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Proximity sensors

Inductive proximity sensors

Osiprox® Universal

Case							
	Cylindrical						
	Ø 8	Ø 12	Ø 18	Ø 30	Ø 12	Ø 18	Ø 30
	Standard range				Increased range		

Flush mountability		Flush mountable				Non flush mountable		
Dimensions (w x h x d) in mm		M8 x 50	M12 x 50	M18 x 60	M30 x 60	M12 x 55	M18 x 60	M30 x 62.5
Case		Nickel plated brass				Nickel plated brass		
Sensing distance Sn (mm)		2.5	4	8	15	7	12	22
Connection	Pre-cabled	•	•	•	•	•		
	Connector	•	•	•	•	•		
	Remote connector	–	–	–	–	–		
Supply	⎓ 3-wire	•	• *(1)*	• *(1)*	• *(1)*	•		
	∿ 2-wire	–	• *(1)*	• *(1)*	• *(1)*	•		
Type reference		XS6 08B1	XS6 12 B1/B1M	XS6 18 B1/B1M	XS6 30 B1/B1M	XS6 12B4	XS6 18B4	XS6 30B4
Page(s)		2/22	2/22 and 2/24			2/26 and 2/28		

(1) Depending on model.

Proximity sensors

Inductive proximity sensors

Osiprox® Universal

Flat		
Form E	**Form C**	**Form D**
***Osi**concept*	***Osi**concept*	***Osi**concept*
Flush mountable and non flush mountable		
26 x 26 x 13	40 x 40 x 15	80 x 80 x 26
Plastic, PBT		
15	25	60
•		
•		
•		
•		
•		
XS8 E	**XS8 C**	**XS8 D**
2/30		

Proximity sensors

Inductive proximity sensors

Osiprox® Optimum

Case	Flat				
	Form J	Form F	Form E	Form C	Form D

Flush mountability		Flush mountable				
Dimensions (w x h x d) in mm		8 x 22 x 8	15 x 32 x 8	26 x 26 x 13	40 x 40 x 15	80 x 80 x 26
Case		Plastic, PBT			Plastic, PBT	
Sensing distance Sn (mm)		2.5	5	10	15	40
Connection	Pre-cabled	•	•	•	•	•
	Connector	–	–	•	•	•
	Remote connector	•	•	•	•	•
Supply	⎓ 3-wire	•	•	•	•	•
	⎓ 2-wire	•	•	•	•	•
Type reference		XS7 J	XS7 F	XS7 E	XS7 C	XS7 D
Page		2/32	2/32	2/34	2/34	

Proximity sensors

Inductive proximity sensors

Osiprox® Optimum

Cylindrical								
Increased range					Standard range			
Ø 6	Ø 8	Ø 12	Ø 18	Ø 30	Ø 8	Ø 12	Ø 18	Ø 30
Flush mountable					Flush mountable			
M8 x 33	M8 x 33	M12 x 33	M18 x 36,5	M30 x 40.6	M8 x 33	M12 x 33	M18 x 36.5	M30 x 40.6
Nickel plated brass					Nickel plated brass			
2.5	2.5	4	10	20	1.5	2	5	10
•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•
–	–	–	–	–	–	–	–	–
•	•	•	•	•	•	•	•	•
–	–	–	–	–	•	•	•	•
XS1 L06••349•	**XS1 N08••349•**	**XS1 N12••349•**	**XS1 N18••349•**	**XS1 N30••349•**	**XS5 08B1•**	**XS5 12B1•**	**XS5 18B1•**	**XS5 30B1•**
2/36					2/38			

Proximity sensors

Inductive proximity sensors

Osiprox® Technology

Application series: sensors for specific tasks	Plastic case sensors	Basic sensors	Miniature sensors
Developed in accordance with the needs expressed by our customers, these sensors provide a complete solution for specific application functions: rotation monitoring, selective detection, analogue control, etc.	*Food and beverage processing, chemical industry, marine sector*	*Standard machines, clean environment*	*Assembly machines for small parts*

Form	**Cylindrical**	Threaded: M8, M12, M18, M30	Plain: Ø 6.5 Threaded: M8, M12, M18, M30	Plain: Ø 4, Ø 6.5 Threaded: M5
	Block, dimensions (w x h x d) in mm	–	–	–
Case		Plastic	Nickel plated brass or plastic *(1)*	Brass or stainless steel *(1)*
Sensing distance Sn (mm)	**Flush mountable in metal sensors**	–	1.5...10 *(1)*	1...2.5 *(1)*
	Non flush mountable in metal sensors	2.5... 15 *(1)*	4...15 *(1)*	2.5
Degree of protection		IP 67 or IP 68	IP 67	IP 67
Connection	**Pre-cabled**	●	●	●
	Connector	–	●	–
	Remote connector	●	–	
Supply	⎓	●	●	●
	∼	●	●	–
	≂	–	–	–
Type reference		**XS4 P**	**XS1 ●●B3** **XS1 ●●BL●** **XS2 ●●BL●**	**XS1 L** **XS1 N** **XS2 L**
Page(s)		2/42	2/44	2/54

(1) Depending on model.

Proximity sensors

Inductive proximity sensors

Osiprox® Technology

Multivoltage sensors with short-circuit protection	**Sensors with 2 complementary outputs**	
	Solid-state outputs NO + NC	**Solid-state outputs PNP + NPN, NO/NC programmable**
Simple machines or installations not having a low voltage DC supply	*Assembly machines, conveyor systems, materials handling, robotics*	
Threaded: M12, M18, M30	Plain: Ø 6.5 Threaded: M8, M12, M18, M30	Threaded: M12, M18, M30
–	–	–
Nickel plated brass	Nickel plated brass or stainless steel or plastic *(1)*	Nickel plated brass or plastic *(1)*
2...10	1.5...10	2...10
4...15	2.5...15	4...15
IP 67 or IP 68 *(1)*		
●	●	●
●	●	●
–	–	–
●	●	●
–	–	●
●	–	–
XS1 M **XS2 M**	**XS1●●●●C410** **XS2●●●●C410**	**XS1 M●●KP340** **XS2 M●●KP340** **XS4 P●●KP340**
2/56	2/58	2/60

(1) Depending on model.

Proximity sensors
Inductive proximity sensors
Osiprox® Application

2

Application series: sensors for specific tasks	Osiprox® Application		
	Osiconcept® Application	Sensors for rotation monitoring	Sensors with analogue output
Developed in accordance with the needs expressed by our customers, these sensors provide a complete solution for specific application functions: rotation monitoring, selective detection, analogue control, etc.	*Detection of passage of objects for machine tools, conveyor systems*	*Detection of underspeed, shaft overload and slowing down of conveyor belts*	*Position, displacement and deformation control/monitoring*

Form	Cylindrical	M12 (L = 54), M18 (L = 67), M30 (L = 71)	Threaded: M30	–	Threaded: M12, M18, M30	–
	Block, dimensions (w x h x d) in mm	–	–	26 x 26 x 13 40 x 40 x 15	–	32 x 15 x 8 26 x 26 x 13 40 x 40 x 15 80 x 80 x 26
Case		Nickel plated brass	Metal, cylindrical	PBT block	Metal or plastic, cylindrical	PBT block
Sensing distance (Sn) in mm	Flush mountable in metal sensors	5...18 *(1)*	10	10…15 *(1)*	0.2…10 *(1)*	5…40 *(1)*
	Non flush mountable in metal sensors	–	10	10…15 *(1)*	0.4…60 *(1)*	5…40 *(1)*
Degree of protection		–	IP 67	IP 67	IP 67	IP 67 or IP 68 *(1)*
Supply	⎓	●	●	●	●	●
	~	–	–	–	–	●
	⎓ ~	–	●	●	–	–
Connection	Pre-cabled	–	●	–	●	●
	Connector	–	–	●	–	●
	Remote connector	●	–	–	–	–
Type reference		**XS6 12B2 XS6 18 B2 XS6 30 B2**	**XSA V**	**XS9 ●11R**	**XS1 M●●●AB1 XS4 P●●AB1**	**XS9 ●●●●A**
Page(s)		2/62	2/65	2/67	2/69	2/73, 2/75

(1) Depending on model.

Schneider Electric

Proximity sensors

Inductive proximity sensors

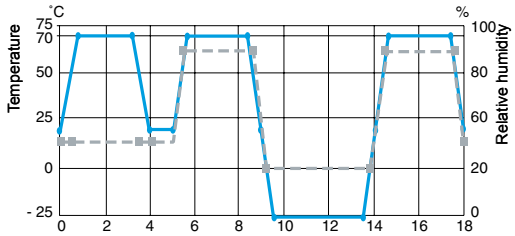
Osiprox® Application

Detection of metal objects: inductive sensors									
Factor 1 (Fe/Nfe) sensors		**Selective sensors**	**Sensors for assembly applications**				**Sensors for welding machine applications**	**Sensors for food and beverage processing applications**	
			Form G	**Form C**	**Form cubic 40**	**Forme D increased range**		**Cylindrical, stainless steel**	**Cylindrical, plastic**
Detection of ferrous and non ferrous materials without variation of sensing distance		*Selective detection of ferrous materials only or non ferrous materials only*	*Applications for assembly machines, conveyor and materials handling systems*				*Detection applications on welding machines*	*Detection of stainless steel and ferrous materials in food/beverage processing and pharmaceutical environments*	
Threaded: M18, M30		Threaded: M18	–	–	–	–	Threaded: M12, M18, M30. Ø 12, Ø 18	Plain: Ø 18 Threaded: M12, M18, M30	Threaded: M12, M18, M30
40 x 117 x 41		–	12 x 40 x 26	40 x 117 x 41	40 x 40 x 40	80 x 80 x 40	–	–	–
Metal, cylindrical or plastic, form C, turret head		Metal, cylindrical, form A	Plastic				Metal, cylindrical, threaded, Teflon coated	Stainless steel, grade 316 L	Plastic, PPS
5, 10 or 15 *(1)*		5, 6 or 10 *(1)*	2	15 to 20	15	50	2,3,5,10 *(1)*	–	–
–		–	4	20 to 40	20	42	4...10 *(1)*	7...22 *(1)*	7...22 *(1)*
IP 67 or IP 68 *(1)*		IP 67 or IP 68 *(1)*	IP 67				IP 67	IP 67 (connector version) IP 68 (pre-cabled version) IP 69K conforming to DIN 40050	
●		●	●	●	●	●	●	●	●
–		–	●	●	–	–	–	–	● *(1)*
–		–	●	●	●	–	–	–	–
●		●	●	●	●	–	–	●	●
●		●	●	●	●	●	●	●	●
●		–	●	●	●	–	–	–	–
XS1 M ●●●KP	**XS7 C40**	**XS1 M18PA**	**XS7 G XS8 G**	**XS7 C XS8 C**	**XS7 T XS8 T**	**XS7 D**	**XS● M XSL C**	**XS2 ●●SA**	**XS2 ●●AA**
2/76	2/78	2/80	2/82	2/86	2/90	2/92	2/94 2/96	2/98 and 2/100	2/102 and 2/104

(1) Depending on model.

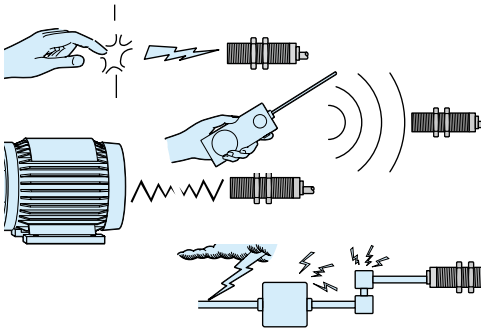
2

Standards and certifications
Parameters related to the environment



- 25 + 70 °C cycle, 95% RH

Temperature °C
Humidity as %



Insulation

Recommendations

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 inductive proximity 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 qualified 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.

Conformity to standards

All Schneider Electric brand inductive proximity sensors conform to and are tested in accordance with the recommendations of standard IEC 60947-5-2.

Mechanical shock resistance

The sensors are tested in accordance with standard IEC 60068-2-27, 50 gn, duration 11 ms.

Vibration resistance

The sensors are tested in accordance with standard IEC 60068-2-6, amplitude ± 2 mm, f = 10…55 Hz, 25 gn at 55 Hz.

Resistance to the environment

- Please refer to the characteristics pages for the various sensors.
- **IP 67**: protection against the effects of immersion.
  Test conforming to IEC 60529: sensor immersed for 30 minutes in 1 m of water.
  No deterioration in either operating or insulation characteristics is permitted.
- **IP 68**: protection against prolonged immersion.
  Sensor immersed for 336 hours in 40 metres of water at 50 °C.
  No deterioration in either operating or insulation characteristics is permitted.
  Schneider Electric sensors with an IP 68 degree of protection are ideal for use in the most arduous conditions, such as machine tools, automatic car washers.

Resistance to electromagnetic interference

■ Electrostatic discharges	∿ and ≂ versions: level 4 immunity (15 kV). **IEC 61000-4-2**
■ Radiated electromagnetic fields (electromagnetic waves)	⎓, ∿ and ≂ versions: level 2 (3 V/m) or level 3 (10 V/m) immunity. **IEC 61000-4-3**
■ Fast transients (motor start/stop interference)	⎓ version: level 3 immunity (1 kV). ∿ and ≂ versions: level 4 immunity (2 kV) except Ø 8 mm model (level 2). **IEC 61000-4-4**
■ Impulse voltage	⎓, ∿ and ≂ versions: level 3 immunity (2.5 kV) except Ø 8 mm and smaller models (level 1 kV). **IEC 60947-5-2**

Resistance to chemicals in the environment

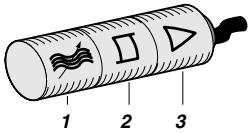
- Owing to the very wide range of chemicals encountered in industry, it is very difficult to give general guidelines common to all sensors.
- To ensure lasting efficient operation, it is essential that any chemicals coming into contact with the sensors will not affect their casing and, in doing so, prevent their reliable operation.
- Cylindrical and flat plastic case sensors offer excellent overall resistance to:
  - chemical products such as salts, aliphatic and aromatic oils, petroleum, acids and diluted bases. For alcohols, ketones and phenols, preliminary tests should be made relating to the nature and concentration of the liquid.
  - food and beverage industry products such as animal or vegetable based products (vegetable oils, animal fat, fruit juice, dairy proteins, etc.).

In all cases, the materials selected (see product characteristics) provide satisfactory compatibility in most industrial environments (for further information, please consult your Regional Sales Office).

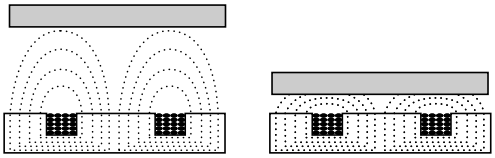
Class 2 devices ⧈

Electrical insulation conforming to standards IEC 61140 and NF C 20-030 relating to means of protection against electric shock.

Principle of inductive detection



Composition of an inductive proximity sensor



Detection of a metal object

Operating principle

■ An inductive proximity sensor is solely for the detection of metal objects.
It basically comprises an oscillator whose windings constitute the sensing face.
An alternating magnetic field is generated in front of these windings.

■ When a metal object is placed within the magnetic field generated by the sensor, the resulting currents induced form an additional load and the oscillations cease.
This causes the output driver to operate and, depending on the sensor type, a normally open (NO) or normally closed (NC) output signal is produced.

Inductive proximity detection

■ Inductive proximity sensors enable the detection, without physical contact, of metal objects.
■ Their range of applications is very extensive and includes:
□ monitoring the position of machine parts (cams, end stops, etc.),
□ counting the presence of metal objects, etc.

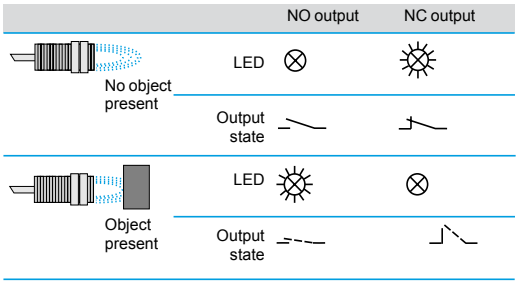
Advantages of inductive detection

■ No physical contact with the object to be detected, thus avoiding wear and enabling detection of fragile objects, freshly painted objects, etc.
■ High operating rates. Fast response.
■ Excellent resistance to industrial environments (robust products, fully encapsulated in resin).
■ Solid-state technology: no moving parts, therefore service life of sensor not related to number of operating cycles.

Osiconcept

■ **Osi**concept sensors are suitable for all metal environments (flush mountable or non flush mountable) since they ensure a maximum sensing distance, even if there is a metal background. Precise detection of the position of the object can be obtained using the teach mode. For further information, see page 2/20.

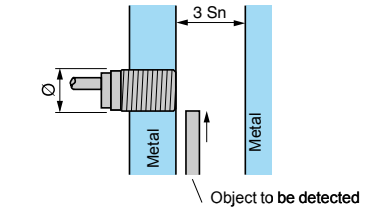
LED indicator



Output LED

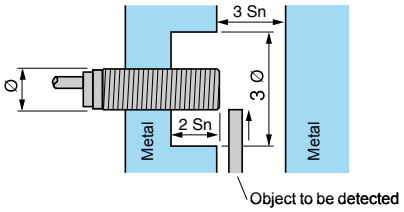
All Schneider Electric brand inductive proximity sensors incorporate an output state LED indicator.
Osiconcept sensors are fitted with a green LED that indicates “Power on” and also assists the user during setting-up (teach mode).

Mounting sensors on a metal support



Sensors suitable for flush mounting in metal

■ No side clearance required.
■ All models using the **Osi**concept system are flush mountable in metal without reducing the sensing distance and also enable the detection of an object against a metal background. For further information, see pages 2/20 and 2/21.

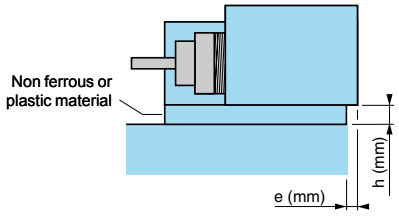


Sensors not suitable for flush mounting in metal

■ Side clearance required.
Sensing distance greater than that for a standard flush mountable model.
■ The **Osi**concept system eliminates the side clearance requirement. For further information, see pages 2/20 and 2/21.

2

Mounting sensors on a metal support



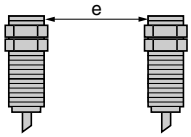
Mounting using fixing clamp

- Standard flush mountable models: e = 0, h = 0
- Standard non flush mountable models:
  - Ø 6.5 / 8 / 12 mm: e = 0, h = 0,
  - Ø 18 mm: if h = 0, e ⩾ 5; e = 0, h ⩾ 3,

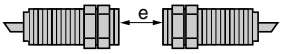
Ø 30 mm: if h = 0, e ⩾ 8; e = 0, h ⩾ 4.

- **Osi**concept models: e = 0, h = 0

Mounting distance between sensors



Mounting side by side
e ⩾ 2 Sn



Mounting face to face
e ⩾ 10 Sn

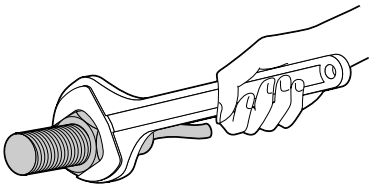
Standard sensors

If 2 standard sensors are mounted too close to each other they are likely to lock in the “detection state” due to interference between their respective oscillating frequencies.
To avoid this condition, minimum mounting distances stated for the sensors should be adhered to or, alternatively, sensors with staggered oscillating frequencies should be used.

Staggered frequency sensors

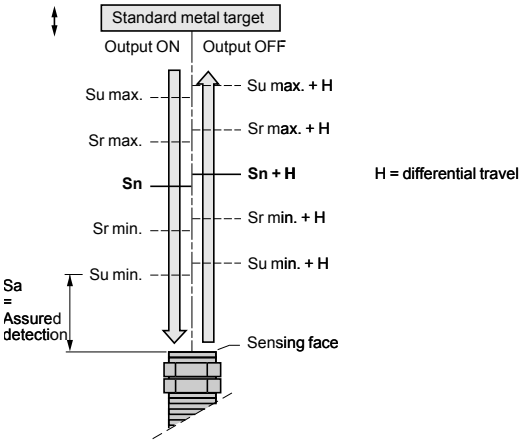
For applications where the minimum recommended mounting distances for standard sensors cannot be achieved, it is possible to overcome this restraint by using staggered frequency sensors. Please consult your Regional Sales Office.
In this case, a staggered frequency sensor is mounted adjacent to or opposite each standard sensor.

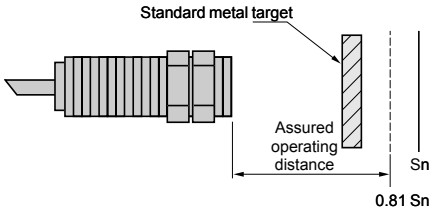
Tightening torque for cylindrical type sensors



	Maximum tightening torque for the various sensor case materials			
	Brass	Brass	Stainless steel	Plastic
Diameter of sensor (mm)	Short case model	Form A model	Form A model	All models
	XS5 ●●B1	XS6 ●●B1 XS6 ●●B2 XSA V●	XS1 ●● XS2 ●●	XS4 P●●
Ø 5	1.6 N.m	1.6 N.m	2 N.m	–
Ø 8	5 N.m	5 N.m	9 N.m	1 N.m
Ø 12	6 N.m	15 N.m	30 N.m	2 N.m
Ø 18	15 N.m	35 N.m	50 N.m	5 N.m
Ø 30	40 N.m	50 N.m	100 N.m	20 N.m

Sensing distance





Definitions

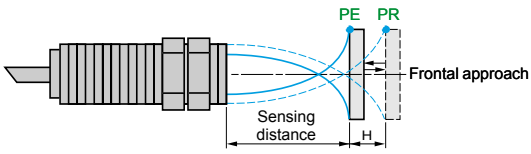
In order to ensure that customers can make reliable product comparisons and selection, the standard IEC 60947-5-2 defines various sensing distances, such as:

- **Nominal sensing distance (Sn)**
  The rated operating distance for which the sensor is designed. It does not take into account any variations (manufacturing tolerances, temperature, voltage).
- **Real sensing distance (Sr)**
  The real sensing distance is measured at the rated voltage (Un) and the rated ambient temperature (Tn).
  It must be between 90% and 110% of the nominal sensing distance (Sn):
  $0.9\ Sn \leq Sr \leq 1.1\ Sn$.
- **Usable sensing distance (Su)**
  The usable sensing distance is measured at the limits of the permissible variations in the ambient temperature (Ta) and the supply voltage (Ub). It must be between 90% and 110% of the real sensing distance: $0.9\ Sr \leq Su \leq 1.1\ Sr$.
- **Assured sensing distance (Sa).**
  This is the operating zone of the sensor. The assured operating distance is between 0 and 81% of the nominal sensing distance (Sn): $0 \leq Sa \leq 0.9 \times 0.9 \times Sn$

Standard metal target

The standard IEC 60947-5-2 defines the standard metal target as a square mild steel (Fe 360) plate, 1 mm thick.
The side dimension of the plate is either equal to the diameter of the circle engraved on the sensing face of the sensor or 3 times the nominal sensing distance (Sn).

Terminology



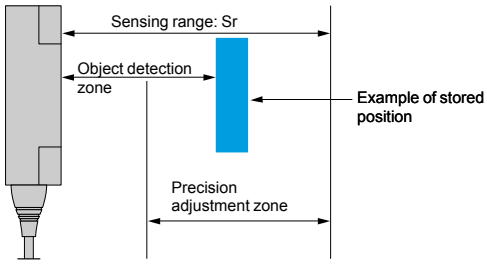
PE = pick-up point, the target is detected
PR = drop-out point, the target is no longer detected

Differential travel

The differential travel (H), or hysteresis, is the distance between the pick-up point, as the standard metal target moves towards the sensor, and the drop-out point, as it moves away.
This hysteresis is essential for the stable operation of the sensor.

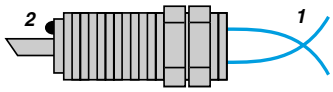
Repeat accuracy

The repeat accuracy (R) is the repeatability of the sensing distance between successive operations. Readings are taken over a period of time whilst the sensor is subjected to voltage and temperature variations: 8 hours, 10 to 30 °C, Un ± 5%.
It is expressed as a percentage of Sr.



Detection zone and precision adjustment zone

- By using sensitivity adjustment in teach mode, **Osi**concept proximity sensors enable the position of an object to be detected as it approaches from the front or side.
  The teach mode can be used when the object is located in the zone known as the "precision adjustment zone". When the object approaches from the front, the detection zone of the object ranges from the stored position down to zero.



1 Detection threshold curves
2 "Object detected" LED

Operating zone

- The operating zone relates to the area in front of the sensing face in which the detection of a metal object is certain.
  The values stated in the characteristics relating to the various types of sensor are for steel objects of a size equal to the sensing face of the sensor.
  For objects of a different nature (smaller than the sensing face of the sensor, other metals, etc.), it is necessary to apply a correction coefficient.

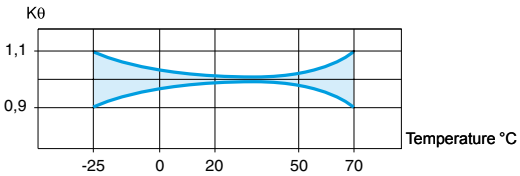
Correction coefficients to apply to the assured operating distance

Assured operating distance of a sensor

In practice, most objects to be detected are generally made of steel and are of a size equal to, or greater, than the sensing face of the sensor.

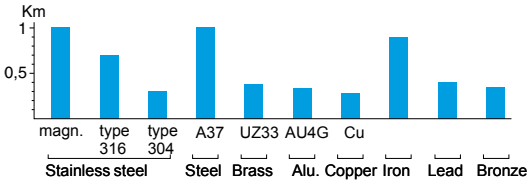
For the calculation of the assured operating distance for different operating conditions, one must take into account the correction coefficients that influence it.

The curves indicated are purely representative of typical curves. They are only given as a guide to the approximate usable sensing distance of a proximity sensor for a given application.



Influence of ambient temperature

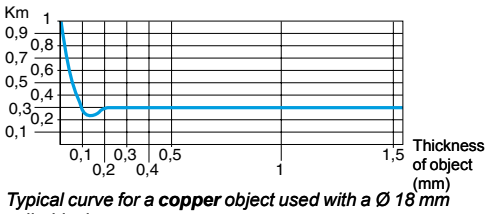
Apply a correction coefficient Kθ, determined from the curve shown opposite.



Material of object to be detected

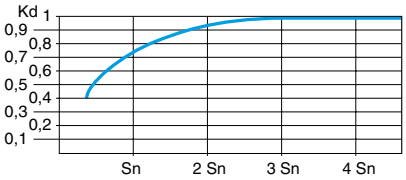
Apply a correction coefficient Km, determined from the diagram shown opposite.

The fixed sensing distance models for ferrous/non ferrous (Fe/NFe) materials enable the detection of different objects at a fixed distance, irrespective of the type of material.



*Typical curve for a **copper** object used with a Ø 18 mm cylindrical sensor*

Special case of a very thin object made of a non ferrous material.



*Typical curve for a **steel** object used with a Ø 18 mm cylindrical sensor*

Size of object to be detected

Apply a correction coefficient Kd, determined from the curve shown opposite.
When calculating the sensing distance for the selection of a sensor, make the assumption that Kd = 1.

Variation of supply voltage

In all cases, apply the correction coefficient Kt = 0.9.

Calculation examples

Correction of the sensing distance of a sensor

Sensor with nominal sensing distance Sn = 15 mm.
Ambient temperature variation 0 to + 20 °C.
Object material and size: steel, 30 x 30 x 1 mm thick.
The assured operating distance Sa is determined using the formula:
Sa = Sn x Kq x Km x Kd x Kt = 15 x 0.98 x 1 x 0.95 x 0.9
i.e. Sa = 12.5 mm.

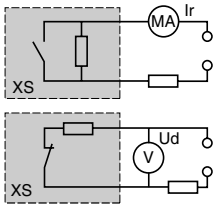
Selecting a sensor for a given application

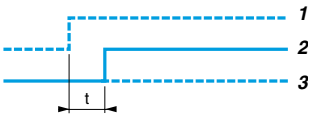
Application characteristics:
- object material and size: iron (Km = 0.9), 30 x 30 mm,
- temperature: 0 to 20 °C (Kθ = 0.98),
- object detection distance: 3 mm ± 1.5 mm, i.e. Sa max. = 4.5 mm,
- assume Kd = 1.

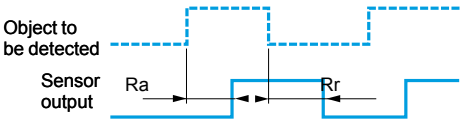
A sensor must be selected for which $\mathbf{Sn \geqslant \frac{Sa}{Kq \times Km \times Kd \times Kt} = \frac{4.5}{0.98 \times 0.9 \times 1 \times 0.9}}$

i.e. **Sn ⩾ 5.7 mm**

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 proximity 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).

- ■ 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*

- ■ Delays
  - □ 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 supply

Sensors for a.c. circuits (∿ and ≂ models)

Check that the voltage limits of the sensor are compatible with the nominal voltage of the a.c. supply used.

Sensors for d.c. circuits

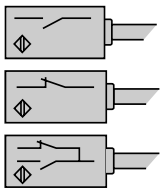
- ■ **d.c. source:** check that the voltage limits of the sensor and the acceptable level of ripple are compatible with the supply used.

- ■ **a.c. 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 a.c. supply, the voltage must be rectified and smoothed to ensure that:
- the peak voltage of the d.c. 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 d.c. voltage (U).

Example:
∿ 18 V to obtain ⎓ 24 V,
∿ 36 V to obtain ⎓ 48 V.

Outputs



Output signal (contact logic)

- ■ Normally open (NO)

Corresponds to a sensor whose output changes to the closed state when an object is present in the operating zone.

- ■ Normally closed (NC)

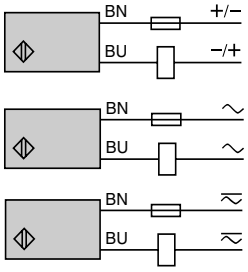
Corresponds to a sensor whose output changes to the open state when an object is present in the operating zone.

- ■ Complementary outputs (NO + NC)

Corresponds to a sensor with a normally closed output and a normally open output.

2

Outputs (continued)



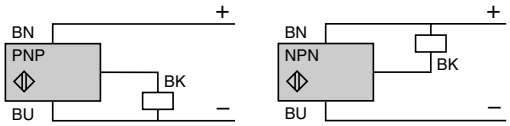
2-wire type ⎓, non polarised NO or NC output

■ **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 leads to be wired: these sensors can be wired in series in the same way as mechanical limit switches,
- They can be connected to either positive (PNP) or negative (NPN) logic PLC inputs,
- No risk of incorrect connections.

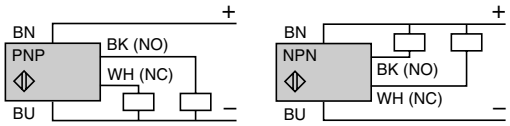
■ **Operating precautions**
- Check the possible effects of residual current and voltage drop on the actuator or input connected,
- For sensors that do not have overload and short-circuit protection (a.c. or a.c./d.c. symbol), it is essential to connect a 0.4 A "quick-blow" fuse in series with the load.



3-wire type ⎓, NO or NC output, PNP or NPN

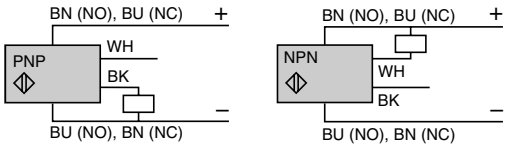
■ **Specific aspects**
- These sensors comprise 2 wires for the d.c. supply and a 3rd wire for the output signal,
- PNP type: switching the positive side to the load,
- NPN type: switching the negative side to the load.

■ **Advantages**
- Protection against supply reverse polarity,
- Protection against overload and short-circuit,
- No residual current, low voltage drop.



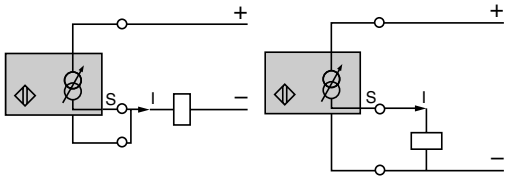
4-wire type, complementary outputs ⎓, NO and NC outputs, PNP or NPN

■ **Advantages**
- Protection against supply reverse polarity (+/-).
- Protection against overload and short-circuit.



4-wire type, multifunction, programmable ⎓, NO or NC output, PNP or NPN

■ **Advantages**
- Protection against supply reverse polarity (+/-).
- Protection against overload and short-circuit.

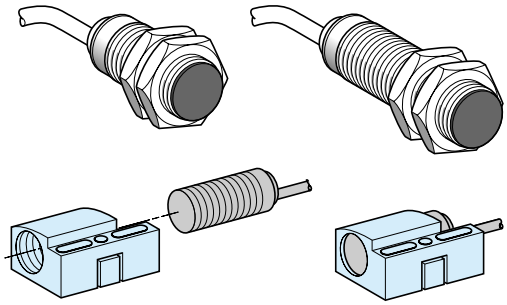


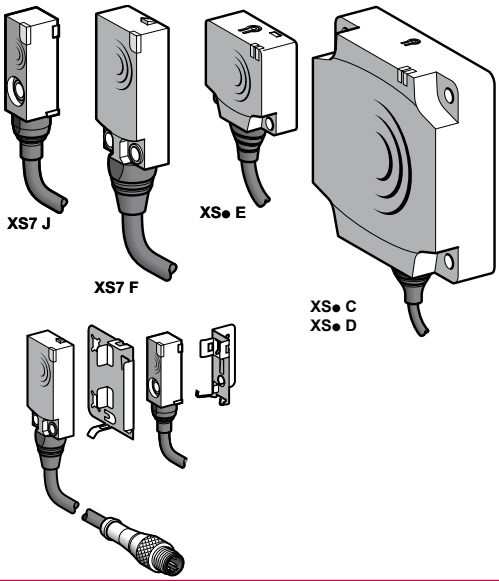
2-wire connection *3-wire connection*

Specific output signals, analogue type

■ These sensors convert the approach of a metal object towards the sensing face into an output current variation which is proportional to the distance between the object and the sensing face.
■ Two models available:
- 0...10 V (0...10 mA) output for 3-wire connection,
- 4-20 mA output for 2-wire connection.

Features of the various models



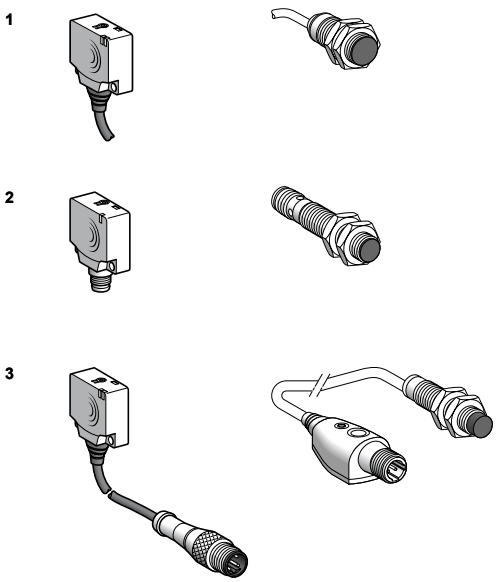


Types of case

■ **Cylindrical case**
- □ Fast installation and setting-up.
- □ Pre-cabled and connector versions.
- □ Small size facilitates mounting in locations with restricted access.
- □ **Interchangeability**, provided by indexed **fixing clamp**: when assembled, becomes similar to a block type sensor.

■ **Flat case**
- □ Reduced size (sensor volume divided by 8).
- □ Fast installation by mounting on clip-on brackets.
- □ Precision detection using **Osi**concept teach mode.

Electrical connection



Connection methods

1 **Pre-cabled:** factory fitted moulded cable, good protection against splashing liquids (IP 68). Example: machine tool.
2 Connector: easy installation and maintenance (IP 67).
3 Remote connector: easy installation and maintenance (IP 68 at sensor level and IP 67 at remote connector level).

Wiring advice

■ **Length of cable**
- □ No limitation up to 200 m or up to a line capacitance of < 100 nF (characteristics of sensor remain unaffected).
- □ In this case, it is important to take into account the voltage drop on the line.

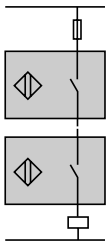
■ **Separation of control and power circuit wiring**
- □ The sensors are immune to electrical interference encountered in normal industrial conditions.
- □ Where extreme conditions of electrical “noise” could occur (large motors, spot welders, etc.), it is advisable to protect against transients in the normal way:

- suppress interference at source,
- separate power and control wiring from each other,
- smooth the supply,
- limit the length of cable.

■ **Connect the sensor with supply switched off.**

2

Setting-up precautions



Connection in series

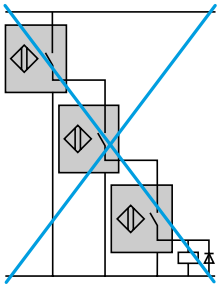
2-wire type sensors

- 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.

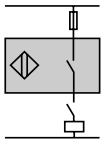
- If only one sensor in the circuit is in the open state, it will be supplied at a voltage almost equal to the supply voltage.
- When in the closed state, a small voltage drop is present across each sensor. The resultant loss of voltage at the load will be the sum of the individual voltage drops and 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:
  - Sensor 1 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.



Sensors and devices in series with an external mechanical contact

2 and 3-wire type sensors

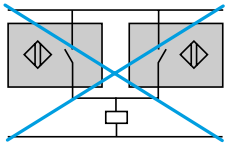
- The following points should be taken into account:
  - When the mechanical contact is open, the sensor is not supplied.
  - When the contact closes, the sensor does not operate until a certain time (t) has elapsed (corresponding to the first-up delay).

Connection in parallel

2-wire type sensors

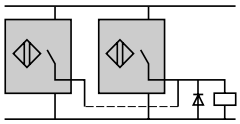
This connection method is not recommended.

- 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.



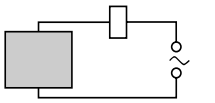
3-wire type sensors

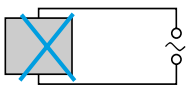
- No specific restrictions. The use of "flywheel" diodes is recommended when an inductive load (relay) is being switched.



a.c. supply

- **2-wire type sensors cannot be connected directly to an a.c. 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.

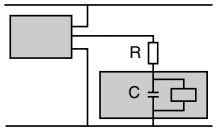




Capacitive load (C > 0.1 µF)

- 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.

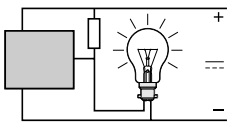
$$R = \frac{U\ (supply)}{I\ max.\ (sensor)}$$

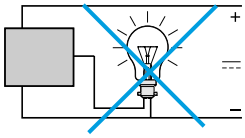


Load comprising an incandescent lamp

- 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





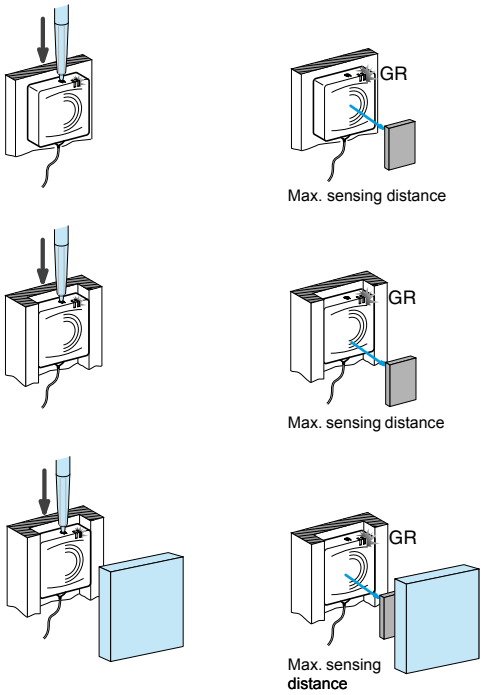
Fast troubleshooting guide

Problem	Possible causes	Remedy
The sensor's output will not change state when a metal object enters the detection zone	On an **Osi**concept sensor: setting-up or programming error.	■ After a RESET, follow the environment teach mode procedure. Refer to instruction sheet supplied with sensor.
	Output stage faulty or complete failure of the sensor 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 for 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 ≤ 10%.
False or erratic operation, with or without the presence of a metal object in the detection zone	On an **Osi**concept sensor: setting-up or programming error.	■ After a RESET, follow the environment teach mode procedure. Refer to instruction sheet supplied with sensor.
	Influence of background or metal environment	■ Refer to the instruction sheet supplied with the sensor. For sensors with adjustable sensitivity, reduce the sensing distance.
	Operating distance poorly defined for the object to be detected	■ Apply the correction coefficients. ■ Realign the system or run the teach mode again.
	Influence of transient interference on the supply lines	■ Ensure that any d.c. supplies, when derived from rectified a.c., are correctly smoothed (C > 400 µF). ■ Separate a.c. power cables from low-level d.c. 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 size 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.
No detection following a period of service	Vibration, shock	■ Realign the system. ■ Replace the support or protect the sensor.

Inductive proximity sensors

Osiprox®

Osiconcept®: **O**ffering **S**implicity through **I**nnovation



Operating principle

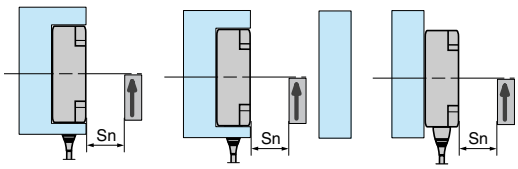
In proposing the **Osi**concept technology, Schneider Electric brand offers simplicity through innovation.

■ With **Osi**concept, a single product meets all metal object detection needs.
By simply pressing the “Teach mode” pushbutton, the product automatically takes up an optimum configuration for all detection, flush mountability and environment requirements.

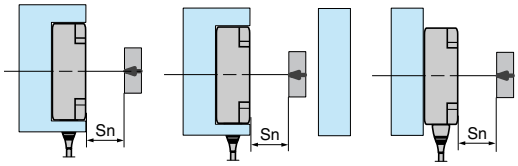
■ Other advantages of **Osi**concept:
□ □Increased performance:
- sensing distance guaranteed and optimized irrespective of the mounting configuration, the object, the environment or the background,
- suitable for all metal environments.

□ □Simplified use provided by:
- the **Osi**concept technology associated with the availability of the flattest, most compact sensors on the market ensuring that the sensor is fully built into the machine, thereby limiting risks of mechanical damage,
- mechanical adjustments being eliminated through the use of the teach mode.

□ Lower costs due to:
- adjustment times and complex supports being eliminated,
- the elimination of flush mountable and non flush mountable versions which halves the number of references,
- much easier and much quicker product selection.



Precision side approach detection



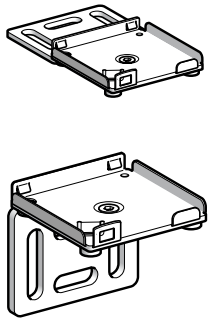
Precision frontal approach detection

Precision position detection

All **Osi**concept inductive proximity sensors benefit from ultra precise adjustment which is very quick irrespective of the metal environment.

■ Precision side approach detection makes it possible to accurately define the position at which the object will be detected as it passes the sensor.
Due to the **Osi**concept technology, the desired detection position can be stored in memory by simply pressing the teach button.

■ Precision frontal approach detection makes it possible to accurately define the position at which the object will be detected as it approaches the sensor.
Due to the **Osi**concept technology, the desired detection position can be stored in memory by simply pressing the teach button.



Mounting accessories

Schneider Electric brand proposes a complete, inexpensive range of mounting accessories (clamps, plates, brackets, etc.) providing solutions to all setting-up problems.

■ Fixing kits enable quick installation or replacement of **Osi**concept sensors.

■ No adjustment is required. Simple clipping-in enables the sensor to be fixed in position and ready for operation.

Inductive proximity sensors

Osiprox®

Osiconcept®: **O**ffering **S**implicity through **I**nnovation

XS8 E1A1

XS8 C1A1

XS8 D1A1

XS6 12B2

XS6 18B2

XS6 30B2

Block type

Dimensions (mm)		26 x 26 x 13	40 x 40 x 15	80 x 80 x 26
Sensing distance (mm)	Flush mounted use	0...10	0...15	0...40
	Non flush mounted use	0...15	0...25	0...60
Sensor type		**XS8 E1A1**	**XS8 C1A1**	**XS8 D1A1**
Page		2/30		

Cylindrical type

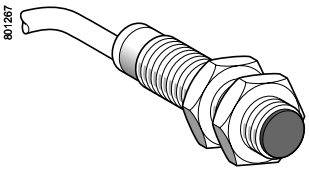
Dimensions (mm)		12	18	30
Sensing distance (mm)	Flush mounted use	0...3.4	0...6	0...11
	Non flush mounted use	0...5	0...9	0...18
Sensor type		**XS6 12B2**	**XS6 18B2**	**XS6 30B2**
Page		2/62		

Inductive proximity sensors

Osiprox® Universal

Cylindrical, flush mountable

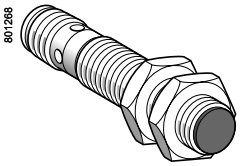
Three-wire, d.c. supply, solid-state output



XS6 ●●B1●●L2

Ø 8, threaded M8 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
2.5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS6 08B1PAL2**	0.035
			M12 connector	**XS6 08B1PAM12**	0.015
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS6 08B1NAL2**	0.035
			M12 connector	**XS6 08B1NAM12**	0.015
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS6 08B1PBL2**	0.035
			M12 connector	**XS6 08B1PBM12**	0.015
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS6 08B1NBL2**	0.035
			M12 connector	**XS6 08B1NBM12**	0.015



XS6 ●●B1●●M12

Ø 12, threaded M12 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
4	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS6 12B1PAL2**	0.075
			M12 connector	**XS6 12B1PAM12**	0.020
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS6 12B1NAL2**	0.075
			M12 connector	**XS6 12B1NAM12**	0.020
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS6 12B1PBL2**	0.075
			M12 connector	**XS6 12B1PBM12**	0.020
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS6 12B1NBL2**	0.075
			M12 connector	**XS6 12B1NBM12**	0.020

Ø 18, threaded M18 x 1

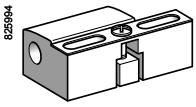
Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
8	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS6 18B1PAL2**	0.100
			M12 connector	**XS6 18B1PAM12**	0.040
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS6 18B1NAL2**	0.100
			M12 connector	**XS6 18B1NAM12**	0.040
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS6 18B1PBL2**	0.100
			M12 connector	**XS6 18B1PBM12**	0.040
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS6 18B1NBL2**	0.100
			M12 connector	**XS6 18B1NBM12**	0.040

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
15	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS6 30B1PAL2**	0.205
			M12 connector	**XS6 30B1PAM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS6 30B1NAL2**	0.205
			M12 connector	**XS6 30B1NAM12**	0.145
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS6 30B1PBL2**	0.205
			M12 connector	**XS6 30B1PBM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS6 30B1NBL2**	0.205
			M12 connector	**XS6 30B1NBM12**	0.145

Accessories *(2)*

Description		Reference	Weight kg
Fixing clamps	Ø 8	**XSZ B108**	0.006
	Ø 12	**XSZ B112**	0.006
	Ø 18	**XSZ B118**	0.010
	Ø 30	**XSZ B130**	0.020



XSZ B●●●

*(1) For a 5 m long cable, replace L2 with **L5**, and for a 10 m long cable, replace L2 with **L10**.*
*Example: XS6 08B1PAL2 becomes **XS6 08B1PAL5** with a 5 m long cable.*
(2) For further information, see page 2/106.

