Inductive proximity sensors OsiSense XS

Catalogue

Simply easy!™

Telemecanique Sensors

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OsiSense XS

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Inductive proximity sensors

OsiSense XS

General purpose

Cylindrical type

Standard range

Flush mountable

Sensing distance Sn (mm)		1.5	2	5	10
Diameter		Ø 6.5 plain and M8	M12	M18	M30
Short case	Supply				
	3-wire ⎓ (PNP/NPN)	Page 24			
	2-wire ⎓	Page 28			
Long case	Supply				
	3-wire ⎓ (PNP/NPN)	Page 25			
	2-wire ⎓	Page 29			
	2-wire ∿	–	Page 32		
Function	NO	●	●	●	●
	NC	●	●	●	●
Connection	Pre-cabled (L = 2 m) *(1)*	●	●	●	●
	M8 connector, 3-pin (3-wire ⎓)	●	–	–	–
	M12 connector	●	●	●	●
	1/2"-20UNF connector	–	●	●	●
	Remote connector	Remote connectors available: M8, M12, M18, screw terminal, 7/8", DIN: please consult our Customer Care Centre			
Degree of protection		IP 65 and IP 67, IP 68 for pre-cabled version, IP 69K for diameters 12 to 30			
Special temperatures	- 40 °C, + 70 °C	Add the suffix TF to the end of the reference *(2)*			
	- 25 °C, + 85° C	Add the suffix TT to the end of the reference *(2)*			
Type reference		XS506	XS508	XS512	XS518	XS530
Pages		24 to 33				

(1) Also available in lengths of 5 and 10 m, depending on model

(2) Product availability depending on model: please consult our Customer Care Centre.

Increased range

Flush mountable

Non flush mountable

Sensing distance Sn (mm)		2.5	4	8	15	7	8	12	16	22	30
Diameter		Ø 6.5 plain and M8	M12	M18	M30	M12		M18		M30	
Short case	Supply										
	3-wire ⎓ (PNP/NPN)	Pages 34 and 35				–	Page 44	–	Page 44	–	–
	2-wire ⎓	Page 38				–	–	–	–	–	–
Long case	Supply										
	3-wire ⎓ (PNP/NPN)	Page 36				Page 42	–	Page 42	–	–	Page 42
	2-wire ⎓	Page 38				–	–	–	–	–	–
	2-wire ∿	–	Page 40			–	–	Page 46	–	Page 46	–
Function	NO	●	●	●	●	●	●	●	●	●	●
	NC	●	●	●	●	●	●	●	●	●	●
Connection	Pre-cabled (L = 2 m) *(1)*	●	●	●	●	●	●	●	●	●	●
	M8 connector, 3-pin (3-wire ⎓)	●	–	–	–	–	–	–	–	–	–
	M12 connector	●	●	●	●	●	●	●	●	●	●
	1/2"-20UNF connector	–	●	●	●	–	–	●	–	●	–
	Remote connector	Remote connectors available: M8, M12, M18, screw terminal, 7/8", DIN: please consult our Customer Care Centre									
Degree of protection		IP 65 and IP 67, IP 68 for pre-cabled version, IP 69K for diameters 12 to 30				IP 65 and IP 67, IP 68 for pre-cabled version, IP 69K					
Special temperatures	- 40 °C, + 70 °C	Add the suffix TF to the end of the reference *(2)*									
	- 25 °C, + 85° C	Add the suffix TT to the end of the reference *(2)*									
Type reference		XS106 XS606	XS108 XS608	XS112, XS612	XS118, XS618	XS130, XS630	XS612	XS212	XS618	XS218	XS630
Pages		34 to 41					42 to 47				

