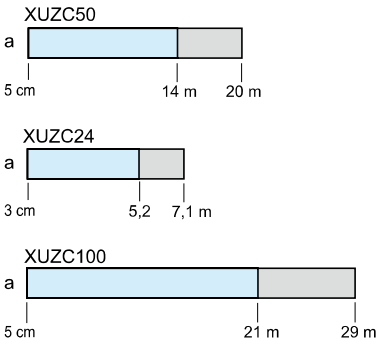


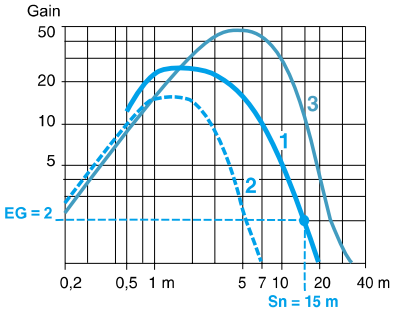
1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

Reflex sensor XUX1A●●●●●●



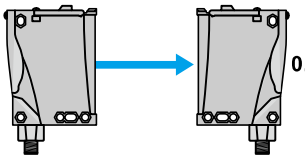
With reflector



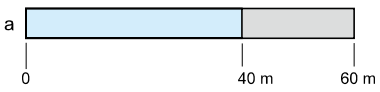


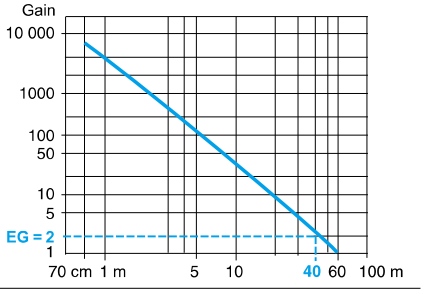
1 With reflector XUZC50
2 With reflector XUZC24
3 With reflector XUZC100

Thru-beam sensor XUX2A●●●●●●



With thru-beam accessory





Nominal sensing distance. EG ≥ 2.
Maximum sensing distance. The maximum sensing distances indicated are average values.

a: Potentiometer set at maximum.

Product reference index

Product reference index

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Design: Schneider Electric
Photos: Schneider Electric

DIA4ED2140904EN