Inductive proximity sensors

Osiprox® Universal

Cylindrical, flush mountable

Three-wire, d.c. supply, solid-state output

Characteristics

Sensor type			XS6 ●●B1●●M12	XS6 ●●B1●●L2
Product certifications			UL, CSA, CE	
Connection	Connector		M12	–
	Pre-cabled		–	Length: 2 m
Operating zone	Ø 8	**mm**	**0…2**	
	Ø 12	**mm**	**0…3.2**	
	Ø 18	**mm**	**0…6.4**	
	Ø 30	**mm**	**0…12**	
Differential travel		**%**	1…15 of real sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 67	IP 68 double insulation ⧈ (except Ø 8: IP 67)
	Conforming to DIN 40050		IP 69K for Ø12 to Ø30	
Storage temperature range		**°C**	- 40…+ 85	
Operating temperature range		**°C**	- 25…+ 70	
Materials	Case		Nickel plated brass except **XS6 08**: stainless steel grade 303	
	Pre-cabled		–	PvR 3 x 0.34 mm² (except **XS6 08:** 3 x 0.11 mm²)
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication			LED (yellow), 4 viewing ports at 90°	LED (yellow), annular
Rated supply voltage		**V**	⎓ 12…48 with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10…58	
Switching capacity		**mA**	≤ 200 with overload and short-circuit protection	
Voltage drop, closed state		**V**	≤ 2	
Current consumption, no-load		**mA**	≤ 10	
Maximum switching frequency	**XS6 08B1●●●●, XS6 12B1●●●●**	**Hz**	2500	
	XS6 18B1●●●●	**Hz**	1000	
	XS6 30B1●●●●	**Hz**	500	
Delays	First-up	**ms**	≤ 10	
	Response	**ms**	≤ 0.2 for Ø8 and Ø12, ≤ 0.3 for Ø18, ≤ 0.6 for Ø30	
	Recovery	**ms**	≤ 0.2 for Ø8 and Ø12, ≤ 0.7 for Ø18, ≤ 1.4 for Ø30	

Wiring scheme

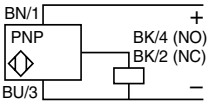
Connector

M12

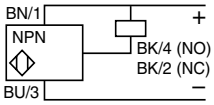
Pre-cabled

BU : Blue
BN : Brown
BK : Black

PNP



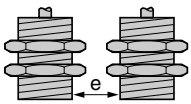
NPN

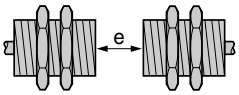


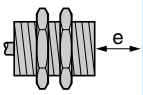
See connection on page 9/45.

Setting-up

Minimum mounting distances (mm)



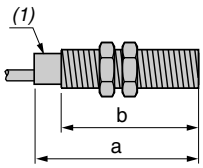




	Side by side	Face to face	Facing a metal object
Ø 8	e ≥ 5	e ≥ 30	e ≥ 8
Ø 12	e ≥ 8	e ≥ 50	e ≥ 12
Ø 18	e ≥ 16	e ≥ 100	e ≥ 25
Ø 30	e ≥ 30	e ≥ 180	e ≥ 45

Dimensions

XS6



(1) LED

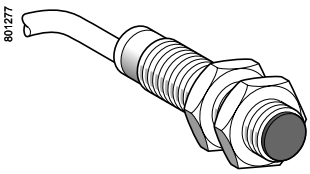
XS6	Pre-cabled (mm) a	Pre-cabled (mm) b	Connector (mm) a	Connector (mm) b
Ø 8	50	42	61	40
Ø 12	50	42	61	42
Ø 18	61.4	51	71.5	51
Ø 30	61.8	51	71.8	51

Inductive proximity sensors

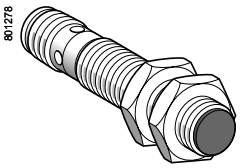
Osiprox® Universal

Cylindrical, flush mountable

Two-wire, a.c. or d.c. supply *(1)*



XS6 ●●B1M●L2



XS6 ●●B1M●U20

Ø 12, threaded M12 x 1

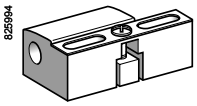
Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
4	NO	Pre-cabled (L = 2 m) *(2)*	**XS6 12B1MAL2**	0.075
		Connector 1/2" - 20UNF	**XS6 12B1MAU20**	0.025
	NC	Pre-cabled (L = 2 m) *(2)*	**XS6 12B1MBL2**	0.075
		Connector 1/2" - 20UNF	**XS6 12B1MBU20**	0.025

Ø 18, threaded M18 x 1

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
8	NO	Pre-cabled (L = 2 m) *(2)*	**XS6 18B1MAL2**	0.120
		Connector 1/2" - 20UNF	**XS6 18B1MAU20**	0.060
	NC	Pre-cabled (L = 2 m) *(2)*	**XS6 18B1MBL2**	0.120
		Connector 1/2" - 20UNF	**XS6 18B1MBU20**	0.060

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
15	NO	Pre-cabled (L = 2 m) *(2)*	**XS6 30B1MAL2**	0.205
		Connector 1/2" - 20UNF	**XS6 30B1MAU20**	0.145
	NC	Pre-cabled (L = 2 m) *(2)*	**XS6 30B1MBL2**	0.205
		Connector 1/2" - 20UNF	**XS6 30B1MBU20**	0.145



XSZ B1●●

Accessories *(3)*

Description		Reference	Weight kg
Fixing clamps	Ø 12	**XSZ B112**	0.006
	Ø 18	**XSZ B118**	0.010
	Ø 30	**XSZ B130**	0.020

(1) Available in Ø8 plastic with double insulation, see page 2/42.
*(2) For a 5 m long cable, replace L2 with **L5**, and for a 10 m long cable, replace L2 with **L10**.*
*Example: XS6 12B1MAL2 becomes **XS6 12B1MAL5** with a 5 m long cable.*
(3) For further information, see page 2/106.

Inductive proximity sensors

Osiprox® Universal
Cylindrical, flush mountable
Two-wire, a.c. or d.c. supply

Characteristics

Sensor type			XS6 ●●B1M●U20	XS6 ●●B1M●L2
Product certifications			UL, CSA, CE	
Connection	Connector		1/2" - 20 UNF	–
	Pre-cabled		–	Length: 2 m
Operating zone	Ø 12	**mm**	**0…3.2**	
	Ø 18	**mm**	**0…6.4**	
	Ø 30	**mm**	**0…12**	
Differential travel		**%**	1…15 of real sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 67	IP 68 double insulation ⧈
Storage temperature range		**°C**	- 40…+ 85	
Operating temperature range		**°C**	- 25…+ 70	
Materials	Case		Nickel plated brass	
	Pre-cabled		–	PvR 2 x 0.34 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication			LED (yellow): 4 viewing ports at 90°	LED (yellow): annular
Rated supply voltage		**V**	∼ or ⎓ 24…240 (∼ 50/60 Hz)	
Voltage limits (including ripple)		**V**	∼ or ⎓ 20…264	
Switching capacity	**XS6 12B1M●●●**	**mA**	5…200 *(1)*	
	XS6 18B1M●●●, XS6 30B1M●●●	**mA**	∼ 5…300 or ⎓ 5…200 *(1)*	
Voltage drop, closed state		**V**	≤ 5.5	
Residual current, open state		**mA**	≤ 0.8	
Maximum switching frequency	**XS6 12B2●●●,XS6 18B1M●●●**	**Hz**	∼ 25 or ⎓ 1000	
	XS6 30B1M●●●	**Hz**	∼ 25 or ⎓ 500	
Delays	First-up	**ms**	≤ 20 for **XS6 12B1M●●●**, ≤ 25 for **XS6 18B1M●●●** and **XS6 30B1M●●●**	
	Response	**ms**	≤ 0.5	
	Recovery	**ms**	≤ 0.2 for **XS6 12B1M●●●**, ≤ 0.5 for **XS6 18B1M●●●**, ≤ 2 for **XS6 30B1M●●●**	

(1) It is essential to connect a 0.4 A quick-blow fuse in series with the load

Wiring scheme

Connector

1/2" - 20 UNF

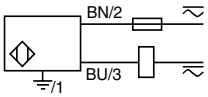
+/- : 2
⏚ : 1
+/- : 3

Pre-cabled

BU: Blue
BN: Brown

2-wire ∼ or ⎓

N/O or N/C output

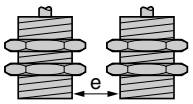


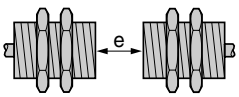
⏚: on connector models only

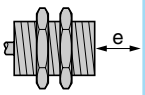
See connection on page 9/45.

Setting-up

Minimum mounting distances (mm)



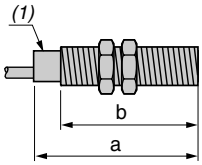




	Side by side	Face to face	Facing a metal object
Ø 12	e ≥ 8	e ≥ 50	e ≥ 12
Ø 18	e ≥ 16	e ≥ 90	e ≥ 25
Ø 30	e ≥ 30	e ≥ 180	e ≥ 45

Dimensions

XS6



(1) LED

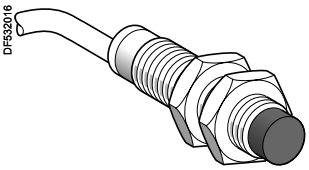
XS6	Pre-cabled (mm) a	Pre-cabled (mm) b	Connector (mm) a	Connector (mm) b
Ø 12	50	42	61	42
Ø 18	60	51	72.2	51
Ø 30	60	51	72.2	51

Inductive proximity sensors

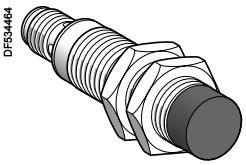
Osiprox® Universal

Cylindrical, non flush mountable

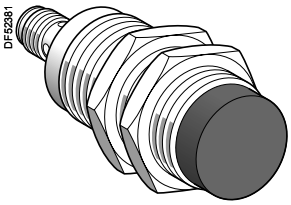
Three-wire, d.c. supply, solid-state output



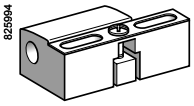
XS6 ●●B4●●L2



XS6 ●●B4●●M12



XS6 ●●B4●●M12



XSZ B●●●

Ø 12, threaded M12 x 1

Sensing dist. (Sn) mm	Function	Output	Connection	Reference	Weight kg
7	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS6 12B4PAL2**	0.075
			M12 connector	**XS6 12B4PAM12**	0.020
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS6 12B4NAL2**	0.075
			M12 connector	**XS6 12B4NAM12**	0.020
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS6 12B4PBL2**	0.075
			M12 connector	**XS6 12B4PBM12**	0.020
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS6 12B4NBL2**	0.075
			M12 connector	**XS6 12B4NBM12**	0.020

Ø 18, threaded M18 x 1

Sensing dist. (Sn) mm	Function	Output	Connection	Reference	Weight kg
12	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS6 18B4PAL2**	0.100
			M12 connector	**XS6 18B4PAM12**	0.040
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS6 18B4NAL2**	0.100
			M12 connector	**XS6 18B4NAM12**	0.040
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS6 18B4PBL2**	0.100
			M12 connector	**XS6 18B4PBM12**	0.040
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS6 18B4NBL2**	0.100
			M12 connector	**XS6 18B4NBM12**	0.040

Ø 30, threaded M30 x 1.5

Sensing dist. (Sn) mm	Function	Output	Connection	Reference	Weight kg
22	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS6 30B4PAL2**	0.205
			M12 connector	**XS6 30B4PAM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS6 30B4NAL2**	0.205
			M12 connector	**XS6 30B4NAM12**	0.145
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS6 30B4PBL2**	0.205
			M12 connector	**XS6 30B4PBM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS6 30B4NBL2**	0.205
			M12 connector	**XS6 30B4NBM12**	0.145

Accessories *(2)*

Description		Reference	Weight kg
Fixing clamps	Ø 12	**XSZ B112**	0.006
	Ø 18	**XSZ B118**	0.010
	Ø 30	**XSZ B130**	0.020

*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: **XS6 12B4PAL2** becomes **XS6 12B4PAL5** with a 5 m long cable.*
(2) For further information, see page 2/106.

Inductive proximity sensors

Osiprox® Universal

Cylindrical, non flush mountable
Three-wire, d.c. supply, solid-state output

Characteristics

Sensor type			XS6 ●●B4●●M12	XS6 ●●B4●●L2
Product certifications/approvals			UL, CSA, CE	
Connection	Connector		M12	–
	Pre-cabled		–	Length: 2 m
Operating zone	Ø 12	**mm**	**0…5.6**	
	Ø 18	**mm**	**0…9.6**	
	Ø 30	**mm**	**0…17.6**	
Differential travel		**%**	1...15 of real sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 67	IP 68, double insulation ⧈
Storage temperature		**°C**	- 40…+ 85	
Operating temperature		**°C**	- 25…+ 70	
Materials	Case		Nickel plated brass	
	Cable		–	PvR, 3 x 0.34 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication			Yellow LED: 4 viewing ports at 90°	Yellow LED: annular
Rated supply voltage		**V**	⎓ 12…48 with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10…58	
Switching capacity		**mA**	⩽ 200 with overload and short-circuit protection	
Voltage drop, closed state		**V**	⩽ 2	
Current consumption, no-load		**mA**	⩽ 10	
Maximum switching frequency	**XS6 12B4●●●●**	**Hz**	2500	
	XS6 18B4●●●●	**Hz**	1000	
	XS6 30B4●●●●	**Hz**	500	
Delays	First-up	**ms**	⩽ 10	
	Response	**ms**	⩽ 0.2 Ø12, ⩽ 0.3 Ø18, ⩽ 0.6 Ø30	
	Recovery	**ms**	⩽ 0.2 Ø12, ⩽ 0.7 Ø18, ⩽ 1.4 Ø30	

Wiring schemes

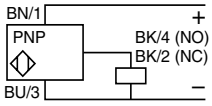
Connector

M12

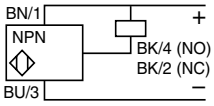
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP

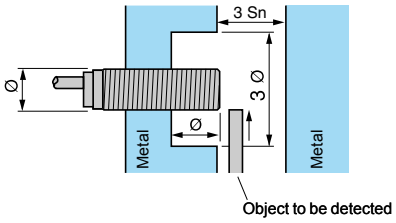


NPN

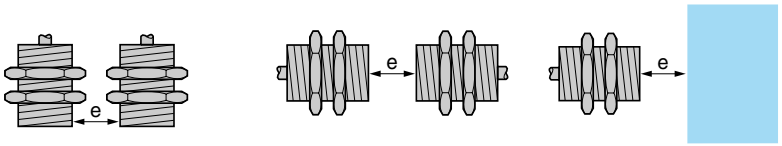


See connection on page 9/45.

Setting-up

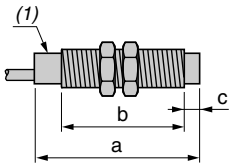


Minimum mounting distances (mm)



	Side by side	Face to face	Facing a metal object
Ø 12	e ⩾ 48	e ⩾ 84	e ⩾ 21
Ø 18	e ⩾ 72	e ⩾ 144	e ⩾ 36
Ø 30	e ⩾ 120	e ⩾ 264	e ⩾ 66

Dimensions



(1) LED

XS6

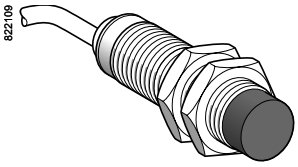
XS6	Pre-cabled (mm) a	Pre-cabled (mm) b	Connector (mm) a	Connector (mm) b	Connector (mm) c
Ø 12	55	41.5	65.5	41.5	5
Ø 18	60	43.5	71.5	43.5	8
Ø 30	62.5	41	74	41	13

Inductive proximity sensors

Osiprox® Universal

Cylindrical, non flush mountable

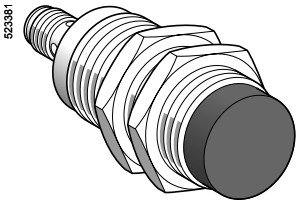
Two-wire, a.c. or d.c. supply



XS6 ●●B4M●L2

Ø 18, threaded M18 x 1

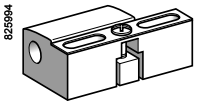
Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
12	NO	Pre-cabled (L = 2 m) *(1)*	**XS6 18B4MAL2**	0.120
		1/2" - 20UNF connector	**XS6 18B4MAU20**	0.060
	NC	Pre-cabled (L = 2 m) *(1)*	**XS6 18B4MBL2**	0.120
		1/2" - 20UNF connector	**XS6 18B4MBU20**	0.060



XS6 ●●B4M●U20

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
22	NO	Pre-cabled (L = 2 m) *(1)*	**XS6 30B4MAL2**	0.205
		1/2" - 20UNF connector	**XS6 30B4MAU20**	0.145
	NC	Pre-cabled (L = 2 m) *(1)*	**XS6 30B4MBL2**	0.205
		1/2" - 20UNF connector	**XS6 30B4MBU20**	0.145



XSZ B1●●

Accessories *(2)*

Description		Reference	Weight kg
Fixing clamps	Ø 18	**XSZ B118**	0.010
	Ø 30	**XSZ B130**	0.020

*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: **XS6 18B4MAL2** becomes **XS6 18B4MAL5** with a 5 m long cable.*
(2) For further information, see page 2/106.

Inductive proximity sensors

Osiprox® Universal
Cylindrical, non flush mountable
Two-wire, a.c. or d.c. supply

Characteristics

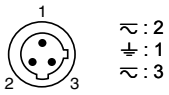
Sensor type			XS6 ●●B4M●U20	XS6 ●●B4M●L2
Product certifications/approvals			UL, CSA, CE	
Connection	Connector		1/2" - 20UNF	–
	Pre-cabled		–	Length: 2 m
Operating zone	Ø 18	**mm**	**0…9.6**	
	Ø 30	**mm**	**0...17.6**	
Differential travel		**%**	1...15 of real sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 67	IP 68, double insulation ⧈
Storage temperature		**°C**	- 40…+ 85	
Operating temperature		**°C**	- 25…+ 70	
Materials	Case		Nickel plated brass	
	Cable		–	PvR, 2 x 0.34 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication			Yellow LED: 4 viewing ports at 90°	Yellow LED: annular
Rated supply voltage		**V**	∿ or ⎓ 24…240 (∿ 50/60 Hz)	
Voltage limits (including ripple)		**V**	∿ or ⎓ 20…264	
Switching capacity		**mA**	∿ 5…300 or ⎓ 5…200 *(1)*	
Voltage drop, closed state		**V**	⩽ 5.5	
Residual current, open state		**mA**	⩽ 0.8	
Maximum switching frequency	**XS6 18B4M●●●**	**Hz**	∿ 25 or ⎓ 1000	
	XS6 30B4M●●●	**Hz**	∿ 25 or ⎓ 300	
Delays	First-up	**ms**	⩽ 30 **XS6 18B4M●●●** and **XS6 30B4M●●●**	
	Response	**ms**	⩽ 0.5	
	Recovery	**ms**	⩽ 0.5 **XS6 18B4M●●●**, ⩽ 2 **XS6 30B4M●●●**	

(1) It is essential to connect a 0.4 A "quick-blow" fuse in series with the load.

Wiring schemes

Connector

1/2" - 20UNF



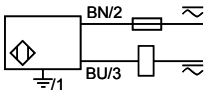
See connection on page 9/45.

Pre-cabled

BU: Blue
BN: Brown

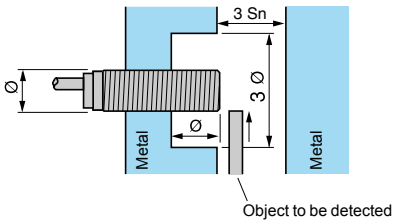
2-wire ∿ or ⎓

NO output

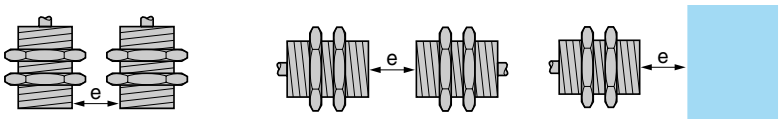


⏚: on connector models only

Setting-up



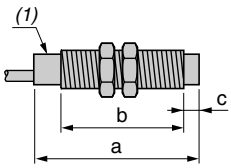
Minimum mounting distances (mm)



	Side by side	Face to face	Facing a metal object
Ø 18	e ⩾ 72	e ⩾ 144	e ⩾ 36
Ø 30	e ⩾ 120	e ⩾ 264	e ⩾ 66

Dimensions

XS6



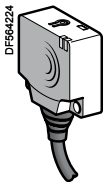
(1) LED

XS6	Pre-cabled (mm) a	Pre-cabled (mm) b	Connector (mm) a	Connector (mm) b	Connector (mm) c
Ø 18	60	43.5	71.5	43.5	8
Ø 30	62.5	41	74	41	13

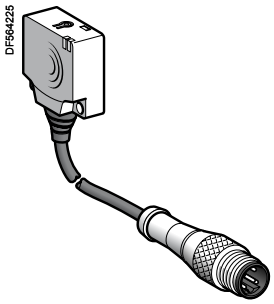
Inductive proximity sensors

Osiprox® Universal, Osiconcept® *(1)*

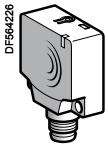
Flat, flush mountable and non flush mountable, forms E, C and D
Two-wire, a.c. or d.c. supply
Three-wire, d.c. supply, solid-state output



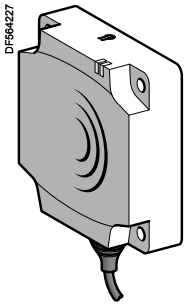
XS8 E1A1●●L2



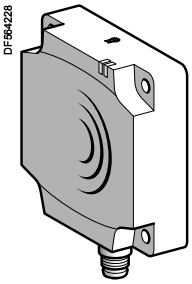
XS8 ●1A1●●L01M12
XS8 ●1A1●●L01U20



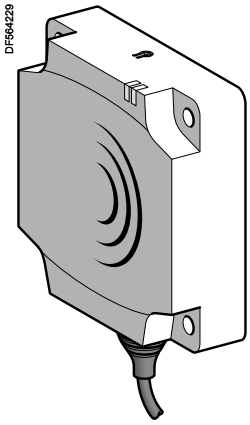
XS8 E1A1●●M8



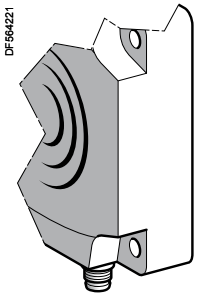
XS8 C1A1●●L2



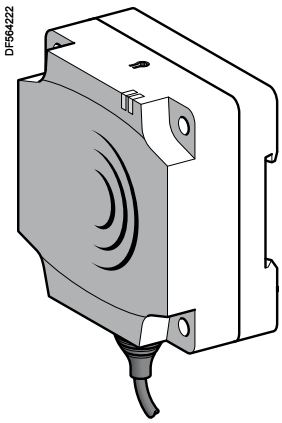
XS8 C1A1●●M8



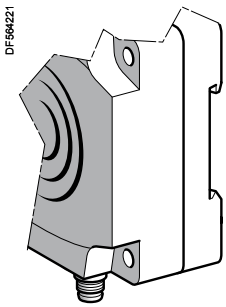
XS8 D1A1●●L2



XS8 D1A1●●M12



XS8 D1A1●●L2DIN



XS8 D1A1●●M12DIN

Flat, form E, 26 x 26 x 13 mm *(2)*

Sensing dist. (Sn) mm	Function	Output	Connection	Reference	Weight kg
Three-wire ⎓ with overload and short-circuit protection					
15	NO	PNP	Pre-cabled (L = 2 m) *(3)*	**XS8 E1A1PAL2**	0.075
			M8 connector	**XS8 E1A1PAM8**	0.040
			Remote M12 connector	**XS8 E1A1PAL01M12**	0.040
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS8 E1A1NAL2**	0.075
			M8 connector	**XS8 E1A1NAM8**	0.040
			Remote M12 connector	**XS8 E1A1NAL01M12**	0.040
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS8 E1A1PBL2**	0.075
			M8 connector	**XS8 E1A1PBM8**	0.040
			Remote M12 connector	**XS8 E1A1PBL01M12**	0.040
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS8 E1A1NBL2**	0.075
			M8 connector	**XS8 E1A1NBM8**	0.040
			Remote M12 connector	**XS8 E1A1NBL01M12**	0.040
Two-wire ∿ or ⎓ unprotected *(4)*					
15	NO	–	Pre-cabled (L = 2 m) *(3)*	**XS8 E1A1MAL2**	0.070
			Remote 1/2" - 20 UNF connec.	**XS8 E1A1MAL01U20**	0.040
	NC	–	Pre-cabled (L = 2 m) *(3)*	**XS8 E1A1MBL2**	0.070
			Remote 1/2" - 20 UNF connec.	**XS8 E1A1MBL01U20**	0.040

Flat, form C, 40 x 40 x 15 mm *(2)*

Sensing dist. (Sn) mm	Function	Output	Connection	Reference	Weight kg
Three-wire ⎓ with overload and short-circuit protection					
25	NO	PNP	Pre-cabled (L = 2 m) *(3)*	**XS8 C1A1PAL2**	0.095
			M8 connector	**XS8 C1A1PAM8**	0.060
			Remote M12 connector	**XS8 C1A1PAL01M12**	0.060
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS8 C1A1NAL2**	0.095
			M8 connector	**XS8 C1A1NAM8**	0.060
			Remote M12 connector	**XS8 C1A1NAL01M12**	0.060
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS8 C1A1PBL2**	0.095
			M8 connector	**XS8 C1A1PBM8**	0.060
			Remote M12 connector	**XS8 C1A1PBL01M12**	0.060
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS8 C1A1NBL2**	0.095
			M8 connector	**XS8 C1A1NBM8**	0.060
			Remote M12 connector	**XS8 C1A1NBL01M12**	0.060
Two-wire ∿ or ⎓ unprotected *(4)*					
25	NO	–	Pre-cabled (L = 2 m) *(3)*	**XS8 C1A1MAL2**	0.090
			Remote 1/2" - 20 UNF connec.	**XS8 C1A1MAL01U20**	0.060
	NC	–	Pre-cabled (L = 2 m) *(3)*	**XS8 C1A1MBL2**	0.090
			Remote 1/2" - 20 UNF connec.	**XS8 C1A1MBL01U20**	0.060

Flat, form D, 80 x 80 x 26 mm *(2)*

Sensing dist. (Sn) mm	Function	Output	Connection	Reference	Weight kg
Three-wire ⎓ with overload and short-circuit protection					
60	NO	PNP	Pre-cabled (L = 2 m) *(3)*	**XS8 D1A1PAL2** *(5)*	0.390
			M12 connector	**XS8 D1A1PAM12** *(5)*	0.340
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS8 D1A1NAL2** *(5)*	0.390
			M12 connector	**XS8 D1A1NAM12** *(5)*	0.340
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS8 D1A1PBL2** *(5)*	0.390
			M12 connector	**XS8 D1A1PBM12** *(5)*	0.340
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS8 D1A1NBL2** *(5)*	0.390
			M12 connector	**XS8 D1A1NBM12** *(5)*	0.340
Two-wire ∿ or ⎓ unprotected *(4)*					
60	NO	–	Pre-cabled (L = 2 m) *(3)*	**XS8 D1A1MAL2** *(5)*	0.390
			1/2" - 20 UNF connector	**XS8 D1A1MAU20** *(5)*	0.340
	NC	–	Pre-cabled (L = 2 m) *(3)*	**XS8 D1A1MBL2** *(5)*	0.390
			1/2" - 20 UNF connector	**XS8 D1A1MBU20** *(5)*	0.340

*(1) For further information on **Osiconcept®**, see page 2/20*
(2) For accessories, see page 2/106.
*(3) For a 5 m long cable, replace L2 with **L5**, and for a 10 m long cable, replace L2 with **L10**.*
(4) It is essential to connect a 0.4 A quick-blow fuse in series with the load.
*(5) For clipping onto 35 mm omega rail or 80 x 80 x 40 mm format, add DIN to the end of the reference. Example: **XS8 D1A1PAL2 DIN**.*

Inductive proximity sensors

Osiprox® Universal, **Osi**concept® *(1)*

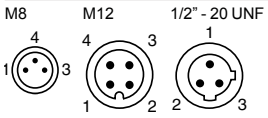
Flat, flush mountable and non flush mountable, forms E, C and D
Two-wire, a.c. or d.c. supply
Three-wire, d.c. supply, solid-state output

Characteristics

Sensor types				**XS8 E●●●●●M8, XS8 C●●●●●M8, XS8 D●●●●●M12, XS8 D●●●●●U20**	**XS8 E●●●●●L01M12, XS8 E●●●●●L01U20, XS8 C●●●●●L01M12, XS8 C●●●●●L01U20**	**XS8 E●●●●●L2, XS8 C●●●●●L2, XS8 D●●●●●L2**
Product certifications				UL, CSA, CE		
Connection	Connector			M8 except XS8 ●●●●●●M12: M12 XS8 ●●●●●●U20: 1/2" 20UNF	0.15 m flying lead with remote connec. XS8 ●●●●●●L01M12: M12, XS8 ●●●●●●L01U20: 1/2" 20UNF	–
	Pre-cabled			–	–	Length: 2 m
Sensing distance and adjustment zone	XS8 E	Nominal sensing dist. Sn	**mm**	**0…15** non flush mounted configuration / **0…10** flush mounted configuration		
		Fine adjustment zone	**mm**	**5…15** non flush mounted configuration / **5…10** flush mounted configuration		
	XS8 C	Nominal sensing dist. Sn	**mm**	**0…25** non flush mounted configuration / **0…15** flush mounted configuration		
		Fine adjustment zone	**mm**	**8…25** non flush mounted configuration / **8…15** flush mounted configuration		
	XS8 D	Nominal sensing dist. Sn	**mm**	**0…60** non flush mounted configuration / **0…40** flush mounted configuration		
		Fine adjustment zone	**mm**	**20…60** non flush mounted configuration / **20…40** flush mounted configuration		
Differential travel			**%**	1…15 of real sensing distance (Sr)		
Degree of protection	Conforming to IEC 60529			IP 67 double insulation ⧈ (except for M8 connector: IP 67)		IP 68 ⧈
Storage temperature range			**°C**	- 40….+ 85		
Operating temperature range			**°C**	- 25….+ 70		
Materials	Case			PBT		
	Pre-cabled			–	PvR 3 x 0.34 mm² ⎓ and PvR 2 x 0.34 mm² ∼	
Vibration resistance	Conforming to IEC 60068-2-6			25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27			50 gn, duration 11 ms		
Indicator	Output state			Yellow LED		
	Supply on and teach mode			Green LED		
Rated supply voltage	3-wire		**V**	12…24 with protection against reverse polarity		
	2-wire		**V**	∼ or ⎓ 24…240 (∼ 50/60 Hz)		
Voltage limits (including ripple)	3-wire		**V**	10…36		
	2-wire		**V**	∼ or ⎓ 20…264		
Current consumption, no-load	3-wire		**mA**	⩽ 10		
Residual current, open state	2-wire		**mA**	⩽ 1.5		
Switching capacity	3-wire		**mA**	⩽ 100 **XS8 E**, ⩽ 200 **XS8 C** and **XS8 D**, with overload and short-circuit protection		
	2-wire		**mA**	5…200 ∼ **XS8 E**, 5…300 ∼ **XS8 C** and **XS8 D**, 5…200 ⎓ **XS8 C** and **XS8 D**.		
Voltage drop, closed state	3-wire		**V**	⩽ 2		
	2-wire		**V**	⩽ 5.5		
Maximum switching frequency			**Hz**	2000 **XS8 E**, 1000 **XS8 C**, 150 **XS8 D**		
Delays	First-up		**ms**	⩽ 10 **XS8 E**, **XS8 C** and **XS8 D** (3-wire), ⩽ 10 **XS8 E** and **XS8 C**, ⩽ 15 **XS8 D** (2-wire)		
	Response		**ms**	⩽ 0.3		
	Recovery		**ms**	⩽ 0.8 **XS8 E** and **XS8 C**, ⩽ 6 **XS8 D**		

Wiring scheme

Connector

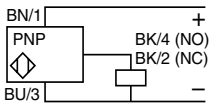


Pre-cabled

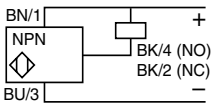
BU: Blue
BN: Brown
BK: Black

See connection on page 9/45.

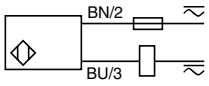
PNP/M12 or M8



NPN/M12 or M8



2-wire 1/2" - 20 UNF

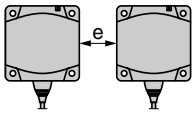


For M8 connector, NO and NC output on terminal 4.

Setting-up

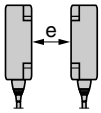
Minimum mounting distances (mm)

Side by side



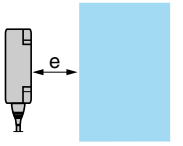
e ⩾	XS8 E	XS8 C	XS8 D
Flush mounted	40	60	200
Non flush mounted	150	125	600

Face to face



e ⩾	XS8 E	XS8 C	XS8 D
Flush mounted	80	120	400
Non flush mounted	300	250	Not recommended

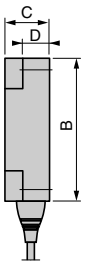
Facing a metal object



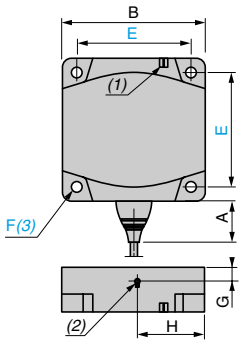
e ⩾	XS8 E	XS8 C	XS8 D
	10	15	40

Dimensions

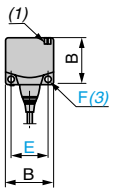
XS8 C/D/E



XS8 C/D



XS8 E



(1) LED
(2) Teach mode button
(3) For CHC type screws

Sensor	A (cable)	A (connector)	B	C	D	E	F	G	H
XS8 E	14	11	26	13	8,8	**20**	**3,5**	6.8	6.6
XS8 C	14	11	40	15	9,8	**33**	**4,5**	8.3	13.6
XS8 D	23	18	80	26	16	**65**	**5,5**	8.5	37.8
XS8 D●●DIN	23	18	80	40	30	**65**	**5.1**	22.5	37.8

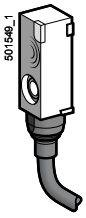
Inductive proximity sensors

Osiprox® Optimum

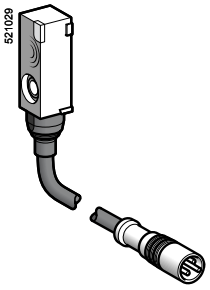
Flat, flush mountable, forms J and F

Two-wire, d.c. supply

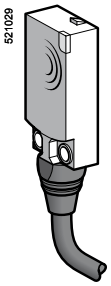
Three-wire, d.c. supply, solid-state output



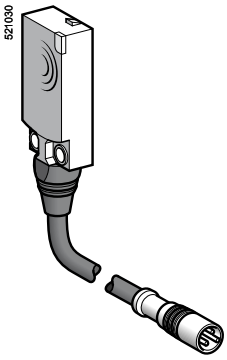
XS7 J1A1●●L2



XS7 J1A1●●L01M8



XS7 F1A1●●L2



XS7 F1A1●●L01M8

Flat, form J, 8 x 22 x 8 mm *(1) (2)*

Three-wire ⎓

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
2.5	NO	PNP	Pre-cabled (L = 2 m) *(3)*	**XS7 J1A1PAL2**	0.060
			0.15 m flying lead with M8 connector	**XS7 J1A1PAL01M8**	0.040
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS7 J1A1NAL2**	0.060
			0.15 m flying lead with M8 connector	**XS7 J1A1NAL01M 8**	0.040
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS7 J1A1PBL2**	0.060
			0.15 m flying lead with M8 connector	**XS7 J1A1PBL01M8**	0.040
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS7 J1A1NBL2**	0.060
			0.15 m flying lead with M8 connector	**XS7 J1A1NBL01M8**	0.040

Two-wire ⎓

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
2.5	NO		Pre-cabled (L = 2 m) *(3)*	**XS7 J1A1DAL2**	0.050
			0.15 m flying lead with M8 connector	**XS7 J1A1DAL01M8**	0.035
	NC		Pre-cabled (L = 2 m) *(3)*	**XS7 J1A1DBL2**	0.050
			0.15 m flying lead with M8 connector	**XS7 J1A1DBL01M8**	0.035

Flat, form F, 15 x 32 x 8 mm *(1)*

Three-wire ⎓

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
5	NO	PNP	Pre-cabled (L = 2 m) *(3)*	**XS7 F1A1PAL2**	0.065
			0.15 m flying lead with M8 connector	**XS7 F1A1PAL01M8**	0.045
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS7 F1A1NAL2**	0.065
			0.15 m flying lead with M8 connector	**XS7 F1A1NAL01M8**	0.045
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS7 F1A1PBL2**	0.065
			0.15 m flying lead with M8 connector	**XS7 F1A1PBL01M8**	0.045
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS7 F1A1NBL2**	0.065
			0.15 m flying lead with M8 connector	**XS7 F1A1NBL01M8**	0.045

Two-wire ⎓

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
5	NO		Pre-cabled (L = 2 m) *(3)*	**XS7 F1A1DAL2**	0.055
			0.15 m flying lead with M8 connector	**XS7 F1A1DAL01M8**	0.045
	NC		Pre-cabled (L = 2 m) *(3)*	**XS7 F1A1DBL2**	0.055
			0.15 m flying lead with M8 connector	**XS7 F1A1DBL01M8**	0.045

(1) For accessories, see page 2/106.
*(2) Sensors **XS7 J** include a basic fixing clamp with screw.*
*(3) For a 5 m long cable, replace L2 with **L5**, and for a 10 m long cable, replace L2 with **L10**. For example XS7 J1A1PAL2 becomes **XS7 J1A1PAL5** with a 5 m long cable.*

Inductive proximity sensors

Osiprox® Optimum
Flat, flush mountable, forms J and F
Two-wire, d.c. supply
Three-wire, d.c. supply, solid-state output

Characteristics

Sensor type			XS7 J●●●●●L01M8	XS7 F●●●●●L01M8	XS7 J●●●●●●L2, XS7 F●●●●●●L2
Product certifications			CE	UL, CSA, CE	
Connection	Connector		0.15 m flying lead with M8 connector		–
	Pre-cabled		–		Length: 2 m
Operating zone	**XS7 J**	**mm**	**0…2**		
	XS7 F	**mm**	**0…4**		
Differential travel		**%**	1…15 of real sensing distance (Sr)		
Degree of protection	Conforming to IEC 60529		IP 67 (**XS7 J**), IP 68 (**XS7 F**)		
Storage temperature range		**°C**	- 40….+ 85		
Operating temperature range		**°C**	- 25….+ 70		
Materials	Case		PBT		
	Pre-cabled		PvR 3 x 0.11 mm² or 2 x 0.11 mm² (XS7 F : 2 or 3 x 0,34 mm²)		
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms		
Output state indication			Yellow LED		
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity		
Voltage limits (including ripple)		**V**	⎓ 10…36		
Current consumption, no-load	3-wire	**mA**	≤ 10		
Residual current, open state	2-wire	**mA**	≤ 0.5		
Switching capacity	3-wire	**mA**	100 with overload and short-circuit protection		
	2-wire	**mA**	1.5...100 with overload and short-circuit protection		
Voltage drop, closed state	3-wire	**V**	≤ 2		
	2-wire	**V**	≤ 4		
Maximum switching frequency	3-wire	**kHz**	2		
	2-wire	**kHz**	4 for **XS7 J**, 5 for **XS7 F**		
Delays	First-up	**ms**	Three-wire: 5		
		ms	Two-wire: 10 **XS7 J**, 5 **XS7 F**		
	Response	**ms**	Three-wire: 0.1		
		ms	Two-wire: 0.5 **XS7 J**, 5 **XS7 F**		
	Recovery	**ms**	Three-wire: 0.1		
		ms	Two-wire: 1 **XS7 J**, 5 **XS7 F**		

Wiring scheme

Connector

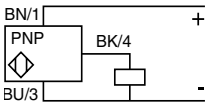
M8

See connection on page 9/45.

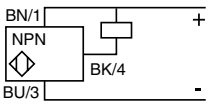
Pre-cabled

BU: Blue
BN: Brown
BK: Black

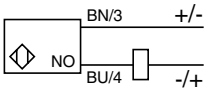
PNP, NO or NC



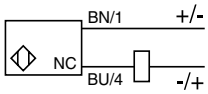
NPN, NO or NC



2-wire, NO

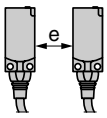


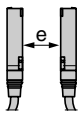
2-wire, N/C

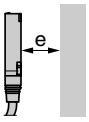


Setting-up

Minimum mounting distances (mm)



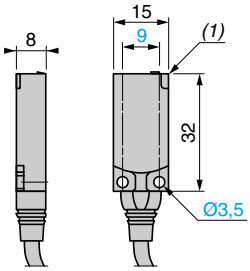




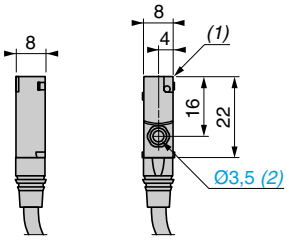
	Side by side	Face to face	Facing a metal object
XS7 J	e ≥ 1	e ≥ 6	e ≥ 7.5
XS7 F	e ≥ 1	e ≥ 12	e ≥ 15

Dimensions

XS7 F



XS7 J

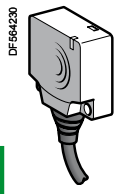


(1) LED
(2) For CHC type screws

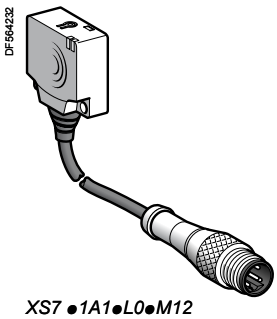
Inductive proximity sensors

Osiprox® Optimum

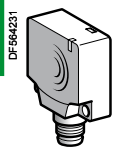
Flat, flush mountable, forms E, C and D
Two-wire, d.c. supply
Three-wire, d.c. supply, solid-state output



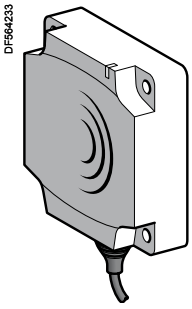
XS7 E1A1●●L2



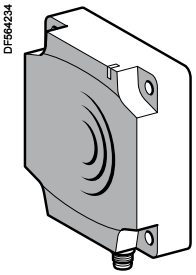
XS7 ●1A1●L0●M12



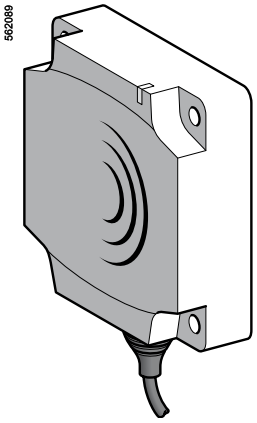
XS7 E1A1●●M8



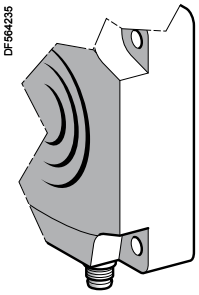
XS7 C1A1●●L2



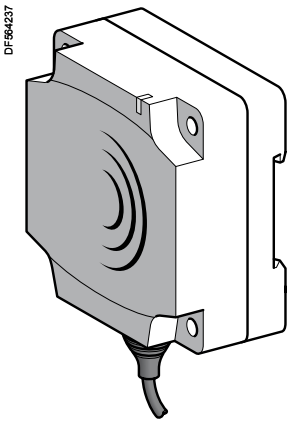
XS7 C1A1●●M8



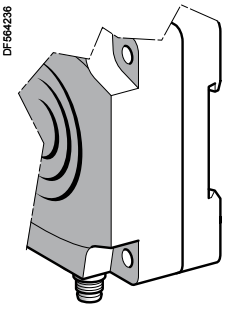
XS7 D1A1●●L2



XS7 D1A1●●M12



XS7 D1A1●●L2DIN



XS7 D1A1●●M12DIN

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Flat, form E, 26 x 26 x 13 mm *(1)*					
Three-wire ⎓					
10	NO	PNP	Pre-cabled (L = 2 m) *(4)*	**XS7 E1A1PAL2**	0.075
			M8 connector	**XS7 E1A1PAM8**	0.040
			Remote M12 connector	**XS7 E1A1PAL01M12**	0.040
		NPN	Pre-cabled (L = 2 m) *(4)*	**XS7 E1A1NAL2**	0.075
			M8 connector	**XS7 E1A1NAM8**	0.075
			Remote M12 connector	**XS7 E1A1NAL01M12**	0.040
	NC	PNP	Pre-cabled (L = 2 m) *(4)*	**XS7 E1A1PBL2**	0.075
			M8 connector	**XS7 E1A1PBM8**	0.040
			Remote M12 connector	**XS7 E1A1PBL01M12**	0.040
		NPN	Pre-cabled (L = 2 m) *(4)*	**XS7 E1A1NBL2**	0.075
			M8 connector	**XS7 E1A1NBM8**	0.040
			Remote M12 connector	**XS7 E1A1NBL01M12**	0.040
Two-wire ⎓					
10	NO		Pre-cabled (L = 2 m) *(4)*	**XS7 E1A1DAL2**	0.070
			M8 connector	**XS7 E1A1DAM8**	0.040
			Remote M12 connector	**XS7 E1A1DAL01M12**	0.040
	NO terminals 1 and 4 *(2)*		Remote M12 connector	**XS7 E1A1CAL01M12**	0.040
			Remote M12 connector (3)	**XS7 E1A1CAL08M12**	0.065
	NC		Pre-cabled (L = 2 m) *(4)*	**XS7 E1A1DBL2**	0.070
			M8 connector	**XS7 E1A1DBM8**	0.040
			Remote M12 connector	**XS7 E1A1DBL01M12**	0.040
Flat, form C, 40 x 40 x 15 mm *(1)*					
Three-wire ⎓					
15	NO	PNP	Pre-cabled (L = 2 m) *(4)*	**XS7 C1A1PAL2**	0.095
			M8 connector	**XS7 C1A1PAM8**	0.060
			Remote M12 connector	**XS7 C1A1PAL01M12**	0.060
		NPN	Pre-cabled (L = 2 m) *(4)*	**XS7 C1A1NAL2**	0.095
			M8 connector	**XS7 C1A1NAM8**	0.060
			Remote M12 connector	**XS7 C1A1NAL01M12**	0.060
	NC	PNP	Pre-cabled (L = 2 m) *(4)*	**XS7 C1A1PBL2**	0.095
			M8 connector	**XS7 C1A1PBM8**	0.060
			Remote M12 connector	**XS7 C1A1PBL01M12**	0.060
		NPN	Pre-cabled (L = 2 m) *(4)*	**XS7 C1A1NBL2**	0.095
			M8 connector	**XS7 C1A1NBM8**	0.060
			Remote M12 connector	**XS7 C1A1NBL01M12**	0.060
Two-wire ⎓					
15	NO		Pre-cabled (L = 2 m) *(4)*	**XS7 C1A1DAL2**	0.090
			M8 connector	**XS7 C1A1DAM8**	0.060
			Remote M12 connector	**XS7 C1A1DAL01M12**	0.060
	NO terminals 1 and 4 *(2)*		Remote M12 connector	**XS7 C1A1CAL01M12**	0.060
			Remote M12 connector *(3)*	**XS7 C1A1CAL08M12**	0.090
	NC		Pre-cabled (L = 2 m) *(4)*	**XS7 C1A1DBL2**	0.090
			M8 connector	**XS7 C1A1DBM8**	0.060
			Remote M12 connector	**XS7 C1A1DBL01M12**	0.060
Flat, form D, 80 x 80 x 26 mm *(1)*					
Three-wire ⎓					
40	NO	PNP	Pre-cabled (L = 2 m) *(4)*	**XS7 D1A1PAL2** *(5)*	0,340
			M12 connector	**XS7 D1A1PAM12** *(5)*	0,290
		NPN	Pre-cabled (L = 2 m) *(4)*	**XS7 D1A1NAL2** *(5)*	0,340
			M12 connector	**XS7 D1A1NAM12** *(5)*	0,290
	NC	PNP	Pre-cabled (L = 2 m) *(4)*	**XS7 D1A1PBL2** *(5)*	0,340
			M12 connector	**XS7 D1A1PBM12** *(5)*	0,290
		NPN	Pre-cabled (L = 2 m) *(4)*	**XS7 D1A1NBL2** *(5)*	0,340
			M12 connector	**XS7 D1A1NBM12** *(5)*	0,290
Two-wire ⎓					
40	NO		Pre-cabled (L = 2 m) *(4)*	**XS7 D1A1DAL2** *(5)*	0,340
			M12 connector	**XS7 D1A1DAM12** *(5)*	0,290
	NO terminals 1 and 4 *(2)*		M12 connector	**XS7 D1A1CAM12** *(5)*	0,290
	NC		Pre-cabled (L = 2 m) *(4)*	**XS7 D1A1DBL2** *(5)*	0,340
			M12 connector	**XS7 D1A1DBM12** *(5)*	0,290

(1) For accessories, see page 2/106.
(2) The NO output is connected to terminals 1 and 4 of the M12 connector.
(3) 0.8 m flying lead with remote connector.
*(4) For a 5 m long cable, replace L2 with **L5**, and for a 10 m long cable, replace L2 with **L10**. Example: **XS7 J1A1PAL2** becomes **XS7 J1A1PAL5** with a 5 m long cable.*
*(5) For clipping onto 35 mm omega rail or 80 x 80 x 40 mm format, add DIN to the end of the reference. Example: **XS7 D1A1PAL2** becomes **XS7 D1A1PAL2DIN**.*

Inductive proximity sensors

Osiprox® Optimum
Flat, flush mountable, forms E, C and D
Two-wire, d.c. supply
Three-wire, d.c. supply, solid-state output

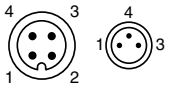
Characteristics

Sensor type				XS7 E●●●●●M8, XS7 C●●●●●M8, XS7 D●●●●●M12	XS7 E●●●●●L01M12, XS7 C●●●●●L01M12	XS7 E●●●●●L2, XS7 C●●●●●L2, XS7 D●●●●●L2
Product certifications				UL, CSA, CE		
Connection	Connector			M8 except M12 on **XS7 D●●●●●M12**	0.15 m flying lead with remote connec., M12 for **XS7 ●●●●●L01M12**	–
	Pre-cabled			–	–	Length: 2
Operating zone	**XS7 E**		**mm**	**0…8**		
	XS7 C		**mm**	**0…12**		
	XS7 D		**mm**	**0…32**		
Differential travel			**%**	1…15 of real sensing distance (Sr)		
Degree of protection	Conforming to IEC 60529			IP 67 double insulation ⧈ (except for M8 connector: IP 67)		IP 68 ⧈
Storage temperature range			**°C**	- 40….+ 85		
Operating temperature range			**°C**	- 25….+ 70		
Materials	Case			PBT		
	Pre-cabled			–	PvR 3 x 0.34 mm² or 2 x 0.34 mm²	
Vibration resistance	Conforming to IEC 60068-2-6			25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27			50 gn, duration 11 ms		
Output state indication				Yellow LED		
Rated supply voltage			**V**	12…24 with protection against reverse polarity		
Voltage limits (including ripple)			**V**	10…36		
Current consumption, no-load	3-wire		**mA**	⩽ 10		
Residual current, open state	2-wire		**mA**	⩽ 0.5		
Switching capacity	3-wire		**mA**	⩽ 100 with overload and short-circuit protection		
	2-wire		**mA**	1.5...100 with overload and short-circuit protection		
Voltage drop, closed state	3-wire		**V**	⩽ 2		
	2-wire		**V**	⩽ 4		
Maximum switching frequency	**XS7 E, XS7 C**		**kHz**	1		
	XS7 D		**Hz**	100		
Delays	First-up	3-wire	**ms**	10 for **XS7 E** and **XS7 C**, 30 for **XS7 D**		
		2-wire	**ms**	5 for **XS7 E** and **XS7 D**, 10 for **XS7 D**		
	Response	3-wire	**ms**	2 for **XS7 E** and **XS7 C**, 5 for **XS7 D**		
		2-wire	**ms**	0.3 for **XS7 E** and **XS7 D**, 10 for **XS7 D**		
	Recovery	3-wire	**ms**	6 for **XS7 E**, 5 **XS7 C**, 35 for **XS7 D**		
		2-wire	**ms**	0.7 for **XS7 E** and **XS7 D**, 10 for **XS7 D**		

Wiring scheme

Connector

M12 M8

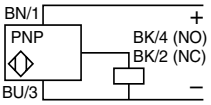


See connection on page 9/45.