Inductive proximity sensors

OsiSense XS

General purpose

Block type		**Standard range**				
		Flush mountable				
Sensing distance Sn (mm)		**2.5**	**5**	**10**	**15**	**40**
Dimensions (W x H x D)		**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**
Supply	3-wire ⎓ (PNP/NPN)	Page 48	Page 48	Page 50	Page 50	Page 50
	2-wire ⎓	Page 48	Page 48	Page 50	Page 50	Page 50
	∿	–	–	–	–	–
Function	NO	●	●	●	●	●
	NC	●	●	●	●	●
	NO + NC	–	–	–	–	–
	NO/NC	–	–	–	–	–
Connection	Pre-cabled (L = 2 m) *(1)*	●	●	●	●	●
	M8 connector, 3-pin (3-wire ⎓)	–	–	●	●	–
	M12 connector	–	–	–	–	●
	1/2”-20UNF connector	–	–	–	–	–
	Screw terminals	–	–	–	–	–
	Remote connector M8	●	●	–	–	–
	Remote connector M12	–	–	●	●	–
	Remote connector 1/2”-20 UNF	–	–	–	–	–
	Other remote connectors available	M18, screw terminal, 7/8”, DIN: please consult our Customer Care Centre				
Degree of protection		IP 67	IP 67, double insulation ⧈ or IP 68, double insulation ⧈, depending on model			
Special temperatures	- 40 °C, + 70 °C	Add the suffix TF to the end of the reference *(2)*				
	- 25 °C, + 85 °C	Add the suffix TT to the end of the reference *(2)*				
Type reference		**XS7J**	**XS7F**	**XS7E**	**XS7C**	**XS7D**
Pages		48		50		

(1) Also available in lengths of 5 and 10 m, depending on model.
(2) Product availability depending on model: please consult our Customer Care Centre.

Standard and increased ranges		
Flush mountable		Non flush mountable
15	**20**	**40**
40 x 40 x 70 and **40 x 40 x 117**		
Pages 52 and 54		
Pages 52 and 54		
Pages 52 and 54		
●	●	●
●	●	●
–	●	●
●	●	●
–	–	–
–	–	–
●	●	●
●	●	●
●	●	●
–	–	–
–	–	–
–	–	–
–		
IP 65, IP 67 and IP 69K		
Add the suffix TF to the end of the reference *(2)*		
Add the suffix TT to the end of the reference *(2)*		
XS7C2, XS7C4, XS8C2 and XS8C4		
52 and 54		

Inductive proximity sensors

OsiSense XS

General purpose

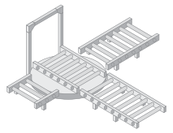
Sensor type: flush and non flush mountable		Multivoltage sensors	Sensors with 2 complementary outputs	
		With short-circuit protection	Solid-state PNP or NPN NO + NC outputs	Solid-state PNP + NPN, NO or NC programmable outputs
Sensing distance Sn (mm)	Flush mountable	**2 ... 10**	**1.5 ... 15**	**2 ... 10**
	Non flush mountable	**4 ... 15**	**2.5 ...15**	**4 ... 15**
Diameter		Threaded: M12, M18, M30	Plain: Ø 6.5 Threaded: M8, M12, M18, M30	Threaded: M12, M18, M30
Case material		Nickel plated brass	Nickel plated brass or stainless steel or plastic	Nickel plated brass or plastic
Supply	⎓	–	●	●
	~	–	–	–
	⎓/~	●	–	–
Function	NO	●	–	–
	NC	●	–	–
	NO + NC	–	●	–
	NO/NC	–	–	● programmable
Connection	Pre-cabled (L = 2 m) *(1)*	●	●	●
	M8 connector, 3-pin (3-wire ⎓)	–	–	–
	M12 connector	–	●	●
	1/2"-20UNF connector	●	–	–
	Remote connector	Remote connectors available: M8, M12, M18, screw terminal, 7/8", DIN: please consult our Customer Care Centre		
Degree of protection		IP 67, IP 68 or IP 69K depending on model		
Special temperatures	- 40 °C, + 70 °C	Add the suffix TF to the end of the reference *(2)*		
	- 25 °C, + 85 °C	Add the suffix TT to the end of the reference *(2)*		
Type reference		**XS1M** **XS2M**	**XS1●●●●C410** **XS4P●●●C410** **XS1●●B3PC●**	**XS1M●●KP340** **XS2M●●KP340** **XS4P●●KP340**
Pages		56	58 and 62	64

(1) Also available in lengths of 5 and 10 m, depending on model.
(2) Product availability depending on model: please consult our Customer Care Centre.
(3) Packed and sold in lots of 20