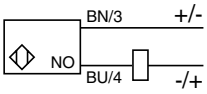
Pre-cabled

BU: Blue
BN: Brown
BK: Black

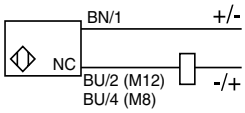
PNP/M12 or M8



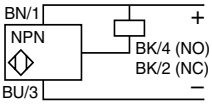
2-wire, NO / M12 or M8



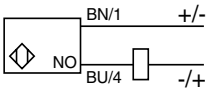
2-wire, NC / M12 or M8



NPN/M12 or M8



2-wire, NO/M12 XS7 ●●●●CA●●●

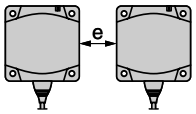


For M8 connector, NO and NC output on terminal 4.

Setting-up

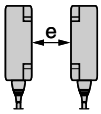
Minimum mounting distances (mm)

Side by side



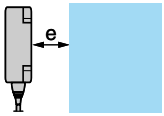
e ⩾	XS7 E	XS7 C	XS7 D
	4	5	40

Face to face



e ⩾	XS7 E	XS7 C	XS7 D
	72	110	300

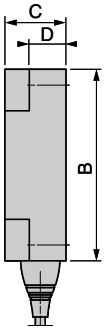
Facing a metal object



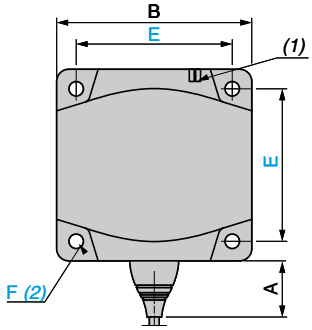
e ⩾	XS7 E	XS7 C	XS7 D
	30	45	120

Dimensions

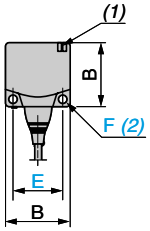
XS7 C/D/E



XS7 C/D



XS7 E



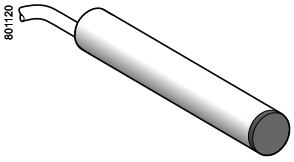
(1) LED
(2) For CHC type screws

Sensor	A (cable)	A (connector)	B	C	D	E	F
XS7 E	14	11	26	13	8,8	**20**	**3.5**
XS7 C	14	11	40	15	9,8	**33**	**4.5**
XS7 D	23	18	80	26	16	**65**	**5.5**
XS7 D●●DIN	23	18	80	40	30	**65**	**5.1**

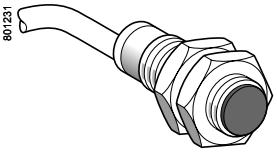
Inductive proximity sensors

Osiprox® Optimum

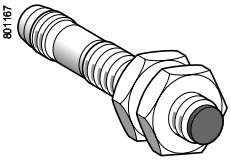
Cylindrical, flush mountable, increased range
Three-wire, d.c. supply, solid-state output



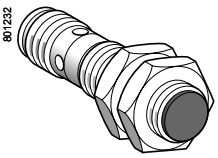
XS1 L06●A349



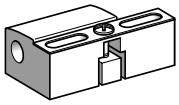
XS1 N●●●●349



XS1 N08●●349S



XS1 N●●●●349D



XSZ B1●●

Sensing distance Sn (mm)	Function	Output	Connection	Reference	Weight kg
Ø 6.5, plain					
2.5	NO	PNP	Pre-cabled (L = 2 m)	**XS1 L06PA349**	0.025
			M8 connector	**XS1 L06PA349S**	0.010
			M12 connector	**XS1 L06PA349D**	0.015
		NPN	Pre-cabled (L = 2 m)	**XS1 L06NA349**	0.025
			M8 connector	**XS1 L06NA349S**	0.010
			M12 connector	**XS1 L06NA349D**	0.015
	NC	PNP	Pre-cabled (L = 2 m)	**XS1 L06PB349**	0.025
			M8 connector	**XS1 L06PB349S**	0.010
		NPN	Pre-cabled (L = 2 m)	**XS1 L06NB349**	0.025
			M8 connector	**XS1 L06NB349S**	0.010
Ø 8, threaded M8 x 1					
2.5	NO	PNP	Pre-cabled (L = 2 m)	**XS1 N08PA349**	0.035
			M8 connector	**XS1 N08PA349S**	0.015
			M12 connector	**XS1 N08PA349D**	0.020
		NPN	Pre-cabled (L = 2 m)	**XS1 N08NA349**	0.035
			M8 connector	**XS1 N08NA349S**	0.015
			M12 connector	**XS1 N08NA349D**	0.020
	NC	PNP	Pre-cabled (L = 2 m)	**XS1 N08PB349**	0.035
			M8 connector	**XS1 N08PB349S**	0.015
			M12 connector	**XS1 N08PB349D**	0.020
		NPN	Pre-cabled (L = 2 m)	**XS1 N08NB349**	0.035
			M8 connector	**XS1 N08NB349S**	0.015
			M12 connector	**XS1 N08NB349D**	0.020
Ø 12, threaded M12 x 1					
4	NO	PNP	Pre-cabled (L = 2 m)	**XS1 N12PA349**	0.070
			M12 connector	**XS1 N12PA349D**	0.020
		NPN	Pre-cabled (L = 2 m)	**XS1 N12NA349**	0.070
			M12 connector	**XS1 N12NA349D**	0.020
	NC	PNP	Pre-cabled (L = 2 m)	**XS1 N12PB349**	0.070
			M12 connector	**XS1 N12PB349D**	0.020
		NPN	Pre-cabled (L = 2 m)	**XS1 N12NB349**	0.070
			M12 connector	**XS1 N12NB349D**	0.020
Ø 18, threaded M18 x 1					
10	NO	PNP	Pre-cabled (L = 2 m)	**XS1 N18PA349**	0.100
			M12 connector	**XS1 N18PA349D**	0.040
		NPN	Pre-cabled (L = 2 m)	**XS1 N18NA349**	0.100
			M12 connector	**XS1 N18NA349D**	0.040
	NC	PNP	Pre-cabled (L = 2 m)	**XS1 N18PB349**	0.100
			M12 connector	**XS1 N18PB349D**	0.040
		NPN	Pre-cabled (L = 2 m)	**XS1 N18NB349**	0.100
			M12 connector	**XS1 N18NB349D**	0.040
Ø 30, threaded M30 x 1.5					
20	NO	PNP	Pre-cabled (L = 2 m)	**XS1 N30PA349**	0.160
			M12 connector	**XS1 N30PA349D**	0.100
		NPN	Pre-cabled (L = 2 m)	**XS1 N30NA349**	0.160
			M12 connector	**XS1 N30NA349D**	0.100
	NC	PNP	Pre-cabled (L = 2 m)	**XS1 N30PB349**	0.160
			M12 connector	**XS1 N30PB349D**	0.100
		NPN	Pre-cabled (L = 2 m)	**XS1 N30NB349**	0.160
			M12 connector	**XS1 N30NB349D**	0.100

Accessories *(1)*

Description mm		Reference	Weight kg
Fixing clamps	Ø 8	**XSZ B108**	0.006
	Ø 12	**XSZ B112**	0.006
	Ø 18	**XSZ B118**	0.010
	Ø 30	**XSZ B130**	0.020

(1) For further information, see page 2/106.

Inductive proximity sensors

Osiprox® Optimum

Cylindrical, flush mountable, increased range
Three-wire, d.c. supply, solid-state output

Characteristics

Sensor type			XS1 ●●●●●349D	XS1 ●●●●●349S	XS1 ●●●●●349
Product certifications			UL, CSA, CE		
Connection			M12 connector	M8 connector	Pre-cabled, length: 2 m
Operating zone	Ø 6.5 and Ø 8	mm	**0…2**		
	Ø 12	mm	**0…3.2**		
	Ø 18	mm	**0…8**		
	Ø 30	mm	**0…16**		
Differential travel		%	1...15 of real sensing distance (Sr)		
Degree of protection	Conforming to IEC 60529		IP 67		IP 68, double insulation (except Ø 6.5 and Ø 8: IP 67)
	Conforming to DIN 40050		IP 69K from Ø 12 to Ø 30		
Storage temperature		°C	- 40…+ 85		
Operating temperature		°C	- 25…+ 70		
Materials	Case		Nickel plated brass		
	Cable		–		PvR 3 x 0.34 mm² except Ø 6.5 and Ø 8: 3 x 0.11 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms		
Output state indication			Yellow LED, 4 viewing ports at 90°		Yellow LED, annular
Rated supply voltage		V	⎓ 12…24 with protection against reverse polarity		
Voltage limits (including ripple)		V	⎓ 10…36		
Switching capacity		mA	≤ 200 with overload and short-circuit protection		
Voltage drop, closed state		V	≤ 2		
Current consumption, no-load		mA	≤ 10		
Maximum switching frequency	Ø 6.5, Ø 8 and Ø 12	Hz	2500		
	Ø 18	Hz	1000		
	Ø 30	Hz	500		
Delays	First-up	ms	≤ 5		
	Response	ms	≤ 0.2 for Ø 8 and Ø 12, ≤ 0.3 for Ø 18, ≤ 0.6 for Ø 30		
	Recovery	ms	≤ 0.2 for Ø 8 and Ø 12, ≤ 0.7 for Ø 18, ≤ 1.4 for Ø 30		

Wiring schemes

Connector

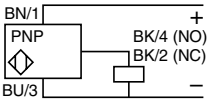
M8

M12

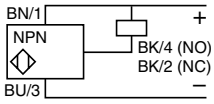
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP 3-wire



NPN 3-wire

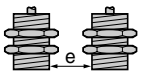


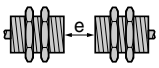
See connection on page 9/45.

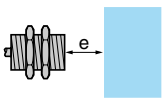
Setting-up

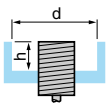
Minimum mounting distances (mm)

Sensor	Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 6.5	e ≥ 5	e ≥ 30	e ≥ 7.5	d ≥ 10 h ≥ 1.6
Ø 8	e ≥ 5	e ≥ 30	e ≥ 7.5	d ≥ 10 h ≥ 1.6
Ø 12	e ≥ 8	e ≥ 48	e ≥ 12	d ≥ 14 h ≥ 2.4
Ø 18	e ≥ 20	e ≥ 96	e ≥ 30	d ≥ 28 h ≥ 3.6
Ø 30	e ≥ 40	e ≥ 240	e ≥ 60	d ≥ 50 h ≥ 6

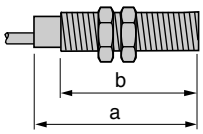








Dimensions



Flush mountable in metal

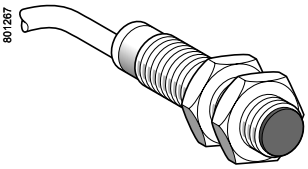
Sensor	Pre-cabled a	Pre-cabled b	M8 connector a	M8 connector b	M12 connector a	M12 connector b
Ø 6.5	33	30	42	34	45	24
Ø 8	33	25	42	26	45	23
Ø 12	35	25	–	–	50	29
Ø 18	38	28	–	–	50.3	28
Ø 30	42.3	32	–	–	54.5	32

Inductive proximity sensors

Osiprox® Optimum

Cylindrical, flush mountable

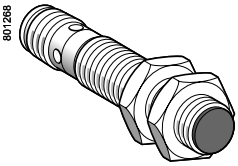
Three-wire, d.c. supply, solid-state output



XS5 ●●B1●●L2

Ø 8, threaded M8 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
1.5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS5 08B1PAL2**	0.035
			M8 connector	**XS5 08B1PAM8**	0.025
			M12 connector	**XS5 08B1PAM12**	0,025
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS5 08B1NAL2**	0.035
			M8 connector	**XS5 08B1NAM8**	0.025
			M12 connector	**XS5 08B1NAM12**	0.025
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS5 08B1PBL2**	0.035
			M8 connector	**XS5 08B1PBM8**	0.025
			M12 connector	**XS5 08B1PBM12**	0.025
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS5 08B1NBL2**	0.035
			M8 connector	**XS5 08B1NBM8**	0.025
			M12 connector	**XS5 08B1NBM12**	0.025



XS5 ●●B1●●M12

Ø 12, threaded M12 x 1

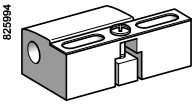
Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
2	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS5 12B1PAL2**	0.075
			M12 connector	**XS5 12B1PAM12**	0.035
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS5 12B1NAL2**	0.075
			M12 connector	**XS5 12B1NAM12**	0.035
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS5 12B1PBL2**	0.075
			M12 connector	**XS5 12B1PBM12**	0.035
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS5 12B1NBL2**	0.075
			M12 connector	**XS5 12B1NBM12**	0.035

Ø 18, threaded M18 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS5 18B1PAL2**	0.120
			M12 connector	**XS5 18B1PAM12**	0.060
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS5 18B1NAL2**	0.120
			M12 connector	**XS5 18B1NAM12**	0.060
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS5 18B1PBL2**	0.120
			M12 connector	**XS5 18B1PBM12**	0.060
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS5 18B1NBL2**	0.120
			M12 connector	**XS5 18B1NBM12**	0.060

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
10	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS5 30B1PAL2**	0.205
			M12 connector	**XS5 30B1PAM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS5 30B1NAL2**	0.205
			M12 connector	**XS5 30B1NAM12**	0.145
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS5 30B1PBL2**	0.205
			M12 connector	**XS5 30B1PBM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS5 30B1NBL2**	0.205
			M12 connector	**XS5 30B1NBM12**	0.145



XSZ B1●●

Accessories *(2)*

Description		Reference	Weight kg
Fixing clamps	Ø 8	**XSZ B108**	0.006
	Ø 12	**XSZ B112**	0.006
	Ø 18	**XSZ B118**	0.010
	Ø 30	**XSZ B130**	0.020

*(1) For a 5 m long cable, replace L2 with **L5**, and for a 10 m long cable, replace L2 with **L10**.*
*Example: XS5 08B1PAL2 becomes **XS5 08B1PAL5** with a 5 m long cable.*
(2) For further information, see page 2/106.

Inductive proximity sensors

Osiprox® Optimum
Cylindrical, flush mountable
Three-wire, d.c. supply, solid-state output

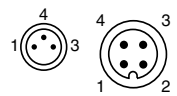
Characteristics

Sensor type			XS5 ●●B1●●M8, XS5 ●●B1●●M12	XS5 ●●B1●●L2
Product certifications			UL, CSA, CE	
Connection	Connector		M8 on Ø 8, M12 on Ø 8, M12 on Ø 12, Ø 18 and Ø 30	–
	Pre-cabled		–	Length: 2 m
Operating zone	Ø 8	**mm**	**0…1.2**	
	Ø 12	**mm**	**0…1.6**	
	Ø 18	**mm**	**0…4**	
	Ø 30	**mm**	**0…8**	
Differential travel		**%**	1…15 of real sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 67	IP 68 ⧈ (except Ø 8: IP 67)
	Conforming to DIN 40050		IP 69K for Ø12 to Ø30	
Storage temperature range		**°C**	- 40…+ 85	
Operating temperature range		**°C**	- 25…+ 70	
Materials	Case		Nickel plated brass	
	Pre-cabled		–	PvR 3 x 0.34 mm² (except **XS5 08**: 3 x 0.11 mm²)
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 50 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication			LED (yellow): 4 viewing ports at 90°	LED (yellow): annular
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10…36	
Switching capacity		**mA**	≤ 200 with overload and short-circuit protection	
Voltage drop, closed state		**V**	≤ 2	
Current consumption, no-load		**mA**	≤ 10	
Maximum switching frequency	**XS5 08B1●●●●, XS5 12B1●●●●**	**kHz**	5	
	XS5 18B1●●●●	**kHz**	2	
	XS5 30B1●●●●	**kHz**	1	
Delays	First-up	**ms**	≤ 10	
	Response	**ms**	≤ 0.1 for **XS5 08B1●●●●** and **XS5 12B1●●●●**, ≤ 0.15 for **XS5 18B1●●●●**, ≤ 0.3 for **XS5 30B1●●●●**	
	Recovery	**ms**	≤ 0.1 for **XS5 08B1●●●●** and **XS5 12B1●●●●**, ≤ 0.35 for **XS5 18B1●●●●**, ≤ 0.7 for **XS5 30B1●●●●**	

Wiring scheme

Connector

M8 M12

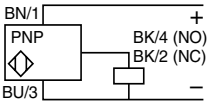


See connection on page 9/45.

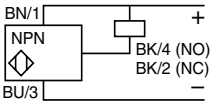
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP



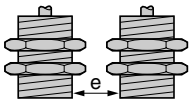
NPN

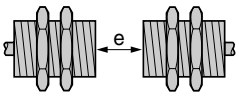


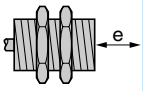
For M8 connector, NO and NC output on terminal 4.

Setting-up

Minimum mounting distances (mm)



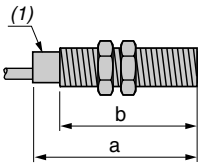




	Side by side	Face to face	Facing a metal object
Ø 8	e ≥ 3	e ≥ 18	e ≥ 4.5
Ø 12	e ≥ 4	e ≥ 24	e ≥ 6
Ø 18	e ≥ 10	e ≥ 60	e ≥ 15
Ø 30	e ≥ 20	e ≥ 120	e ≥ 30

Dimensions

XS5

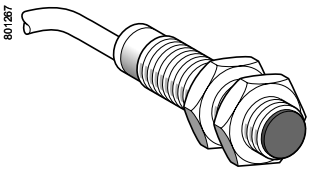


(1) LED

XS5	Pre-cabled a	Pre-cabled b	Connector	a	b
Ø 8	33	25	M8	42	26
			M12	45	24
Ø 12	35	25	M12	50	29
Ø 18	38	28	M12	50.3	28
Ø 30	42.3	32	M12	54.5	32

Inductive proximity sensors

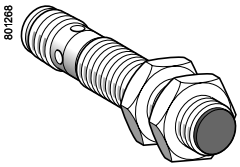
Osiprox® Optimum
Cylindrical, flush mountable
Two-wire, d.c. supply



XS5 ●●B1D●L2

Ø 8, threaded M8 x 1

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
1.5	NO	Pre-cabled (L = 2 m) *(1)*	**XS5 08B1DAL2**	0.035
		M12 connector	**XS5 08B1DAM12**	0.025
	NO terminals 1 and 4	M12 connector	**XS5 08B1CAM12**	0.025
	(2)	Remote M12 connector *(3)*	**XS5 08B1CAL08M12**	0.050
	NC	Pre-cabled (L = 2 m) *(1)*	**XS5 08B1DBL2**	0.035
		M12 connector	**XS5 08B1DBM12**	0.025



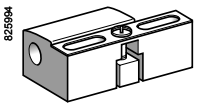
XS5 ●●B1D●M12

Ø 12, threaded M12 x 1

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
2	NO	Pre-cabled (L = 2 m) *(1)*	**XS5 12B1DAL2**	0.075
		M12 connector	**XS5 12B1DAM12**	0.035
	NO terminals 1 and 4	M12 connector	**XS5 12B1CAM12**	0.035
	(2)	Remote M12 connector *(3)*	**XS5 12B1CAL08M12**	0.060
	NC	Pre-cabled (L = 2 m) *(1)*	**XS5 12B1DBL2**	0.075
		M12 connector	**XS5 12B1DBM12**	0.035

Ø 18, threaded M18 x 1

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
5	NO	Pre-cabled (L = 2 m) *(1)*	**XS5 18B1DAL2**	0.120
		M12 connector	**XS5 18B1DAM12**	0.060
	NO terminals 1 and 4	M12 connector	**XS5 18B1CAM12**	0.060
	(2)	Remote M12 connector *(3)*	**XS5 18B1CAL08M12**	0.085
	NC	Pre-cabled (L = 2 m) *(1)*	**XS5 18B1DBL2**	0.120
		M12 connector	**XS5 18B1DBM12**	0.060



XSZ B1●●

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
10	NO	Pre-cabled (L = 2 m) *(1)*	**XS5 30B1DAL2**	0.205
		M12 connector	**XS5 30B1DAM12**	0.145
	NO terminals 1 and 4	M12 connector	**XS5 30B1CAM12**	0.145
	(2)	Remote M12 connector *(3)*	**XS5 30B1CAL08M12**	0.170
	NC	Pre-cabled (L = 2 m) *(1)*	**XS5 30B1DBL2**	0.205
		M12 connector	**XS5 30B1DBM12**	0.145

Accessories *(4)*

Description		Reference	Weight kg
Fixing clamps	Ø 8	**XSZ B108**	0.006
	Ø 12	**XSZ B112**	0.006
	Ø 18	**XSZ B118**	0.010
	Ø 30	**XSZ B130**	0.020

*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: XS5 08B1DAL2 becomes **XS5 08B1DAL5** with a 5 m long cable.*
(2) The NO output is connected to terminals 1 and 4 of the M12 connector.
(3) 0.8 m flying lead with M12 connector.
(4) For further information, see page 2/106.

Inductive proximity sensors

Osiprox® Optimum
Cylindrical, flush mountable
Two-wire, d.c. supply

Characteristics

Sensor type			XS5 ●●B1●●M12	XS5 ●●B1CAL08M12	XS5 ●●B1D●L2
Product certifications			UL, CSA, CE		
Connection	Connector		M12	0.80 m flying lead with M12 connector	–
	Pre-cabled		–		Length: 2 m
Operating zone	Ø 8	mm	**0…1.2**		
	Ø 12	mm	**0…1.6**		
	Ø 18	mm	**0…4**		
	Ø 30	mm	**0…8**		
Differential travel		%	1...15 of real sensing distance (Sr)		
Degree of protection	Conforming to IEC 60529		IP 67		⧈ IP 68 (except Ø 8: IP 67)
Storage temperature		°C	- 40…+ 85		
Operating temperature		°C	- 25…+ 70		
Materials	Case		Nickel plated brass (except **XS5 08**: stainless steel, grade 303)		
	Cable		–	PvR 2 x 0.34 mm² (except **XS5 08**: 2 x 0.11 mm²)	
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms		
Output state indication			Yellow LED: 4 viewing ports at 90°		Yellow LED: annular
Rated supply voltage		V	⎓ 12…48		
Voltage limits (including ripple)		V	⎓ 10…58		
Switching capacity		mA	1.5…100 with overload and short-circuit protection		
Voltage drop, closed state		V	≤ 4		
Residual current, open state		mA	≤ 0.5		
Maximum switching frequency	**XS5 08B1D●●●, XS5 12B1D●●●**	Hz	4000		
	XS5 18B1D●●●	Hz	3000		
	XS5 30B1D●●●	Hz	2000		
Delays	First-up	ms	≤ 10		
	Response	ms	≤ 0.2 **XS5 08B1●●●●** and **XS5 12B1●●●●**, ≤ 0.15 **XS5 18B1●●●●**, ≤ 0.3 **XS5 30B1●●●●**		
	Recovery	ms	≤ 0.2 (except **XS5 30B1●●●●**: ≤ 0.3)		

Wiring schemes

Connector

M12

See connection on page 9/44.

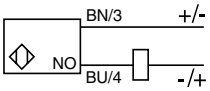
Pre-cabled

BU: Blue
BN: Brown

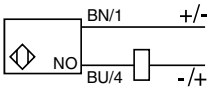
2-wire ⎓ non polarised

NO output

XS5 ●●B1DA●●●



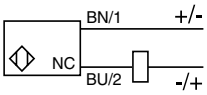
XS5 ●●B1CA●●●



2-wire ⎓ non polarised

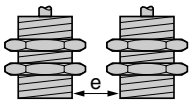
NC output

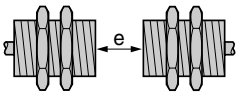
XS5 ●●B1DB●●●

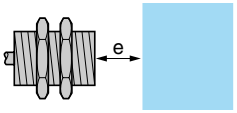


Setting-up

Minimum mounting distances (mm)



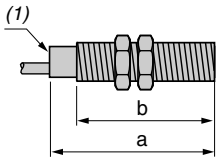




	Side by side	Face to face	Facing a metal object
Ø 8	e ≥ 3	e ≥ 18	e ≥ 4.5
Ø 12	e ≥ 4	e ≥ 24	e ≥ 6
Ø 18	e ≥ 10	e ≥ 60	e ≥ 15
Ø 30	e ≥ 20	e ≥ 120	e ≥ 30

Dimensions

XS5



(1) LED

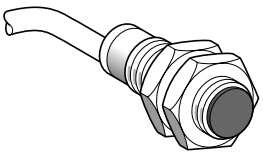
	Pre-cabled (mm)		Connector (mm)	
	a	b	a	b
Ø 8	50	42	61	40
Ø 12	50	42	61	42
Ø 18	52.5	44	64.6	44
Ø 30	50	42	62.2	41

Inductive proximity sensors

Osiprox® Technology

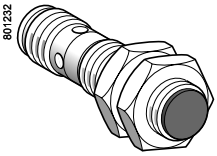
Plastic, cylindrical, non flush mountable
Two-wire, a.c. or d.c. supply
Three-wire, d.c. supply, solid-state output

801231



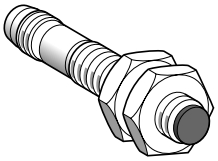
XS4 P●●●●340
XS4 P●●●●370
XS4 P●●●●230

801232



XS4 P●●●●340D
XS4 P●●●●370D
XS4 P●●●●230D

801167



XS4 P●●●●340S

Sensing dist. Sn (mm)	Function	Output	Connection	Reference	Weight kg
Ø 8, threaded M8 x 1					
Three-wire ⎓ 12-24 V					
2.5	NO	PNP	Pre-cabled (L = 2 m) *(1) (2)*	**XS4 P08PA340**	0.025
		NPN	Pre-cabled (L = 2 m) *(1) (2)*	**XS4 P08NA340**	0.025
	NC	PNP	Pre-cabled (L = 2 m) *(1) (2)*	**XS4 P08PB340**	0.025
		NPN	Pre-cabled (L = 2 m) *(1) (2)*	**XS4 P08NB340**	0.025
Three-wire ⎓ 12-48 V					
2.5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS4 P08PA370**	0.030
		NPN	Pre-cabled (L = 2 m)	**XS4 P08NA370**	0.030
	NC	PNP	Pre-cabled (L = 2 m)	**XS4 P08PB370**	0.030
		NPN	Pre-cabled (L = 2 m)	**XS4 P08NB370**	0.030
Two-wire ∿ or ⎓ 24-240 V					
2.5	NO		Pre-cabled (L = 2 m) *(1)*	**XS4 P08MA230**	0.030
			1/2"-20UNF connector	**XS4 P08MA230K**	0.020
	NC		Pre-cabled (L = 2 m) *(1)*	**XS4 P08MB230**	0.030
			1/2"-20UNF connector	**XS4 P08MB230K**	0.020
Ø 12, threaded M12 x 1					
Three-wire ⎓ 12-24 V					
4	NO	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P12PA340**	0.060
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P12NA340**	0.060
	NC	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P12PB340**	0.060
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P12NB340**	0.060
Three-wire ⎓ 12-48 V					
4	NO	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P12PA370**	0.065
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P12NA370**	0.065
	NC	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P12PB370**	0.065
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS4 P12NB370**	0.065
Two-wire ∿ or ⎓ 24-240 V					
4	NO		Pre-cabled (L = 2 m) *(1)*	**XS4 P12MA230**	0.065
			1/2"-20UNF connector	**XS4 P12MA230K**	0.030
	NC		Pre-cabled (L = 2 m) *(1)*	**XS4 P12MB230**	0.065
			1/2"-20UNF connector	**XS4 P12MB230K**	0.030
Ø 18, threaded M18 x 1					
Three-wire ⎓ 12-24 V					
8	NO	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P18PA340**	0.090
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P18NA340**	0.090
	NC	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P18PB340**	0.090
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P18NB340**	0.090
Three-wire ⎓ 12-48 V					
8	NO	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P18PA370**	0.100
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P18NA370**	0.100
	NC	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P18PB370**	0.100
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS4 P18NB370**	0.100
Two-wire ∿ or ⎓ 24-240 V					
8	NO		Pre-cabled (L = 2 m) *(1)*	**XS4 P18MA230**	0.100
			1/2"-20UNF connector	**XS4 P18MA230K**	0.040
	NC		Pre-cabled (L = 2 m) *(1)*	**XS4 P18MB230**	0.100
			1/2"-20UNF connector	**XS4 P18MB230K**	0.040
Ø 30, threaded M30 x 1.5					
Three-wire ⎓ 12-24 V					
15	NO	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P30PA340**	0.120
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P30NA340**	0.120
	NC	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P30PB340**	0.120
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P30NB340**	0.120
Three-wire ⎓ 12-48 V					
15	NO	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P30PA370**	0.140
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4 P30NA370**	0.140
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS4 P30PB370**	0.140
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS4 P30NB370**	0.140
Two-wire ∿ or ⎓					
15	NO		Pre-cabled (L = 2 m) *(1)*	**XS4 P30MA230**	0.140
			1/2"-20UNF connector	**XS4 P30MA230K**	0.080
	NC		Pre-cabled (L = 2 m) *(1)*	**XS4 P30MB230**	0.140
			1/2"-20UNF connector	**XS4 P30MB230K**	0.080

*(1) For a 5 m long cable, add **L1** to the reference and for a 10 m long cable, add **L2**. Example: **XS4 P08PA340** becomes **XS4 P08PA340L1** with a 5 m long cable.*
*(2) For an M8 connector, add **S** to the reference. Example: **XS4 P08PA340** becomes **XS4 P08PA340S** with an M8 connector.*
*(3) For an M12 connector, add **D** to the reference. Example: **XS4 P12PA370** becomes **XS4 P12PA370D** with an M12 connector.*

Inductive proximity sensors

Osiprox® Technology
Plastic, cylindrical, non flush mountable
Two-wire, a.c. or d.c. supply
Three-wire, d.c. supply, solid-state output

Characteristics

Sensor type			XS4 P●●●●340●	XS4 P●●●●370●	XS4 P●●M●230●
Product certifications			UL, CSA, CE		
Connection	Pre-cabled		Length: 2 m		
	Connector		M8 on Ø 8 M12 on Ø 12, Ø 18 and Ø 30		1/2"-20UNF
Operating zone	Ø 6.5 and Ø 8	**mm**	**0…2**		
	Ø 12	**mm**	**0…3.2**		
	Ø 18	**mm**	**0…6.4**		
	Ø 30	**mm**	**0…12**		
Differential travel		**%**	1...15 of real sensing distance (Sr)		
Degree of protection	Conforming to IEC 60529		IP 68, double insulation ⧈ for pre-cabled version (except Ø 8: IP 67) IP 67 for connector version		
Storage temperature		**°C**	- 40…+ 85		
Operating temperature		**°C**	- 25…+ 70		
Materials	Case		PPS		
	Cable		PvR 3 x 0.34 mm² except Ø 6.5 and 8: 3 x 0.11 mm²		PvR 2 x 0.34 mm² except Ø 8: 2 x 0.11 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms		
Output state indication			Yellow LED: annular on pre-cabled version Yellow LED: 4 viewing ports at 90° on connector version		
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity	⎓ 12…48 with protection against reverse polarity	∼ or ⎓ 24…240 (50/60 Hz)
Voltage limits (including ripple)		**V**	⎓ 10…36	⎓ 10…58	∼ or ⎓ 20…264
Switching capacity		**mA**	⩽ 200 with overload and short-circuit protection		5…100 for Ø 8, 5…200 for Ø 12, 5…200 ⎓ and 5…300 ∼ for Ø 18 and 30
Voltage drop, closed state		**V**	⩽ 2		⩽ 5.5
Residual current, open state		**mA**	–		⩽ 0.6
Current consumption, no-load		**mA**	⩽ 10		–
Maximum switching frequency	Ø 6.5, Ø 8 and Ø 12	**Hz**	5000		⎓ 3000, ∼ 25
	Ø 18	**Hz**	2000		⎓ 2000, ∼ 25
	Ø 30	**Hz**	1000		⎓ 1000, ∼ 25
Delays	First-up	**ms**	⩽ 10		⩽ 40
	Response	**ms**	⩽ 0.1 for Ø 8 and Ø 12, ⩽ 0.15 for Ø 18, ⩽ 0.3 for Ø 30		⩽ 0.2
	Recovery	**ms**	⩽ 0.1 for Ø 8 and Ø 12, ⩽ 0.35 for Ø 18, ⩽ 0.7 for Ø 30		⩽ 0.2 for Ø 8, Ø 12 and Ø 18, ⩽ 0.4 for Ø 30

Wiring schemes

Connector

M8

M12

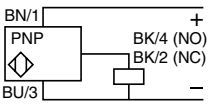
1/2"-20UNF

⎓: 2
⎓: 3

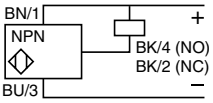
Pre-cabled

BU: Blue
BN: Brown
BK: Black

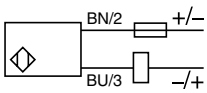
PNP



NPN



2-wire ∼ or ⎓



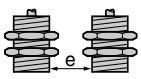
For M8 connector, NO and NC outputs on terminal 4

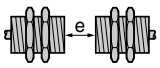
See connection on page 9/45.

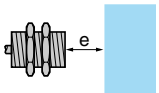
Setting-up

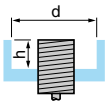
Minimum mounting distances (mm)

	Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 8	e ⩾ 10	e ⩾ 30	e ⩾ 7.5	d ⩾ 24 h ⩾ 5
Ø 12	e ⩾ 16	e ⩾ 48	e ⩾ 12	d ⩾ 36 h ⩾ 8
Ø 18	e ⩾ 16	e ⩾ 96	e ⩾ 24	d ⩾ 54 h ⩾ 16
Ø 30	e ⩾ 60	e ⩾ 180	e ⩾ 45	d ⩾ 90 h ⩾ 30

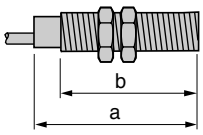








Dimensions

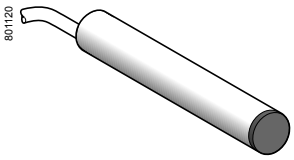


XS4 P	3-wire ⎓ 12-24 V Pre-cabled (mm) a	b	Connector (mm) a	b	3-wire ⎓ 12-48 V or 2-wire ∼/⎓ 24-240 V Pre-cabled (mm) a	b	Connector (mm) a	b
Ø 8	33	26	42	26	50	40	61	40
Ø 12	33	26	48	27	50	42	61	42
Ø 18	33.5	26	48	29	60	51.5	70	51.5
Ø 30	40.5	33	50	34	60	51.5	70	51.5

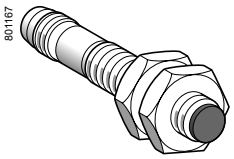
Inductive proximity sensors

Osiprox® Technology

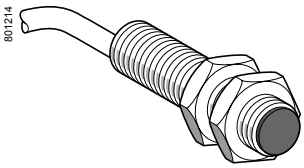
Basic, cylindrical, flush mountable, increased range
Three-wire d.c. Solid-state output



XS1 06B3●●L2



XS1 08B3●●M8



XS1 12B3●●L2

Sensing distance Sn (mm)	Function	Output	Connection	Sold in minimum lots of	Unit reference	Weight kg
Ø 6.5, plain						
Three-wire ⎓ 12-24 V, flush mountable						
2	NO	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS1 06B3PAL2**	0.060
			M8 connector	1	**XS1 06B3PAM8**	0.030
			M12 connector	1	**XS1 06B3PAM12**	0.050
			Pre-cabled (L = 2 m)	20	**XS1 06B3PAL2TQ**	0.980
			M8 connector	20	**XS1 06B3PAM8TQ**	0.320
		NPN	Pre-cabled (L = 2 m)	1	**XS1 06B3NAL2**	0.060
			M8 connector	1	**XS1 06B3NAM8**	0.030
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS1 06B3PBL2**	0.060
			M8 connector	1	**XS1 06B3PBM8**	0.030
Ø 8, threaded M8 x 1						
Three-wire ⎓ 12-24 V, flush mountable						
2	NO	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS1 08B3PAL2**	0.070
			M8 connector	1	**XS1 08B3PAM8**	0.030
			M12 connector	1	**XS1 08B3PAM12**	0.060
			Pre-cabled (L = 2 m)	20	**XS1 08B3PAL2TQ**	1.120
			M8 connector	20	**XS1 08B3PAM8TQ**	0.460
			M12 connector	20	**XS1 08B3PAM12TQ**	0.940
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS1 08B3NAL2**	0.070
			M8 connector	1	**XS1 08B3NAM8**	0.030
			M12 connector	1	**XS1 08B3NAM12**	0.060
			Pre-cabled (L = 2 m)	20	**XS1 08B3NAL2TQ**	1.120
			M8 connector	20	**XS1 08B3NAM8TQ**	0.460
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS1 08B3PBL2**	0.070
			M8 connector	1	**XS1 08B3PBM8**	0.030
			M12 connector	1	**XS1 08B3PBM12**	0.060
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS1 08B3NBL2**	0.070
			M8 connector	1	**XS1 08B3NBM8**	0.030
			M12 connector	1	**XS1 08B3NBM12**	0.060
Ø 12, threaded M12 x 1						
Three-wire ⎓ 12-24 V, flush mountable						
4	NO	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS1 12B3PAL2**	0.090
			M12 connector	1	**XS1 12B3PAM12**	0.030
			Pre-cabled (L = 2 m)	20	**XS1 12B3PAL2TQ**	1.600
			M12 connector	20	**XS1 12B3PAM12TQ**	0.470
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS1 12B3NAL2**	0.090
			M12 connector	1	**XS1 12B3NAM12**	0.030
			Pre-cabled (L = 2 m)	20	**XS1 12B3NAL2TQ**	1.600
			M12 connector	20	**XS1 12B3NAM12TQ**	0.470
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS1 12B3PBL2**	0.090
			M12 connector	1	**XS1 12B3PBM12**	0.030
			M12 connector	20	**XS1 12B3PBM12TQ**	0.470
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS1 12B3NBL2**	0.090
			M12 connector	1	**XS1 12B3NBM12**	0.030

(1) For a 5 m long cable replace L2 by L5.
*Example: XS1 06B3PAL2 becomes **XS1 06B3PAL5** with a 5 m long cable.*

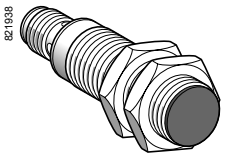
Characteristics: page 2/44
Schemes: page 2/44
Dimensions: page 2/47

Schneider Electric

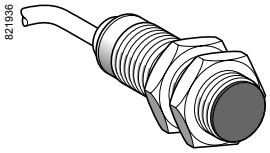
Inductive proximity sensors

Osiprox® Technology

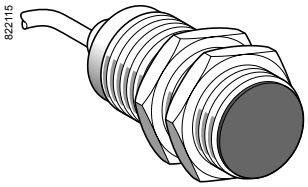
Basic, cylindrical, flush mountable, increased range
Three-wire d.c. Solid-state output



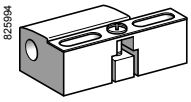
XS1 18B3●●M12



XS1 18B3●●●L2



XS1 30B3●●L2



XSZ B1●●

Sensing distance Sn (mm)	Function	Output	Connection	Sold in minimum lots of	Unit reference	Weight kg
Ø 18, threaded M18 x 1						
Three-wire ⎓ 12-24 V, flush mountable						
8	NO	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS1 18B3PAL2**	0.110
			M12 connector	1	**XS1 18B3PAM12**	0.060
			Pre-cabled (L = 2 m)	20	**XS1 18B3PAL2TQ**	2.000
			M12 connector	20	**XS1 18B3PAM12TQ**	1.140
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS1 18B3NAL2**	0.110
			M12 connector	1	**XS1 18B3NAM12**	0.060
			Pre-cabled (L = 2 m)	20	**XS1 18B3NAL2TQ**	2.000
			M12 connector	20	**XS1 18B3NAM12TQ**	1.140
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS1 18B3PBL2**	0.110
			M12 connector	1	**XS1 18B3PBM12**	0.060
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS1 18B3NBL2**	0.110
			M12 connector	1	**XS1 18B3NBM12**	0.060
Ø 30, threaded M30 x 1.5						
Three-wire ⎓ 12-24 V, flush mountable						
15	NO	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS1 30B3PAL2**	0.180
			M12 connector	1	**XS1 30B3PAM12**	0.130
			Pre-cabled (L = 2 m)	20	**XS1 30B3PAL2TQ**	3.360
			M12 connector	20	**XS1 30B3PAM12TQ**	2.000
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS1 30B3NAL2**	0.180
			M12 connector	1	**XS1 30B3NAM12**	0.130
			M12 connector	20	**XS1 30B3NAM12TQ**	2.000
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS1 30B3PBL2**	0.180
			M12 connector	1	**XS1 30B3PBM12**	0.130
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS1 30B3NBL2**	0.180
			M12 connector	1	**XS1 30B3NBM12**	0.130

Accessories *(2)*

Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø = 6.5 (plain)	**XSZ B165**	0.005
	Ø 8 (M8 x 1)	**XSZ B108**	0.006
	Ø 12 (M12 x 1)	**XSZ B112**	0.006
	Ø 18 (M18 x 1)	**XSZ B118**	0.010
	Ø 30 (M30 x 1.5)	**XSZ B130**	0.020

(1) For a 5 m long cable replace L2 by L5.
*Example: XS1 18B3PAL2 becomes **XS1 18B3PAL5** with a 5 m long cable.*
(2) For further information, see page 2/106.

Characteristics: page 2/44
Schemes: page 2/44
Dimensions: page 2/47

Inductive proximity sensors

Osiprox® Technology

Basic, cylindrical, flush mountable, increased range

Three-wire d.c. Solid-state output

Characteristics

Sensor type			XS1 ••B3••M8	XS1 ••B3••M12	XS1 ••B3••L2
Product certifications			UL, CSA, CE		
Connection	Connector		M8	M12	–
	Pre-cabled		–	–	Length 2 m
Operating zone *(1)*	Ø 6.5 and Ø 8	**mm**	**0…1.6**		
	Ø 12	**mm**	**0…3.2**		
	Ø 18	**mm**	**0…6.4**		
	Ø 30	**mm**	**0…12**		
Differential travel		**%**	1...15 of effective sensing distance (Sr)		
Degree of protection	Conforming to IEC 60529		IP 65 and IP 67		
Storage temperature		**°C**	- 40…+ 85		
Operating temperature		**°C**	- 25…+ 70		
Materials	Case		Nickel plated brass		
	Cable		–		PvR 3 x 0.34 mm² except Ø 6.5 and 8: 3 x 0.11 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms		
Output state indication			Yellow LED, 4 viewing ports at 90°		Yellow LED, annular
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity		
Voltage limits (including ripple)		**V**	⎓ 10…36		
Switching capacity		**mA**	≤ 200 with overload and short-circuit protection		
Voltage drop, closed state		**V**	≤ 2		
Current consumption, no-load		**mA**	≤ 10		
Maximum switching frequency	Ø 6.5, Ø 8 and Ø 12	**Hz**	2500		
	Ø 18	**Hz**	1000		
	Ø 30	**Hz**	500		
Delays	First-up	**ms**	≤ 10		
	Response	**ms**	≤ 0.2 for Ø 8 and Ø 12, ≤ 0.3 for Ø 18, ≤ 0.6 for Ø 30		
	Recovery	**ms**	≤ 0.2 for Ø 8 and Ø 12, ≤ 0.7 for Ø 18, ≤ 1.4 for Ø 30		

(1) Detection curves, see page 2/110.

Wiring schemes

Connector

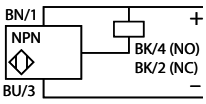
M8

M12

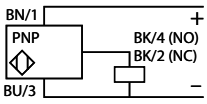
Pre-cabled

BU: Blue
BN: Brown
BK: Black

NPN



PNP



For M8 connector, NO and NC outputs on terminal 4

See connection on page 9/45.

References:
pages 2/44 and 2/45

Dimensions:
page 2/47

Inductive proximity sensors

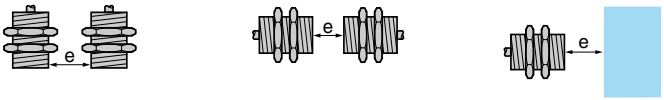
Osiprox® Technology

Basic, cylindrical, flush mountable, increased range

Three-wire d.c. Solid-state output

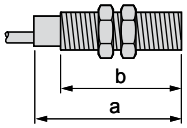
Setting-up

Minimum mounting distances (mm)



Sensors		Side by side	Face to face	Facing a metal object
Ø 6.5 flush mountable	**XS1 06 B3**	e ⩾ 4	e ⩾ 24	e ⩾ 6
Ø 8 flush mountable	**XS1 08 B3**	e ⩾ 4	e ⩾ 24	e ⩾ 6
Ø 12 flush mountable	**XS1 12 B3**	e ⩾ 8	e ⩾ 50	e ⩾ 12
Ø 18 flush mountable	**XS1 18 B3**	e ⩾ 16	e ⩾ 100	e ⩾ 25
Ø 30 flush mountable	**XS1 30 B3**	e ⩾ 30	e ⩾ 180	e ⩾ 45

Dimensions



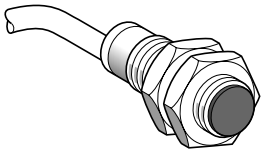
Sensors		Flush mountable in metal					
		Pre-cabled (mm)		M8 connector (mm)		M12 connector (mm)	
		a	b	a	b	a	b
Ø 6.5	**XS1 06 B3**	33	30	42	34	45	24
Ø 8	**XS1 08 B3**	33	25	42	26	45	23
Ø 12	**XS1 12 B3**	35	25	–	–	50	29
Ø 18	**XS1 18 B3**	38	28	–	–	50.3	28
Ø 30	**XS1 30 B3**	42.3	32	–	–	54.5	32

Inductive proximity sensors

Osiprox® Technology

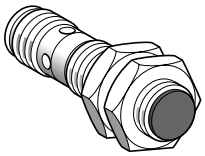
Basic, plastic, cylindrical, non flush mountable
Three-wire, d.c. supply, solid-state output

801231



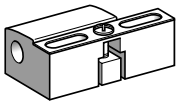
XS2 ●●AL●●L2

801232



XS2 ●●AL●●M12

825994



XSZ B1●●

Sensing distance Sn (mm)	Function	Output	Connection	Reference	Weight kg
Ø 8, threaded M8 x 1					
Three-wire ⎓ 12-24 V, non flush mountable					
2.5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 08ALPAL2**	0.030
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 08ALNAL2**	0.030
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 08ALPBL2**	0.003
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 08ALNBL2**	0.030
Ø 12, threaded M12 x 1					
Three-wire ⎓ 12-24 V, non flush mountable					
4	NO	PNP	Pre-cabled (L = 2 m) *(2)*	**XS2 12ALPAL2**	0.065
			M12 connector	**XS2 12ALPAM12**	0.010
		NPN	Pre-cabled (L = 2 m) *(2)*	**XS2 12ALNAL2**	0.065
			M12 connector	**XS2 12ALNAM12**	0.010
	NC	PNP	Pre-cabled (L = 2 m) *(2)*	**XS2 12ALPBL2**	0.065
			M12 connector	**XS2 12ALPBM12**	0.010
		NPN	Pre-cabled (L = 2 m) *(2)*	**XS2 12ALNBL2**	0.065
			M12 connector	**XS2 12ALNBM12**	0.010
Ø 18, threaded M18 x 1					
Three-wire ⎓ 12-24 V, non flush mountable					
8	NO	PNP	Pre-cabled (L = 2 m) *(2)*	**XS2 18ALPAL2**	0.095
			M12 connector	**XS2 18ALPAM12**	0.025
		NPN	Pre-cabled (L = 2 m) *(2)*	**XS2 18ALNAL2**	0.095
			M12 connector	**XS2 18ALNAM12**	0.025
	NC	PNP	Pre-cabled (L = 2 m) *(2)*	**XS2 18ALPBL2**	0.095
			M12 connector	**XS2 18ALPBM12**	0.025
		NPN	Pre-cabled (L = 2 m) *(2)*	**XS2 18ALNBL2**	0.095
			M12 connector	**XS2 18ALNBM12**	0.025
Ø 30, threaded M30 x 1.5					
Three-wire ⎓ 12-24 V, non flush mountable					
15	NO	PNP	Pre-cabled (L = 2 m) *(2)*	**XS2 30ALPAL2**	0.135
			M12 connector	**XS2 30ALPAM12**	0.065
		NPN	Pre-cabled (L = 2 m) *(2)*	**XS2 30ALNAL2**	0.135
			M12 connector	**XS2 30ALNAM12**	0.065
	NC	PNP	Pre-cabled (L = 2 m) *(2)*	**XS2 30ALPBL2**	0.135
			M12 connector	**XS2 30ALPBM12**	0.065
		NPN	Pre-cabled (L = 2 m) *(2)*	**XS2 30ALNBL2**	0.135
			M12 connector	**XS2 30ALNBM12**	0.065

Accessories *(3)*

Description		Reference	Weight kg
Fixing clamps	Ø 8	**XSZ B108**	0.006
	Ø 12	**XSZ B112**	0.006
	Ø 18	**XSZ B118**	0.010
	Ø 30	**XSZ B130**	0.020

(1) For a 5 m long cable replace L2 by L5.
*Example: XS2 08ALPAL2 becomes **XS2 08ALPAL5** with a 5 m long cable.*
(2) For a 5 m long cable replace L2 by L5; for a 10 m long cable replace L2 by L10.
*Example: XS2 18ALPAL2 becomes **XS2 18ALPAL5** with a 5 m long cable.*
(3) For further information, see page 2/106.

Characteristics: page 2/49
Schemes: page 2/49
Dimensions: page 2/49

Schneider Electric

Inductive proximity sensors

Osiprox® Technology

Basic, plastic, cylindrical, non flush mountable

Three-wire, d.c. supply, solid-state output

Characteristics

Sensor type			XS2 ●●ALP●L2 XS2 ●●ALN●L2	XS2 ●●ALP●M12 XS2 ●●ALN●M12
Product certifications			UL, CSA, CE	
Connection	Pre-cabled		Length: 2 m	–
	Connector		–	M12
Operating zone *(1)*	Ø 8	**mm**	**0…2**	
	Ø 12	**mm**	**0…3.2**	
	Ø 18	**mm**	**0…6.4**	
	Ø 30	**mm**	**0…12**	
Differential travel		**%**	1...15 of real sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 67	
Storage temperature		**°C**	- 40…+ 85	
Operating temperature		**°C**	- 25…+ 70	
Materials	Case		PPS	
	Cable		PVC 3 x 0.34 mm² except Ø 8: 3 x 0.11 mm²	–
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication			Yellow LED, on rear	Yellow LED: 4 viewing ports at 90°
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10…36	
Switching capacity		**mA**	≤ 100 (except Ø 8: ≤ 50) with overload and short-circuit protection	
Voltage drop, closed state		**V**	≤ 2	
Current consumption, no-load		**mA**	≤ 10	
Maximum switching frequency	Ø 8	**Hz**	3000	
	Ø 12	**Hz**	1000	
	Ø 18	**Hz**	250	
	Ø 30	**Hz**	60	
Delays	First-up	**ms**	≤ 5 (except Ø 30 ≤ 10)	
	Response	**ms**	≤ 0.5 for Ø 8, Ø 12, ≤ 1 for Ø 18, ≤ 2 for Ø 30	
	Recovery	**ms**	≤ 1 for Ø 8, ≤ 0.5 for Ø 12, ≤ 2 for Ø 18, ≤ 6 for Ø 30	

(1) Detection curves, see page 2/110.

Wiring schemes

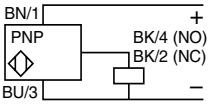
Connector

M12

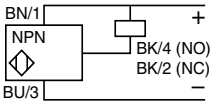
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP



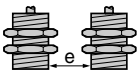
NPN

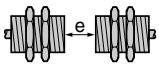


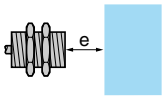
See connection on page 9/45.

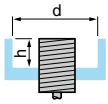
Setting-up

Minimum mounting distances (mm)



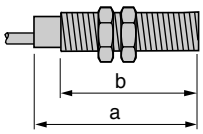






Sensors		Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 8	**XS2 08AL**	e > 10	e > 30	e > 7.5	d > 24 h > 5
Ø 12	**XS2 12AL**	e > 16	e > 48	e > 12	d > 36 h > 8
Ø 18	**XS2 18AL**	e > 16	e > 96	e > 24	d > 54 h > 16
Ø 30	**XS2 30AL**	e > 60	e > 180	e > 45	d > 90 h > 30

Dimensions



Non flush mountable in metal

Sensors		Pre-cabled (mm)		Connector (mm)	
		a	**b**	**a**	**b**
Ø 8	XS2 08AL	49	40	–	–
Ø 12	XS2 12AL	49	42	61	42
Ø 18	XS2 18AL	58.8	51.5	70.3	51.5
Ø 30	XS2 30AL	58.8	51.5	70.3	51.5

References:
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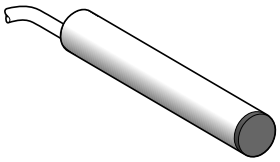
Inductive proximity sensors

Osiprox® Technology

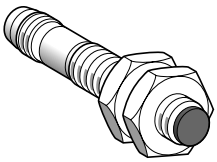
Basic, cylindrical, metal, flush and non flush mountable
Two-wire, a.c. supply
Three-wire, d.c. supply, solid-state output

801120



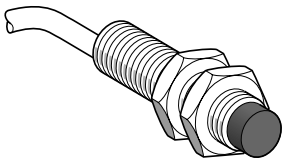
XS1 06BL●●L2

801167



XS1 08BL●●M8

801220



XS2 08BL●●L2

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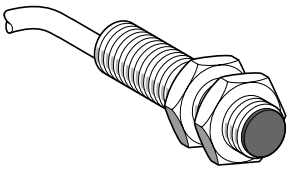

XS1 12BL●●L2

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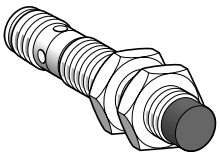


XS2 12BL●●M12

Sensing distance Sn (mm)	Function	Output	Connection	Reference	Weight kg
Ø 6.5, plain					
Three-wire ⎓ 12-24 V, flush mountable					
1.5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS1 06BLPAL2**	0.030
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS1 06BLNAL2**	0.030
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS1 06BLPBL2**	0.030
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS1 06BLNBL2**	0.030
Ø 8, threaded M8 x 1					
Three-wire ⎓ 12-24 V, flush mountable					
1.5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS1 08BLPAL2**	0.035
			M8 connector	**XS1 08BLPAM8**	0.008
			M12 connector	**XS1 08BLPAM12**	0.015
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS1 08BLNAL2**	0.035
			M8 connector	**XS1 08BLNAM8**	0.008
			M12 connector	**XS1 08BLNAM12**	0.015
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS1 08BLPBL2**	0.035
			M8 connector	**XS1 08BLPBM8**	0.008
			M12 connector	**XS1 08BLPBM12**	0.015
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS1 08BLNBL2**	0.035
			M8 connector	**XS1 08BLNBM8**	0.008
			M12 connector	**XS1 08BLNBM12**	0.015
Three-wire ⎓ 12-24 V, non flush mountable					
2.5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 08BLPAL2**	0.035
			M8 connector	**XS2 08BLPAM8**	0.008
			M12 connector	**XS2 08BLPAM12**	0.015
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 08BLNAL2**	0.035
			M8 connector	**XS2 08BLNAM8**	0.008
			M12 connector	**XS2 08BLNAM12**	0.015
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 08BLPBL2**	0.035
			M8 connector	**XS2 08BLPBM8**	0.008
			M12 connector	**XS2 08BLPBM12**	0.015
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 08BLNBL2**	0.035
			M8 connector	**XS2 08BLNBM8**	0.008
			M12 connector	**XS2 08BLNBM12**	0.015
Ø 12, threaded M12 x 1					
Three-wire ⎓ 12-24 V, flush mountable					
2	NO	PNP	Pre-cabled (L = 2 m) *(2)*	**XS1 12BLPAL2**	0.070
			M12 connector	**XS1 12BLPAM12**	0.015
		NPN	Pre-cabled (L = 2 m) *(2)*	**XS1 12BLNAL2**	0.070
			M12 connector	**XS1 12BLNAM12**	0.015
	NC	PNP	Pre-cabled (L = 2 m) *(2)*	**XS1 12BLPBL2**	0.070
			M12 connector	**XS1 12BLPBM12**	0.015
		NPN	Pre-cabled (L = 2 m) *(2)*	**XS1 12BLNBL2**	0.070
			M12 connector	**XS1 12BLNBM12**	0.015
Two-wire ∿ 24-240 V, flush mountable					
2	NO		Pre-cabled (L = 2 m) *(2)*	**XS1 12BLFAL2**	0.075
Three-wire ⎓ 12-24 V, non flush mountable					
4	NO	PNP	Pre-cabled (L = 2 m) *(2)*	**XS2 12BLPAL2**	0.070
			M12 connector	**XS2 12BLPAM12**	0.015
		NPN	Pre-cabled (L = 2 m) *(2)*	**XS2 12BLNAL2**	0.070
			M12 connector	**XS2 12BLNAM12**	0.015
	NC	PNP	Pre-cabled (L = 2 m) *(2)*	**XS2 12BLPBL2**	0.070
			M12 connector	**XS2 12BLPBM12**	0.015
		NPN	Pre-cabled (L = 2 m) *(2)*	**XS2 12BLNBL2**	0.070
			M12 connector	**XS2 12BLNBM12**	0.015

(1) For a 5 m long cable replace L2 by L5.
*Example: XS1 06BLPAL2 becomes **XS1 06BLPAL5** with a 5 m long cable.*
(2) For a 5 m long cable replace L2 by L5; for a 10 m long cable replace L2 by L10.
*Example: XS1 12BLPAL2 becomes **XS1 12BLPAL5** with a 5 m long cable.*

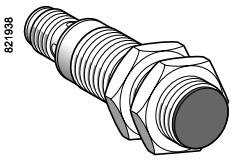
Characteristics: page 2/52
Schemes: page 2/52
Dimensions: page 2/53

Schneider Electric

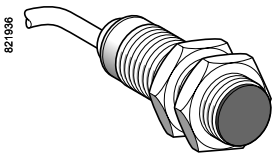
Inductive proximity sensors

Osiprox® Technology

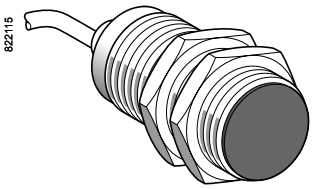
Basic, cylindrical, metal, flush and non flush mountable
Two-wire, a.c. supply
Three-wire, d.c. supply, solid-state output



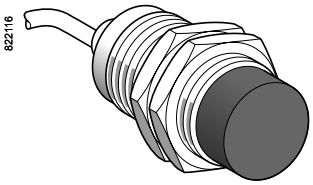
XS1 18BL●●M12



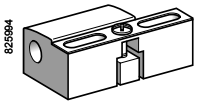
XS1 18BL●●●L2



XS1 30BL●●L2



XS2 30BL●●L2



XSZ B1●●

Sensing distance Sn (mm)	Function	Output	Connection	Reference	Weight kg
Ø 18, threaded M18 x 1					
Three-wire ⎓ 12-24 V, flush mountable					
5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS1 18BLPAL2**	0.105
			M12 connector	**XS1 18BLPAM12**	0.035
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS1 18BLNAL2**	0.105
			M12 connector	**XS1 18BLNAM12**	0.035
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS1 18BLPBL2**	0.105
			M12 connector	**XS1 18BLPBM12**	0.035
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS1 18BLNBL2**	0.105
			M12 connector	**XS1 18BLNBM12**	0.035
Two-wire ∿ 24-240 V, flush mountable					
5	NO		Pre-cabled (L = 2 m) *(1)*	**XS1 18BLFAL2**	0.120
Three-wire ⎓ 12-24 V, non flush mountable					
8	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 18BLPAL2**	0.105
			M12 connector	**XS2 18BLPAM12**	0.035
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 18BLNAL2**	0.105
			M12 connector	**XS2 18BLNAM12**	0.035
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 18BLPBL2**	0.105
			M12 connector	**XS2 18BLPBM12**	0.035
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 18BLNBL2**	0.105
			M12 connector	**XS2 18BLNBM12**	0.035
Ø 30, threaded M30 x 1.5					
Three-wire ⎓ 12-24 V, flush mountable					
10	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS1 30BLPAL2**	0.165
			M12 connector	**XS1 30BLPAM12**	0.075
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS1 30BLNAL2**	0.165
			M12 connector	**XS1 30BLNAM12**	0.075
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS1 30BLPBL2**	0.165
			M12 connector	**XS1 30BLPBM12**	0.075
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS1 30BLNBL2**	0.165
			M12 connector	**XS1 30BLNBM12**	0.075
Two-wire ∿ 24-240 V, flush mountable					
10	NO		Pre-cabled (L = 2 m) *(1)*	**XS1 30BLFAL2**	0.205
Three-wire ⎓ 12-24 V, non flush mountable					
15	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 30BLPAL2**	0.155
			M12 connector	**XS2 30BLPAM12**	0.085
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 30BLNAL2**	0.155
			M12 connector	**XS2 30BLNAM12**	0.085
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 30BLPBL2**	0.155
			M12 connector	**XS2 30BLPBM12**	0.085
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 30BLNBL2**	0.155
			M12 connector	**XS2 30BLNBM12**	0.085

Accessories *(2)*

Description		Reference	Weight kg
Fixing clamps	Ø 6.5	**XSZ B165**	0.005
	Ø 8	**XSZ B108**	0.006
	Ø 12	**XSZ B112**	0.006
	Ø 18	**XSZ B118**	0.010
	Ø 30	**XSZ B130**	0.020

(1) For a 5 m long cable replace L2 by L5; for a 10 m long cable replace L2 by L10.
*Example: XS1 18BLPAL2 becomes **XS1 18BLPAL5** with a 5 m long cable.*
(2) For further information, see page 2/106.

Characteristics: page 2/52
Schemes: page 2/52
Dimensions: page 2/53

Inductive proximity sensors

Osiprox® Technology
Basic, cylindrical, metal, flush and non flush mountable
Two-wire, a.c. supply
Three-wire, d.c. supply, solid-state output

Characteristics

Sensor type			XS1 ••BLP•L2 XS1 ••BLN•L2	XS1 ••BLP•M• XS1 ••BLN•M•	XS2 ••BLP•L2 XS2 ••BLN•L2	XS2 ••BLP•M• XS2 ••BLN•M•	XS1 ••BLFAL2
Product certifications			UL, CSA, CE				
Connection	Pre-cabled		Length 2 m	–	Length 2 m	–	Length 2 m
	Connector		–	M8 on Ø 8 M12 on Ø 8, Ø 12, Ø 18 and Ø 30	–	M8 on Ø 8 M12 on Ø 8, Ø 12, Ø 18 and Ø 30	–
Operating zone *(1)*	Ø 6.5	**mm**	**0…1.2**		–		–
	Ø 8	**mm**	**0…1.2**		**0…2**		–
	Ø 12	**mm**	**0…1.6**		**0…3.2**		**0…1.6**
	Ø 18	**mm**	**0…4**		**0…6.4**		**0…4**
	Ø 30	**mm**	**0…8**		**0…12**		**0…8**
Differential travel		**%**	1...15 of real sensing distance (Sr)				
Degree of protection	Conforming to IEC 60529		IP 67				
Storage temperature		**°C**	- 40…+ 85				
Operating temperature		**°C**	- 25…+ 70				
Materials	Case		Nickel plated brass				
	Cable		PVC 3 x 0.34 mm² except Ø 6.5 and 8: 3 x 0.11 mm²	–	PVC 3 x 0.34 mm² except Ø 6.5 and 8: 3 x 0.11 mm²	–	PVC 2 x 0.34 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)				
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms				
Output state indication			Yellow LED, on rear	Yellow LED: 4 viewing ports at 90°	Yellow LED, on rear	Yellow LED: 4 viewing ports at 90°	Yellow LED, on rear
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity				∿ 24…240
Voltage limits (including ripple)		**V**	⎓ 10…36				∿ 20…264
Switching capacity		**mA**	⩽ 100 (except Ø 6.5 and 8: ⩽ 50) with overload and short-circuit protection				5…300 (5…200 for Ø 12) *(2)*
Voltage drop, closed state		**V**	⩽ 2				⩽ 4.5 (⩽ 7 for Ø 12)
Current consumption, no-load		**mA**	⩽ 10				–
Residual current, open state		**mA**	–				⩽ 1.5
Maximum switching frequency	Ø 6.5, Ø 8	**Hz**	3000				–
	Ø 12	**Hz**	2000		1000		25
	Ø 18	**Hz**	2000		250		25
	Ø 30	**Hz**	200		60		25
Delays	First-up	**ms**	⩽ 5 (except Ø 30 ⩽ 10)				⩽ 40
	Response	**ms**	⩽ 0.5 for Ø 8, Ø 12, ⩽ 1 for Ø 18, ⩽ 2 for Ø 30				⩽ 10
	Recovery	**ms**	⩽ 1 for Ø 8, ⩽ 0.5 for Ø 12, ⩽ 2 for Ø 18, ⩽ 6 for Ø 30				⩽ 15

(1) Detection curves, see page 2/110.
(2) 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, see page 2/106.

Wiring schemes

Connector

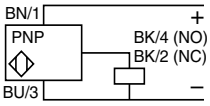
M8

M12

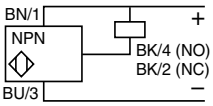
Pre-cabled

BU: Blue
BN: Brown
BK: Black

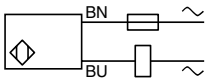
PNP



NPN



2-wire ∿



See connection on page 9/45.

References:
pages 2/50 and 2/51

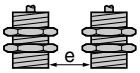
Dimensions:
page 2/53

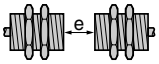
Inductive proximity sensors

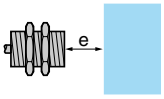
Osiprox® Technology
Basic, cylindrical, metal, flush and non flush mountable
Two-wire, a.c. supply
Three-wire, d.c. supply, solid-state output

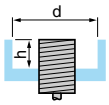
Setting-up

Minimum mounting distances (mm)



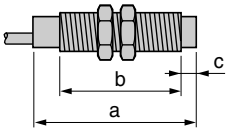






Sensors		Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 6.5 flush mountable	**XS1 06**	e ≥ 3	e ≥ 18	e ≥ 4.5	d ≥ 6,5 h ≥ 0
Ø 8 flush mountable	**XS1 08**	e ≥ 3	e ≥ 18	e ≥ 4.5	d ≥ 8 h ≥ 0
Ø 8 non flush mountable	**XS2 08**	e ≥ 10	e ≥ 30	e ≥ 7.5	d ≥ 24 h ≥ 5
Ø 12 flush mountable	**XS1 12**	e ≥ 4	e ≥ 24	e ≥ 6	d ≥ 12 h ≥ 0
Ø 12 non flush mountable	**XS2 12**	e ≥ 16	e ≥ 48	e ≥ 12	d ≥ 36 h ≥ 8
Ø 18 flush mountable	**XS1 18**	e ≥ 10	e ≥ 60	e ≥ 15	d ≥ 18 h ≥ 0
Ø 18 non flush mountable	**XS2 18**	e ≥ 16	e ≥ 96	e ≥ 24	d ≥ 54 h ≥ 16
Ø 30 flush mountable	**XS1 30**	e ≥ 20	e ≥ 120	e ≥ 30	d ≥ 30 h ≥ 0
Ø 30 non flush mountable	**XS2 30**	e ≥ 60	e ≥ 180	e ≥ 45	d ≥ 90 h ≥ 30

Dimensions



Flush mountable in metal

Sensors		Pre-cabled (mm)		M8 connector (mm)		M12 connector (mm)	
		a	b	a	b	a	b
Ø 6.5	**XS1 06**	42	–	–	–	–	–
Ø 8	**XS1 08**	42	39.4	52.2	41.3	61.4	39
Ø 12	**XS1 12**	41.3	38.7	–	–	53	39
Ø 18	**XS1 18**	51.3	48.4	–	–	64	48.5
Ø 30	**XS1 30**	51.3	48.4	–	–	64	48.5

Non flush mountable in metal

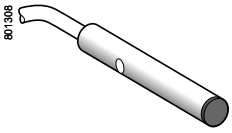
Sensors		Pre-cabled (mm)		M8 connector (mm)			M12 connector (mm)		
		a	b	a	b	c	a	b	c
Ø 8	**XS2 08**	42	35.8	52.2	37.7	4	61.4	35.4	4
Ø 12	**XS2 12**	41.3	34.1	–	–	–	52.6	34	5
Ø 18	**XS2 18**	50.6	40.4	–	–	–	63.4	40.5	8
Ø 30	**XS2 30**	50.6	35.4	–	–	–	63.4	35.5	13

References: pages 2/50 and 2/51
Characteristics: page 2/52
Schemes: page 2/52

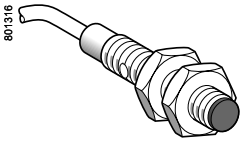
Inductive proximity sensors

Osiprox® Technology

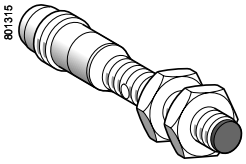
Miniature, cylindrical, flush and non flush mountable
Three-wire, d.c. supply, solid-state output



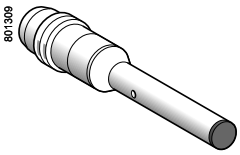
XS1 L04●●310



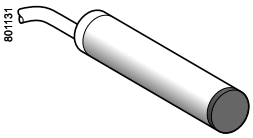
XS1 N05●●310



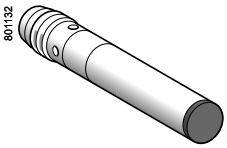
XS1 N05●●311S



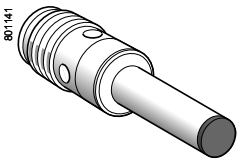
XS1 L04●●310S



XS● L06●●340



XS● L06●●340S
XS● L06●●349S



XS● L06●●340D

Ø 4 plain *(1)*

Sensing distance (Sn) mm	Function	Output	Connection *(2)*	Reference	Weight kg
Brass case, flush mountable					
1	NO	PNP	Pre-cabled (L = 2 m)	**XS1 L04PA310**	0.025
			M8 connector	**XS1 L04PA310S**	0.010
		NPN	Pre-cabled (L = 2 m)	**XS1 L04NA310**	0.025
			M8 connector	**XS1 L04NA310S**	0.010
	NC	PNP	Pre-cabled (L = 2 m)	**XS1 L04PB310**	0.025
			M8 connector	**XS1 L04PB310S**	0.010
		NPN	Pre-cabled (L = 2 m)	**XS1 L04NB310**	0.025
			M8 connector	**XS1 L04NB310S**	0.010
Stainless steel case, flush mountable					
0.8	NO	PNP	Pre-cabled (L = 2 m)	**XS1 L04PA311**	0.025
			M8 connector	**XS1 L04PA311S**	0.010
		NPN	Pre-cabled (L = 2 m)	**XS1 L04NA311**	0.025
			M8 connector	**XS1 L04NA311S**	0.010

Ø 5, threaded M5 x 0.5 *(1)*

Sensing distance (Sn) mm	Function	Output	Connection *(2)*	Reference	Weight kg
Brass case, flush mountable					
1	NO	PNP	Pre-cabled (L = 2 m)	**XS1 N05PA310**	0.030
		NPN	Pre-cabled (L = 2 m)	**XS1 N05NA310**	0.030
	NC	PNP	Pre-cabled (L = 2 m)	**XS1 N05PB310**	0.030
		NPN	Pre-cabled (L = 2 m)	**XS1 N05NB310**	0.030
Stainless steel case, flush mountable					
0.8	NO	PNP	Pre-cabled (L = 2 m)	**XS1 N05PA311**	0.030
			M8 connector	**XS1 N05PA311S**	0.015
		NPN	Pre-cabled (L = 2 m)	**XS1 N05NA311**	0.030
			M8 connector	**XS1 N05NA311S**	0.015

Ø 6.5 plain *(1)*

Sensing distance (Sn) mm	Function	Output	Connection *(2)*	Reference	Weight kg
Stainless steel case, flush mountable					
1.5	NO	PNP	Pre-cabled (L = 2 m)	**XS1 L06PA340**	0.025
			M8 connector	**XS1 L06PA340S**	0.010
			M12 connector	**XS1 L06PA340D**	0.015
		NPN	Pre-cabled (L = 2 m)	**XS1 L06NA340**	0.010
			M8 connector	**XS1 L06NA340S**	0.025
			M12 connector	**XS1 L06NA340D**	0.015
	NC	PNP	Pre-cabled (L = 2 m)	**XS1 L06PB340**	0.025
			M8 connector	**XS1 L06PB340S**	0.010
		NPN	Pre-cabled (L = 2 m)	**XS1 L06NB340**	0.025
			M8 connector	**XS1 L06NB340S**	0.010
Stainless steel case, non flush mountable					
2.5	NO	PNP	Pre-cabled (L = 2 m)	**XS2 L06PA340**	0.025
			M8 connector	**XS2 L06PA340S**	0.010
			M12 connector	**XS2 L06PA340D**	0.015
		NPN	Pre-cabled (L = 2 m)	**XS2 L06NA340**	0.025
			M8 connector	**XS2 L06NA340S**	0.010
			M12 connector	**XS2 L06NA340D**	0.015

(1) For accessories, see page 2/106.
*(2) For a 5 m long cable add **L1** to the reference, for 10 m long cable add **L2 to the reference**.*
*Example: **XS1 L04PA310** becomes **XS1 L04PA310L1** with a 5 m long cable.*

Inductive proximity sensors

Osiprox® Technology

Miniature, cylindrical, flush and non flush mountable
Three-wire, d.c. supply, solid-state output

Characteristics

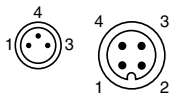
Sensor type			XS1 ●●●●●●●●S; XS1 ●●●●●●●●D; XS2 L06●A340●	XS1 ●●●●●●●; XS2 L06●A340
Product certifications			UL, CSA, CE	
Connection	Connector		M8 on **XS1 ●●●●●●●●S** and M12 on **XS1 ●●●●●●●●D**	–
	Pre-cabled		–	Length: 2 m
Operating zone *(1)*	Ø 4	**mm**	**0…0.8 (brass), 0…0.6 (stainless steel)**	
	Ø 5	**mm**	**0…0.8 (brass), 0…0.6 (stainless steel)**	
	Ø 6.5 flush mountable	**mm**	**0…1.2 (stainless steel)**	
	Ø 6.5 non flush mountable	**mm**	**0…2 (stainless steel)**	
Degree of protection	Conforming to IEC 60529		IP 67	
Storage temperature		**°C**	- 40…+ 85	
Operating temperature		**°C**	- 25…+ 70	
Materials	Case		Nickel plated brass or stainless steel grade 303	
	Pre-cabled		PvR, 3 x 0.11 mm² or 4 x 0.08 mm²	
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication			Yellow LED, 4 viewing ports at 90°	Yellow LED, annular
Rated supply voltage		**V**	⎓ 5…24 for **XS1 L04●●●●●●** and **XS1 N05●●●●●●** ⎓ 12…24 for **XS● L06●●●●●●**	
Voltage limits (including ripple)		**V**	⎓ 5…30 for **XS1 L04●●●●●●** and **XS1 N05●●●●●●** ⎓ 10…38 for **XS● L06●●●●●●**	
Current consumption, no-load		**mA**	⩽ 10	
Switching capacity	3-wire PNP/NPN	**mA**	⩽ 100 with overload and short-circuit protection ⩽ 200 for **XS● L06** with overload and short-circuit protection	
Voltage drop, closed state		**V**	⩽ 2	
Maximum switching frequency		**kHz**	5	
Delays	First-up	**ms**	⩽ 5	
	Response	**ms**	⩽ 0.1	
	Recovery	**ms**	⩽ 0.1	

(1) Detection curves, see page 2/110

Wiring schemes

Connector

M8 M12

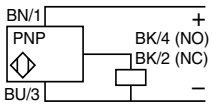


See connection on page 9/45.

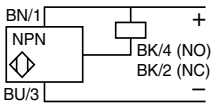
Pre-cabled

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

PNP 3-wire



NPN 3-wire

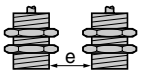


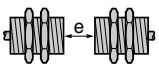
For M8 connector, NO and NC outputs on terminal 4.

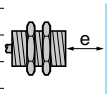
Setting-up

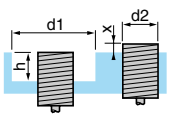
Minimum mounting distances (mm)

Sensor	Side by side	Face to face	Facing a metal object		
Ø 4	e ⩾ 2	e ⩾ 12	e ⩾ 3	d1 ⩾ 4, h ⩾ 0	–
Ø 5	e ⩾ 2	e ⩾ 12	e ⩾ 3	d1 ⩾ 5, h ⩾ 0	–
Ø 6.5	e ⩾ 3	e ⩾ 18	e ⩾ 4.5	d1 ⩾ 3, h ⩾ 0	–
Ø 6.5, XS2 L06●A340●	e ⩾ 5	e ⩾ 30	e ⩾ 7.5	d1 ⩾ 10, h ⩾ 1.6 d2 ⩾ 6.5, x ⩾ 1.3	





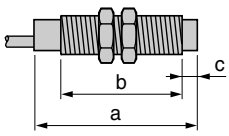




Tightening torque

Stainless steel: 2.2 N.m
Brass: 1.6 N.m

Dimensions

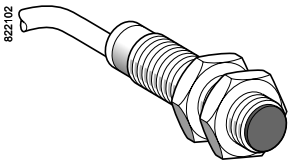


Sensor	Pre-cabled a	Pre-cabled b	Pre-cabled c	M8 connector a	M8 connector b	M8 connector c	M12 connector a	M12 connector b	M12 connector c
Ø 4	29	29	–	41	24	–	–	–	–
Ø 5	29	29	–	41	24	–	–	–	–
Ø 6.5	33	30	–	42	34	–	45	24	–
Ø 6.5, XS2 L06●A340●	33	27	3	46	35	3	49	25	3

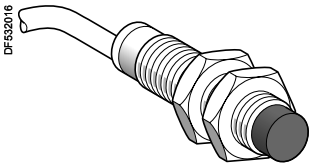
Inductive proximity sensors

Osiprox® Technology

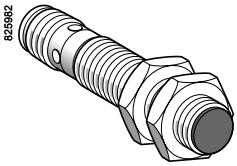
Cylindrical, flush mountable and non flush mountable
Two-wire, a.c. or d.c. supply, short-circuit protection



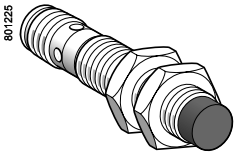
XS1 M●●●●250



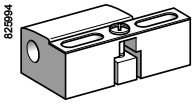
XS2 M●●●●250



XS1 M●●●●250K



XS2 M●●●●250K



XSZ B1●●

Sensing distance Sn (mm)	Function	Connection	Reference	Weight kg
Ø 12, threaded M12 x 1				
Flush mountable				
2	NO	Pre-cabled (L = 2 m) *(1)*	**XS1 M12MA250**	0.075
		1/2"-20UNF connector	**XS1 M12MA250K**	0.025
	NC	Pre-cabled (L = 2 m) *(1)*	**XS1 M12MB250**	0.075
		1/2"-20UNF connector	**XS1 M12MB250K**	0.025
Non flush mountable				
4	NO	Pre-cabled (L = 2 m) *(1)*	**XS2 M12MA250**	0.075
		1/2"-20UNF connector	**XS2 M12MA250K**	0.025
	NC	Pre-cabled (L = 2 m) *(1)*	**XS2 M12MB250**	0.075
Ø 18, threaded M18 x 1				
Flush mountable				
5	NO	Pre-cabled (L = 2 m) *(1)*	**XS1 M18MA250**	0.120
		1/2"-20UNF connector	**XS1 M18MA250K**	0.060
	NC	Pre-cabled (L = 2 m) *(1)*	**XS1 M18MB250**	0.120
		1/2"-20UNF connector	**XS1 M18MB250K**	0.060
Non flush mountable				
8	NO	Pre-cabled (L = 2 m) *(1)*	**XS2 M18MA250**	0.120
		1/2"-20UNF connector	**XS2 M18MA250K**	0.060
	NC	Pre-cabled (L = 2 m) *(1)*	**XS2 M18MB250**	0.120
		1/2"-20UNF connector	**XS2 M18MB250K**	0.060
Ø 30, threaded M30 x 1.5				
Flush mountable				
10	NO	Pre-cabled (L = 2 m) *(1)*	**XS1 M30MA250**	0205
		1/2"-20UNF connector	**XS1 M30MA250K**	0.145
	NC	Pre-cabled (L = 2 m) *(1)*	**XS1 M30MB250**	0205
		1/2"-20UNF connector	**XS1 M30MB250K**	0.145
Non flush mountable				
15	NO	Pre-cabled (L = 2 m) *(1)*	**XS2 M30MA250**	0205
		1/2"-20UNF connector	**XS2 M30MA250K**	0.145
	NC	Pre-cabled (L = 2 m) *(1)*	**XS2 M30MB250**	0205
		1/2"-20UNF connector	**XS2 M30MB250K**	0.145

Accessories *(2)*

Description mm		Reference	Weight kg
Fixing clamps	Ø 12	**XSZ B112**	0.006
	Ø 18	**XSZ B118**	0.010
	Ø 30	**XSZ B130**	0.020

*(1) For a 5 m long cable, add **L1** to the reference and for a 10 m long cable, add **L2** to the reference. Example: **XS1 M18MA250** becomes **XS1 M18MA250L1** with a 5 m long cable.*
(2) For further information, see page 2/106.

Inductive proximity sensors

Osiprox® Technology

Cylindrical, flush mountable and non flush mountable

Two-wire, a.c. or d.c. supply, short-circuit protection

Characteristics

Sensor type			XS• M••M•250K	XS• M••M•250
Product certifications			UL, CSA, CE	
Connection			1/2"-20UNF connector	Pre-cabled, length: 2 m
Operating zone	Ø 12 flush mountable	mm	**0…1.6**	
	Ø 12 non flush mountable	mm	**0…3.2**	
	Ø 18 flush mountable	mm	**0…4**	
	Ø 18 non flush mountable	mm	**0…6.4**	
	Ø 30 flush mountable	mm	**0…8**	
	Ø 30 non flush mountable	mm	**0…12**	
Differential travel		%	1...15 of real sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 67	IP 68, double insulation
Storage temperature		°C	- 40…+ 85	
Operating temperature		°C	- 25…+ 70	
Materials	Case		Nickel plated brass	
	Cable		–	PvR 2 x 0.34 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Indicators	Output state		Red LED, 4 viewing ports at 90°	Red LED
	Supply on		Green LED: 4 viewing ports at 90° (only on Ø 18 and Ø 30)	Green LED (only on Ø 18 and Ø 30)
Rated supply voltage		V	∼ 24…240 (50/60 Hz) or ⎓ 24…210	
Voltage limits (including ripple)		V	∼ or ⎓ 20…264	
Switching capacity		mA	∼ 5…300 or ⎓ 5…200 (except Ø 12: ∼ or ⎓ 5…200) with overload and short-circuit protection	
Voltage drop, closed state		V	≤ 5.5	
Current consumption, no-load		mA	–	
Residual current, open state		mA	≤ 1.5	
Maximum switching frequency	Ø 12	Hz	∼ 25 or ⎓ 4000	
	Ø 18	Hz	∼ 25 or ⎓ 2000	
	Ø 30 flush mountable	Hz	∼ 25 or ⎓ 2000	
	Ø 30 non flush mountable	Hz	∼ 25 or ⎓ 1000	
Delays	First-up	ms	≤ 70	
	Response	ms	≤ 0.2 for Ø 12, ≤ 2 for Ø 18 and Ø 30	
	Recovery	ms	≤ 0.2 for Ø 12, ≤ 4 for Ø 18, ≤ 5 for Ø 30 flush mountable, ≤ 10 for Ø 30 non flush mountable	

Wiring schemes

1/2"-20UNF connector

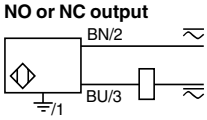
+/- : 2
⏚ : 1
+/- : 3

Pre-cabled

BU: Blue
BN: Brown

2-wire ∼ or ⎓

NO or NC output



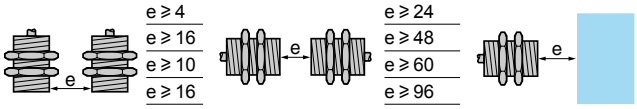
See connection on page 9/45.

⏚: on connector models only.

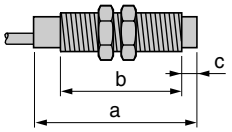
Setting-up

Minimum mounting distances (mm)

Sensor	Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 12 flush mountable	e ≥ 4	e ≥ 24	e ≥ 6	d ≥ 12 h ≥ 0
Ø 12 non flush mountable	e ≥ 16	e ≥ 48	e ≥ 12	d ≥ 36 h ≥ 8
Ø 18 flush mountable	e ≥ 10	e ≥ 60	e ≥ 15	d ≥ 18 h ≥ 0
Ø 18 non flush mountable	e ≥ 16	e ≥ 96	e ≥ 24	d ≥ 54 h ≥ 16
Ø 30 flush mountable	e ≥ 20	e ≥ 120	e ≥ 30	d ≥ 30 h ≥ 0
Ø 30 non flush mountable	e ≥ 60	e ≥ 180	e ≥ 45	d ≥ 90 h ≥ 30



Dimensions



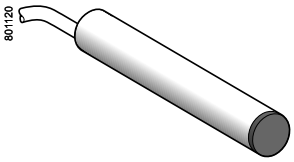
Sensor	Flush mountable in metal				Non flush mountable in metal				
	Pre-cabled		Connector		Pre-cabled		Connector		
	a	b	a	b	a	b	a	b	c
Ø 12	55	47	66	48	54.6	42	65.6	42	5
Ø 18	60	51	72	51	60	44	72	44	8
Ø 30	60	51	72	51	62.6	41	74.7	41	13

Inductive proximity sensors

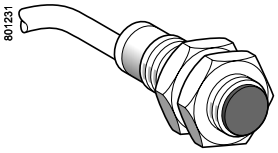
Osiprox® Technology

Cylindrical, metal and plastic, flush mountable and non flush mountable

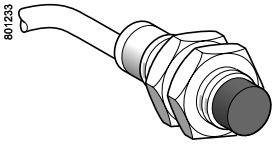
Four-wire, d.c. supply, solid-state NO + NC output



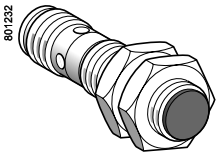
XS1 L06●C410



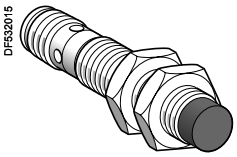
XS1 ●●●●C410



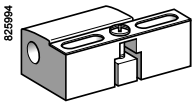
XS2 ●●●●C410



XS1 N●●●C410D



XS2 N●●●C410D



XSZ B1●●

Sensing distance Sn (mm)	Function	Output	Connection	Reference	Weight kg
Ø 6.5 plain					
Stainless steel case, flush mountable					
1.5	NO + NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS1 L06PC410**	0.025
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS1 L06NC410**	0.025
Ø 8, threaded M8 x 1					
Stainless steel case, flush mountable					
1.5	NO + NC	PNP	Pre-cabled (L = 2 m)	**XS1 M08PC410**	0.035
			M12 connector	**XS1 M08PC410D**	0.025
		NPN	Pre-cabled (L = 2 m)	**XS1 M08NC410**	0.035
			M12 connector	**XS1 M08NC410D**	0.025
Stainless steel case, non flush mountable					
2.5	NO + NC	PNP	Pre-cabled (L = 2 m)	**XS2 M08PC410**	0.035
			M12 connector	**XS2 M08PC410D**	0.025
		NPN	Pre-cabled (L = 2 m)	**XS2 M08NC410**	0.035
			M12 connector	**XS2 M08NC410D**	0.025
Ø 12, threaded M12 x 1					
Brass case, flush mountable					
2	NO + NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS1 N12PC410**	0.070
			M12 connector	**XS1 N12PC410D**	0.020
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS1 N12NC410**	0.070
			M12 connector	**XS1 N12NC410D**	0.020
Brass case, non flush mountable *(2)*					
4	NO + NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 N12PC410**	0.070
			M12 connector	**XS2 N12PC410D**	0.020
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 N12NC410**	0.070
			M12 connector	**XS2 N12NC410D**	0.020
Ø 18, threaded M18 x 1					
Brass case, flush mountable					
5	NO + NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS1 N18PC410**	0.100
			M12 connector	**XS1 N18PC410D**	0.040
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS1 N18NC410**	0.100
			M12 connector	**XS1 N18NC410D**	0.040
Brass case, non flush mountable *(2)*					
8	NO + NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 N18PC410**	0.100
			M12 connector	**XS2 N18PC410D**	0.040
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 N18NC410**	0.100
			M12 connector	**XS2 N18NC410D**	0.040
Ø 30, threaded M30 x 1.5					
Brass case, flush mountable					
10	NO + NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS1 N30PC410**	0.160
			M12 connector	**XS1 N30PC410D**	0.100
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS1 N30NC410**	0.160
			M12 connector	**XS1 N30NC410D**	0.100
Brass case, non flush mountable *(2)*					
15	NO + NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 N30PC410**	0.160
			M12 connector	**XS2 N30PC410D**	0.100
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 N30NC410**	0.160
			M12 connector	**XS2 N30NC410D**	0.100

Accessories *(3)*

Description mm		Reference	Weight kg
Fixing clamps	Ø 8	**XSZ B108**	0.006
	Ø 12	**XSZ B112**	0.006
	Ø 18	**XSZ B118**	0.010
	Ø 30	**XSZ B130**	0.020

*(1) For a 5 m long cable, add **L1** to the reference and for a 10 m long cable, add **L2** to the reference. Example: **XS1 N12PC410** becomes **XS1 N12PC410L1** with a 5 m long cable.*

*(2) For a sensor with a plastic case, non flush mountable, replace 2N by 4P in the reference. Example: **XS2 N12PC410** becomes **XS4 P12PC410** with a plastic case.*

(3) For further information, see page 2/106.

Inductive proximity sensors

Osiprox® Technology

Cylindrical, metal and plastic, flush mountable and non flush mountable

Four-wire, d.c. supply, solid-state NO + NC output

Characteristics

Sensor type			XS● ●●●●C410D	XS● ●●●●C410
Product certifications			UL, CSA, CE	
Connection			M12 connector	Pre-cabled, length: 2 m
Operating zone	Ø 6.5 and Ø 8 flush mtble.	**mm**	**0…1.2**	
	Ø 8 non flush mountable	**mm**	**0…2**	
	Ø 12 flush mountable	**mm**	**0…1.6**	
	Ø 12 non flush mountable	**mm**	**0…3.2**	
	Ø 18 flush mountable	**mm**	**0…4**	
	Ø 18 non flush mountable	**mm**	**0…6.4**	
	Ø 30 flush mountable	**mm**	**0…8**	
	Ø 30 non flush mountable	**mm**	**0…12**	
Differential travel		**%**	1...15 of real sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 67	IP 68, double insulation (except Ø 6.5 and Ø 8: IP 67)
Storage temperature		**°C**	- 40…+ 85	
Operating temperature		**°C**	- 25…+ 70	
Materials	Case		Nickel plated brass for XS1 N and XS2 N Stainless steel, grade 303, for XS1 L06, XS1 M08 and XS2 M08 Plastic, PPS, for XS4 P	
	Cable		–	PvR 4 x 0.34 mm² except Ø 6.5 and Ø 8: 4 x 0.08 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication			Yellow LED, 4 viewing ports at 90°	Yellow LED, annular
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10…36	
Switching capacity		**mA**	≤ 200 with overload and short-circuit protection	
Voltage drop, closed state		**V**	≤ 2	
Current consumption, no-load		**mA**	≤ 10	
Maximum switching frequency	Ø 6.5, Ø 8 and Ø 12	**Hz**	5000	
	Ø 18	**Hz**	2000	
	Ø 30	**Hz**	1000	
Delays	First-up	**ms**	≤ 5	
	Response	**ms**	≤ 0.1 for Ø 8 and Ø 12, ≤ 0.15 for Ø 18, ≤ 0.3 for Ø 30	
	Recovery	**ms**	≤ 0.1 for Ø 8 and Ø 12, ≤ 0.35 for Ø 18, ≤ 0.7 for Ø 30	

Wiring schemes

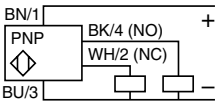
M12 connector

See connection on page 9/45.