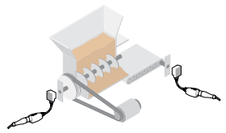
Plastic case sensors	Basic sensors		Almost flush mountable sensors	Miniature sensors
For chemical processing, marine applications	For repetitive machines			For robotic, transfer machine, assembly line applications
–	**1.5 ... 10**	**2.5 ... 15**	**–**	**1**
2.5 ... 15	**2.5 ... 15**	**–**	**2.5 ... 20**	**–**
Threaded: M8, M12, M18, M30	Threaded: M8, M12, M18, M30	Plain: Ø 6.5 Threaded: M8, M12, M18, M30		Plain: Ø 4 Threaded: M5
Plastic	Nickel plated brass or plastic	Nickel plated brass		Nickel plated brass or stainless steel
●	●	●	●	●
–	–	–	–	–
●	–	–	–	–
–	●	●	●	●
●	●	●	●	●
–	–	–	–	–
–	–	–	–	–
●	●	●	●	●
–	●	●	●	●
–	●	●	●	●
●	–	–	–	–
Remote connectors available: M8, M12, M18, screw terminal, 7/8", DIN: please consult our Customer Care Centre				
IP 67 or IP 68 depending on model	IP 67		IP 67 or IP 68	IP 67
Add the suffix TF to the end of the reference *(2)*				
Add the suffix TT to the end of the reference *(2)*				
XS4P	**XS1●●BL●** **XS2●●BL●**	**XS1●●B3●●●●TQ** *(3)*	**XS1N●●349**	**XS1L** **XS2L** **XS1N**
66	68 and 69	34 and 35	72	74

Inductive proximity sensors
OsiSense XS
Applications

Applications



Conveying



Detection of underspeed, shaft overload

Position, displacement and deformation control/monitoring

Machine with stainless steel housing

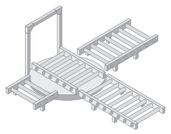
Sensor type: flush and non flush mountable		**Adjustable range sensors**				**Sensors for rotation monitoring**	**Sensors with analogue output 0 ... 10 V or 4 ... 20 mA**		**Sensors for food/beverage and pharmaceutical applications**	
									Cylindrical, stainless steel 316 L	**Cylindrical, plastic**
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.										
Sensing dist. Sn (mm)	Flush mountable	**3...11** *(1)*	**15**	**25**	**60**	**10**	**10…15** *(1)*	**0.2…10** *(1)*	**5…40** *(1)*	–
	Non flush mountable	**5...18** *(1)*	–	–	–	**10**	**10…15** *(1)*	**0.4…15** *(1)*	**5…40** *(1)*	**2…25**
Form	**Cylindrical**	M12 x 54 M18 x 67 M30 x 71	–	–	–	M30 x 81	–	Threaded: M12, M18, M30	–	–
	Block (W x H x D) dimensions in mm	–	26 x 26 x 13	40 x 40 x15	80 x 80 x 26	–	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	40 x 40 x 70
Case material		Nickel plated brass	PBT	PBT	PBT	Metal	PBT	Metal or plastic	PBT	PBT
Supply	⎓	●	●	●	●	●	●	●	●	●
	∼	–	–	–	–	–	–	–	–	–
	≂	–	●	●	●	●	●	–	–	–
Function	NO	●	●	●	●	–	–	–	–	–
	NC	●	●	●	●	●	●	–	–	–
	NO + NC	–	–	–	–	–	–	–	–	–
	NO/NC	–	–	–	–	–	–	–	–	–
Connection	Pre-cabled (L = 2 m) *(2)*	–	●	●	●	●	–	●	●	–
	M8 connector, 3-pin (⎓ 3-wire)	–	●	●	–	–	–	–	–	–
	M12 connector	–	–	–	●	–	–	–	●	–
	1/2"-20UNF connector	–	–	–	●	–	–	–	–	●
	Remote connector	●	●	●	●	–	●	–	●	–
	Screw terminals	–	–	–	–	–	–	–	–	●
Degree of protection		IP 67, double insulation ⧈	IP 67, double insulation ⧈ or IP 68, double insulation ⧈, depending on model.			IP 67	IP 67, double insulation ⧈	IP 67	IP 67 or IP 68 (pre-cabled version)	IP 65, IP 67 IP 69K
Special temperatures	- 40 °C, + 70 °C	Add the suffix TF to the end of the reference *(3)*				Add the suffix TF to the end of the reference *(3)*				
	- 25 °C, + 85 °C	Add the suffix TT to the end of the reference *(3)*				Add the suffix TT to the end of the reference *(3)*				
Type reference		**XS612B2 XS618 B2 XS630 B2**	**XS8E**	**XS8C**	**XS8D**	**XSAV**	**XS9●11R**	**XS1M●●●AB1 XS4P●●AB1**	**XS9●●●●A**	**XS9C2**
Pages		76	78			81	83	85	89 and 91	92