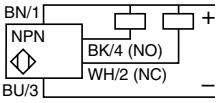
Pre-cabled

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

PNP 4-wire



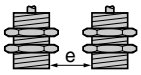
NPN 4-wire

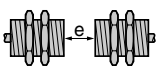


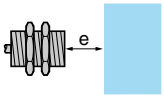
Setting-up

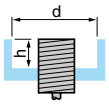
Minimum mounting distances (mm)

Sensor	Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 6.5 flush mountable **XS1 L06**	e ≥ 3	e ≥ 18	e ≥ 4.5	d ≥ 6.5 h ≥ 0
Ø 8 flush mountable **XS1 M08**	e ≥ 3	e ≥ 18	e ≥ 4.5	d ≥ 8 h ≥ 0
Ø 8 non flush mountable **XS2 M08**	e ≥ 10	e ≥ 30	e ≥ 7.5	d ≥ 24 h ≥ 5
Ø 12 flush mountable **XS1 N12**	e ≥ 4	e ≥ 24	e ≥ 6	d ≥ 12 h ≥ 0
Ø 12 non flush mtble **XS1 N12** or **XS4 P12**	e ≥ 16	e ≥ 48	e ≥ 12	d ≥ 36 h ≥ 8
Ø 18 flush mountable **XS1 N18**	e ≥ 10	e ≥ 60	e ≥ 15	d ≥ 18 h ≥ 0
Ø 18 non flush mtble **XS2 N18** or **XS4 P18**	e ≥ 16	e ≥ 96	e ≥ 24	d ≥ 54 h ≥ 16
Ø 30 flush mountable **XS1 N30**	e ≥ 20	e ≥ 120	e ≥ 30	d ≥ 30 h ≥ 0
Ø 30 non flush mtble **XS2 N30** or **XS4 P30**	e ≥ 60	e ≥ 180	e ≥ 45	d ≥ 90 h ≥ 30

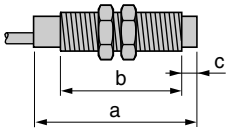








Dimensions



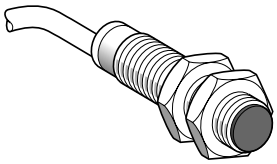
Sensor	Flush mountable in metal				Non flush mountable in metal				
	Pre-cabled		Connector		Pre-cabled		Connector		
	a	b	a	b	a	b	a	b	c
Ø 6.5 metal	50	47	–	–	–	–	–	–	–
Ø 8 metal	50	42	61	42	50	36	61	36	4
Ø 12 metal	33	25	48	29	37.6	25	52.6	29	5
Ø 12 plastic	–	–	–	–	33	25	48	29	0
Ø 18 metal	36.5	28	48.6	28	36.5	20	48.6	20	8
Ø 18 plastic	–	–	–	–	33.5	26	48	29	0
Ø 30 metal	40.6	32	52.7	32	40.5	19	52.6	19	13
Ø 30 plastic	–	–	–	–	40.5	33	50	34	0

Inductive proximity sensors

Osiprox® Technology

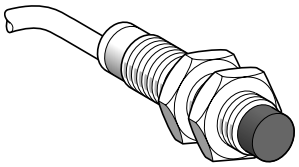
Cylindrical, metal and plastic, flush and non flush mountable
Four-wire, d.c. supply, solid-state PNP + NPN
NO/NC programmable output

822102



XS1 M●●KP340
XS4 P●●KP340

DF532016



XS2 M●●KP340

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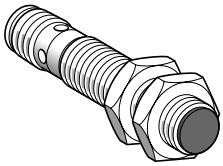

XS1 M●●KP340D
XS4 P●●KP340D

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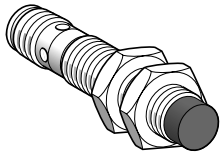

XS2 M●●KP340D

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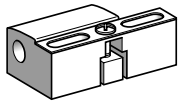


XSZ B1●●

Sensing distance Sn (mm)	Function	Output	Connection	Reference	Weight kg
Ø 12, threaded M12 x 1					
Metal case, flush mountable					
2	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS1 M12KP340**	0.075
			M12 connector	**XS1 M12KP340D**	0.025
Metal case, non flush mountable					
4	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 M12KP340**	0.075
			M12 connector	**XS2 M12KP340D**	0.025
Plastic case, non flush mountable					
4	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS4 P12KP340**	0.075
			M12 connector	**XS4 P12KP340D**	0.025
Ø 18, threaded M18 x 1					
Metal case, flush mountable					
5	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS1 M18KP340**	0.120
			M12 connector	**XS1 M18KP340D**	0.060
Metal case, non flush mountable					
8	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 M18KP340**	0.120
			M12 connector	**XS2 M18KP340D**	0.060
Plastic case, non flush mountable					
8	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS4 P18KP340**	0.120
			M12 connector	**XS4 P18KP340D**	0.060
Ø 30, threaded M30 x 1.5					
Metal case, flush mountable					
10	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS1 M30KP340**	0205
			M12 connector	**XS1 M30KP340D**	0.145
Metal case, non flush mountable					
15	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 M30KP340**	0205
			M12 connector	**XS2 M30KP340D**	0.145
Plastic case, non flush mountable					
15	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS4 P30KP340**	0205
			M12 connector	**XS4 P30KP340D**	0.145

Accessories *(2)*

Description mm		Reference	Weight kg
Fixing clamps	Ø 12	**XSZ B112**	0.006
	Ø 18	**XSZ B118**	0.010
	Ø 30	**XSZ B130**	0.020

*(1) For a 5 m long cable, add **L1** to the reference and for a 10 m long cable, add **L2** to the reference. Example: **XS1 M12KP340** becomes **XS1 M12KP340L1** with a 5 m long cable.*
(2) For further information, see page 2/106.

Inductive proximity sensors

Osiprox® Technology

Cylindrical, metal and plastic, flush and non flush mountable
Four-wire, d.c. supply, solid-state PNP + NPN
NO/NC programmable output

Characteristics

Sensor type			XS● M●●KP340D	XS● M●●KP340
Product certifications			UL, CSA, CE	
Connection			M12 connector	Pre-cabled, length: 2 m
Operating zone	Ø 12 flush mountable	**mm**	**0…1.6**	
	Ø 12 non flush mountable	**mm**	**0…3.2**	
	Ø 18 flush mountable	**mm**	**0…4**	
	Ø 18 non flush mountable	**mm**	**0…6.4**	
	Ø 30 flush mountable	**mm**	**0…8**	
	Ø 30 non flush mountable	**mm**	**0…12**	
Differential travel		**%**	1...15 of real sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 67	IP 68, double insulation
Storage temperature		**°C**	- 40…+ 85	
Operating temperature		**°C**	- 25…+ 70	
Materials	Case		Nickel plated brass for XS1 M and XS2 M, PPS for XS4 P	
	Cable		–	PvR 4 x 0.34 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication			Yellow LED, 4 viewing ports at 90°	Yellow LED, annular
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10…36	
Switching capacity		**mA**	≤ 200 with overload and short-circuit protection	
Voltage drop, closed state		**V**	≤ 2.6	
Current consumption, no-load		**mA**	≤ 10	
Maximum switching frequency	Ø 12	**Hz**	5000	
	Ø 18	**Hz**	2000	
	Ø 30 flush mountable	**Hz**	1000	
	Ø 30 non flush mountable	**Hz**	1000	
Delays	First-up	**ms**	≤ 5	
	Response	**ms**	≤ 0.1 for Ø 12, ≤ 0.15 for Ø 18, ≤ 0.3 for Ø 30	
	Recovery	**ms**	≤ 0.1 for Ø 12, ≤ 0.35 for Ø 18, ≤ 0.7 for Ø 30	

Wiring schemes

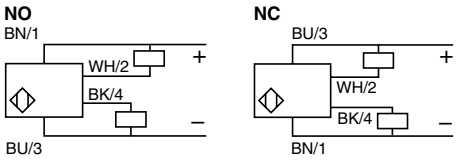
M12 connector

Pre-cabled

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

PNP + NPN

4-wire programmable, NO or NC output

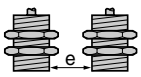


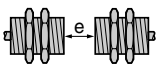
See connection on page 9/45.

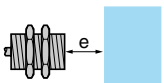
Setting-up

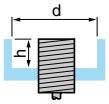
Minimum mounting distances (mm)

Sensor	Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 12 flush mountable **XS1 M12**	e ≥ 4	e ≥ 24	e ≥ 6	d ≥ 12 h ≥ 0
Ø 12 non flush mountable **XS2 M12** and **XS4 P12**	e ≥ 16	e ≥ 48	e ≥ 12	d ≥ 36 h ≥ 8
Ø 18 flush mountable **XS1 M18**	e ≥ 10	e ≥ 60	e ≥ 15	d ≥ 18 h ≥ 0
Ø 18 non flush mountable **XS2 M18** and **XS4 P18**	e ≥ 16	e ≥ 96	e ≥ 24	d ≥ 54 h ≥ 16
Ø 30 flush mountable **XS1 M30**	e ≥ 20	e ≥ 120	e ≥ 30	d ≥ 30 h ≥ 0
Ø 30 non flush mountable **XS2 M30** and **XS4 P30**	e ≥ 60	e ≥ 180	e ≥ 45	d ≥ 90 h ≥ 30

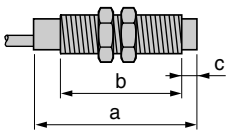








Dimensions



Sensor	Flush mountable in metal				Non flush mountable in metal				
	Pre-cabled		Connector		Pre-cabled		Connector		
	a	b	a	b	a	b	a	b	c
Ø 12 metal	50	42	61	42	54.6	42	65.6	42	5
Ø 12 plastic	–	–	–	–	50	42	61	42	0
Ø 18 metal	60	51	72	51	60	44	72	44	8
Ø 18 plastic	–	–	–	–	60	51	70	51	0
Ø 30 metal	60	51	72	51	62.6	41	74.7	41	13
Ø 30 plastic	–	–	–	–	60	51	70	51	0

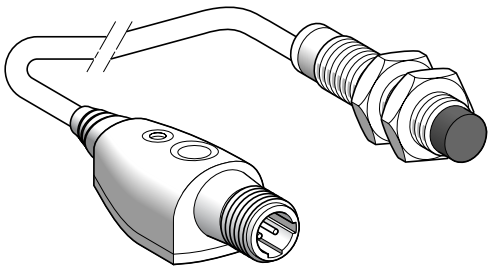
Inductive proximity sensors

Osiprox® Universal, **Osi**concept® *(1)*

Cylindrical, flush mountable or non flush mountable

Three-wire, d.c. supply, solid-state output

520030



XS6 ●●B2●●L01M12

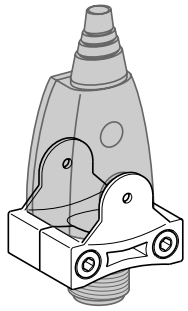
Ø 12, threaded M12 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
5	NO	PNP	0.15 m flying lead with M12 connector	**XS6 12B2PAL01M12**	0.100
		NPN	0.15 m flying lead with M12 connector	**XS6 12B2NAL01M12**	0.100
	NC	PNP	0.15 m flying lead with M12 connector	**XS6 12B2PBL01M12**	0.100
		NPN	0.15 m flying lead with M12 connector	**XS6 12B2NBL01M12**	0.100

Ø 18, threaded M18 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
9	NO	PNP	0.15 m flying lead with M12 connector	**XS6 18B2PAL01M12**	0.140
		NPN	0.15 m flying lead with M12 connector	**XS6 18B2NAL01M12**	0.140
	NC	PNP	0.15 m flying lead with M12 connector	**XS6 18B2PBL01M12**	0.140
		NPN	0.15 m flying lead with M12 connector	**XS6 18B2NBL01M12**	0.140

520031

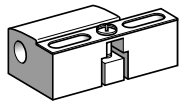


XSZ BPM12

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
18	NO	PNP	0.15 m flying lead with M12 connector	**XS6 30B2PAL01M12**	0.220
		NPN	0.15 m flying lead with M12 connector	**XS6 30B2NAL01M12**	0.220
	NC	PNP	0.15 m flying lead with M12 connector	**XS6 30B2PBL01M12**	0.220
		NPN	0.15 m flying lead with M12 connector	**XS6 30B2NBL01M12**	0.220

825994



XSZ B●●●

Accessories (2)

Description		Reference	Weight kg
Remote control fixing clamp		**XSZ BPM12**	0.015
Sensor fixing clamps	Ø 12	**XSZ B112**	0.006
	Ø 18	**XSZ B118**	0.010
	Ø 30	**XSZ B130**	0.020

*(1) For further information on **Osi**concept®, see page 2/20.*
(2) For further information, see page 2/106.

Inductive proximity sensors

Osiprox® Universal, **Osi**concept® (1)
Cylindrical, flush mountable or non flush mountable
Three-wire, d.c. supply, solid-state output

Characteristics

Sensor type				XS6 ●●B2●●L01M12
Product certifications				UL, CSA, CE
Connection	Connector			0.15 m flying lead with M12 connector
Sensing distance and adjustment zone	Ø 12	Nominal sensing distance Sn	**mm**	**0…5** non flush mounted configuration / **0…3.4** flush mounted configuration
		Fine adjustment zone	**mm**	**1.7…5** non flush mounted configuration / **1.7…3.4** flush mounted configuration
	Ø 18	Nominal sensing distance Sn	**mm**	**0…9** non flush mounted configuration / **0…6** flush mounted configuration
		Fine adjustment zone	**mm**	**3…9** non flush mounted configuration / **3…6** flush mounted configuration
	Ø 30	Nominal sensing distance Sn	**mm**	**0…18** non flush mounted configuration / **0…11** flush mounted configuration
		Fine adjustment zone	**mm**	**6…18** non flush mounted configuration / **6…11** flush mounted configuration
Differential travel			**%**	1…15 of real sensing distance (Sr)
Degree of protection	Conforming to IEC 60529			IP 67 ⧈
Storage temperature range			**°C**	- 40…+ 85
Operating temperature range			**°C**	- 25…+ 70
Materials	Case			Nickel plated brass
	Remote control			PBT
	Pre-cabled			PvR - Ø 4.2 mm
Vibration resistance	Conforming to IEC 60068-2-6			25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)
Shock resistance	Conforming to IEC 60068-2-27			50 gn, duration 11 ms
Indicator	Output state			Yellow LED
	Supply on and teach mode			Green LED
Rated supply voltage			**V**	⎓ 12…24 with protection against reverse polarity
Voltage limits (including ripple)			**V**	⎓ 10…36
Switching capacity			**mA**	≤ 100 with overload and short-circuit protection
Voltage drop, closed state			**V**	≤ 2
Current consumption, no-load			**mA**	≤ 10
Maximum switching frequency			**Hz**	1000
Delays	First-up		**ms**	≤ 10
	Response		**ms**	≤ 0.3
	Recovery		**ms**	≤ 0.7

*(1) For further information on **Osi**concept®, see page 2/20.*

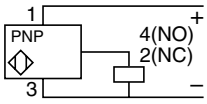
Wiring scheme

Connector

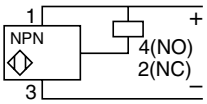
M12

See connection on page 9/45.

PNP

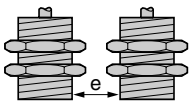


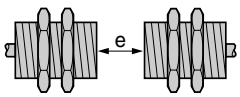
NPN

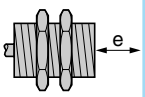


Setting-up

Minimum mounting distances (mm)



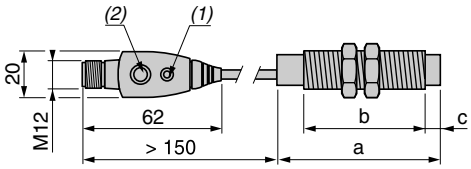




	Side by side flush mounted	Side by side non flush mounted	Face to face flush mounted	Face to face non flush mounted	Facing a metal object
Ø 12	e ≥ 14	50	e ≥ 50	100	e ≥ 3.4
Ø 18	e ≥ 28	100	e ≥ 100	200	e ≥ 6
Ø 30	e ≥ 48	180	e ≥ 180	360	e ≥ 11

Dimensions

XS6



(1) LED
(2) Teach mode button

	Connector (mm) a	b	c
Ø 12	54.6	42	5
Ø 18	60	44	8
Ø 30	62.6	41	13

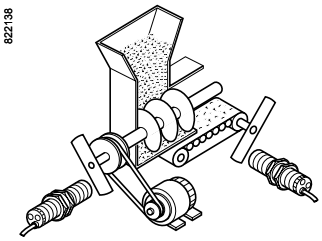
Inductive proximity sensors

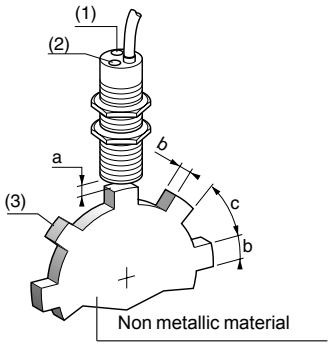
Osiprox® Application

Sensors for rotation monitoring, slip detection, shaft overload detection

Cylindrical type

Example:
Coupling breakage monitoring





Functions

These self-contained rotation speed monitoring sensors have the special feature of incorporating, in the same case, the pulse sensing and processing electronics as well as the output switching amplifier that are required to establish an integrated rotation monitoring device.

The unit provides an economical solution for detecting slip, belt breakage, drive shaft shear and overloading, etc., in the following applications: conveyor belts, bucket elevators, Archemedian screws, grinders, crushers, pumps, centrifugal driers, mixers, etc.

Operating principle

The output signal of this type of sensor is processed by an impulse comparator incorporated in the sensor. The impulse frequency Fc generated by the moving part to be monitored is compared to the frequency Fr preset on the sensor. The output switching circuit of the sensor is in the closed state for Fc > Fr and the open state for Fc < Fr.

Sensors XSA-V are particularly suitable for the detection of underspeed: when the speed of the moving part Fc falls below a preset threshold Fr, this causes the output circuit of the sensor to switch off.

***Note:** following power-up, the operational status of the sensor is subject to a delay of 9 seconds in order for the moving part being monitored to run-up to its nominal speed. During this time, the output of the sensor remains in the closed state.*

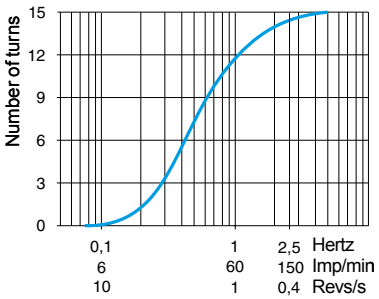
Adjustment of frequency threshold

- Adjustment of sensor's frequency threshold: using potentiometer, 15 turns approximately.
- To increase the frequency threshold: turn the adjustment screw clockwise (+).
- To decrease the frequency threshold: turn the adjustment screw anti-clockwise (–).

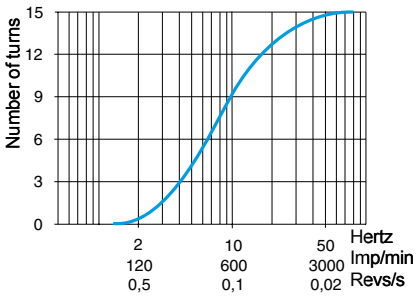
Potentiometer	Diameter of sensor			
LED		a	b	c
Metal target	M30	4…6 mm	30 mm	60 mm

Potentiometer adjustment curves (for **XSA V1●801**, 2-wire ∿ or ⎓ sensors)

Low speed version (6…150 impulses/minute)



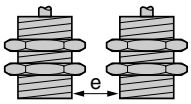
High speed version (120…3000 impulses/minute)



Setting-up

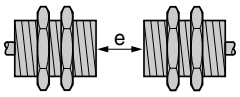
Minimum mounting distances (mm)

Side by side



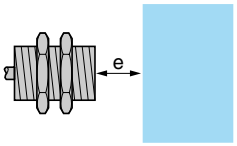
e ≥ 20

Face to face



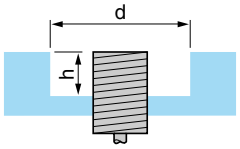
e ≥ 120

Facing a metal object



e ≥ 30

Mounted in a metal support



d ≥ 30, h ≥ 0

Fixing nut tightening torque: < 50 N.m

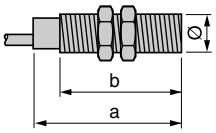
Inductive proximity sensors

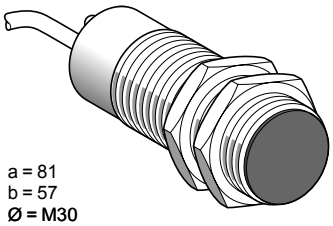
Osiprox® Application

Sensors for rotation monitoring, slip detection, shaft overload detection

Cylindrical type

Flush mountable in metal





Lengths (mm):
a = Overall
b = Threaded section

a = 81
b = 57
Ø = M30

	DC	DC	AC/DC	AC/DC
Nominal sensing distance (Sn)	10 mm	10 mm	10 mm	10 mm
Adjustable frequency range	6…150 impulses/min	120…3000 impulses/min	6…150 impulses/min	120…3000 impulses/min

References

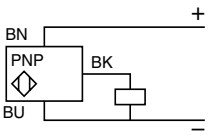
3-wire ⎓	**PNP / NC**	**XSA V11373**	**XSA V12373**	–	–
2-wire	**⎓ or ∿ / NC**	–	–	**XSA V11801**	**XSA V12801**
Weight (kg)		0.300			

Characteristics

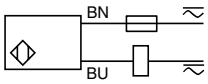
Connection	Pre-cabled, 3 x 0.34 mm², length 2 m *(1)*	Pre-cabled, 2 x 0.34 mm², length 2 m *(1)*
Degree of protection conforming to IEC 60529	IP 67	
Operating zone	0…8 mm	
Repeat accuracy	3% of Sr	
Differential travel	3…15% of Fr	
Operating temperature	- 25…+ 70 °C	
Output state indication	Red LED	
Rated supply voltage	**⎓ 12…48 V with protection against reverse polarity**	**∿ 24…240 V (50/60 Hz) or ⎓ 24…210 V**
Voltage limits (including ripple)	⎓ 10…58 V	∿ or ⎓ 20…264 V
Switching capacity	**≤ 200 mA with overload and short-circuit protection**	**∿ 5…350 mA or ⎓ 5…200 mA** *(2)*
Voltage drop, closed state	≤ 1.8 V	≤ 5.7 V
Residual current, open state	–	≤ 1.5 mA
Current consumption, no-load	≤ 15 mA	–
Maximum switching frequency	6 000 impulses/min (for **XSA V11●●●**); 48 000 impulses/min (for **XSA V12●●●**)	
"Run-up" delay following power-up	9 seconds ± 20% + 1/Fr (3)	

Wiring schemes

3-wire ⎓
XSA V1●**373**



2-wire ∿ or ⎓
XSA V1●801



(1) For a 5 m long cable add L05 to the reference, for a 10 m long cable add L10 to the reference.
*Example: XSA V11373 becomes **XSA V11373L05** with a 5 m long cable.*
(2) 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, see page 2/106.
(3) For a sensor without a "run-up" delay following power-up, replace XSA V1 in the reference by XSA V0.
*Example: XSA V11801 becomes **XSA V01801** without a "run-up" delay. For a reduced "run-up" delay of 3 s, replace XSA V1 in the reference by XSA V3.*

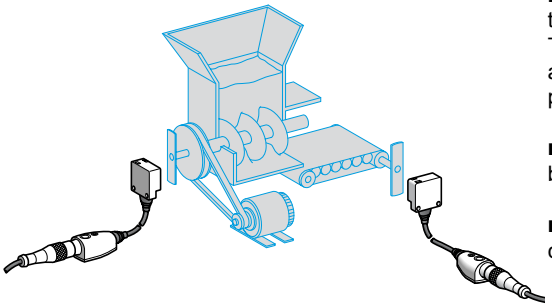
Accessories:
page 2/106

Inductive proximity sensors

Osiprox® Application

Sensors for rotation monitoring, slip detection, and shaft overload detection with teach mode

Operating principle and applications

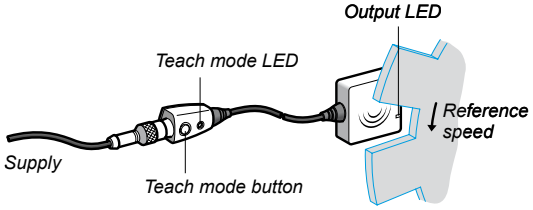


■ These inductive proximity sensors are designed for monitoring rotational speed or the speed of the flow of objects to be monitored or protected.
They operate on the principle of comparing a speed threshold preset by the operator against the instantaneous measurement of the speed of the moving object to be protected.

■ They provide a simple, economical solution to the problems of detecting slip, belt breakage, coupling and overloading, etc.

■ They are commonly used in grinder/crusher, mixer, pump, centrifugal driver, conveyor belt, bucket elevator, Archimedian screw, etc. type applications.

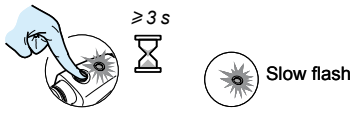
Installation and setting-up

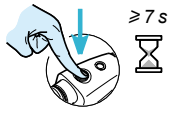


Setting-up and positioning the sensor

■ In the positioning phase, the XS9 sensor can operate as a standard inductive sensor (Schneider Electric patent pending).
Operation in inductive mode enables validation of reliable detection of all the moving objects to be monitored.

■ Through this system, the positioning is thus made 100 % reliable and able to be checked at any time without modifying the sensor's adjustment.





Speed adjustment in teach mode

■ The normal or reference speed of the moving object (1) to be monitored is adjusted by simply pressing the teach mode button (*2*) and is then validated by the display LED.

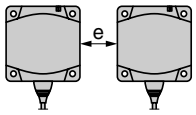
□ If in doubt, the sensor can be reset at any time to the factory settings.

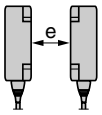
(1) To allow the moving object to reach its normal speed (machine inertia), the sensor holds its output closed for 9 seconds.

(2) The sensor's default drop-out underspeed corresponds to the preset speed - 30 %.
Example: if the preset speed is 1000 rpm, the sensor drops out at underspeed when the speed of the moving object drops below 1000 - (1000 x 0.3) = 700 rpm.
- 20 %, - 11 % and - 6 % threshold can be obtained by pressing the teach mode button.

Setting-up

Minimum mounting distances (mm)

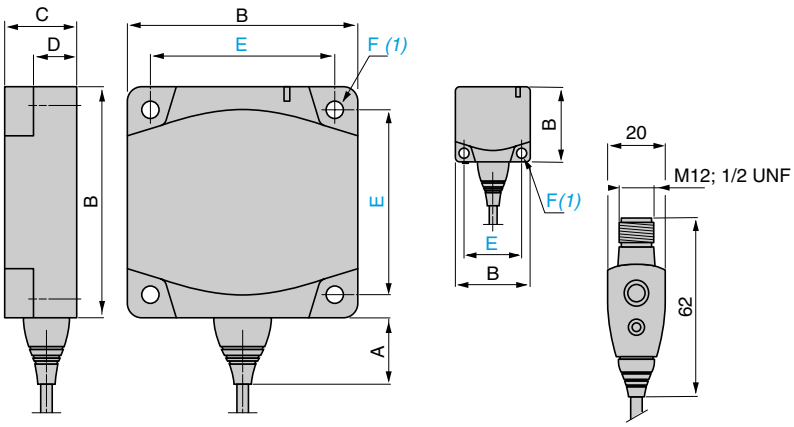




Type	Side by side	Face to face
XS9 E	e ≥ 40	e ≥ 80
XS9 C	e ≥ 60	e ≥ 120

Dimensions

XS9 E, XS9 C



(1) For CHC type screws

Type	A	B	C	D	E	F
XS9 E	14	26	13	8.8	20	3.5
XS9 C	14	40	15	9.8	33	4.5

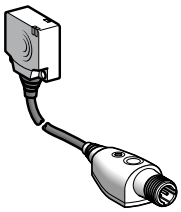
Inductive proximity sensors

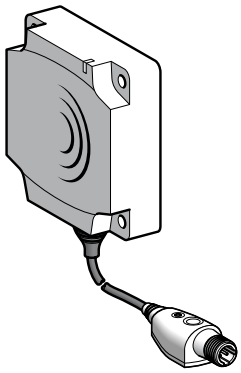
Osiprox® Application

Sensors for rotation monitoring, slip detection, and shaft overload detection with teach mode

Flush mountable in metal

PBT case



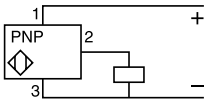


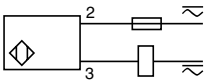
Nominal sensing distance (Sn)		**10 mm**	**15 mm**	**10 mm**	**15 mm**
Adjustable frequency range		6…6000 impulses/min			
References					
3-wire	PNP / NC	**XS9 E11RPBL01M12**	**XS9 C11RPBL01M12**	–	–
2-wire	⎓ or ∿ / NC	–	–	**XS9 E11RMBL01U20**	**XS9 C11RMBL01U20**
Weight (kg)		0.040	0.060	0.040	0.060
Characteristics					
Product certifications		UL, CSA, CE			
Connection		0.15 m flying lead with M12 connector		0.15 m flying lead with 1/2" - 20 UNF connector	
Operating zone		**0…8 mm**	**0…12 mm**	**0…8 mm**	**0…12 mm**
Degree of protection	Conforming to IEC 60529	IP 67 double insulation ⧈			
Storage temperature range		- 40…+ 85 °C			
Operating temperature range		- 25…+ 70 °C			
Vibration resistance	Conforming to IEC 60068-2-6	25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)			
Shock resistance	Conforming to IEC 60068-2-27	50 gn, duration 11 ms			
Indicator	Output state	Yellow LED			
	Supply on	Green LED			
Rated supply voltage		⎓ 12…24 V		∿ or ⎓ 24…240 V (50/60 Hz)	
Voltage limits (including ripple)		⎓ 10…36 V		∿ or ⎓ 20…264 V	
Switching capacity		≤ 100 mA *(1)*	≤ 200 mA *(1)*	∿ or ⎓ 5…100 mA *(2)*	⎓ 5…200 mA, ∿ 5…300 mA*(2)*
Voltage drop, closed state		≤ 2 V		≤ 5.5 V	
Residual current, open state		≤ 100 mA		≤ 1.5 mA	
Current consumption, no-load		≤ 10 mA		–	
Maximum switching frequency		48 000 impulses/min			
Power on "run-up" delay		9 seconds + 1/Fr			

(1) With overload and short-circuit protection.
(2) It is essential to connect a 0.4 A quick-blow fuse in series with the load.

Wiring scheme

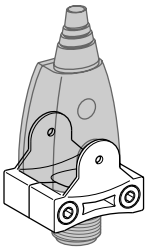
Connector		**3-wire ⎓**	**2-wire ∿ or ⎓**
M12	**1/2" UNF**	**XS9 •11RPBL01M12**	**XS9 •11RMBL01U20**





See connection on page 9/45.

Accessory *(1)*



XSZ BPM12

Description	Reference	Weight kg
Remote control fixing clamp	**XSZ BPM12**	0.015

(1) For accessories, see page 2/106.

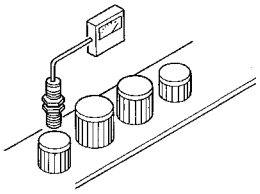
Inductive proximity sensors

Osiprox® Application

Sensors with analogue output signal 0...10 V *(1)* or 4…20 mA

Functions

Example:
Sorting parts



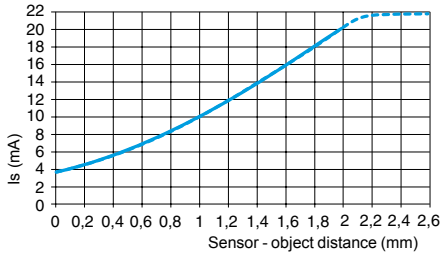
These analogue output proximity sensors are solid-state sensors designed for monitoring displacement. They are not measuring sensors.
They are suitable for use in numerous sectors, particularly for applications involving:
- deformation and displacement monitoring,
- vibration amplitude and frequency monitoring,
- control of dimensional tolerances,
- position control,
- concentricity or eccentricity monitoring.

Operating principle

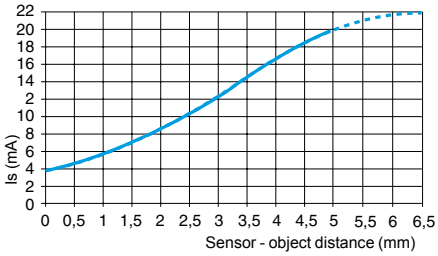
The operating principle of the sensor is that of a damped oscillator. The degree of damping will depend on the distance of an object from the sensing face. The sensor will sense the distance and produce an output current with a value directly proportional to this distance.

Output curves 4...20 mA, 2-wire connection

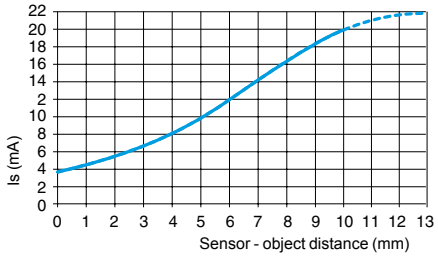
XS1 M12AB120
Sn = 0.2…2 mm **Ø 12 mm**



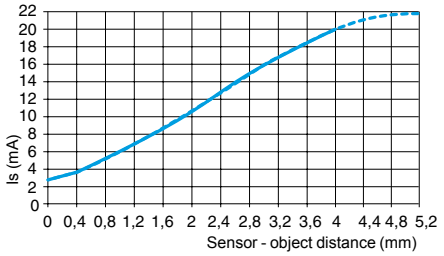
XS1 M18AB120
Sn = 0.5…5 mm **Ø 18 mm**



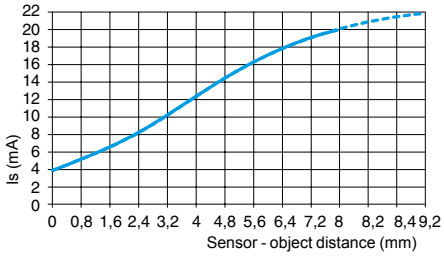
XS1 M30AB120
Sn = 1…10 mm **Ø 30 mm**



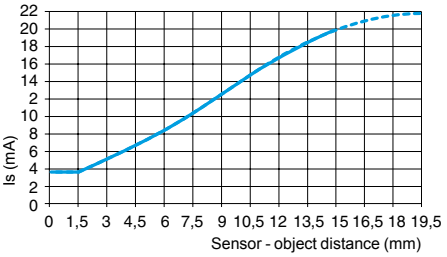
XS4 P12AB120
Sn = 0.4…4 mm **Ø 12 mm**



XS4 P18AB120
Sn = 0.8…8 mm **Ø 18 mm**

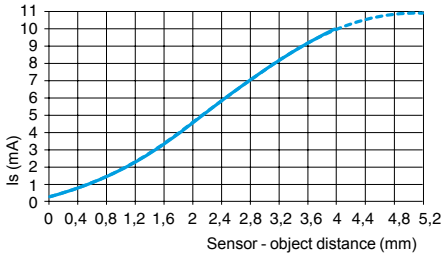


XS4 P30AB120
Sn = 1.5…15 mm **Ø 30 mm**

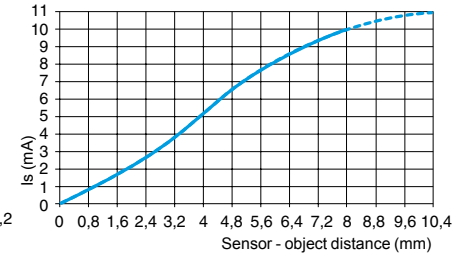


Output curves 0...10 V, 3-wire connection

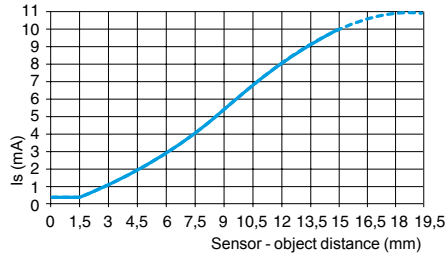
XS4 P12AB110
Sn = 0.4…4 mm **Ø 12 mm**



XS4 P18AB110
Sn = 0.4…4 mm **Ø 18 mm**

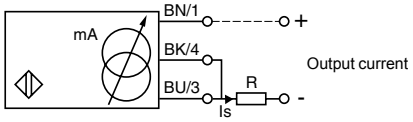


XS4 P30AB110
Sn = 0.4…4 mm **Ø 30 mm**



Wiring schemes

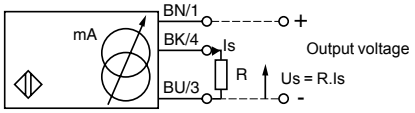
2-wire connection



	Output current	Load impedance value
12 V	4…20 mA	R ⩽ 8.2 Ω
24 V	4…20 mA	R ⩽ 470 Ω

Ensure a minimum of 10 V between the + and the - (terminal 3) of the sensor.

3-wire connection



	Output current	Load impedance value	Output voltage	Load impedance value
24 V	0…10 mA	R ⩽ 1500 Ω	0…10 V	R = 1000 Ω
48 V	0…10 mA	R ⩽ 3300 Ω	0…10 V	R = 1000 Ω

Ensure a minimum of 5 V between the + and the sensor output (terminal 4).

(1) Voltage range only obtained with a load impedance of 1000 Ω.

References:
pages 2/69 to 2/71

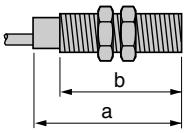
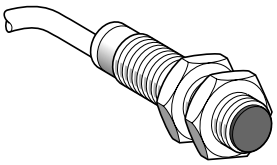
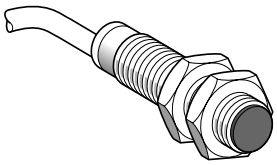
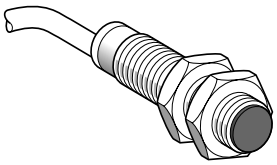
Characteristics:
pages 2/69 to 2/71

Schneider Electric

Inductive proximity sensors

Osiprox® Application

Sensors with analogue output signal 0...10 V *(1)* or 4…20 mA

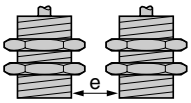
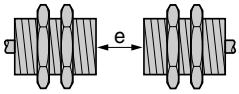
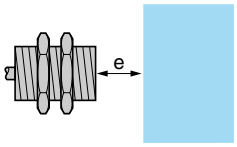
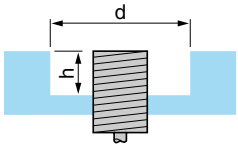
Sensor	Flush mountable in metal	Non flush mountable in metal	
			
Lengths (mm): a = Overall b = Threaded section	a = 50 b = 42	a = 50 b = 42	a = 50 b = 42
	Metal case	**Plastic case**	**Plastic case**
Nominal sensing distance (Sn)	2 mm	4 mm	4 mm
References			
3-wire ⎓ Output 0…10 V *(2)*	–	–	**XS4 P12AB110**
2-wire ⎓ Output 4…20 mA *(2)*	**XS1 M12AB120**	**XS4 P12AB120**	–
Weight (kg)	0.075	0.065	0.065

Characteristics

Product certifications	CE, UL, CSA		
Connection	**Pre-cabled, PvR, 3 x 0.34 mm², length 2 m**		
Degree of protection conforming to IEC 60529	IP 67		
Operating zone	**0.2…2 mm**	**0.4…4 mm**	**0.4…4 mm**
Repeat accuracy	± 3%		
Linearity error	± 2 mA		± 1 V
Ambient air temperature	For operation: - 25…+ 70 °C		
Rated supply voltage	⎓ **12...24 V**	⎓ **12...24 V**	⎓ **24…48 V**
Voltage limits (including ripple)	⎓ 10…38 V	⎓ 10…38 V	⎓ 15…58 V
Output current drift Ambient temperature: - 25…+ 70 °C	≤ 10%		
Current consumption, no-load	4 mA		
Maximum operating rate	1500 Hz		

(1) Voltage range only obtained with a load impedance of 1000 Ω.
(2) Output current range Is, see page 2/68.

Setting-up

Minimum mounting distances (mm)	Side by side	Face to face	Facing a metal object	Mounted in a metal support
				
XS1 M12AB120 flush mountable	e ≥ 4	e ≥ 24	e ≥ 6	d ≥ 12, h ≥ 0
XS4 P12AB110 non flush mountable	e ≥ 16	e ≥ 48	e ≥ 12	d ≥ 36, h ≥ 8
XS4 P12AB120 non flush mountable	e ≥ 16	e ≥ 48	e ≥ 12	d ≥ 36, h ≥ 8

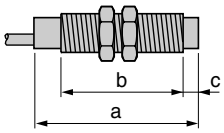
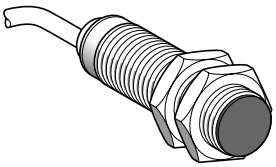
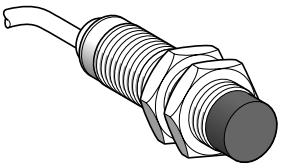
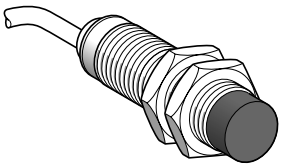
Fixing nut tightening torque	< 6 N.m (metal case), < 2 N.m (plastic case)
Other versions	Please consult your Regional Sales office.

Accessories: page 2/106
Schemes: page 2/68

Inductive proximity sensors

Osiprox® Application

Sensors with analogue output signal 0...10 V (1) or 4…20 mA

Sensor	Flush mountable in metal	Non flush mountable in metal	
			
Lengths (mm): a = Overall b = Threaded section c = For non flush mountable sensors	a = 52.5 b = 44 c = 0	a = 40.6 b = 26 c = 8	a = 40.6 b = 26 c = 8
	Metal case	**Plastic case**	**Plastic case**
Nominal sensing distance (Sn)	5 mm	8 mm	8 mm

References

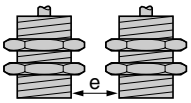
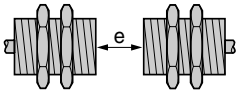
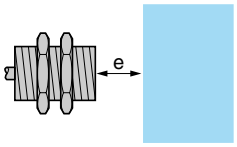
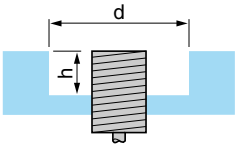
3-wire ⎓ Output 0…10 V *(2)*	–	–	**XS4 P18AB110**
2-wire ⎓ Output 4…20 mA *(2)*	**XS1 M18AB120**	**XS4 P18AB120**	–
Weight (kg)	0.120	0.080	0.080

Characteristics

Product certifications	CE, UL, CSA		
Connection	**Pre-cabled, PvR, 3 x 0.34 mm², length 2 m**		
Degree of protection conforming to IEC 60529	IP 67		
Operating zone	**0.5…5 mm**	**0.8…8 mm**	**0.8…8 mm**
Repeat accuracy	± 3%		
Linearity error	± 2 mA		± 1 V
Ambient air temperature	For operation: - 25…+ 70 °C		
Rated supply voltage	⎓ **12...24 V**	⎓ **12...24 V**	⎓ **24…48 V**
Voltage limits (including ripple)	⎓ 10…38 V	⎓ 10…38 V	⎓ 15…58 V
Output current drift Ambient temperature: - 25…+ 70 °C	≤ 10%		
Current consumption, no-load	4 mA		
Maximum operating rate	500 Hz		

(1) Voltage range only obtained with a load impedance of 1000 Ω.
(2) Output current range Is, see page 2/68.

Setting-up

Minimum mounting distances (mm)	Side by side	Face to face	Facing a metal object	Mounted in a metal support
				
XS1 M18AB120 flush mountable	e ≥ 10	e ≥ 60	e ≥ 15	d ≥ 18, h ≥ 0
XS4 P18AB110 non flush mountable	e ≥ 32	e ≥ 96	e ≥ 24	d ≥ 54, h ≥ 16
XS4 P18AB120 non flush mountable	e ≥ 32	e ≥ 96	e ≥ 24	d ≥ 54, h ≥ 16

Fixing nut tightening torque	< 15 N.m (metal case), < 5 N.m (plastic case)
Other versions	Please consult your Regional Sales office.

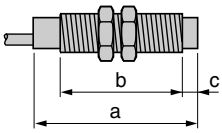
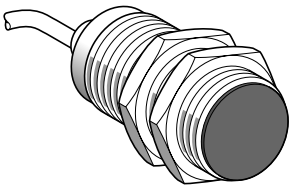
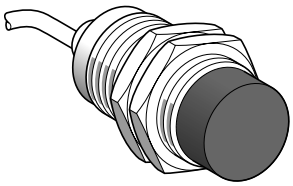
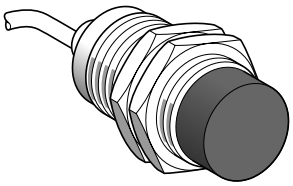
Accessories: page 2/106
Schemes: page 2/68

Schneider Electric

Inductive proximity sensors

Osiprox® Application

Sensors with analogue output signal 0...10 V *(1)* or 4…20 mA

Sensor	Flush mountable in metal	Non flush mountable in metal	
			
Lengths (mm): a = Overall b = Threaded section c = For non flush mountable sensors	a = 50 b = 42 c = 0	a = 52.6 b = 32 c = 13	a = 52.6 b = 32 c = 13
	Metal case	**Plastic case**	**Plastic case**
Nominal sensing distance (Sn)	10 mm	15 mm	15 mm

References

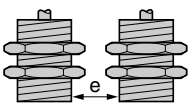
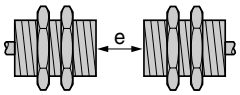
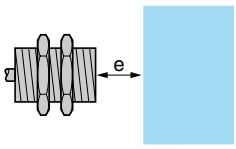
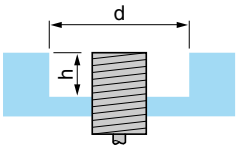
3-wire ⎓	Output 0…10 V *(2)*	–	–	**XS4 P30AB110**
2-wire ⎓	Output 4…20 mA *(2)*	**XS1 M30AB120**	**XS4 P30AB120**	–
Weight (kg)		0.200	0.100	0.100

Characteristics

Product certifications	CE, UL, CSA		
Connection	**Pre-cabled, PvR, 3 x 0.34 mm², length 2 m**		
Degree of protection conforming to IEC 60529	IP 67		
Operating zone	**1…10 mm**	**1.5…15 mm**	**1.5…15 mm**
Repeat accuracy	± 3%		
Linearity error	± 2 mA		± 1 V
Ambient air temperature	For operation: - 25…+ 70 °C		
Rated supply voltage	⎓ **12...24 V**	⎓ **12...24 V**	⎓ **24…48 V**
Voltage limits (including ripple)	⎓ 10…38 V	⎓ 10…38 V	⎓ 15…58 V
Output current drift Ambient temperature: - 25…+ 70 °C	≤ 10%		
Current consumption, no-load	4 mA		
Maximum operating rate	300 Hz		

(1) Voltage range only obtained with a load impedance of 1000 Ω.
(2) Output current range Is, see page 2/68.

Setting-up

Minimum mounting distances (mm)	Side by side	Face to face	Facing a metal object	Mounted in a metal support
				
XS1 M30AB120 flush mountable	e ≥ 20	e ≥ 120	e ≥ 30	d ≥ 30, h ≥ 0
XS4 P30AB110 non flush mountable	e ≥ 60	e ≥ 180	e ≥ 45	d ≥ 90, h ≥ 30
XS4 P30AB120 non flush mountable	e ≥ 60	e ≥ 180	e ≥ 45	d ≥ 90, h ≥ 30

Fixing nut tightening torque	< 40 N.m (metal case), < 20 N.m (plastic case)
Other versions	Please consult your Regional Sales office.

Accessories: page 2/106
Schemes: page 2/68

Inductive proximity sensors

Osiprox® Application

Sensors with analogue output signal 0…10 V *(1)*

Functions

These analogue output proximity sensors are solid-state sensors designed for monitoring displacement. They are not measuring sensors.

They are suitable for use in numerous sectors, particularly for applications involving:

- deformation and displacement monitoring,
- vibration amplitude and frequency monitoring,
- control of dimensional tolerances,
- position control,
- concentricity or eccentricity monitoring.

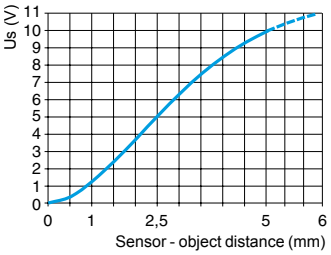
Operating principle

The operating principle of the sensor is that of a damped oscillator. The degree of damping will depend on the distance of an object from the sensing face. The sensor will sense the distance and produce an output current with a value directly proportional to this distance.

Output curves 0…10 V, 3-wire connection

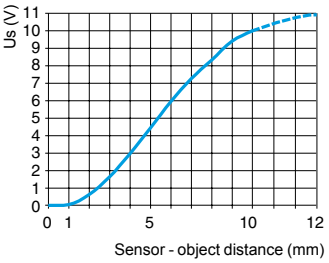
XS9 F

Sn = 1…5 mm



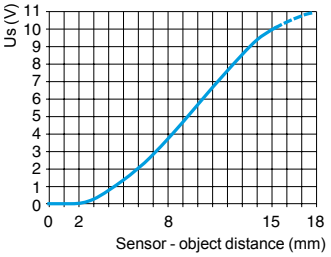
XS9 E

Sn = 1…10 mm



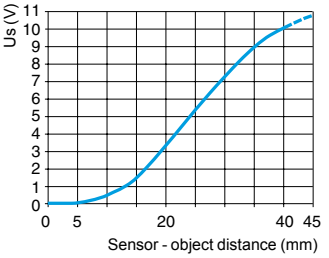
XS9 C

Sn = 2…15 mm



XS9 D

Sn = 5…40 mm



Wiring schemes

Connector

M8

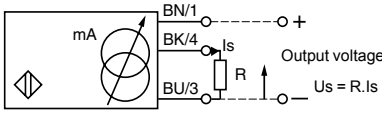
M12

See connection on page 9/45.