Sensing dist. Sn (mm)	Flush mountable	–	**6,10 or 20** *(1)*	–	–	**3...11** *(1)*	**15**	**25**	**60**
	Non flush mountable	**2…25**	**10, 20 or 40** *(1)*	**7...22** *(1)*	**7...22** *(1)*	**5...18** *(1)*	–	–	–
Form	**Cylindrical**	–	Threaded: M12, M18, M30	Plain: Ø 18 Threaded: M12, M18, M30	Threaded: M12, M18, M30	M12 x 54 M18 x 67 M30 x 71	–	–	–
	Block (W x H x D) dimensions in mm	40 x 40 x 117	–	–	–	–	26 x 26 x 13	40 x 40 x15	80 x 80 x 26
Case material		PBT	Stainless steel, 316 L	Stainless steel, 316 L	Plastic, PPS	Nickel plated brass	PBT	PBT	PBT
Supply	⎓	●	●	●	●	●	●	●	●
	∼	–	–	–	–	–	–	–	–
	≂	–	–	●	●	–	●	●	●
Function	NO	–	●	●	●	●	●	●	●
	NC	–	–	–	–	●	●	●	●
	NO + NC	–	–	–	–	–	–	–	–
	NO/NC	–	–	–	–	–	–	–	–
Connection	Pre-cabled (L = 2 m) *(2)*	–	–	●	●	–	●	●	●
	M8 connector, 3-pin (⎓ 3-wire)	–	–	–	–	–	●	●	–
	M12 connector	–	●	●	●	–	–	–	●
	1/2"-20UNF connector	–	–	●	●	–	–	–	●
	Remote connector	–	–	–	–	●	●	●	●
	Screw terminals	–	–	–	–	–	–	–	–
Degree of protection		IP 65, IP 67 IP 69K	IP 68, IP 69K	IP 68 (pre-cabled version), double insulation ⧈ IP 69K conforming to DIN 40050		IP 67, double insulation ⧈	IP 67, double insulation ⧈ or IP 68, double insulation ⧈, depending on model.		
Special temperatures	- 40 °C, + 70 °C	Add the suffix TF to the end of the reference *(3)*				Add the suffix TF to the end of the reference *(3)*			
	- 25 °C, + 85 °C	Add the suffix TT to the end of the reference *(3)*				Add the suffix TT to the end of the reference *(3)*			
Type reference		**XS9●●S●**	**XS2●●SA**	**XS2●●AA**		**XS612B2 XS618 B2 XS630 B2**	**XS8E**	**XS8C**	**XS8D**
Pages		94	96 and 98	100 and 102		76	78		

(1) Depending on model.
(2) Also available in lengths of 5 and 10 m, depending on model.
(3) Product availability depending on model: please consult our Customer Care Centre.

Inductive proximity sensors
OsiSense XS
Applications

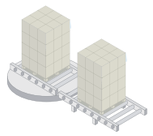
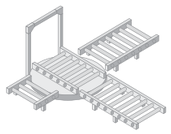
Applications



Conveying

Sensor type: flush and non flush mountable		Sensors for conveying and material handling applications		
		Cylindrical, stainless steel 303	12 x 40 x 26 format	80 x 80 x 40 format, increased range
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.				
Sensing dist. Sn (mm)	Flush mountable	3, 6, 10 or 20 *(1)*	2	50
	Non flush mountable	6, 10, 20 or 40 *(1)*	4	42
Form	Cylindrical	Threaded: M8, M12, M18, M30	–	–
	Block (W x H x D) dimensions in mm	–	12 x 40 x 26	80 x 80 x 40
Case material		Stainless steel 303	Plastic	Plastic
Supply	⎓	●	●	●
	∼	–	–	–
	⎓/∼	–	●	–
Function	NO	●	●	●
	NC	–	●	–
	NO + NC	–	●	–
	NO/NC	–	–	–
Connection	Pre-cabled (L = 2 m) *(2)*	–	●	–
	M8 connector, 3-pin (⎓ 3-wire)	–	●	–
	M12 connector	●	–	●
	1/2"-20UNF connector	–	–	–
	Remote connector	–	–	–
	Screw terminals	–	–	–
Degree of protection		IP 67 and IP 69K	IP 67	IP 67, double insulation ⧈
Special temperatures	- 40 °C, + 70 °C	Add the suffix TF to the end of the reference *(3)*		
	- 25 °C, + 85 °C	Add the suffix TT to the end of the reference *(3)*		
Type reference		XS9●●R●	XS7G XS8G	XS7D
Pages		104	106	110

(1) Depending on model.
(2) Also available in lengths of 5 and 10 m, depending on model.
(3) Product availability depending on model: please consult our Customer Care Centre.