Pre-cabled

BN: Brown
BU: Blue
BK: Black

3-wire connection



	Output current	Load impedance value	Output voltage	Load impedance value
24 V	0…10 mA	R ⩽ 1400 Ω	0…10 V	R = 1000 Ω

Note: *ensure a minimum of 5 V between the + (terminal 1) and the sensor output (terminal 4).*

(1) Voltage range only obtained with a load impedance of 1000 Ω.

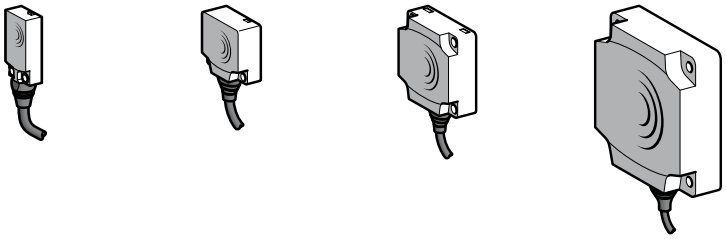
Inductive proximity sensors

Osiprox® Application

Sensors with analogue output signal 0…10 V *(1)*

Flush mountable in metal

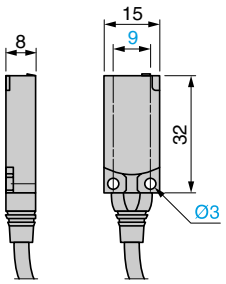
PBT case



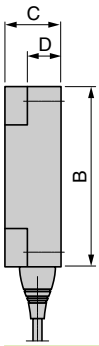
Nominal sensing distance (Sn)		**5 mm**	**10 mm**	**15 mm**	**40 mm**
References					
3-wire ⎓ 0…10 V	Pre-cabled (L = 2 m) *(2)*	**XS9 F111A1L2**	**XS9 E111A1L2**	**XS9 C111A1L2**	**XS9 D111A1L2**
	Connector	**XS9 F111A1L01M8**	**XS9 E111A1L01M12**	**XS9 C111A1L01M12**	**XS9 D111A1M12**
Weight (kg)	Pre-cabled (L = 2 m) *(2)*	0.060	0.075	0.095	0.340
	Connector	0.040	0.055	0.075	0.320
Characteristics					
Product certifications		UL, CSA, CE			
Connection	Pre-cabled	PvR, 3 x 0.34 mm², length 2 m for **XS9 ●111A●L2**			
	Connector	0.15 m flying lead with M8 connector	0.15 m flying lead with M12 connector		M12
Operating zone		**1…5 mm**	**1…10 mm**	**2…15 mm**	**5…40 mm**
Degree of protection Conforming to IEC 60529	Pre-cabled	IP 68	IP 68, double insulation ⧈		
	Connector	IP 67	IP 67, double insulation ⧈		
Storage temperature		- 40…+ 85 °C			
Operating temperature		- 25…+ 70 °C			
Materials		PBT case			
Vibration resistance	Conforming to IEC 60068-2-6	25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)			
Shock resistance	Conforming to IEC 60068-2-27	50 gn, duration 11 ms			
Output state indication		No			
Rated supply voltage		⎓ 24 V			
Voltage limits (including ripple)		⎓ 15…36 V			
Repeat accuracy		± 3%			
Linearity error		± 1 V			
Current consumption, no-load		≤ 4 mA with overload and short-circuit protection			
Maximum operating frequency		2000 Hz	1000 Hz		100 Hz
Output current drift		≤ 10% (throughout the operating temperature range)			

Dimensions

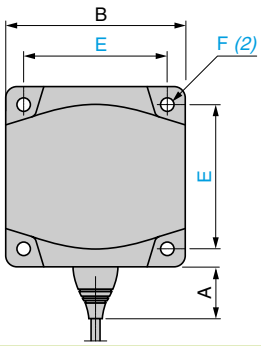
XS9 F



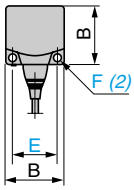
XS9 E/C/D



XS9 C/D



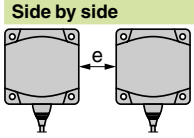
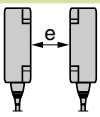
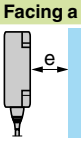
XS9 E



(2) For CHC type screws

Type	A (L2)	A (M12)	B	C	D	E	F
XS9 E	14	–	26	13	8.8	20	3.5
XS9 C	14	–	40	15	9.8	33	4.5
XS9 D	23	14	80	26	16	65	5.5

Setting-up (Minimum mounting distances (mm))

Type	Side by side		Face to face		Facing a metal object	
XS9 F		e ≥ 15		e ≥ 36		e ≥ 15
XS9 E		e ≥ 30		e ≥ 72		e ≥ 30
XS9 C		e ≥ 45		e ≥ 110		e ≥ 45
XS9 D		e ≥ 120		e ≥ 300		e ≥ 120

(1) Voltage range only obtained with a load impedance of 1000 Ω.
(2) For a 5 m long cable replace L2 by L5, for a 10 m long cable replace L2 by L10.
*Example: XS9 C111A1L2 becomes **XS9 C111A1L5** with a 5 m long cable.*

Accessories:
page 2/106

Inductive proximity sensors

Osiprox® Application

Sensors with analogue output signal 4…20 mA

Functions

These analogue output proximity sensors are solid-state sensors designed for monitoring displacement. They are not measuring sensors.

They are suitable for use in numerous sectors, particularly for applications involving:

- deformation and displacement monitoring,
- vibration amplitude and frequency monitoring,
- control of dimensional tolerances,
- position control,
- concentricity or eccentricity monitoring.

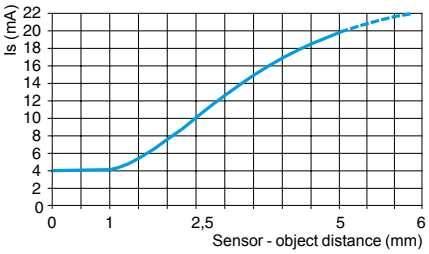
Operating principle

The operating principle of the sensor is that of a damped oscillator. The degree of damping will depend on the distance of an object from the sensing face. The sensor will sense the distance and produce an output current with a value directly proportional to this distance.

Output curves 4…20 mA, 2-wire connection

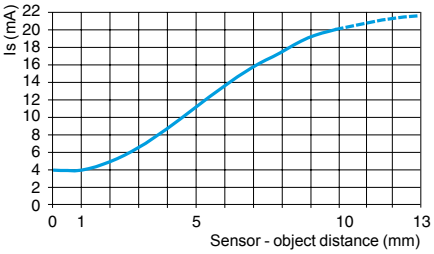
XS9 F

Sn = 1…5 mm



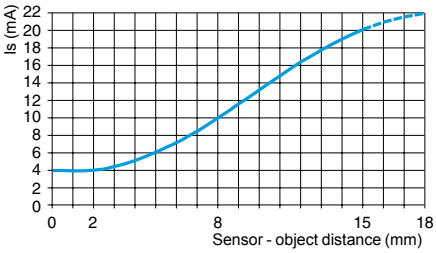
XS9 E

Sn = 1…10 mm



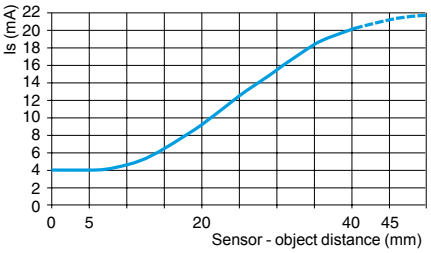
XS9 C

Sn = 2…15 mm



XS9 D

Sn = 5…40 mm



Wiring schemes

Connector

M8

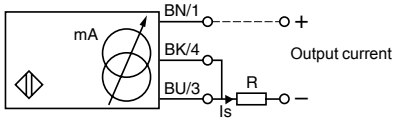
M12

See connection on page 9/45.

Pre-cabled

BN: Brown
BU: Blue
BK: Black

2-wire connection



	Output current	Load impedance value
12 V	4…20 mA	R ⩽ 8.2 Ω
24 V	4…20 mA	R ⩽ 470 Ω

Note: *ensure a minimum of 10 V between the + (terminal 1) and - (terminal 3) of the sensor.*

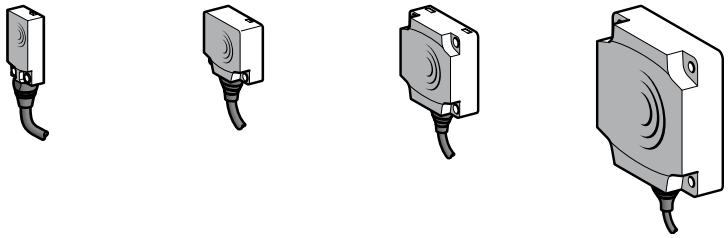
Inductive proximity sensors

Osiprox® Application

Sensors with analogue output signal 4…20 mA

Flush mountable in metal

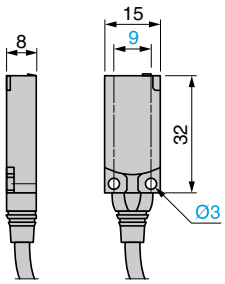
PBT case



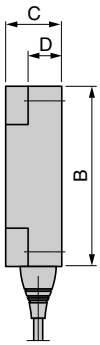
Nominal sensing distance (Sn)		**5 mm**	**10 mm**	**15 mm**	**40 mm**
References					
2-wire ⎓ 4…20 mA	Pre-cabled (L = 2 m) *(1)*	**XS9 F111A2L2**	**XS9 E111A2L2**	**XS9 C111A2L2**	**XS9 D111A2L2**
	Connector	**XS9 F111A2L01M8**	**XS9 E111A2L01M12**	**XS9 C111A2L01M12**	**XS9 D111A2M12**
Weight (kg)	Pre-cabled (L = 2 m)	0.060	0.075	0.095	0.340
	Connector	0.040	0.055	0.075	0.320
Characteristics					
Product certifications		UL, CSA, CE			
Connection	Pre-cabled	PvR, 3 x 0.34 mm², length 2 m for **XS9 ●111A●L2**			
	Connector	0.15 m flying lead with M8 connector	0.15 m flying lead with M12 connector		M12
Operating zone		**1…5 mm**	**1…10 mm**	**2…15 mm**	**5…40 mm**
Degree of protection conforming to IEC 60529	Pre-cabled	IP 68	IP 68, double insulation ⧈		
	Connector	IP 67	IP 67, double insulation ⧈		
Storage temperature		- 40…+ 85 °C			
Operating temperature		- 25…+ 70 °C			
Materials		PBT case			
Vibration resistance	Conforming to IEC 60068-2-6	25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)			
Shock resistance	Conforming to IEC 60068-2-27	50 gn, duration 11 ms			
Output state indication		No			
Rated supply voltage		⎓ 12…24 V			
Voltage limits (including ripple)		⎓ 10…36 V			
Repeat accuracy		± 3%			
Linearity error		± 2 mA			
Current consumption, no-load		⩽ 4 mA with overload and short-circuit protection			
Maximum operating frequency		2000 Hz	1000 Hz		100 Hz
Output current drift		⩽ 10% (throughout the operating temperature range)			

Dimensions

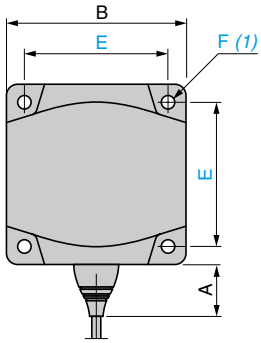
XS9 F



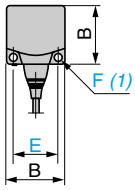
XS9 E/C/D



XS9 C/D



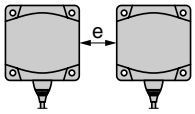
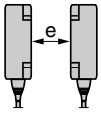
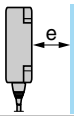
XS9 E



(1) For CHC type screws

Type	A (L2)	A (M12)	B	C	D	E	F
XS9 E	14	–	26	13	8.8	20	3.5
XS9 C	14	–	40	15	9.8	33	4.5
XS9 D	23	14	80	26	16	65	5.5

Setting-up (Minimum mounting distances (mm))

Type	Side by side		Face to face		Facing a metal object	
XS9 F		e ⩾ 15		e ⩾ 36		e ⩾ 15
XS9 E		e ⩾ 30		e ⩾ 72		e ⩾ 30
XS9 C		e ⩾ 45		e ⩾ 110		e ⩾ 45
XS9 D		e ⩾ 120		e ⩾ 300		e ⩾ 120

(1) For a 5 m long cable replace L2 by L5, for a 10 m long cable replace L2 by L10.
*Example: XS9 F111A2L2 becomes **XS9 F111A2L5** with a 5 m long cable.*

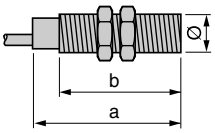
Accessories:
page 2/106

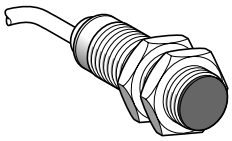
Inductive proximity sensors

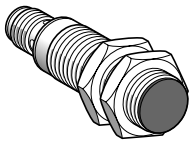
Osiprox® Application

Detection at fixed sensing distance. Factor 1 (Fe/Nfe) sensors *(1)*. For ferrous and non ferrous materials
Solid-state output

Sensors flush mountable in metal







Lengths (mm): a = Overall b = Threaded section	a = 60 b = 51.5 Ø = M18 x 1	a = 70 b = 51.5 Ø = M18 x 1
	Brass case	**Brass case**
Nominal sensing distance (Sn)	**5 mm**	**5 mm**

References

4-wire ⎓	PNP/PNP programmable NO/NC	**XS1 M18KPM40**	**XS1 M18KPM40D**
Weight (kg)		0.120	0.060

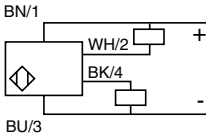
Characteristics

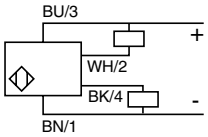
Product certifications		CE, UL, CSA	
Connection		**Pre-cabled, PvR 4 x 0.34 mm², length 2 m** *(2)*	**M12 connector**
Degree of protection	Conforming to IEC 60529	IP 68	IP 67
Operating zone		**0…4 mm**	
Repeat accuracy		3% of Sr	
Differential travel		1…15% of Sr	
Operating temperature		0…+ 50 °C	
Output state indication		Yellow LED, annular	Yellow LED, 4 viewing ports at 90°
Rated supply voltage		**⎓ 12…24 V with protection against reverse polarity**	
Voltage limits (including ripple)		⎓ 10…38 V	
Switching capacity		**0...200 mA with overload and short-circuit protection**	
Voltage drop, closed state		≤ 2.6 V	
Current consumption, no-load		≤ 15 mA	
Maximum switching frequency		1000 Hz	
Delays	First-up	≤ 10 ms	
	Response	≤ 0.3 ms	
	Recovery	≤ 0.7 ms	

Wiring schemes

M12 connector	**Pre-cabled**	**4-wire ⎓, PNP/NPN programmable, NO or NC output**	
		NO	**NC**

BN: brown
BU: blue
BK: black
WH: white





See connection on page 9/45.

(1) The variation in sensing distance between ferrous and non ferrous materials is typically less than 5%.
(2) Sensors available with other cable lengths: please consult your Regional Sales office.

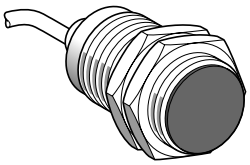
Accessories:
page 2/106

Schneider Electric

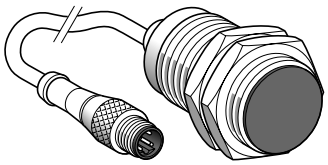
Inductive proximity sensors

Osiprox® Application

Detection at fixed sensing distance. Factor 1 (Fe/Nfe) sensors *(1)*. For ferrous and non ferrous materials
Solid-state output



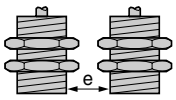
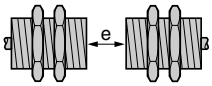
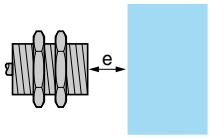
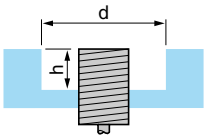
a = 60
b = 51.5
Ø = M30 x 1.5



a = 70
b = 51.5
Ø = M12 x 1

Stainless steel case	**Stainless steel case**
10 mm	**10 mm**
XS1 M30KPM40	**XS1 M30KPM40LD**
0.205	0.145
CE, UL, CSA	
Pre-cabled, PvR 4 x 0.34 mm², length 2 m *(2)*	**M12 connector on 0.8 m flying lead**
IP 68	IP 67
0…8 mm	
3% of Sr	
1…15% of Sr	
0…+ 50 °C	
Yellow LED, annular	
⎓ **12…24 V with protection against reverse polarity**	
⎓ 10…38 V	
0…200 mA with overload and short-circuit protection	
⩽ 2.6 V	
⩽ 15 mA	
1000 Hz	
⩽ 5 ms	
⩽ 0.3 ms	
⩽ 0.7 ms	

Setting-up

Minimum mounting distances (mm)	**Side by side**	**Face to face**	**Facing a metal object**	**Mounted in a metal support**
				
XS1 M18 flush mountable	e ⩾ 10	e ⩾ 60	e ⩾ 15	d ⩾ 18, h ⩾ 0
XS1 M30 flush mountable	e ⩾ 20	e ⩾ 120	e ⩾ 30	d ⩾ 30, h ⩾ 0

***Fixing nut tightening torque: XS1 M18**: < 35 N.m, **XS1 M30**: < 100 N.m*

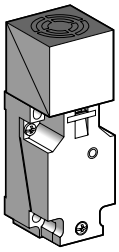
(1) The variation in sensing distance between ferrous and non ferrous materials is typically less than 5%.
(2) Sensors available with other cable lengths: please consult your Regional Sales office.

Inductive proximity sensors

Osiprox® Application

Fixed sensing distance detection, Factor 1 (Fe/Nfe) sensors *(1)*. For ferrous and non ferrous materials
Solid-state output

Sensor		Flush mountable in metal



Nominal sensing distance (Sn)		15 mm
References		
4-wire ⎓	PNP/NPN/NO/NC programmable	**XS7 C40KPM40**
Weight (kg)		0.220
Characteristics		
Product certifications		CE, CSA, UL
Degree of protection	Conforming to IEC 60529	IP 67
Operating temperature		0…+ 50 °C
Connection		Screw terminals, clamping capacity: 4 x 0.34 mm² *(2)*
Operating zone		**0…12 mm**
Repeat accuracy		3% of Sr
Differential travel		1…15% of Sr
Output state indication		Yellow LED
Rated supply voltage		⎓ 12…24 V with protection against reverse polarity
Voltage limits (including ripple)		⎓ 10…38 V
Current consumption, no-load		⩽ 15 mA
Switching capacity		0…200 mA with overload and short-circuit protection
Voltage drop, closed state		⩽ 2.6 V
Maximum switching frequency		1000 Hz
Delays	First-up	⩽ 5 ms
	Response	⩽ 0.3 ms
	Recovery	⩽ 0.7 ms

(1) The variation in sensing distance between ferrous and non ferrous materials is typically less than 5%.
(2) Cable gland not included with sensor. For suitable 13P cable gland (XSZ PE13), see page 2/106.

Inductive proximity sensors

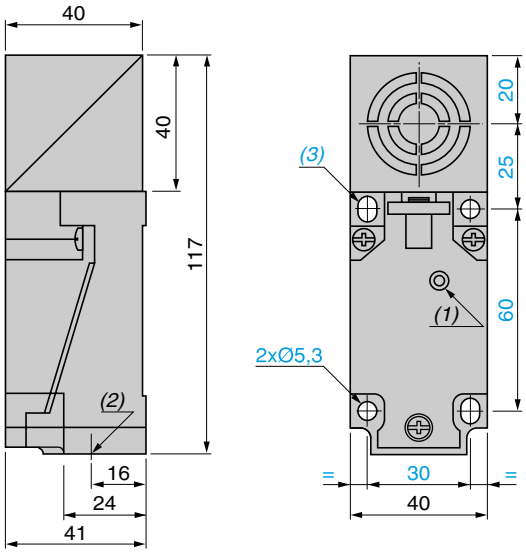
Osiprox® Application

Fixed sensing distance detection, Factor 1 (Fe/Nfe) sensors *(1)*. For ferrous and non ferrous materials

Solid-state output

Dimensions

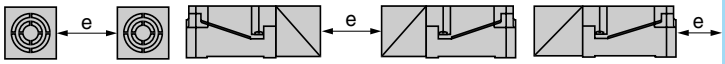
XS7 C40KPM40



(1) Output LED.
(2) 1 tapped entry for 13P cable gland.
(3) 2 elongated holes Ø 5.3 x 7.

Setting-up

Minimum mounting distances (mm)



		Side by side	Face to face	Facing a metal object
Sensor flush mountable in metal	**XS7 C40KPM40**	e ⩾ 40	e ⩾ 120	e ⩾ 45

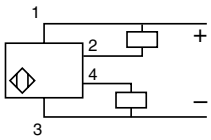
Tightening torque of cover fixing screws and clamp screws: < 1.2 N.m

Wiring schemes

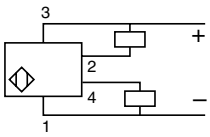
PNP/NPN

4-wire ⎓ programmable, NO or NC output

NO output



NC output



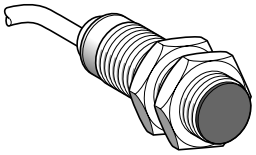
Inductive proximity sensors

Osiprox® Application

Selective detection of ferrous materials
Selective detection of non ferrous materials
Cylindrical type, solid-state output

Flush mountable

Stainless steel case



Nominal sensing distance (Sn)		5 mm

References

3-wire, ferrous version Insensitive to non ferrous materials	PNP	NO	**XS1 M18PAS40**
3-wire, non ferrous version Insensitive to ferrous materials	PNP	NO	**XS1 M18PAS20**
Weight (kg)			0.120

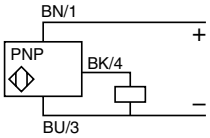
Characteristics

Product certifications		UL, CSA, CE
Connection		**Pre-cabled (PvR)** 3 x 0.34 mm², length 2 m *(1)*
Operating zone		**0…4 mm**
Degree of protection conforming to IEC 60529		IP 68
Operating temperature range		- 25…+ 70 °C
Output state indication		Yellow LED, annular
Rated supply voltage		⎓ 12…24 V with protection against reverse polarity
Voltage limits (including ripple)		⎓ 10…38 V
Switching capacity		0…200 mA with overload and short-circuit protection
Voltage drop, closed state		≤ 2.6 V
Residual current, open state		–
Current consumption, no-load		≤ 15 mA
Maximum switching frequency		1000 Hz
Delays	First-up	≤ 10 ms
	Response	≤ 0.3 ms
	Recovery	≤ 0.7 ms

(1) Sensors available pre-cabled with other cable lengths: please consult your Regional Sales Office

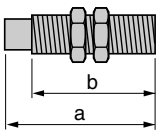
Wiring scheme

3-wire ⎓ PNP



Dimensions

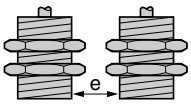
XS1 M

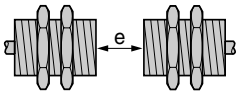


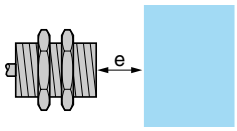
a (mm)	b (mm)
60	51.5

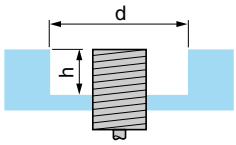
Setting-up

Minimum mounting distances (mm)









	Side by side	Face to face	Facing a metal object	Mounted in a metal support
XS1 M18	e ≥ 10	e ≥ 60	e ≥ 15	d ≥ 18, h ≥ 0 (ferrous metal) d ≥ 18, h ≥ 5 (non ferrous metal)

Accessories:
pages 2/106

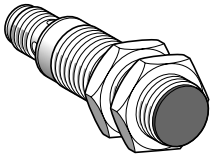
Inductive proximity sensors

Osiprox® Application

Selective detection of ferrous materials
Selective detection of non ferrous materials
Cylindrical type, solid-state output

Flush mountable

Stainless steel case



Nominal sensing distance (Sn)		5 mm

References

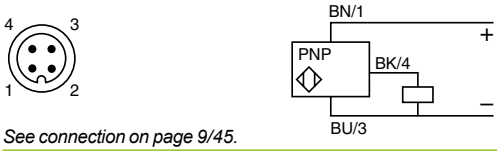
3-wire, ferrous version Insensitive to non ferrous materials	PNP	NO	**XS1 M18PAS40D**
3-wire, non ferrous version Insensitive to ferrous materials	PNP	NO	**XS1 M18PAS20D**
Weight (kg)			0.060

Characteristics

Product certifications		UL, CSA, CE
Connection		**M12 connector**
Degree of protection conforming to IEC 60529		IP 67
Operating zone		**0…4 mm**
Operating temperature range		- 25…+ 70 °C
Output state indication		Yellow LED, 4 viewing ports at 90°
Rated supply voltage		⎓ 12…24 V with protection against reverse polarity
Voltage limits (including ripple)		⎓ 10…38 V
Switching capacity		0…200 mA with overload and short-circuit protection
Voltage drop, closed state		≤ 2.6 V
Residual current, open state		–
Current consumption, no-load		≤ 15 mA
Maximum switching frequency		1000 Hz
Delays	First-up	≤ 10 ms
	Response	≤ 0.3 ms
	Recovery	≤ 0.7 ms

Wiring scheme

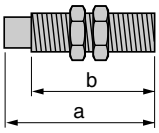
M12 connector | **3-wire ⎓ PNP**



See connection on page 9/45.

Dimensions

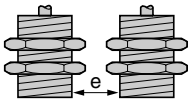
XS1 M

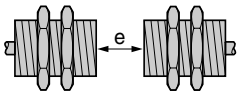


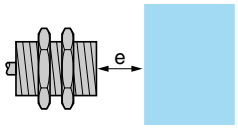
a (mm)	b (mm)
70	51.5

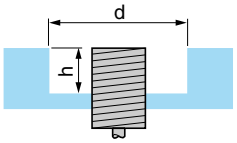
Setting-up

Minimum mounting distances (mm)









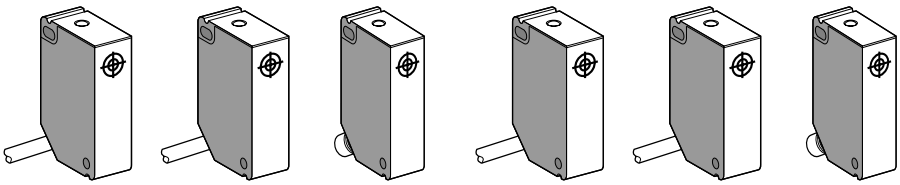
	Side by side	Face to face	Facing a metal object	Mounted in a metal support
XS1 M18	e ≥ 10	e ≥ 60	e ≥ 15	d ≥ 18, h ≥ 0 (ferrous metal) d ≥ 18, h ≥ 5 (non ferrous metal)

Accessories:
pages 2/106

Inductive proximity sensors

Osiprox® Application

For assembly, packaging and light handling
Plastic case: 12 x 26 x 40 mm
dc supply, solid-state output

Sensor			Flush mountable in metal			Non flush mountable in metal		
								
Nominal sensing distance (Sn)			2 mm			4 mm		
References								
3-wire ⎓	PNP	NO	**XS7 G12PA140**	–	**XS7 G12PA140S**	**XS8 G12PA140**	–	**XS8 G12PA140S**
	NPN	NO	**XS7 G12NA140**	–	**XS7 G12NA140S**	**XS8 G12NA140**	–	**XS8 G12NA140S**
4-wire ⎓ (complementary outputs)	PNP	NO + NC	–	**XS7 G12PC440**	–	–	**XS8 G12PC440**	–
	NPN	NO + NC	–	**XS7 G12NC440**	–	–	**XS8 G12NC440**	–
Weight (kg)			0.100	0.100	0.030	0.100	0.100	0.030
Characteristics								
Product certifications			CSA, UL, CE					
Connection	Pre-cabled		3 x 0.34 mm², length 2 m *(1)*	4 x 0.34 mm², length 2 m *(1)*	–	3 x 0.34 mm², length 2 m *(1)*	4 x 0.34 mm², length 2 m *(1)*	–
	Connector		–	–	M8	–	–	M8
Operating zone			**0…1.6 mm**			**0…3.2 mm**		
Repeat accuracy			≤ 10 % of Sr					
Differential travel			3...20 % of Sr					
Degree of protection			IP 67					
Storage temperature range			-40…+85 °C					
Operating temperature range			-25…+70 °C					
Materials			Case: PBT, cable: PVC					
Vibration resistance Conforming to IEC 60068-2-6			25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)					
Shock resistance Conforming to IEC 60068-2-27			50 gn, duration 11 ms					
Output state indication			Yellow LED, on top of case					
Rated supply voltage			⎓ 12…24 V	⎓ 12…48 V	⎓ 12…24 V	⎓ 12…24 V	⎓ 12…48 V	⎓ 12…24 V
Voltage limits (including ripple)			⎓ 10…30 V	⎓ 10…58 V	⎓ 10…30 V	⎓ 10…30 V	⎓ 10…58 V	⎓ 10…30 V
Current consumption, no-load			≤ 10 mA					
Switching capacity			0…100 mA *(2)*	0…200 mA *(2)*	0…100 mA (2)	0…100 mA *(2)*	0…200 mA *(2)*	0…100 mA *(2)*
Voltage drop, closed state			≤ 1.8 V	≤ 2.6 V	≤ 1.8 V	≤ 1.8 V	≤ 2.6 V	≤ 1.8 mA
Maximum switching frequency			≤ 2 kHz			≤ 1 kHz		
Delays	First-up		≤ 4 ms					
	Response		≤ 0.5 ms					
	Recovery		≤ 1 ms					

(1) Sensors available pre-cabled with other cable lengths:

Length of cable	Suffix to be added to references stated above for 2 m pre-cabled sensors	Weight increase
5 m	**L1**	0.120 kg
10 m	**L2**	0.320 kg

Example: sensor **XS7 G12PA**140 with 5 m cable becomes **XS7 G12PA140L1.**

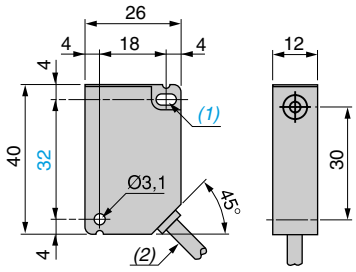
(2) With overload and short-circuit protection

Inductive proximity sensors

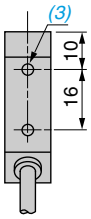
Osiprox® Application
For assembly, packaging and light handling
Plastic case: 12 x 26 x 40 mm
dc supply, solid-state output

Dimensions

XS● G12●A140, XS● G12●C440

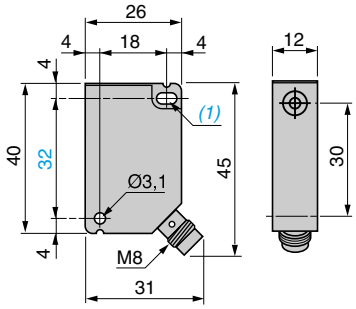


Rear view

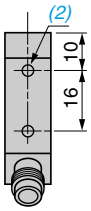


(1) 1 elongated hole 3.1 x 5.1.
(2) Pre-cabled L = 2 m.
(3) 2 holes M3 x 5.

XS● G12●A140S



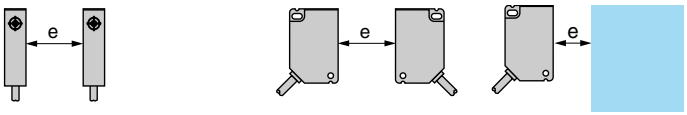
Rear view



(1) 1 elongated hole 3.1 x 5.1
(2) 2 holes M3 x 5

Setting-up

Minimum mounting distances (mm)

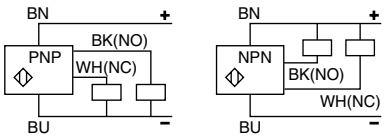


	Side by side	Face to face	Facing a metal object and mounting in a metal support
XS7 G flush mountable	e ⩾ 0	e ⩾ 15	e ⩾ 6
XS8 G non flush mountable	e ⩾ 10	e ⩾ 60	e ⩾ 12

Wiring scheme

3-wire ⎓, NO output

4-wire ⎓, NO + NC output



Connector

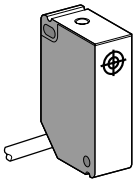
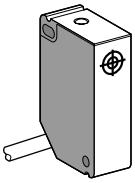
M8

See connection on page 9/45.

Inductive proximity sensors

Osiprox® Application

For assembly, packaging and light handling
Plastic case: 12 x 26 x 40 mm
a.c. or d.c. supply

Sensor		Flush mountable in metal	Non flush mountable in metal
			
Nominal sensing distance (Sn)		2 mm	4 mm
References			
2-wire ⎓ or ∿	NO	**XS7 G12MA230**	**XS8 G12MA230**
	NC	**XS7 G12MB230**	**XS8 G12MB230**
Weight (kg)		0.100	0.100
Characteristics			
Product certifications		CSA, UL, CE	
Connection		Pre-cabled 2 x 0.34 mm², length 2 m *(1)*	
Operating zone		**0…1.6 mm**	**0…3.2 mm**
Repeat accuracy		≤ 10 % of Sr	
Differential travel		3...20 % of Sr	
Degree of protection		IP 67	
Storage temperature range		- 40…+ 85 °C	
Operating temperature range		- 25…+ 70 °C	
Materials		Case: PBT, cable: PVC	
Vibration resistance Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication		Yellow LED, on top of case	
Rated supply voltage		∿ 24…240 V (50/60 Hz) or ⎓ 24…210 V	
Voltage limits (including ripple)		∿ or ⎓ 20…264 V	
Switching capacity		5…200 mA (2)	
Voltage drop, closed state		≤ 5.5 V	
Residual current, open state		≤ 0.8 mA / 24 V, 1.5 mA / 120 V	
Maximum switching frequency		∿ 25 Hz or ⎓ 250 Hz	
Delays	First-up	≤ 40 ms	
	Response	≤ 1 ms	
	Recovery	≤ 2 ms	

(1) Sensors available pre-cabled with other cable lengths:

Length of cable	Suffix to be added to references stated above for 2 m pre-cabled sensors	Weight increase
5 m	**L1**	0.120 kg
10 m	**L2**	0.320 kg

Example: sensor **XS7 G12MA230** with 5 m cable becomes **XS7 G12MA230L1.**

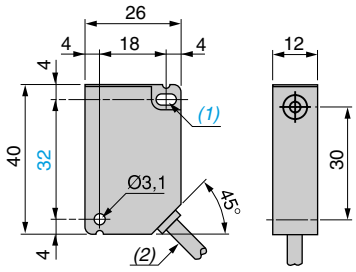
(2) As these sensors do not incorporate overload or short-circuit protection, it is essential to connect a 0.4 A quick-blow fuse in series with the load.

Inductive proximity sensors

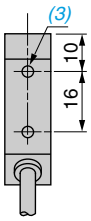
Osiprox® Application
For assembly, packaging and light handling
Plastic case: 12 x 26 x 40 mm
a.c. or d.c. supply

Dimensions

XS● G12M●230



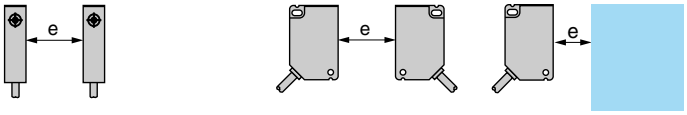
Rear view



(1) 1 elongated hole 3.1 x 5.1.
(2) Pre-cabled L = 2 m.
(3) 2 holes M3 x 5.

Setting-up

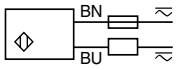
Minimum mounting distances (mm)



	Side by side	Face to face	Facing a metal object and mounting in a metal support
XS7 G flush mountable	e ⩾ 0	e ⩾ 15	e ⩾ 6
XS8 G non flush mountable	e ⩾ 10	e ⩾ 60	e ⩾ 12

Wiring scheme

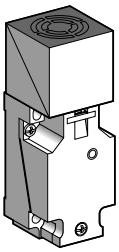
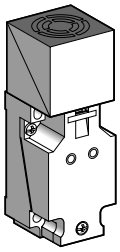
2-wire ∼ or ⎓ , NO or NC output



Inductive proximity sensors

Osiprox® Application

Plastic case, form C, plug-in
5 position turret head
d.c. supply

Sensor		Flush mountable in metal			Non flush mountable in metal		
							
Nominal sensing distance (Sn)		15 mm	Increased range model 20 mm	15 mm	20 mm	Increased range model 40 mm	20 mm
References							
4-wire ⎓ (complementary outputs)	PNP NO + NC	**XS7 C40PC440**	**XS7 C40PC449**	–	**XS8 C40PC440**	**XS8 C40PC449**	–
	NPN NO + NC	**XS7 C40NC440**	**XS7 C40NC449**	–	**XS8 C40NC440**	**XS8 C40NC449**	–
2-wire ⎓ (non polarised)	NO	–	–	**XS7 C40DA210**	–	–	**XS8 C40DA210**
	NO or NC programmable	–	–	**XS7 C40DP210**	–	–	**XS8 C40DP210**
Weight (kg)		0.220	0.220	0.220	0.220	0.220	0.220
Characteristics							
Product certifications		UL, CSA, CE					
Degree of protection conforming to IEC 60529		IP 67					
Operating temperature		- 25…+ 70 °C					
Connection		Screw terminals, clamping capacity: 2 or 4 x 1.5 mm² *(1)*					
Operating zone		**0…12 mm**	**0…16 mm**	**0…12 mm**	**0…16 mm**	**0…32 mm**	**0…16 mm**
Repeat accuracy		≤ 3% of real sensing distance (Sr)					
Differential travel		3…20% of real sensing distance (Sr)					
Status indication	Output	Yellow LED		Yellow LED	Yellow LED		Yellow LED
	Supply on	Green LED		–	Green LED		–
Rated supply voltage		⎓ 12…48 V with protection against reverse polarity					
Voltage limits (including ripple)		⎓ 10…58 V					
Current consumption, no-load		≤ 10 mA		–	≤ 10 mA		–
Switching capacity		0…200 mA		1.5…100 mA	0…200 mA		1.5…100 mA
		With overload and short-circuit protection					
Residual current, open state		–		≤ 0.5 mA	–		≤ 0.5 mA
Voltage drop, closed state		≤ 2 V		≤ 4 V	≤ 2 V		≤ 4 V
Maximum switching frequency		1000 Hz		1500 Hz	1000 Hz	500 Hz	800 Hz
Delays	First-up	≤ 5 ms		≤ 5 ms	≤ 5 ms	≤ 5 ms	≤ 5 ms
	Response	≤ 0.3 ms		≤ 2 ms	≤ 0.3 ms	< 1 ms	≤ 2 ms
	Recovery	≤ 0.7 ms		≤ 5 ms	≤ 0.7 ms	< 1 ms	≤ 7 ms

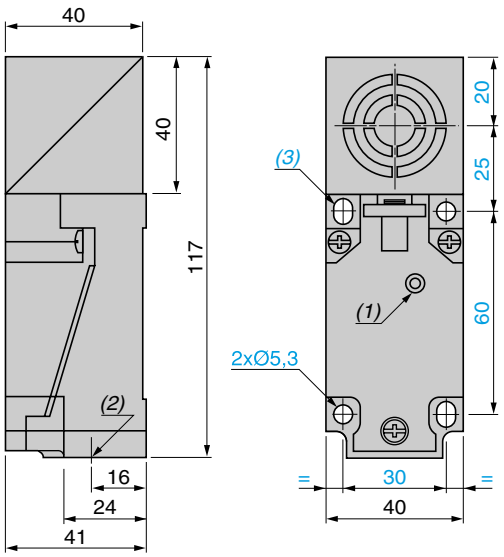
(1) Cable gland not included with sensor. For suitable 13P cable gland (XSZ PE13), see page 2/106.

Inductive proximity sensors

Osiprox® Application
Plastic case, form C, plug-in
5 position turret head
d.c. supply

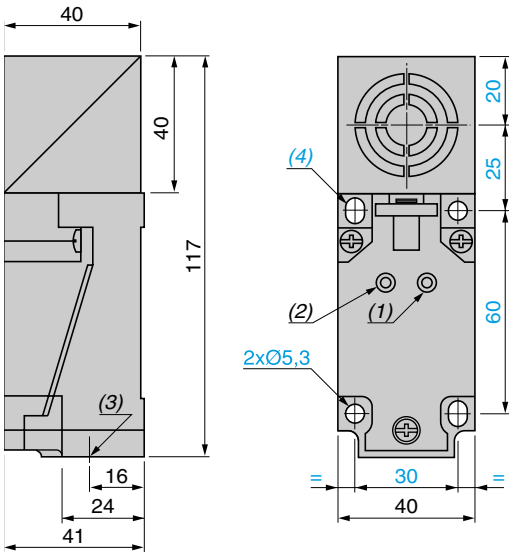
Dimensions

XS7 C40D●210, XS8 C40D●210



(1) Output LED.
(2) 1 tapped entry for 13P cable gland.
(3) 2 elongated holes Ø 5.3 x 7.

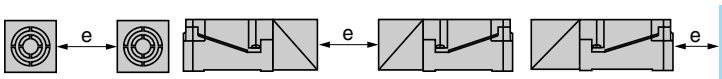
XS7 C40●C44●, XS8 C40●C44●



(1) Output LED.
(2) Supply LED.
(3) 1 tapped entry for 13P cable gland.
(4) 2 elongated holes Ø 5.3 x 7.

Setting-up

Minimum mounting distances (mm)

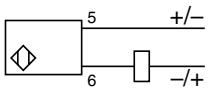


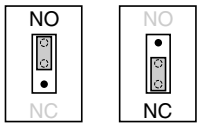
		Side by side	Face to face	Facing a metal object
Sensors flush mountable in metal	**XS7**	e ≥ 40	e ≥ 120	e ≥ 45
	XS7 increased range model	e ≥ 80	e ≥ 240	e ≥ 60
Sensors non flush mountable in metal	**XS8**	e ≥ 80	e ≥ 160	e ≥ 60
	XS8 increased range model	e ≥ 160	e ≥ 320	e ≥ 120

Tightening torque of cover fixing screws and clamp screws: < 1.2 N.m

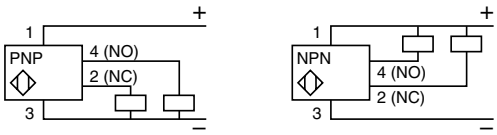
Wiring schemes

2-wire ⎓ (non polarised), NO or NC output depending on position of link





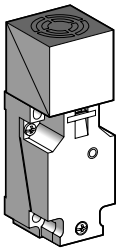
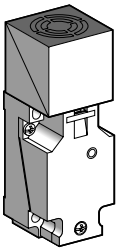
4-wire ⎓, NO + NC output



Inductive proximity sensors

Osiprox® Application

Plastic case, form C, plug-in
5 position turret head
a.c. or d.c. supply

Sensor		Flush mountable in metal		Non flush mountable in metal	
					
		AC	**AC/DC**	**AC**	**AC/DC**
Nominal sensing distance (Sn)		15 mm		20 mm	
References					
2-wire ∿	NO or NC programmable	**XS7 C40FP260**	–	**XS8 C40FP260**	–
2-wire ∿ or ⎓ universal model	NO or NC programmable	–	**XS7 C40MP230**	–	**XS8 C40MP230**
Weight (kg)		0.220	0.220	0.220	0.220
Characteristics					
Product certifications		UL, CSA, CE			
Degree of protection conforming to IEC 60529		IP 67			
Operating temperature		- 25…+ 70 °C			
Connection		Screw terminals, clamping capacity: 2 x 1.5 mm² *(1)*			
Operating zone		**0…12 mm**		**0…16 mm**	
Repeat accuracy		≤ 3% of real sensing distance (Sr)			
Differential travel		3...20% of real sensing distance (Sr)			
Output state indication		Yellow LED			
Rated supply voltage with protection against reverse polarity		∿ 24…240 V, 50/60 Hz	∿ 24…240 V, 50/60 Hz or ⎓ 24…210 V	∿ 24…240 V, 50/60 Hz	∿ 24…240 V, 50/60 Hz or ⎓ 24…210 V
Voltage limits (including ripple)		∿ 20…264 V	∿ or ⎓ 20…264 V	∿ 20…264 V	∿ or ⎓ 20…264 V
Current consumption, no-load		–			
Switching capacity		5…500 mA *(2)* (2 A inrush)	∿ 5…300 mA or ⎓ *5…200 mA (2)*	5…500 mA *(2)* (2 A inrush)	∿ 5…300 mA or ⎓ *5…200 mA (2)*
Residual current, open state		≤ 1.5 mA	0.8 mA on 24 V 1.5 mA on 120 V	≤ 1.5 mA	0.8 mA on 24 V 1.5 mA on 120 V
Voltage drop, closed state		≤ 5.5 V			
Maximum switching frequency		25 Hz	∿ 25 Hz, ⎓ 50 Hz	25 Hz	∿ 25 Hz, ⎓ 50 Hz
Delays	First-up	≤ 120 ms			
	Response	≤ 30 ms			
	Recovery	≤ 20 ms			

(1) Cable gland not included with sensor. For suitable 13P cable gland (XSZ PE13), see page 2/106.

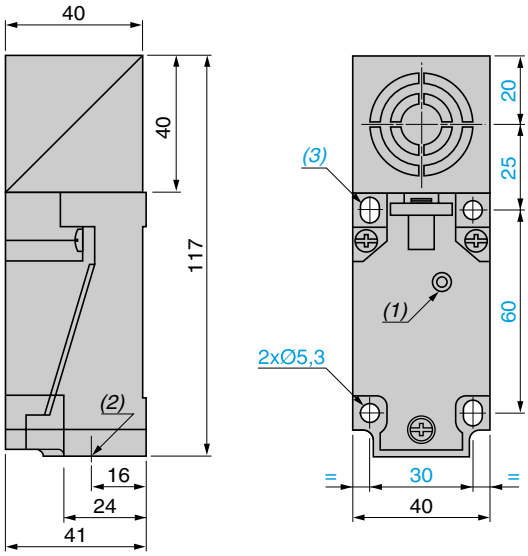
(2) These sensors do not incorporate overload or short-circuit protection and therefore, it is essential to connect a "quick-blow" fuse in series with the load, see page 2/106.

Inductive proximity sensors

Osiprox® Application
Plastic case, form C, plug-in
5 position turret head
a.c. or d.c. supply

Dimensions

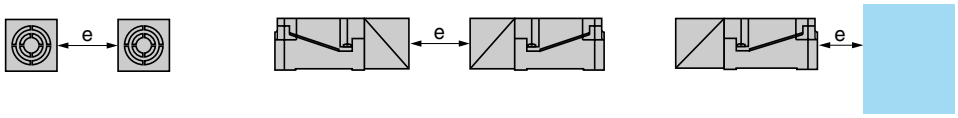
XS7 C40FP260, XS7 C40MP230, XS8 C40FP260, XS8 C40MP230



(1) Output LED.
(2) 1 tapped entry for 13P cable gland.
(3) 2 elongated holes Ø 5.3 x 7.

Setting-up

Minimum mounting distances (mm)

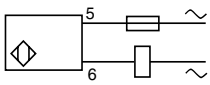


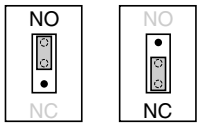
	Side by side	Face to face	Facing a metal object
XS7 flush mountable	e ⩾ 40	e ⩾ 120	e ⩾ 45
XS8 non flush mountable	e ⩾ 80	e ⩾ 160	e ⩾ 60

Tightening torque of cover fixing screws and clamp screws: < 1.2 N.m

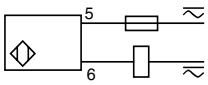
Wiring schemes

2-wire ∼ programmable, NO or NC output depending on position of link





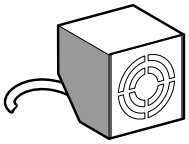
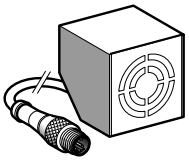
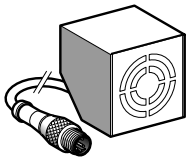
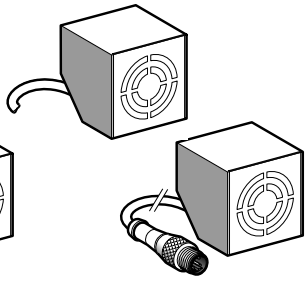
2-wire ∼ or ⎓ programmable, NO or NC output depending on position of link



Inductive proximity sensors

Osiprox® Application

Plastic case, form C, cubic 40, multi-position
d.c. supply

Sensor		Flush mountable in metal					Non flush mountable in metal	
								
Nominal sensing distance (Sn)		15 mm					20 mm	
References								
2-wire ⎓ (non polarised)	NO	**XS7 T4DA210**	–	**XS7 T4DA214LD**	–	**XS7 T4DA214LD01**	–	–
4-wire ⎓ (complementary outputs)	PNP NO + NC	–	**XS7 T4PC440**	–	**XS7 T4PC440LD**	–	**XS8 T4PC440**	**XS8 T4PC440LD**
	NPN NO + NC	–	**XS7 T4NC440**	–	**XS7 T4NC440LD**	–	**XS8 T4NC440**	**XS8 T4NC440LD**
Weight (kg)		0.265	0.265	0.220	0.220	0.200	0.265	0.220
Characteristics								
Product certifications		UL, CSA, CE						
Degree of protection Conforming to IEC 60529		IP 67						
Operating temperature		- 25…+ 70 °C						
Connection	Pre-cabled	2 x 0.5 mm² length 2 m *(1)*	4 x 0.34 mm² length 2 m *(1)*	–			4 x 0.34 mm² length 2 m *(1)*	–
	Remote M12 connector	–		Cable: length 0.8 m		Cable: length 0.15 m	–	Cable: length 0.8 m
Operating zone		**0…12 mm**					**0…16 mm**	
Repeat accuracy		≤ 3 % of real sensing distance (Sr)						
Differential travel		3…20 % of real sensing distance (Sr)						
Supply/output state indication		Yellow LED, rear mounted						
Rated supply voltage		⎓ 12…48 V with protection against reverse polarity						
Voltage limits (including ripple)		⎓ 10…58 V						
Current consumption, no-load		–	≤ 10 mA	–	≤ 10 mA	–	≤ 10 mA	
Switching capacity		1.5…100 mA	0…200 mA	1.5…100 mA	0…200 mA	1.5…100 mA	0…200 mA	
		With overload and short-circuit protection						
Residual current, open state		≤ 0.7 mA	≤ 0.1 mA	≤ 0.7 mA	≤ 0.1 mA	≤ 0.7 mA	≤ 0.1 mA	
Voltage drop, closed state		≤ 5.2 V	≤ 2 V	≤ 5.2 V	≤ 2 V	≤ 5.2 V	≤ 2 V	
Maximum switching frequency		150 Hz	1000 Hz	150 Hz	1000 Hz	150 Hz	1000 Hz	
Delays	First-up	≤ 5 ms	≤ 7 ms	≤ 5 ms	≤ 7 ms	≤ 5 ms	≤ 7 ms	
	Response	≤ 2 ms	≤ 0.3 ms	≤ 2 ms	≤ 0.3 ms	≤ 2 ms	≤ 0.3 ms	
	Recovery	≤ 5 ms	≤ 0.7 ms	≤ 5 ms	≤ 0.7 ms	≤ 5 ms	≤ 0.7 ms	

(1) Sensors pre-cabled with other cable lengths :

Length of cable	Suffix to be added to references stated above for 2 m pre-cabled sensors	Weight increase
5 m	**L1**	0.120 kg
10 m	**L2**	0.320 kg

Example: sensor **XS7 T4DA210** with 5 m cable becomes **XS7 T4DA210L1**

Other versions Inductive proximity sensors specifically designed for other operating temperatures. Please consult your Regional Sales Office.

Inductive proximity sensors

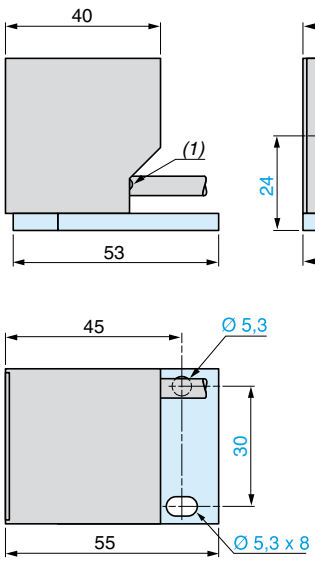
Osiprox® Application

Plastic case, form C, cubic 40, multi-position d.c. supply

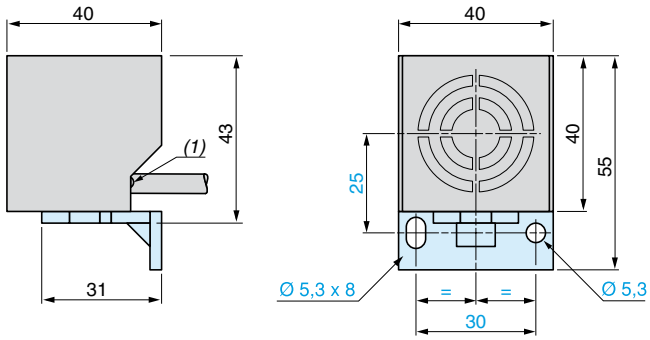
Dimensions

XS● T4●●●●●, XS● T4●●●●●LD, XS7 T4●●●●●LD01

Plate mounted

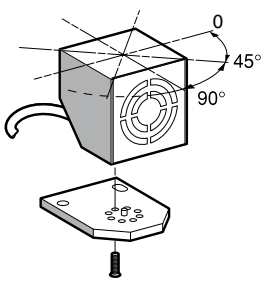


Bracket mounted

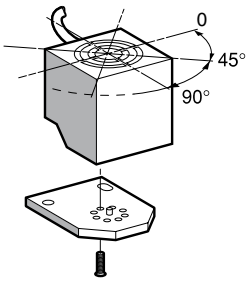


(1) LED.

Alternative positions of head

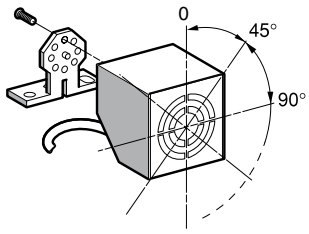


M3 x 6 CHC screw

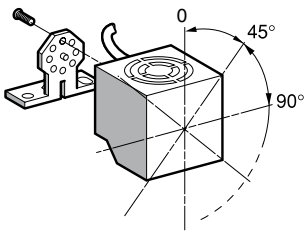


M3 x 6 CHC screw

M3 x 6 CHC screw

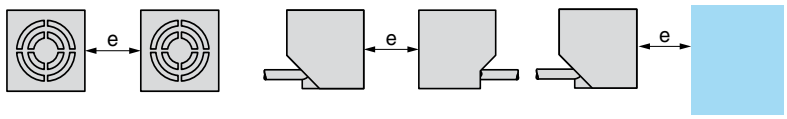


M3 x 6 CHC screw



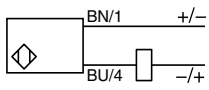
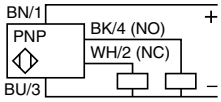
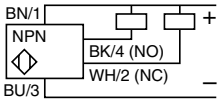
Setting-up

Minimum mounting distances (mm)



		Side by side	Face to face	Facing a metal object
Flush mountable in metal	**XS7 T, 2-wire**	e ⩾ 40	e ⩾ 120	e ⩾ 45
	XS7 T, 4-wire	e ⩾ 40	e ⩾ 120	e ⩾ 45
Non flush mountable in metal	**XS8 T, 4-wire**	e ⩾ 60	e ⩾ 160	e ⩾ 60

Wiring schemes

Connector	Pre-cabled	2-wire ⎓, NO output	4-wire ⎓, NO + NC output	
	BU : Blue BN : Brown BK : Black WH : White			

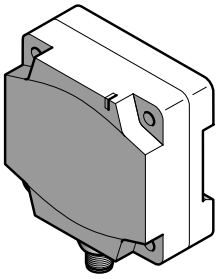
See connection on page 9/45.

Inductive proximity sensors

Osiprox® Application

Flat sensor, flush mountable, increased range, 300 mA switching capacity
Form D, DIN rail mounting, solid-state output

Sensor	**Flush mountable in metal**



Dimensions (mm)		80 x 80 x 40
Nominal sensing distance (Sn)		50 mm (not flush mounted: 42 mm)
References		
2-wire ⎓ (non polarised)	NO	**XS7 D1A3CAM12DIN**
Weight (kg)		0.374
Characteristics		
Product certifications		CE, CSA, UL: pending
Degree of protection	Conforming to IEC 60529	IP 67 double insulation ⧈
Temperature	Operation	- 25…+ 70 °C
	Storage	- 40…+ 85 °C
Vibration resistance	Conforming to IEC 60068-2-6	25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)
Shock resistance	Conforming to IEC 60068-2-27	50 gn, duration 11 ms
Connection		M12 connector
Operating zone		**0…40 mm (not flush mounted: 0…35 mm)**
Repeat accuracy		3% of Sr
Differential travel		1…15% of Sr
Output state indication		Yellow LED
Rated supply voltage		⎓ **12…48 V with protection against reverse polarity**
Voltage limits (including ripple)		⎓ 10…58 V
Residual current, open state		≤ 0.5 mA
Switching capacity		**1.5…300 mA with overload and short-circuit protection**
Voltage drop, closed state		≤ 4.5 V
Maximum switching frequency		100 Hz
Delays	First-up	≤ 10 ms
	Response	≤ 2 ms
	Recovery	≤ 5 ms

Inductive proximity sensors

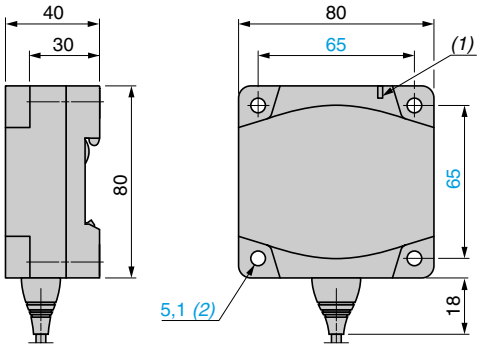
Osiprox® Application

Flat sensor, flush mountable, increased range, 300 mA switching capacity

Form D, DIN rail mounting, solid-state output

Dimensions

XS7 D1A3CAM12DIN

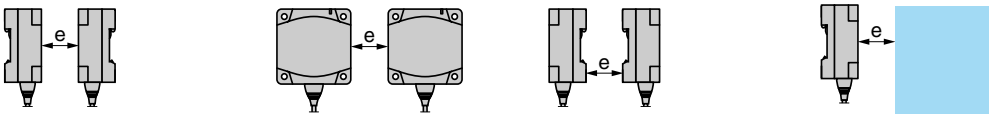


(1) Output LED

(2) For CHC type screws

Setting-up

Minimum mounting distances (mm)



	Face to face	Side by side	Back to back	Facing a metal object
Flush mounted	450	140	90	150
Not flush mounted	450	180	180	150

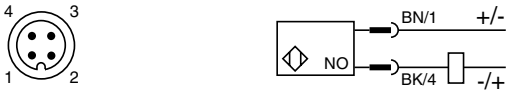
Flush/non flush conditions

In A37 steel

Sn	Su	Sn	Su
42 mm	35 mm	50 mm	40 mm

Wiring schemes

2-wire NO/M12 XS7 D1A3CAM12DIN



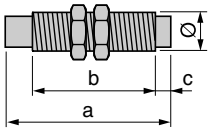
See connection on page 9/45.

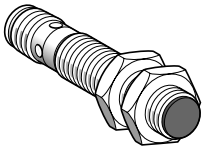
Inductive proximity sensors

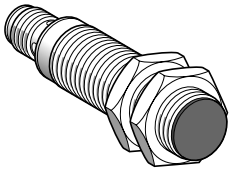
Osiprox® Application

Sensors for welding machine applications *(1)*
Cylindrical type. Metal case, Teflon coated steel, threaded

Sensors flush mountable in metal







Lengths (mm):
a = Overall
b = Threaded section
c = For non flush mountable sensors

a = 60
b = 40
Ø = M12 x 1

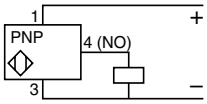
a = 60
b = 40
Ø = M18 x 1

		Teflon front face	**Teflon front face**
Nominal sensing distance (Sn)		**2 mm**	**5 mm**
References			
3-wire ⎓	PNP, NO	**XS1 M12PAW01D**	**XS1 M18PAW01D**
Weight (kg)		0.025	0.060
Characteristics			
Product certifications		CE, UL, CSA	
Connection		**M12 connector**	
Degree of protection	Conforming to IEC 60529	IP 67	
Operating zone		**0…1.6 mm**	**0…4 mm**
Repeat accuracy		3% of Sr	
Differential travel		1…20% of Sr	
Operating temperature		- 25…+ 70 °C	
Output state indication		Yellow LED, 4 viewing ports at 90°	
Rated supply voltage		**⎓ 12…24 V with protection against reverse polarity**	
Voltage limits (including ripple)		⎓ 10…36 V	
Switching capacity		**0...250 mA with overload and short-circuit protection**	
Voltage drop, closed state		≤ 2.5 V	
Current consumption, no-load		≤ 15 mA	
Immunity to electromagnetic fields		≤ 140 mT	
Maximum switching frequency		1000 Hz	500 Hz
Delays	First-up	≤ 10 ms	≤ 10 ms
	Response	≤ 0.1 ms	≤ 0.2 ms
	Recovery	≤ 0.4 ms	≤ 0.6 ms

Wiring schemes

M12 connector

3-wire ⎓, PNP, NO output



See connection on page 9/45.

(1) Sensors particularly resistant to welding machine electromagnetic fields.

Accessories:
page 2/106

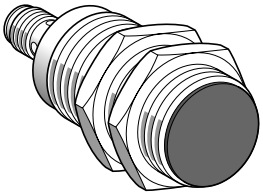
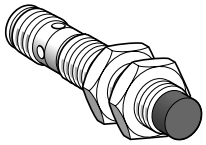
Schneider Electric

Inductive proximity sensors

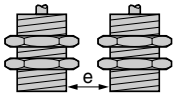
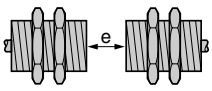
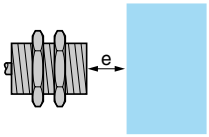
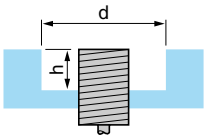
Osiprox® Application

Sensors for welding machine applications *(1)*

Cylindrical type. Metal case, Teflon coated steel, threaded

	Sensors non flush mountable in metal
	
a = 60 b = 40 Ø = M30 x 1.5	a = 60 b = 36 c = 4 Ø = M12 x 1
Teflon front face	**Teflon front face**
10 mm	**4 mm**
XS1 M30PAW01D	**XS2 M12PAW01D**
0.145	0.025
CE, UL, CSA	
M12 connector	
IP 67	
0…8 mm	**0…3.2 mm**
3% of Sr	
1…20% of Sr	
- 25…+ 70 °C	
Yellow LED, 4 viewing ports at 90°	
⎓ 12…24 V with protection against reverse polarity	
⎓ 10…36 V	
0…250 mA with overload and short-circuit protection	
≤ 2.5 V	
≤ 15 mA	
≤ 140 mT	
250 Hz	1000 Hz
≤ 10 ms	≤ 10 ms
≤ 0.7 ms	≤ 0.2 ms
≤ 5 ms	≤ 0.4 ms

Setting-up

Minimum mounting distances (mm)	Side by side	Face to face	Facing a metal object	Mounted in a metal support
				
XS1 M12 flush mountable	e ≥ 0	e ≥ 7	e ≥ 6	d ≥ 12, h ≥ 0
XS1 M18 flush mountable	e ≥ 0	e ≥ 16	e ≥ 9	d ≥ 18, h ≥ 0
XS1 M30 flush mountable	e ≥ 0	e ≥ 20	e ≥ 20	d ≥ 30, h ≥ 0
XS2 M12 non flush mountable	e ≥ 15	e ≥ 9	e ≥ 11	d ≥ 36, h ≥ 8

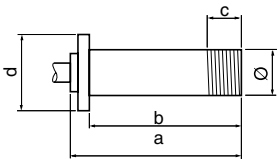
***Fixing nut tightening torque: XS1 M12, XS2 M12**: < 15 N.m, **XS1 M18**: < 35 N.m, **XS1 M30**: < 50 N.m*

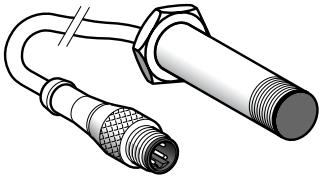
Inductive proximity sensors

Application series

Sensors for welding machine applications
Cylindrical type. Metal case, plain, with shoulder

Flush mountable in metal





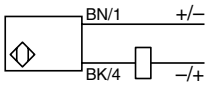
Lengths (mm) :
a = Overall
b = To shoulder
c = Removal
d = Ø shoulder

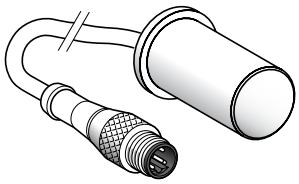
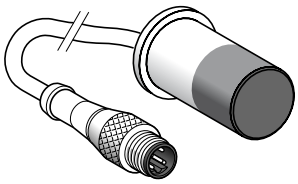
Ø = 12
a = 55
b = 50
c = 9 (threaded)
d = 15 hexagonal

Nominal sensing distance (Sn)			**3 mm**	**3 mm**	**3 mm**
References					
2-wire ⎓ (non polarised) Supply to terminals	1-4	NO	**XSL C1401393L1**	**XSL C1401393L3**	**XSL C1401393L4**
Weight (kg)			0.050	0.065	0.050
Characteristics					
Connection			Remote M12 connector, length of cable: 1.2 m	Remote M12 connector, length of cable: 0.8 m	Remote M12 connector, length of cable: 0.15 m
Degree of protection conforming to IEC 60529			IP 67		
Operating zone			0…2.4 mm		
Repeat accuracy			≤ 3 % of Sr		
Differential travel			1…15 % of Sr		
Operating temperature			- 25…+ 80 °C		
Output state indication			LED (yellow), annular		
Rated supply voltage			⎓ 12…48 V		
Voltage limits (including ripple)			⎓ 10…58 V		
Switching capacity			1.5…100 mA with overload and short-circuit protection		
Voltage drop, closed state			≤ 4 V		
Residual current, open state			≤ 0.5 mA		
Current consumption, no load			–		
Maximum switching frequency			800 Hz		
Delays			First-up : ≤ 5 ms ; response : 0.5 ms ; recovery : ≤ 0.5 ms		

Wiring schemes

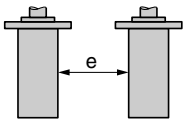
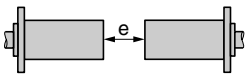
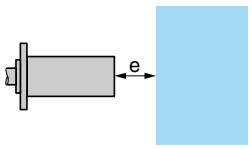
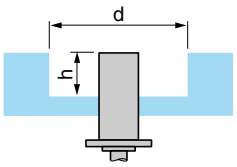
2-wire ⎓ , non polarised, NO output



Flush mountable in metal	Non flush mountable in metal	
		
Ø = 18 a = 40 b = 35 c = 0 (PPS front face) d = Ø 22	Ø = 18 a = 45 b = 35 c = 20 (Teflon front face and case) d = Ø 22	
6.3 mm	**10 mm**	**10 mm**
XSL C1401392L1	**XSL C1401405L3**	**XSL C1401405L4**
0.100	0.065	0.050
Remote M12 connector, length of cable: 1.2 m	Remote M12 connector, length of cable: 0.8 m	Remote M12 connector, length of cable: 0.15 m
IP 67		
0…5 mm	0…8 mm	
3 % of Sr		
1…15 % of Sr		
- 25…+ 70 °C		
LED (yellow), annular		
⎓ 12…48 V		
⎓ 10…58 V		
1.5…100 mA with overload and short-circuit protection		
≤ 4 V		
≤ 0.5 mA		
–		
100 Hz		
First-up : ≤ 10 ms ; response : ≤ 10 ms ; recovery : ≤ 2 ms		

Setting up

Minimum mounting distances (mm)

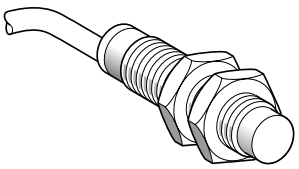
		Side by side	Face to face	Facing a metal object	Mounted in a metal support
					
XSL C	**Ø 12 (flush mountable)**	e ≥ 10	e ≥ 60	e ≥ 15	d = 12, h = 0
	Ø 18 (non flush mountable)	e ≥ 16	e ≥ 96	e ≥ 24	d = 54, h = 16

Inductive proximity sensors

Osiprox® Application, food and beverage processing series

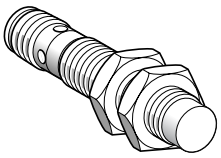
Cylindrical, stainless steel, non flush mountable
Three-wire, d.c. supply, solid-state output

DF532016



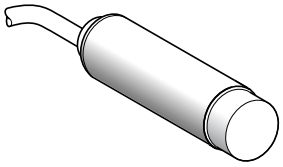
XS2 ●●SA●●L2

DF532015



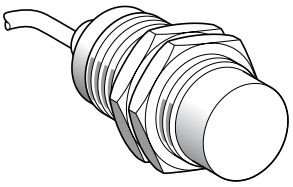
XS2 ●●SA●●M12

534440



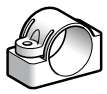
XS2 L2SA●●L2

822116



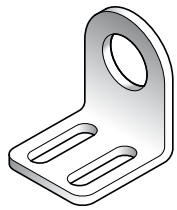
XS2 30SA●●L2

503663



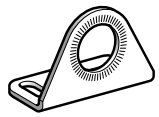
XUZ B2005

523363



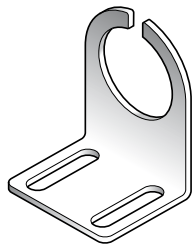
XSZ BS12

805817



XUZ A118

503663



XSZ BS30

Ø 12, threaded M12 x 1

Sensing dist. (Sn) mm	Function	Output	Connection	Reference	Weight kg
7	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 12SAPAL2**	0.075
			M12 connector	**XS2 12SAPAM12**	0.035
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 12SANAL2**	0.075
			M12 connector	**XS2 12SANAM12**	0.035

Ø 18, threaded M18 x 1

Sensing dist. (Sn) mm	Function	Output	Connection	Reference	Weight kg
12	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 18SAPAL2**	0.120
			M12 connector	**XS2 18SAPAM12**	0.060
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 18SANAL2**	0.120
			M12 connector	**XS2 18SANAM12**	0.060

Ø 18, plain

Sensing dist. (Sn) mm	Function	Output	Connection	Reference	Weight kg
12	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 L2SAPAL2**	0.120
			M12 connector	**XS2 L2SAPAM12**	0.060
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 L2SANAL2**	0.120
			M12 connector	**XS2 L2SANAM12**	0.060

Ø 30, threaded M30 x 1.5

Sensing dist. (Sn) mm	Function	Output	Connection	Reference	Weight kg
22	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 30SAPAL2**	0.205
			M12 connector	**XS2 30SAPAM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 30SANAL2**	0.205
			M12 connector	**XS2 30SANAM12**	0.145

Accessories *(2)*

Description	For use with	Reference	Weight kg
Plastic fixing clamp, 24.1 mm centres, with locking screw	Ø 18 sensor, plain case	**XUZ B2005**	0.007
Stainless steel fixing bracket	Ø 12 sensor	**XSZ BS12**	0.060
	Ø 18 sensor	**XUZ A118**	0.045
	Ø 30 sensor	**XSZ BS30**	0.080

Connecting cables

Description	Type	Cable length m	Reference	Weight kg
Pre-wired M12 connectors Female, 4-pin, stainless steel clamping ring	Straight	2	**XZC PA1141L2**	0.090
		5	**XZC PA1141L5**	0.210
		10	**XZC PA1141L10**	0.410
	Elbowed	2	**XZC PA1241L2**	0.090
		5	**XZC PA1241L5**	0.210
		10	**XZC PA1241L10**	0.410
M12 jumper cable Male, 3-pin, stainless steel clamping ring	Straight	2	**XZC RA151140A2**	0.095
		5	**XZC RA151140A5**	0.200

*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: **XS2 12SAPAL2** becomes **XS2 12SAPAL5** with a 5 m long cable.*
(2) For further information, see page 2/106.

Inductive proximity sensors

Osiprox® Application, food and beverage processing series

Cylindrical, stainless steel, non flush mountable
Three-wire, d.c. supply, solid-state output

Characteristics

Sensor type			XS2 ●●SA●●M12	XS2 ●●SA●●L2
Product certifications/approvals			UL, CSA, CE	
Connection	Connector		M12	–
	Pre-cabled		–	Length: 2 m
Operating zone	Ø 12	**mm**	**0…5.6**	
	Ø 18	**mm**	**0…9.6**	
	Ø 30	**mm**	**0…17.6**	
Differential travel		**%**	1...15 of real sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 67	IP 68, double insulation ⧈
	DIN 40050		IP 69 K	
Storage temperature		**°C**	- 40…+ 85 *(1)*	
Operating temperature		**°C**	- 25…+ 85	
Materials	Case		Stainless steel, grade 316 L	
	Cable		–	Non-poisonous PVC, 3 x 0.34 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication			Yellow LED: 4 viewing ports at 90°	Yellow LED: annular
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10…36	
Switching capacity		**mA**	⩽ 200 with overload and short-circuit protection	
Voltage drop, closed state		**V**	⩽ 2	
Current consumption, no-load		**mA**	⩽ 10	
Maximum switching frequency	**XS2 12SA●●●●**	**Hz**	2500	
	XS2 18SA●●●● and **XS2 L2●●●●**	**Hz**	1000	
	XS2 30SA●●●●	**Hz**	500	
Delays	First-up	**ms**	⩽ 10	
	Response	**ms**	⩽ 0.2 Ø12, ⩽ 0.3 Ø18, ⩽ 0.6 Ø30	
	Recovery	**ms**	⩽ 0.2 Ø12, ⩽ 0.7 Ø18, ⩽ 1.4 Ø30	

(1) + 100 °C for cleaning and sterilization phases whilst not in service.

Wiring schemes

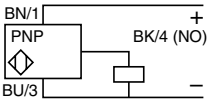
Connector

M12

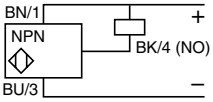
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP

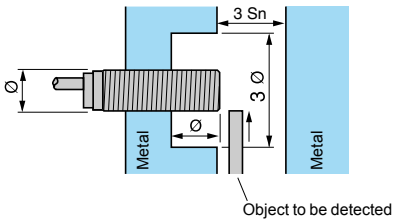


NPN

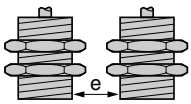


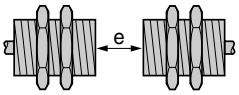
See connection on page 9/45.

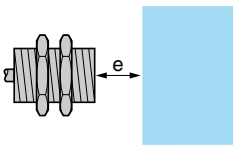
Setting-up



Minimum mounting distances (mm)



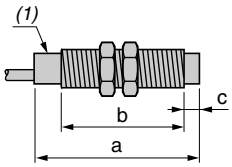




	Side by side	Face to face	Facing a metal object
Ø 12	e ⩾ 48	e ⩾ 84	e ⩾ 21
Ø 18	e ⩾ 72	e ⩾ 144	e ⩾ 36
Ø 30	e ⩾ 120	e ⩾ 264	e ⩾ 66

Dimensions

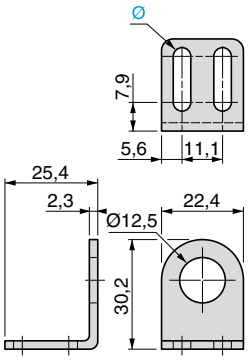
XS2



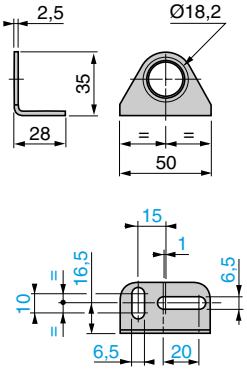
(1) LED

XS2	Pre-cabled (mm) a	Pre-cabled (mm) b	Connector (mm) a	Connector (mm) b	Connector (mm) c
Ø 12	54.5	38	61	37	5
Ø 18	60	40	70	42	8
Ø 30	62.5	41	70	36	13

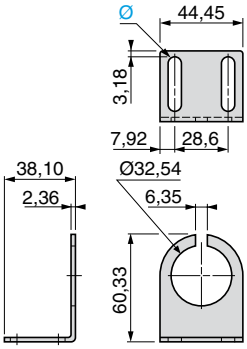
XSZ BS12



XUZ A118



XSZ BS30



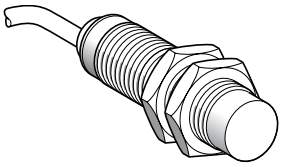
Ø : 2 elongated holes Ø 7.14 x 29.36

Inductive proximity sensors

Osiprox® Application, food and beverage processing series

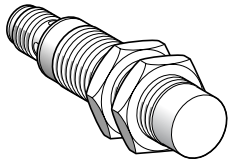
Cylindrical, stainless steel, non flush mountable
Two-wire, a.c. or d.c. supply

523361



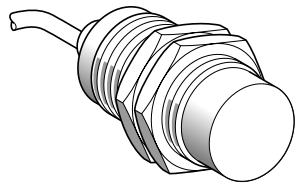
XS2 18SAM●L2

523362



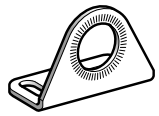
XS2 18SAM●U20

523218



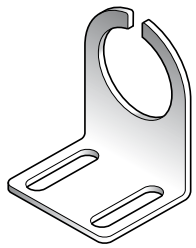
XS2 30SAM●L2

805817



XUZ A118

523364



XSZ BS30

Ø 18, threaded M18 x 1

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
12	NO	Pre-cabled (L = 2 m) *(1)*	**XS2 18SAMAL2**	0.120
		1/2" - 20UNF connector	**XS2 18SAMAU20**	0.060

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Connection		Weight kg
22	NO	Pre-cabled (L = 2 m) *(1)*	**XS2 30SAMAL2**	0.205
		1/2" - 20UNF connector	**XS2 30SAMAU20**	0.145

Connecting cables *(2)*

Description	Type	Cable length m	Reference	Weight kg
Pre-wired connectors 1/2" - 20UNF 3-pin female, stainless steel clamping ring	Straight	5	**XZC PA1865L5**	0.210
		10	**XZC PA1865L10**	0.410
	Elbowed	5	**XZC PA1965L5**	0.250
		10	**XZC PA1965L10**	0.485

Accessories

Description	For use with	Reference	Weight kg
Stainless steel fixing bracket	Ø 18 sensor	**XUZ A118**	0.045
	Ø 30 sensor	**XSZ BS30**	0.080

*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: **XS2 18SAMAL2** becomes **XS2 18SAMAL5** with a 5 m long cable.*
(2) For further information, see page 2/106.

Inductive proximity sensors

Osiprox® Application, food and beverage processing series

Cylindrical, stainless steel, non flush mountable

Two-wire, a.c. or d.c. supply

Characteristics

Sensor type			XS2 ●●SAM●U20	XS2 ●●SAM●L2
Product certifications/approvals			UL, CSA, CE	
Connection	Connector		1/2" - 20UNF	–
	Pre-cabled		–	Length: 2 m
Operating zone	Ø 18	mm	**0…9.6**	
	Ø 30	mm	**0...17.6**	
Differential travel		%	1...15 of real sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 67	IP 68, double insulation ⧈
	DIN 40050		IP 69 K	
Storage temperature		°C	- 40…+ 85 *(1)*	
Operating temperature		°C	- 25…+ 85	
Materials	Case		Stainless steel, grade 316 L	
	Cable		–	Non-poisonous PVC, 2 x 0.34 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication			Yellow LED: 4 viewing ports at 90°	Yellow LED: annular
Rated supply voltage		V	∼ or ⎓ 24…240 (∼ 50/60 Hz)	
Voltage limits (including ripple)		V	∼ or ⎓ 20…264	
Switching capacity		mA	∼ 5…300 or ⎓ 5…200 *(2)*	
Voltage drop, closed state		V	⩽ 5.5	
Residual current, open state		mA	⩽ 0.8	
Maximum switching frequency	**XS2 18SAM●●●**	Hz	∼ 25 or ⎓ 1000	
	XS2 30SAM●●●	Hz	∼ 25 or ⎓ 300	
Delays	First-up	ms	⩽ 30	
	Response	ms	⩽ 0.5	
	Recovery	ms	⩽ 0.5 **XS2 18SAM●●●**, ⩽ 2 **XS2 30SAM●●●**	

(1) + 100 °C for cleaning and sterilization phases whilst not in service.
(2) It is essential to connect a 0.4 A "quick-blow" fuse in series with the load.

Wiring schemes

Connector

1/2" - 20UNF

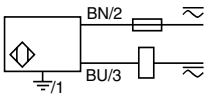
AC/DC : 2
⏚ : 1
AC/DC : 3

Pre-cabled

BU: Blue
BN: Brown

2-wire ∼ or ⎓

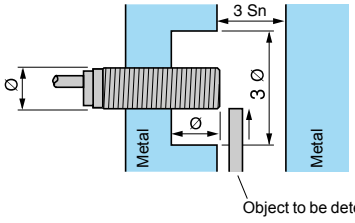
NO output



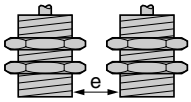
See connection on page 9/45.

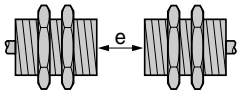
⏚: on connector models only

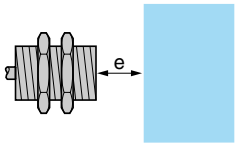
Setting-up



Minimum mounting distances (mm)



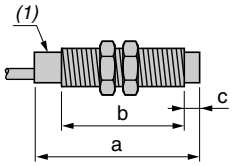




	Side by side	Face to face	Facing a metal object
Ø 18	e ⩾ 72	e ⩾ 144	e ⩾ 36
Ø 30	e ⩾ 120	e ⩾ 264	e ⩾ 66

Dimensions

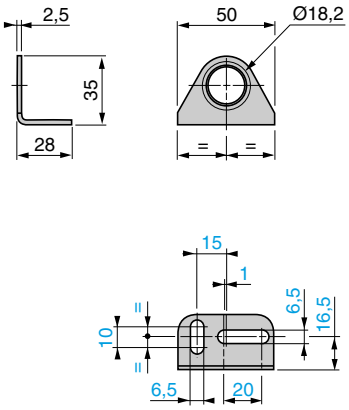
XS2



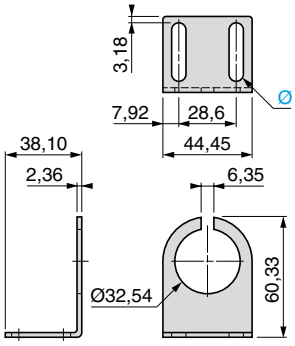
(1) LED

XS2	Pre-cabled (mm) a	Pre-cabled (mm) b	Connector (mm) a	Connector (mm) b	Connector (mm) c
Ø 18	60	40	72	44	8
Ø 30	62.5	41	74	40	13

XSZ A118



XSZ BS30

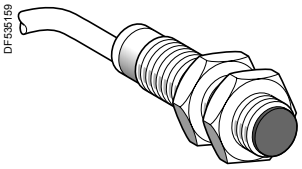


Ø: 2 elongated holes Ø 7.14 x 29.36

Inductive proximity sensors

Osiprox® Application, food and beverage processing series

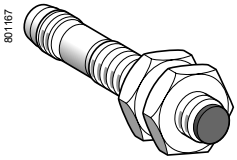
Cylindrical, plastic, non flush mountable
Three-wire, d.c. supply, solid-state output



XS2 ●●AA●●L2

Ø 12, threaded M12 x 1

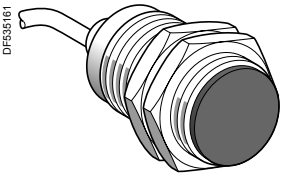
Sensing dist. (Sn) mm	Function	Output	Connection	Reference	Weight kg
7	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 12AAPAL2**	0.065
			M12 connector	**XS2 12AAPAM12**	0.030
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 12AANAL2**	0.065
			M12 connector	**XS2 12AANAM12**	0.030



XS2 ●●AA●●M12

Ø 18, threaded M18 x 1

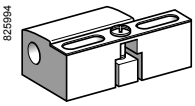
Sensing dist. (Sn) mm	Function	Output	Connection	Reference	Weight kg
12	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 18AAPAL2**	0.100
			M12 connector	**XS2 18AAPAM12**	0.040
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 18AANAL2**	0.100
			M12 connector	**XS2 18AANAM12**	0.040



XS2 30AA●●L2

Ø 30, threaded M30 x 1.5

Sensing dist. (Sn) mm	Function	Output	Connection	Reference	Weight kg
22	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2 30AAPAL2**	0.140
			M12 connector	**XS2 30AAPAM12**	0.080
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2 30AANAL2**	0.140
			M12 connector	**XS2 30AANAM12**	0.080



XSZ B●●●

Accessories *(2)*

Description		Reference	Weight kg
Fixing clamps	Ø 12	**XSZ B112**	0.006
	Ø 18	**XSZ B118**	0.010
	Ø 30	**XSZ B130**	0.020

Connecting cables

Description	Type	Cable length m	Reference	Weight kg
Pre-wired M12 connectors Female, 4-pin, stainless steel clamping ring	Straight	2	**XZC PA1141L2**	0.090
		5	**XZC PA1141L5**	0.190
		10	**XZC PA1141L10**	0.370
	Elbowed	2	**XZC PA1241L2**	0.090
		5	**XZC PA1241L5**	0.190
		10	**XZC PA1241L10**	0.370
M12 jumper cable Male, 3-pin, stainless steel clamping ring	Straight	2	**XZC RA151140A2**	0.090
		5	**XZC RA151140A5**	0.190

*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: **XS2 12AAPAL2** becomes **XS2 12AAPAL5** with a 5 m long cable.*
(2) For further information, see page 2/106.

Inductive proximity sensors

Osiprox® Application, food and beverage processing series

Cylindrical, plastic, non flush mountable
Three-wire, d.c. supply, solid-state output

Characteristics

Sensor type			XS2 ●●AA●●M12	XS2 ●●AA●●L2
Product certifications/approvals			UL, CSA, CE	
Connection	Connector		M12	–
	Pre-cabled		–	Length: 2 m
Operating zone	Ø 12	mm	**0…5.6**	
	Ø 18	mm	**0…9.6**	
	Ø 30	mm	**0…17.6**	
Differential travel		%	1...15 of real sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 67	IP 68, double insulation ⧈
	DIN 40050		IP 69 K	
Storage temperature		°C	- 40…+ 85	
Operating temperature		°C	- 25…+ 85	
Materials	Case		PPS	
	Cable		–	PvR and 3 x 0.34 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication			Yellow LED: annular	
Rated supply voltage		V	⎓ 12…48 for T - 25…+ 85 °C	
Voltage limits (including ripple)		V	⎓ 10…58 for T - 25…+ 85 °C	
Switching capacity		mA	≤ 200 with overload and short-circuit protection	
Voltage drop, closed state		V	≤ 2	
Current consumption, no-load		mA	≤ 10	
Maximum switching frequency	**XS2 12AA●●●●**	Hz	2500	
	XS2 18AA●●●●	Hz	1000	
	XS2 30AA●●●●	Hz	500	
Delays	First-up	ms	≤ 10	
	Response	ms	≤ 0.2 Ø12, ≤ 0.3 Ø18, ≤ 0.6 Ø30	
	Recovery	ms	≤ 0.2 Ø12, ≤ 0.7 Ø18, ≤ 1.4 Ø30	

Wiring schemes

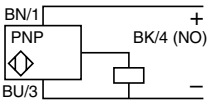
Connector

M12

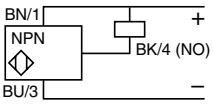
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP

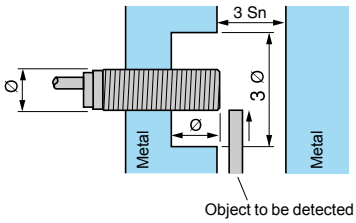


NPN

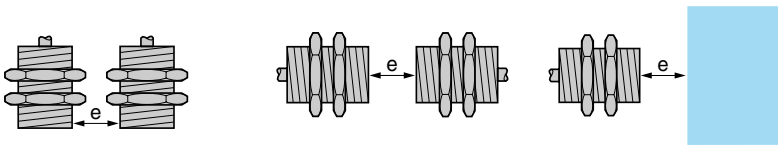


See connection on page 9/45.

Setting-up

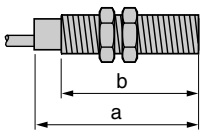


Minimum mounting distances (mm)



	Side by side	Face to face	Facing a metal object
Ø 12	e ≥ 48	e ≥ 84	e ≥ 21
Ø 18	e ≥ 72	e ≥ 144	e ≥ 36
Ø 30	e ≥ 120	e ≥ 264	e ≥ 66

Dimensions



XS2

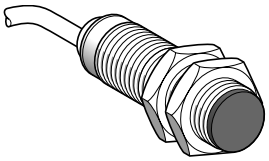
	Pre-cabled (mm)		Connector (mm)	
XS2	**a**	**b**	**a**	**b**
Ø 12	50	42	61	43
Ø 18	60	51	70	52
Ø 30	60	51	70	52

Inductive proximity sensors

Osiprox® Application, food and beverage processing series

Cylindrical, plastic, non flush mountable
Two-wire, a.c. or d.c. supply

535156

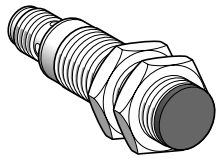


XS2 ●●AAM●L2

Ø 18, threaded M18 x 1

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
12	NO	Pre-cabled (L = 2 m) *(1)*	**XS2 18AAMAL2**	0.100
		1/2" - 20UNF connector	**XS2 18AAMAU20**	0.040

523382

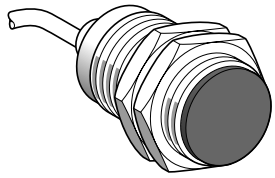


XS2 ●●AAM●U20

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
22	NO	Pre-cabled (L = 2 m) *(1)*	**XS2 30AAMAL2**	0.140
		1/2" - 20UNF connector	**XS2 30AAMAU20**	0.080

535158

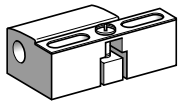


XS2 30AAM●L2

Accessories *(2)*

Description		Reference	Weight kg
Fixing clamps	Ø 18	**XSZ B118**	0.010
	Ø 30	**XSZ B130**	0.020

825994



XSZ B1●●

Connecting cables

Description	Type	Cable length m	Reference	Weight kg
Pre-wired connectors 1/2" - 20UNF 3-pin female, stainless steel 316 L clamping ring	Straight	5	**XZC PA1865L5**	0.180
		10	**XZC PA1865L10**	0.350
	Elbowed	5	**XZC PA1965L5**	0.180
		10	**XZC PA1965L10**	0.350

*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: **XS2 18AAMAL2** becomes **XS2 18AAMAL5** with a 5 m long cable.*
(2) For further information, see page 2/106.

Inductive proximity sensors

Osiprox® Application, food and beverage processing series

Cylindrical, plastic case, non flush mountable
Two-wire, a.c. or d.c. supply

Characteristics

Sensor type			XS2 ●●AAM●U20	XS2 ●●AAM●L2
Product certifications/approvals			UL, CSA, CE	
Connection	Connector		1/2" - 20UNF	–
	Pre-cabled		–	Length: 2 m
Operating zone	Ø 18	**mm**	**0…9.6**	
	Ø 30	**mm**	**0...17.6**	
Differential travel		**%**	1...15 of real sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 67	IP 68, double insulation ⧈
	DIN 40050		IP 69K	
Storage temperature		**°C**	- 40…+ 85	
Operating temperature		**°C**	- 25…+ 85	
Materials	Case		PPS	
	Cable		–	PvR and 2 x 0.34 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication			Yellow LED: annular	
Rated supply voltage		**V**	∿ or ⎓ 24…240 (∿ 50/60 Hz)	
Voltage limits (including ripple)		**V**	∿ or ⎓ 20…264	
Switching capacity		**mA**	∿ 5…300 or ⎓ 5…200 *(1)*	
Voltage drop, closed state		**V**	⩽ 5.5	
Residual current, open state		**mA**	⩽ 0.8	
Maximum switching frequency	**XS2 18AAM●●●**	**Hz**	∿ 25 or ⎓ 1000	
	XS2 30AAM●●●	**Hz**	∿ 25 or ⎓ 300	
Delays	First-up	**ms**	⩽ 30	
	Response	**ms**	⩽ 0.5	
	Recovery	**ms**	⩽ 0.5 **XS2 18AAM●●●**, ⩽ 2 **XS2 30AAM●●●**	

(1) It is essential to connect a 0.4 A "quick-blow" fuse in series with the load.

Wiring schemes

Connector

1/2" - 20UNF

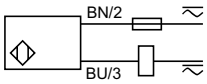
⎓ : 2
⎓ : 3

Pre-cabled

BU: Blue
BN: Brown

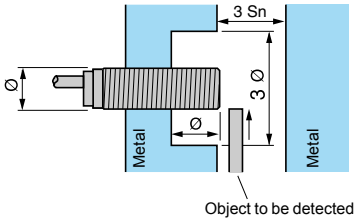
2-wire ∿ or ⎓

NO output

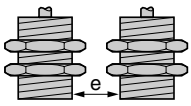


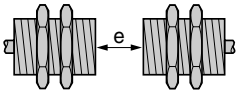
See connection on page 9/45.

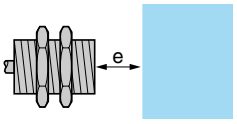
Setting-up



Minimum mounting distances (mm)



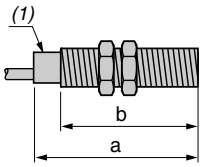




	Side by side	Face to face	Facing a metal object
Ø 18	e ⩾ 72	e ⩾ 144	e ⩾ 36
Ø 30	e ⩾ 120	e ⩾ 264	e ⩾ 66

Dimensions

XS2



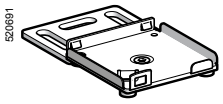
(1) LED

XS2	Pre-cabled (mm) a	Pre-cabled (mm) b	Connector (mm) a	Connector (mm) b
Ø 18	60	51	70	52
Ø 30	60	51	70	52

Inductive proximity sensors

Osiprox®

Accessories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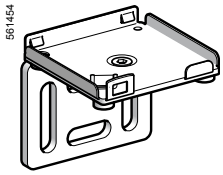
XSZ B●00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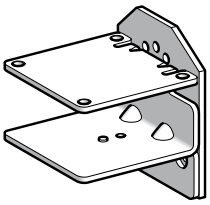
XSZ B●90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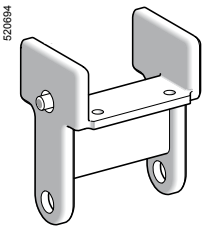
XSZ BC10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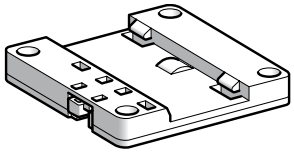
XSZ BE10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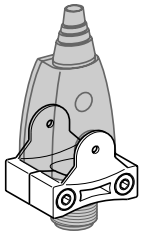
XSZ BD10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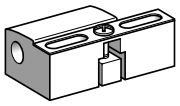
XSZ BPM12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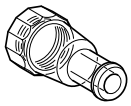
XSZ B1●●

825996

XSZ A0●●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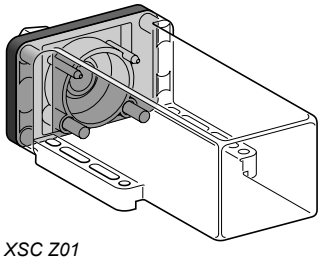
XSZ P1●●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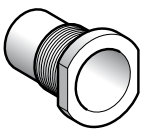
XSC Z01

520935

XSZ F10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XTA Z30

Mounting and fixing accessories

Description	For use with sensors Type	Diameter (mm)	Unit reference	Weight kg
"Clip" mounting plate Mounting possible without "clip" on tapped holes	XS● J	–	**XSZ BJ00**	0.003
	XS● F	–	**XSZ BF00**	0.005
	XS● E	–	**XSZ BE00**	0.025
	XS● C	–	**XSZ BC00**	0.060
"Clip" 90° mounting bracket Mounting possible without "clip" on tapped holes	XS● J	–	**XSZ BJ90**	0.003
	XS● F	–	**XSZ BF90**	0.005
	XS● E	–	**XSZ BE90**	0.025
	XS● C	–	**XSZ BC90**	0.060
Replacement bracket	XS● E Replaced: XS7 T2, XS8 T2, XSE	–	**XSZ BE10**	0.060
	XS● C Replaced: XS7 T4, XS7 C40, XS8 T4, XS8 C40 and XSC	–	**XSZ BC10**	0.110
	XS● D (for XSD) *(1)*	–	**XSZ BD10**	0.065
Fixing clamp for remote control	XS9, XS6●●●B2	–	**XSZ BPM12**	0.015
Fixing clamps	XS1	4 (smooth)	**XSZ B104**	0.005
		5 (M5 x 0.5)	**XSZ B105**	0.005
	XS1, XS2	6.5 (smooth)	**XSZ B165**	0.005
	XS1, XS2, XS4, XS5, XS6	8 (M8 x 1)	**XSZ B108**	0.006
	XS1, XS2, XS4, XS5, XS6, XT1, XT4	12 (M12 x 1)	**XSZ B112**	0.006
		18 (M18 x 1)	**XSZ B118**	0.010
		30 (M30 x 1.5)	**XSZ B130**	0.020
	XT1, XT4	32 (smooth)	**XUZ B32**	0.050
Set of 2 fixing nuts, metal nickel chromed	XS1	5 (M5 x 0.5)	**XSZ E105**	0.010
	XS1, XS2, XS5, XS6	8 (M8 x 1)	**XSZ E108**	0.015
	XS1, XS2, XT1, XS5, XS6	12 (M12 x 1)	**XSZ E112**	0.015
		18 (M18 x 1)	**XSZ E118**	0.020
		30 (M30 x 1.5)	**XSZ E130**	0.050
Set of 2 fixing nuts, stainless steel	XS1, XS2, XS5, XS6	8 (M8 x 1)	**XSZ E308**	0.015
	XS1, XS2, XT1, XS5, XS6	12 (M12 x 1)	**XSZ E312**	0.015
		18 (M18 x 1)	**XSZ E318**	0.020
		30 (M30 x 1.5)	**XSZ E330**	0.050
Set of 2 fixing nuts, plastic	XS4	8 (M8 x 1)	**XSZ E208**	0.002
		12 (M12 x 1)	**XSZ E212**	0.003
	XS4, XT4	18 (M18 x 1)	**XSZ E218**	0.004
		30 (M30 x 1.5)	**XSZ E230**	0.005
Adaptor collar Ø 20	XS●, XT●	18 (M18 x 1)	**XSZ A020**	0.005
Ø 34	XS●, XT●	30 (M30 x 1.5)	**XSZ A034**	0.005

Protection accessories

Cable sleeve adaptor (CNOMO type)	XS●, XT●	12 (M12 x 1)	**XSZ P112**	0.005
		18 (M18 x 1)	**XSZ P118**	0.005
		30 (M30 x 1.5)	**XSZ P130**	0.010
Outer cover (IP 68)	XT7 C	–	**XSC Z01**	0.100
Thread adaptor	XS●, XT●	30 (M30 x 1.5)	**XTA Z30**	0.035
No. 13 plastic cable gland	Clamping capacity Ø 9 to 12 mm		**XSZ PE13**	0.010
Protective cover Sold in lots of 50	M12 universal connectors		**XSZ F10**	0.020

Mounting parts

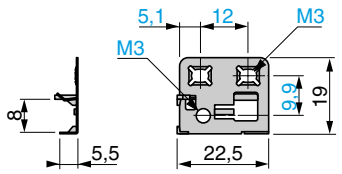
Thread inserts for rear fixing	XS●E	M3	**XSZ VF03**	0.002
	XS●C	M4	**XSZ VF04**	0.005
	XS●D	M5	**XSZ VF05**	0.006

Fuses (for unprotected 2-wire ⎓/∿ sensors)

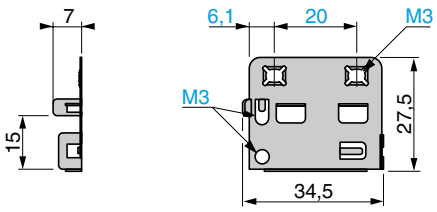
Description	Type	Sold in lots of	Unit reference	Weight kg
Cartridge fuses 5 x 20	0.4 A "quick-blow"	10	**XUZ E04**	0.001
	0.63 A "quick-blow"	10	**XUZ E06**	0.001
	0.8 A "quick-blow"	10	**XUZ E08**	0.001
Fuse terminal block for XUZ E0●		50	**AB1 FU10135U**	0.040

(1) Depth adjustment block for converting from 80 x 80 x 26 mm format to 80 x 80 x 40 mm format. Also enables clipping onto 35 mm "omega" rail.

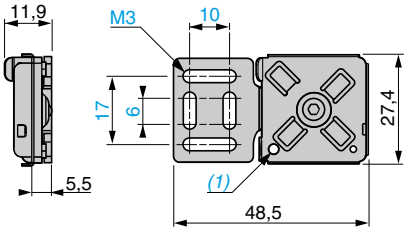
XSZ BJ00



XSZ BF00

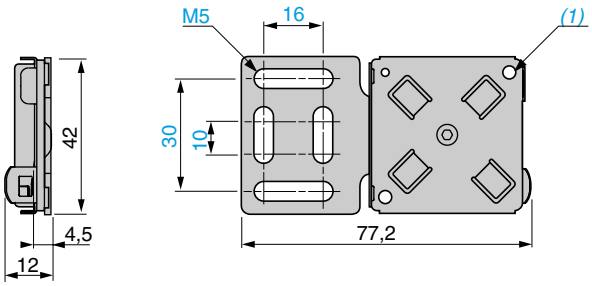


XSZ BE00



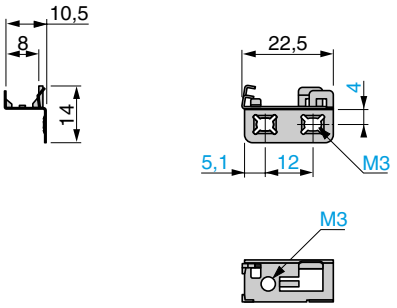
(1) 2 M3 x 12 screws supplied.

XSZ BC00

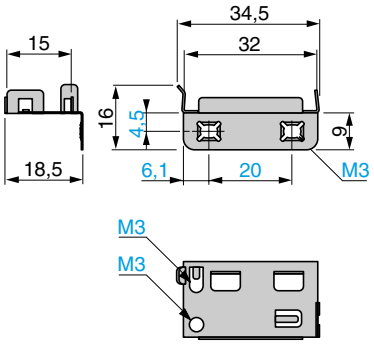


(1) 4 M4 x 14 screws supplied.

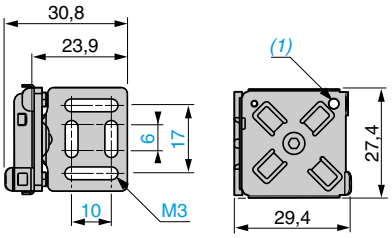
XSZ BJ90



XSZ BF90

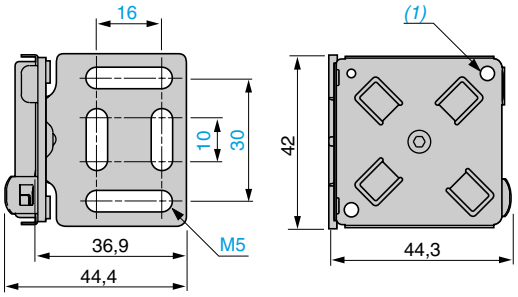


XSZ BE90



(1) 2 M3 x 12 screws supplied.

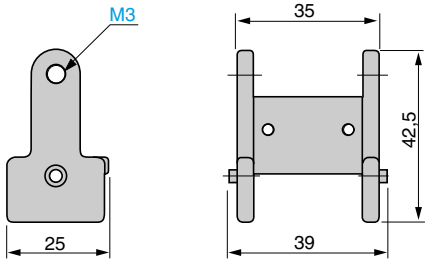
XSZ BC90



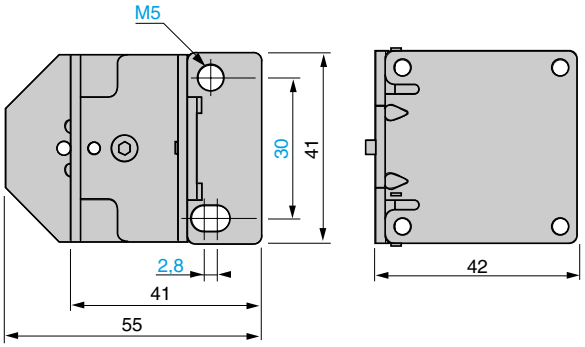
(1) 4 M4 x 14 screws supplied.

2

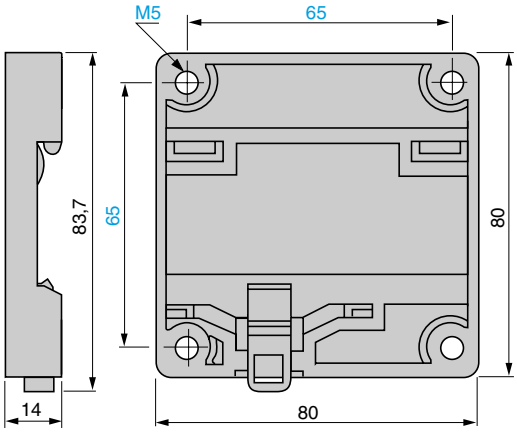
XSZ BE10



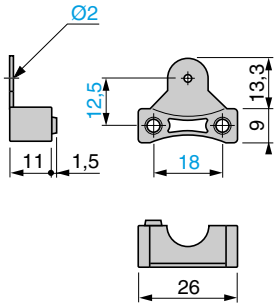
XSZ BC10



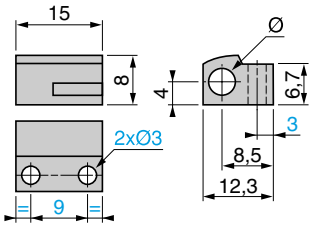
XSZ BD10 (for mounting on XS● D●●●●)



XSZ BPM12



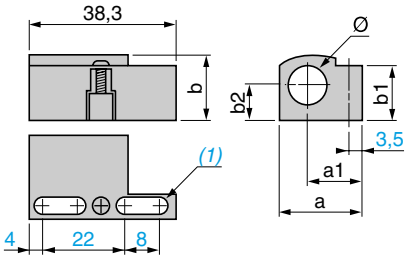
XSZ-B104, B105



XSZ	Ø
B104	4
B105	5

Note: *for saddle clamps XSZ B118 and XSZ B130, see setting-up recommendations page 2/17.*

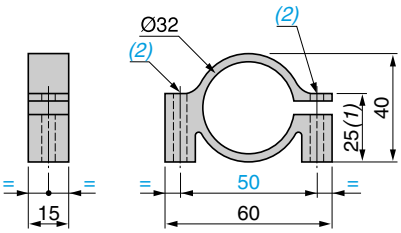
XSZ-B108, B112, B118, B130, B165



XSZ	a	a1	b	b1	b2	Ø
B108	19.9	14.5	14	12.5	7.5	8
B112	21.9	14.5	16	15.5	8.5	12
B118	26	15.7	22.3	20.1	11.5	18
B130	39	21.7	35.5	31	18.5	30
B165	19.9	14.5	14	12.5	7.5	6.5

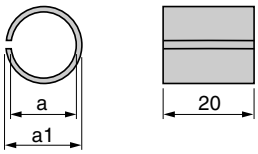
(1) 2 elongated holes Ø 4 x 8 mm.

XUZ B32



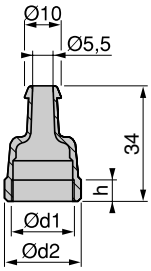
(1) Maximum value
(2) 2 holes Ø 5.5
Clamp supplied with two M5 screws, HM head

XSZ A0●●



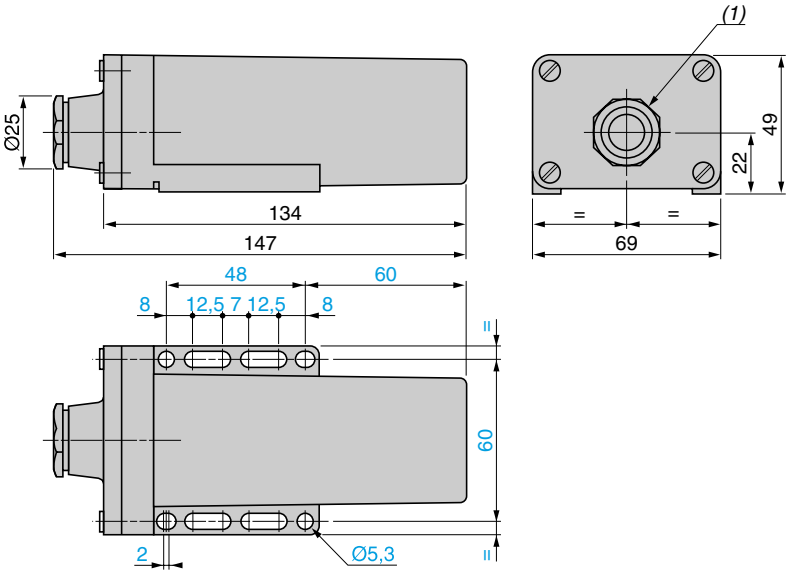
XSZ	a	a1
A020	Ø18	Ø20
A034	Ø30	Ø34

XSZ P112, P118, P130



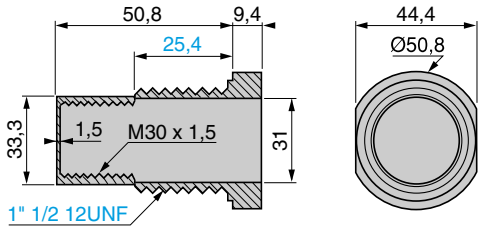
XSZ	h	Ø d1	Ø d2
P112	7	12	16.8
P118	6.2	18	23
P130	6.2	30	34.4

XSC Z01



(1) No. 13 plastic cable gland

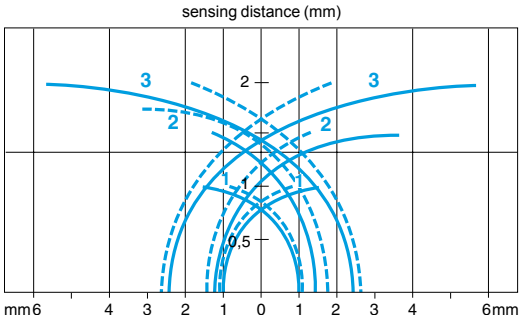
XTA Z30



2

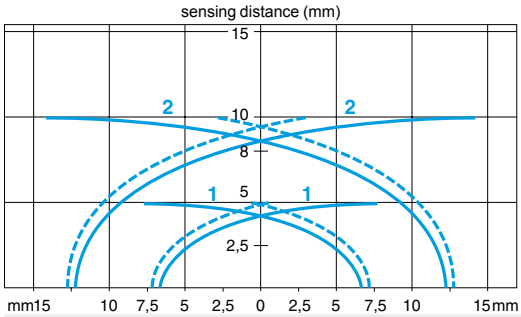
Cylindrical type proximity sensors

Flush mountable in metal



Sensor (mm)	Standard steel target (mm)	Operating zone (mm)
Ø 4	5 x 5 x 1	0…0.8
Ø 5	5 x 5 x 1	0…0.8
Ø 6.5	8 x 8 x 1	0…1.2
Ø 8	8 x 8 x 1	0…1.2
Ø 12	12 x 12 x 1	0…1.6

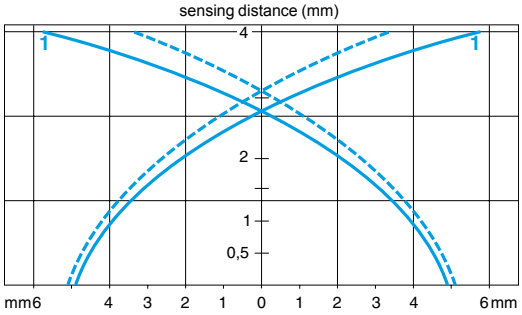
pick-up points
drop-out points (object approaching from the side)
1 Ø 4 (plain) XS1 and Ø 5 (M5 x 0.5) XS1
2 Ø 6.5 (plain) XS1 and Ø 8 (M8 x 1) XS5
3 Ø 12 (M12 x 1) XS5



Sensor (mm)	Standard steel target (mm)	Operating zone (mm)
Ø 18	18 x 18 x 1	0…4
Ø 30	30 x 30 x 1	0…8

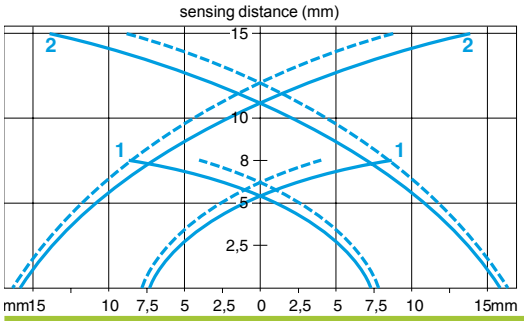
pick-up points
drop-out points (object approaching from the side)
1 Ø 18 (M18 x 1) XS5
2 Ø 30 (M30 x 1.5) XS5

Non flush mountable in metal



Sensor (mm)	Standard steel target (mm)	Operating zone (mm)
Ø 12	12 x 12 x 1	0…3.2

pick-up points
drop-out points (object approaching from the side)
1 Ø 12 (M12 x 1) XS4

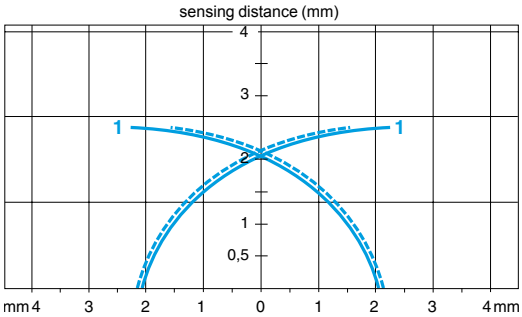


Sensor (mm)	Standard steel target (mm)	Operating zone (mm)
Ø 18	24 x 24 x 1	0…6.4
Ø 30	45 x 45 x 1	0…12

pick-up points
drop-out points (object approaching from the side)
1 Ø 18 (M18 x 1), XS4
2 Ø 30 (M30 x 1.5), XS4

Cylindrical type proximity sensors with increased sensing range

Flush mountable in metal

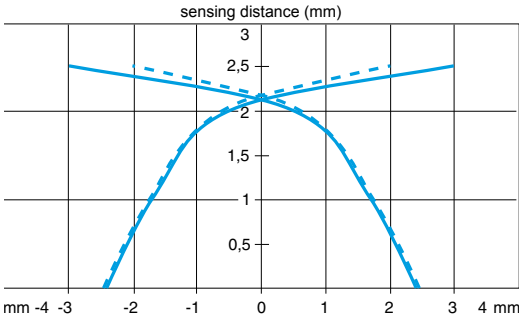


Sensor (mm)	Standard steel target (mm)	Operating zone (mm)
Ø 6.5	8 x 8 x 1	0…2

pick-up points
drop-out points (object approaching from the side)
1 Ø 6.5 (plain) XS1 L06●●349

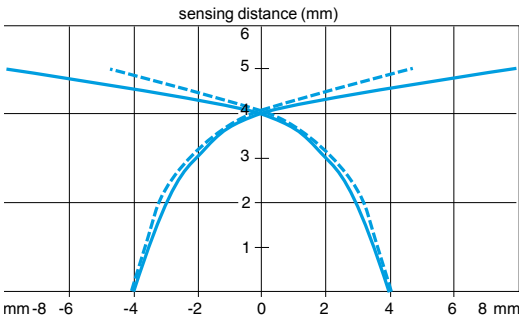
Flat type proximity sensors

Flush mountable in metal



Sensor (mm)	Standard steel target (mm)	Operating zone (mm)
XS7 J1A1D	5 x 5 x 1	0...2

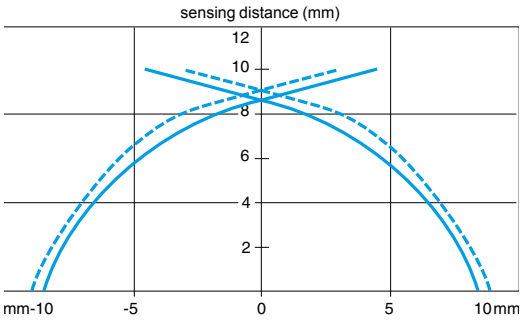
pick-up points
drop-out points (object approaching from the side)



Sensor (mm)	Standard steel target (mm)	Operating zone (mm)
XS7 F1A1D	5 x 5 x 1	0...4

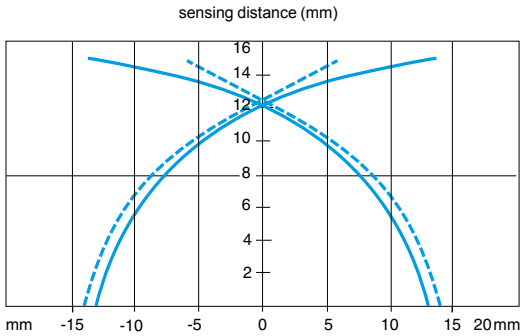
pick-up points
drop-out points (object approaching from the side)

Non flush mountable in metal



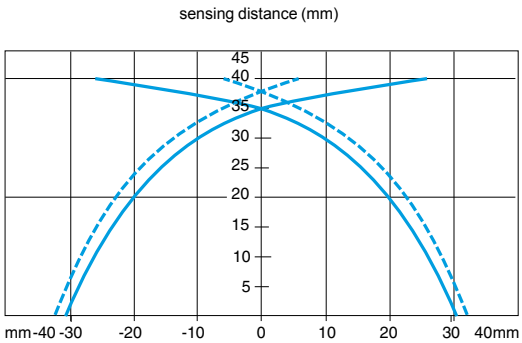
Sensor (mm)	Standard steel target (mm)	Operating zone (mm)
XS7 E1A1D	8 x 8 x 1	0...8
XS7 E1A1C	8 x 8 x 1	0...8

pick-up points
drop-out points (object approaching from the side)



Sensor (mm)	Standard steel target (mm)	Operating zone (mm)
XS7 C1A1D	18 x 18 x 1	0...12
XS7 C1A1C	18 x 18 x 1	0...12

pick-up points
drop-out points (object approaching from the side)



Sensor (mm)	Standard steel target (mm)	Operating zone (mm)
XS7 D1A1D	30 x 30 x 1	0...32
XS7 D1A1C	30 x 30 x 1	0...32

pick-up points
drop-out points (object approaching from the side)

Inductive proximity sensors

Old sensor	New Osiprox sensor
Cylindrical type, d.c. supply	
Diameter 6.5 mm	
XS1L06NA140	**XS106BLNAL2**
XS1L06PA140	**XS106BLPAL2**
Diameter 8 mm	
XS1D08NA140	**XS108BLNAL2**
XS1D08NA140D	**XS108BLNAM12**
XS1D08PA140	**XS108BLPAL2**
XS1D08PA140D	**XS108BLPAM12**
XS1D08PA140L1	**XS108BLPAL5**
XS1M08DA210	**XS508B1DAL2**
XS1M08DA210D	**XS508B1DAM12**
XS1M08DA210L1	**XS508B1DAL5**
XS1M08DA210L2	**XS508B1DAL10**
XS1M08DA210LD	**XS508B1DAM12** *(1)*
XS1M08DA214D	**XS508B1CAM12**
XS1M08DA214LD	**XS508B1CAL08M12**
XS1M08DB210	**XS508B1DBL2**
XS1M08DB210D	**XS508B1DBM12**
XS1M08DB210L1	**XS508B1DBL5**
XS1M08DB210LD	**XS508B1DBM12** *(1)*
XS1M08NA370	**XS608B1NAL2**
XS1M08NA370D	**XS608B1NAM12**
XS1M08NA370L1	**XS608B1NAL5**
XS1M08NB370	**XS608B1NBL2**
XS1M08NB370D	**XS608B1NBM12**
XS1M08PA370	**XS608B1PAL2**
XS1M08PA370D	**XS608B1PAM12**
XS1M08PA370L1	**XS608B1PAL5**
XS1M08PA370L2	**XS608B1PAL10**
XS1M08PA370LD	**XS608B1PAM12** *(1)*
XS1M08PA370S	**XS608B1PAM12** *(2)*
XS1M08PB370	**XS608B1PBL2**
XS1M08PB370D	**XS608B1PBM12**
XS1M08PB370L1	**XS608B1PBL5**
XS1M08PB370L2	**XS608B1PBL10**
XS1N08NA340	**XS508B1NAL2**
XS1N08NA340D	**XS508B1NAM8** *(3)*
XS1N08NA340L1	**XS508B1NAL5**
XS1N08NA340L2	**XS508B1NAL10**
XS1N08NA340S	**XS508B1NAM8**
XS1N08NB340	**XS508B1NBL2**
XS1N08NB340D	**XS508B1NBM8** *(3)*
XS1N08NB340S	**XS508B1NBM8**
XS1N08PA340	**XS508B1PAL2**
XS1N08PA340D	**XS508B1PAM8** *(3)*
XS1N08PA340L1	**XS508B1PAL5**
XS1N08PA340L2	**XS508B1PAL10**
XS1N08PA340LD	**XS508B1PAM8** *(3)*
XS1N08PA340S	**XS508B1PAM8**
XS1N08PB340	**XS508B1PBL2**
XS1N08PB340D	**XS508B1PBM8** *(3)*
XS1N08PB340L1	**XS508B1PBL5**
XS1N08PB340L2	**XS508B1PBL10**
XS1N08PB340S	**XS508B1PBM8**
XS2M08NA340	**XS608B1NAL2**
XS2N08NA340	**XS1N08NA349**
XS2N08NA340D	**XS1N08NA349D**
XS2N08NA340L1	**XS1N08NA349L1**
XS2N08NA340L2	**XS1N08NA349L2**
XS2N08NA340S	**XS1N08NA349S**
XS2N08NB340	**XS1N08NB349**
XS2N08NB340D	**XS1N08NB349D**
XS2N08NB340S	**XS1N08NB349S**
XS2N08PA340	**XS1N08PA349**
XS2N08PA340D	**XS1N08PA349D**
XS2N08PA340L1	**XS1N08PA349L1**
XS2N08PA340L2	**XS1N08PA349L2**
XS2N08PA340S	**XS1N08PA349S**
XS2N08PB340	**XS1N08PB349**
XS2N08PB340D	**XS1N08PB349D**
XS2N08PB340S	**XS1N08PB349S**
XS3P08NA340	**XS508B1NAL2** *(4)*
XS3P08NA340D	**XS508B1NAM8** *(3)(4)*
XS3P08NA340L1	**XS508B1NAL5** *(4)*
XS3P08NA370	**XS608B1NAL2** *(4)*
XS3P08NA370L1	**XS608B1NAL5** *(4)*
XS3P08PA340	**XS508B1PAL2** *(4)*
XS3P08PA340D	**XS508B1PAM8** *(3) (4)*
XS3P08PA340L1	**XS508B1PAL5** *(4)*
XS3P08PA370	**XS608B1PAL2** *(4)*
XS3P08PA370L1	**XS608B1PAL5** *(4)*
Diameter 12 mm	
XS1D12NA140	**XS112BLNAL2**
XS1D12NA140D	**XS112BLNAM12**
XS1D12PA140	**XS112BLPAL2**
XS1D12PA140D	**XS112BLPAM12**
XS1D12PA140L1	**XS112BLPAL5**
XS2D12NA140	**XS212BLNAL2**
XS2D12NA140D	**XS212BLNAM12**
XS2D12NA140L1	**XS212BLNAL5**
XS2D12PA140	**XS212BLPAL2**
XS2D12PA140D	**XS212BLPAM12**
XS2D12PA140L1	**XS212BLPAL5**
XS1M12DA210	**XS512B1DAL2**
XS1M12DA210D	**XS512B1DAM12**
XS1M12DA210L1	**XS512B1DAL5**
XS1M12DA210L2	**XS512B1DAL10**
XS1M12DA210LD	**XS512B1DAM12** *(1)*
XS1M12DA214D	**XS512B1CAM12**
XS1M12DA214LD	**XS512B1CAL08M12**
XS1M12DB210	**XS512B1DBL2**
XS1M12DB210D	**XS512B1DBM12**
XS1M12DB210L1	**XS512B1DBL5**
XS1M12DB210L2	**XS512B1DBL10**
XS1M12DB210LD	**XS512B1DBM12** *(1)*
XS1M12NA370	**XS612B1NAL2**
XS1M12NA370D	**XS612B1NAM12**
XS1M12NA370L1	**XS612B1NAL5**
XS1M12NA370L2	**XS612B1NAL10**
XS1M12NA370S	**XS612B1NAM12** *(2)*
XS1M12NB370	**XS612B1NBL2**
XS1M12NB370D	**XS612B1NBM12**
XS1M12PA370	**XS612B1PAL2**
XS1M12PA370D	**XS612B1PAM12**
XS1M12PA370L1	**XS612B1PAL5**
XS1M12PA370L2	**XS612B1PAL10**
XS1M12PA370LD	**XS612B1PAM12** *(1)*
XS1M12PB370	**XS612B1PBL2**
XS1M12PB370D	**XS612B1PBM12**
XS1M12PB370L1	**XS612B1PBL5**
XS1M12PB370L2	**XS612B1PBL10**
XS1M12PB370LD	**XS612B1PAM12** *(1)*
XS1N12NA340	**XS512B1NAL2**
XS1N12NA340D	**XS512B1NAM12**
XS1N12NA340L1	**XS512B1NAL5**
XS1N12NA340L2	**XS512B1NAL10**
XS1N12NB340	**XS512B1NBL2**
XS1N12NB340D	**XS512B1NBM12**

(1) For the new sensor an integral M12 connector replaces the M12 connector on a 0.80 m flying lead.
(2) For the new sensor an M12 connector replaces the M8 connector.
(3) For the new sensor an M8 connector replaces the M12 connector.
(4) For the new Osiprox® sensor the metal case replaces the plastic case.

Old sensor	**New Osiprox sensor**
Cylindrical type, d.c. supply (continued)	
Diameter 12 mm	
XS1N12PA340	**XS512B1PAL2**
XS1N12PA340D	**XS512B1PAM12**
XS1N12PA340L1	**XS512B1PAL5**
XS1N12PA340L2	**XS512B1PAL10**
XS1N12PA340LD	**XS512B1PAM12** *(1)*
XS1N12PA340S	**XS512B1PAM12** *(2)*
XS1N12PB340	**XS512B1PBL2**
XS1N12PB340D	**XS512B1PBM12**
XS1N12PB340L1	**XS512B1PBL5**
XS2M12NA370	**XS612B1NAL2**
XS2M12NA370D	**XS612B1NAM12**
XS2M12NA370L1	**XS612B1NAL5**
XS2M12NA370L2	**XS612B1NAL10**
XS2M12NB370	**XS612B1NBL2**
XS2M12NB370D	**XS612B1NBM12**
XS2M12PA370	**XS612B1PAL2**
XS2M12PA370D	**XS612B1PAM12**
XS2M12PA370L1	**XS612B1PAL5**
XS2M12PA370L2	**XS612B1PAL10**
XS2M12PB370	**XS612B1PBL2**
XS2M12PB370D	**XS612B1PBM12**
XS2M12PB370L1	**XS612B1PBL5**
XS2M12PB370S	**XS612B1PBM12** *(2)*
XS2N12NA340	**XS1N12NA349**
XS2N12NA340D	**XS1N12NA349D**
XS2N12NA340L1	**XS1N12NA349L1**
XS2N12NA340L2	**XS1N12NA349L2**
XS2N12NB340	**XS1N12NB349**
XS2N12NB340D	**XS1N12NB349D**
XS2N12PA340	**XS1N12PA349**
XS2N12PA340D	**XS1N12PA349D**
XS2N12PA340L1	**XS1N12PA349L1**
XS2N12PA340L2	**XS1N12PA349L2**
XS2N12PB340	**XS1N12PB349**
XS2N12PB340D	**XS1N12PB349D**
XS2N12PB340L1	**XS1N12PB349L1**
XS3P12NA340	**XS512B1NAL2** *(4)*
XS3P12NA340D	**XS512B1NAM12** *(4)*
XS3P12NA340L1	**XS512B1NAL5** *(4)*
XS3P12NA370	**XS612B1NAL2** *(4)*
XS3P12NA370L1	**XS612B1NAL5** *(4)*
XS3P12PA340	**XS512B1PAL2** *(4)*
XS3P12PA340D	**XS512B1PAM12** *(4)*
XS3P12PA340L1	**XS512B1PAL5** *(4)*
XS3P12PA370	**XS612B1PAL2** *(4)*
XS3P12PA370L1	**XS612B1PAL5** *(4)*
Diameter 18 mm	
XS1D18NA140	**XS118BLNAL2**
XS1D18NA140D	**XS118BLNAM12**
XS1D18NA140L1	**XS118BLNAL5**
XS1D18PA140	**XS118BLPAL2**
XS1D18PA140D	**XS118BLPAM12**
XS1D18PA140L1	**XS118BLPAL5**
XS2D18NA140	**XS218BLNAL2**
XS2D18NA140D	**XS218BLNAM12**
XS2D18PA140	**XS218BLPAL2**
XS2D18PA140D	**XS218BLPAM12**
XS2D18PA140L1	**XS218BLPAL5**
XS1M18DA210	**XS518B1DAL2**
XS1M18DA210D	**XS518B1DAM12**
XS1M18DA210L1	**XS518B1DAL5**
XS1M18DA210L2	**XS518B1DAL10**
XS1M18DA210LD	**XS518B1DAM12** *(1)*
XS1M18DA214D	**XS518B1CAM12**
XS1M18DA214LD	**XS518B1CAL08M12**
XS1M18DB210	**XS518B1DBL2**
XS1M18DB210D	**XS518B1DBM12**
XS1M18DB210LD	**XS518B1DBM12** *(1)*
XS1M18NA370	**XS618B1NAL2**
XS1M18NA370D	**XS618B1NAM12**
XS1M18NA370L1	**XS618B1NAL5**
XS1M18NA370L2	**XS618B1NAL10**
XS1M18NB370	**XS618B1NBL2**
XS1M18NB370D	**XS618B1NBM12**
XS1M18NB370L1	**XS618B1NBL5**
XS1M18NB370L2	**XS618B1NBL10**
XS1M18PA370	**XS618B1PAL2**
XS1M18PA370D	**XS618B1PAM12**
XS1M18PA370L1	**XS618B1PAL5**
XS1M18PA370L2	**XS618B1PAL10**
XS1M18PA370LD	**XS618B1PAM12** *(1)*
XS1M18PB370	**XS618B1PBL2**
XS1M18PB370D	**XS618B1PBM12**
XS1M18PB370L1	**XS618B1PBL5**
XS1M18PB370L2	**XS618B1PBL10**
XS1N18NA340	**XS518B1NAL2**
XS1N18NA340D	**XS518B1NAM12**
XS1N18NA340L1	**XS518B1NAL5**
XS1N18NA340L2	**XS518B1NAL10** *(6)*
XS1N18NB340	**XS518B1NBL2**
XS1N18NB340D	**XS518B1NBM12**
XS1N18NB340L2	**XS518B1NBL10**
XS1N18PA340	**XS518B1PAL2**
XS1N18PA340D	**XS518B1PAM12**
XS1N18PA340L1	**XS518B1PAL5**
XS1N18PA340L2	**XS518B1PAL10**
XS1N18PB340	**XS518B1PBL2**
XS1N18PB340D	**XS518B1PBM12**
XS1N18PB340L2	**XS518B1PBL10**
XS2M18NA370	**XS618B1NAL2**
XS2M18NA370D	**XS618B1NAM12**
XS2M18NA370L1	**XS618B1NAL5**
XS2M18NA370L2	**XS618B1NAL10**
XS2M18NB370	**XS618B1NBL2**
XS2M18NB370D	**XS618B1NBM12**
XS2M18NB370L1	**XS618B1NBL5**
XS2M18NB370L2	**XS618B1NBL10**
XS2M18PA370	**XS618B1PAL2**
XS2M18PA370D	**XS618B1PAM12**
XS2M18PA370L1	**XS618B1PAL5**
XS2M18PA370L2	**XS618B1PAL10**
XS2M18PB370	**XS618B1PBL2**
XS2M18PB370D	**XS618B1PBM12**
XS2M18PB370L1	**XS618B1PBL5**
XS2M18PB370L2	**XS618B1PBL10**
XS2N18NA340	**XS1N18NA349** *(8)*
XS2N18NA340D	**XS1N18NA349D** *(8)*
XS2N18NA340L1	**XS1N18NA349L1** *(8)*
XS2N18NA340L2	**XS1N18NA349L2** *(8)*
XS2N18NB340	**XS1N18NB349** *(8)*
XS2N18NB340D	**XS1N18NB349D** *(8)*
XS2N18PA340	**XS1N18PA349** *(8)*
XS2N18PA340D	**XS1N18PA349D** *(8)*
XS2N18PA340L1	**XS1N18PA349L1** *(8)*
XS2N18PA340L2	**XS1N18PA349L2** *(8)*
XS2N18PB340	**XS1N18PB349** *(8)*
XS2N18PB340D	**XS1N18PB349D** *(8)*
XS3P18NA340	**XS518B1NAL2** *(4)*
XS3P18NA340D	**XS518B1NAM12** *(4)*
XS3P18NA340L1	**XS518B1NAL5** *(4)*
XS3P18NA370	**XS618B1NAL2** *(4)*
XS3P18NA370L1	**XS618B1NAL5** *(4)*

(1) For the new sensor an integral M12 connector replaces the M12 connector on a 0.80 m flying lead.
(2) For the new sensor an M12 connector replaces the M8 connector.
(4) For the new Osiprox® sensor the metal case replaces the plastic case.
(6) For the new Osiprox® sensor the length of the product is different.
(8) For the new sensor, Sn = 10 mm instead of 8 mm.

Inductive proximity sensors

Old sensor	New Osiprox sensor
Cylindrical type, d.c. supply (continued)	
Diameter 18 mm	
XS3P18PA340	**XS518B1PAL2** *(4)*
XS3P18PA340D	**XS518B1PAM12** *(4)*
XS3P18PA340L1	**XS518B1PAL5** *(4)*
XS3P18PA370	**XS618B1PAL2** *(4)*
XS3P18PA370L1	**XS618B1PAL5** *(4)*
XS3P18PA370L2	**XS618B1PAL10** *(4)*
Diameter 30 mm	
XS1D30NA140	**XS130BLNAL2**
XS1D30NA140D	**XS130BLNAM12**
XS1D30PA140	**XS130BLPAL2**
XS1D30PA140D	**XS130BLPAM12**
XS1D30PA140L1	**XS130BLPAL5**
XS2D30NA140	**XS230BLNAL2**
XS2D30NA140D	**XS230BLNAM12**
XS2D30PA140	**XS230BLPAL2**
XS2D30PA140D	**XS230BLPAM12**
XS1M30DA210	**XS530B1DAL2**
XS1M30DA210D	**XS530B1DAM12**
XS1M30DA210L1	**XS530B1DAL5**
XS1M30DA210L2	**XS530B1DAL10**
XS1M30DA210LD	**XS530B1DAM12** *(1)*
XS1M30DA214D	**XS530B1CAM12**
XS1M30DA214LD	**XS530B1CAL08M12**
XS1M30DB210	**XS530B1DBL2**
XS1M30DB210D	**XS530B1DBM12**
XS1M30DB210LD	**XS530B1DBM12** *(1)*
XS1M30NA370	**XS630B1NAL2**
XS1M30NA370D	**XS630B1NAM12**
XS1M30NA370L1	**XS630B1NAL5**
XS1M30NA370L2	**XS630B1NAL10**
XS1M30NB370	**XS630B1NBL2**
XS1M30NB370D	**XS630B1NBM12**
XS1M30NB370L1	**XS630B1NBL5**
XS1M30NB370L2	**XS630B1NBL10**
XS1M30PA349D	**XS630B1PAM12** *(5)*
XS1M30PA370	**XS630B1PAL2**
XS1M30PA370D	**XS630B1PAM12**
XS1M30PA370L1	**XS630B1PAL5**
XS1M30PA370L2	**XS630B1PAL10**
XS1M30PA370LD	**XS630B1PAM12** *(1)*
XS1M30PB370	**XS630B1PBL2**
XS1M30PB370D	**XS630B1PBM12**
XS1M30PB370L1	**XS630B1PBL5**
XS1M30PB370L2	**XS630B1PBL10**

Old sensor	New Osiprox sensor
XS1N30NA340	**XS530B1NAL2**
XS1N30NA340D	**XS530B1NAM12**
XS1N30NA340L1	**XS530B1NAL5**
XS1N30NA340L2	**XS530B1NAL10**
XS1N30NB340	**XS530B1NBL2**
XS1N30NB340D	**XS530B1NBM12**
XS1N30PA340	**XS530B1PAL2**
XS1N30PA340D	**XS530B1PAM12**
XS1N30PA340L1	**XS530B1PAL5**
XS1N30PA340L2	**XS530B1PAL10**
XS1N30PB340	**XS530B1PBL2**
XS1N30PB340D	**XS530B1PBM12**
XS2M30NA370	**XS630B1NAL2**
XS2M30NA370D	**XS630B1NAM12**
XS2M30NA370L1	**XS630B1NAL5**
XS2M30NA370L2	**XS630B1NAL10**
XS2M30NB370	**XS630B1NBL2**
XS2M30NB370D	**XS630B1NBM12**
XS2M30NB370L1	**XS630B1NBL5**
XS2M30NB370L2	**XS630B1NBL10**
XS2M30PA370	**XS630B1PAL2**
XS2M30PA370D	**XS630B1PAM12**
XS2M30PA370L1	**XS630B1PAL5**
XS2M30PA370L2	**XS630B1PAL10**
XS2M30PB370	**XS630B1PBL2**
XS2M30PB370D	**XS630B1PBM12**
XS2M30PB370L1	**XS630B1PBL5**
XS2M30PB370L2	**XS630B1PBL10**
XS2N30NA340	**XS1N30NA349** *(9)*
XS2N30NA340D	**XS1N30NA349D** *(9)*
XS2N30NA340L1	**XS1N30NA349L1** *(9)*
XS2N30NA340L2	**XS1N30NA349L2** *(9)*
XS2N30NB340	**XS1N30NB349** *(9)*
XS2N30NB340D	**XS1N30NB349D** *(9)*
XS2N30PA340	**XS1N30PA349** *(9)*
XS2N30PA340D	**XS1N30PA349D** *(9)*
XS2N30PA340L1	**XS1N30PA349L1** *(9)*
XS2N30PA340L2	**XS1N30PA349L2** *(9)*
XS2N30PB340	**XS1N30PB349** *(9)*
XS2N30PB340D	**XS1N30PB349D** *(9)*
XS3P30NA340	**XS530B1NAL2** *(4)*
XS3P30NA340D	**XS530B1NAM12** *(4)*
XS3P30NA340L1	**XS530B1NAL5** *(4)*

Old sensor	New Osiprox sensor
XS3P30NA370	**XS630B1NAL2** *(4)*
XS3P30NA370L1	**XS630B1NAL5** *(4)*
XS3P30PA340	**XS530B1PAL2** *(4)*
XS3P30PA340D	**XS530B1PAM12** *(4)*
XS3P30PA340L1	**XS530B1PAL5** *(4)*
XS3P30PA340L2	**XS530B1PAL10** *(4)*
XS3P30PA370	**XS630B1PAL2** *(4)*
XS3P30PA370L1	**XS630B1PAL5** *(4)*
XS3P30PA370L2	**XS630B1PAL10** *(4)*

(1) For the new sensor an integral M12 connector replaces the M12 connector on a 0.80 m flying lead.
(4) For the new Osiprox® sensor the metal case replaces the plastic case.
(5) For the new sensor, Sn = 15 mm instead of 20 mm.
(9) For the new sensor, Sn = 20 mm instead of 15 mm.

Inductive proximity sensors

Old sensor	New Osiprox sensor
Cylindrical type, a.c. supply	
Diameter 12 mm	
XS1M12FA264	**XS112BLFAL2**
XS1M12FA264L2	**XS112BLFAL10**
XS1M12MA230	**XS612B1MAL2**
XS1M12MA230K	**XS612B1MAU20**
XS1M12MA230L1	**XS612B1MAL5**
XS1M12MA230L2	**XS612B1MAL10**
XS1M12MA239	**XS612B1MAL2**
XS1M12MA239K	**XS612B1MAU20**
XS1M12MB230	**XS612B1MBL2**
XS1M12MB230K	**XS612B1MBU20**
XS1M12MB230L1	**XS612B1MBL5**
XS1M12MB230L2	**XS612B1MBL10**
XS2M12MA230	**XS612B1MAL2**
XS2M12MA230K	**XS612B1MAU20**
XS2M12MA230L1	**XS612B1MAL5**
XS2M12MA230L2	**XS612B1MAL10**
XS2M12MB230	**XS612B1MBL2**
XS2M12MB230K	**XS612B1MBU20**
XS2M12MB230L1	**XS612B1MBL5**
XS2M12MB230L2	**XS612B1MBL10**
XS3P12MA230	**XS612B1MAL2** *(4)*
XS3P12MA230K	**XS612B1MAU20** *(4)*
XS3P12MA230L1	**XS612B1MAL5** *(4)*
XS3P12MA230L2	**XS612B1MAL10** *(4)*
XS3P12MB230	**XS612B1MBL2** *(4)*
XS3P12MB230K	**XS612B1MBU20** *(4)*
XS3P12MB230L1	**XS612B1MBL5** *(4)*

Old sensor	New Osiprox sensor
Diameter 18 mm	
XS1M18FA264	**XS118BLFAL2**
XS1M18MA230	**XS618B1MAL2**
XS1M18MA230K	**XS618B1MAU20**
XS1M18MA230L1	**XS618B1MAL5**
XS1M18MA230L2	**XS618B1MAL10**
XS1M18MA239	**XS618B1MAL2** *(7)*
XS1M18MA239K	**XS618B1MAU20** *(7)*
XS1M18MB230	**XS618B1MBL2**
XS1M18MB230K	**XS618B1MBU20**
XS1M18MB230L1	**XS618B1MBL5**
XS1M18MB230L2	**XS618B1MBL10**
XS2M18MA230	**XS618B1MAL2**
XS2M18MA230K	**XS618B1MAU20**
XS2M18MA230L1	**XS618B1MAL5**
XS2M18MA230L2	**XS618B1MAL10**
XS2M18MB230	**XS618B1MBL2**
XS2M18MB230K	**XS618B1MBU20**
XS2M18MB230L1	**XS618B1MBL5**
XS2M18MB230L2	**XS618B1MBL10**
XS3P18MA230	**XS618B1MAL2** *(4)*
XS3P18MA230K	**XS618B1MAU20** *(4)*
XS3P18MA230L1	**XS618B1MAL5** *(4)*
XS3P18MA230L2	**XS618B1MAL10** *(4)*
XS3P18MB230	**XS618B1MBL2** *(4)*
XS3P18MB230A	**XS618B1MBU20** *(4)*
XS3P18MB230K	**XS618B1MBU20** *(4)*
XS3P18MB230L1	**XS618B1MBL5** *(4)*

Old sensor	New Osiprox sensor
Diameter 30 mm	
XS1M30FA264	**XS130BLFAL2**
XS1M30MA230	**XS630B1MAL2**
XS1M30MA230K	**XS630B1MAU20**
XS1M30MA230L1	**XS630B1MAL5**
XS1M30MA230L2	**XS630B1MAL10**
XS1M30MA239	**XS630B1MAL2** *(5)*
XS1M30MB230	**XS630B1MBL2**
XS1M30MB230K	**XS630B1MBU20**
XS1M30MB230L1	**XS630B1MBL5**
XS1M30MB230L2	**XS630B1MBL10**
XS2M30MA230	**XS630B1MAL2**
XS2M30MA230K	**XS630B1MAU20**
XS2M30MA230L1	**XS630B1MAL5**
XS2M30MA230L2	**XS630B1MAL10**
XS2M30MB230	**XS630B1MBL2**
XS2M30MB230K	**XS630B1MBU20**
XS2M30MB230L1	**XS630B1MBL5**
XS2M30MB230L2	**XS630B1MBL10**
XS3P30MA230	**XS630B1MAL2** *(4)*
XS3P30MA230K	**XS630B1MAU20** *(4)*
XS3P30MA230L1	**XS630B1MAL5** *(4)*
XS3P30MA230L2	**XS630B1MAL10** *(4)*
XS3P30MB230	**XS630B1MBL2** *(4)*
XS3P30MB230K	**XS630B1MBU20** *(4)*
XS3P30MB230L1	**XS630B1MBL5** *(4)*

(4) For the new Osiprox® sensor the metal case replaces the plastic case.
(5) For the new sensor, Sn = 15 mm instead of 20 mm.
(7) For the new sensor, Sn = 8 mm instead of 10 mm.