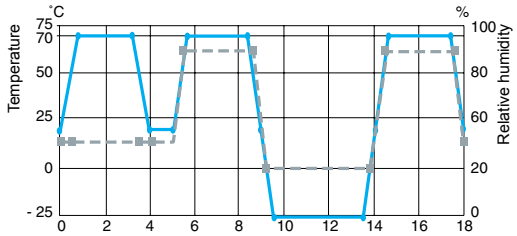



Robotics *Assembly machines, conveyor systems, material handling*

Sensors for welding machine applications	Factor 1 (Fe/Nfe) sensors for ferrous and non ferrous materials			Selective detection sensors for ferrous materials only or non ferrous materials only
Cylindrical, stainless steel 303	Cylindrical	Cubic	Rectangular	Cylindrical
6 or 10 *(1)*	5, 10 or 15 *(1)*	20	20	5
–	–	–	–	–
Threaded: M12, M18	Threaded: M18, M30	–	–	Threaded: M18
–	–	40 x 40 x 70	40 x 40 x 117	–
Stainless steel 303	Metal	PBT	PBT	Metal
●	●	●	●	●
–	–	–	–	–
–	–	–	–	–
●	–	–	–	●
–	–	–	–	–
–	–	●	●	–
–	●	–	–	–
–	●	–	–	●
–	–	–	–	–
●	●	●	–	–
–	–	–	–	–
–	●	–	–	–
–	–	–	●	–
IP 68 and IP 69K	IP 68	IP 65, IP 67 and IP 69K		IP 68
Add the suffix TF to the end of the reference *(3)*				
Add the suffix TT to the end of the reference *(3)*				
XS9●●RW XSLC	XS1M●●●KP	XS9C2	XS9C4	XS1M18PA
112 and 114	116	118	118	120

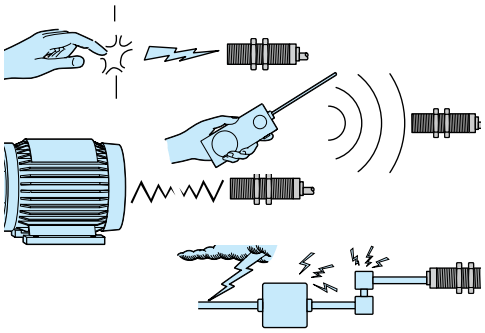
Inductive proximity sensors
OsiSense XS

Standards and certifications
Parameters related to the environment



- 25° + 70 °C cycle, 95 % RH

Temperature °C
Humidity %



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 Telemecanique Sensors 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.
  Telemecanique Sensors with an IP 68 degree of protection are ideal for use in the most arduous conditions, such as machine tools, automatic car washers.
- **IP 69K**: protection against the effects of high pressure cleaning. Adherence to standard DIN 40050 which stipulates that the product must withstand a water jet at a pressure of 90 bar and temperature of +80 °C for 3 minutes.
  No deterioration in either operating or insulation characteristics is permitted.

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.).

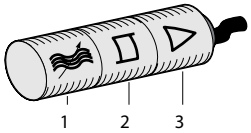
In all cases, the materials selected (see product characteristics) provide satisfactory compatibility in most industrial environments (for further information, please consult our Customer Information Centre).

Class 2 devices ⧈

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

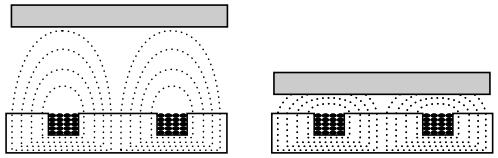
Inductive proximity sensors
OsiSense XS

Principle of inductive detection



1 Oscillator
2 Output driver
3 Output stage

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.

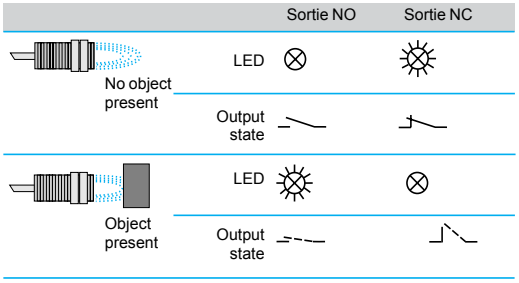
Advantages of inductive detection

■ 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.

Flush mountable using teach mode sensors

■ The flush mountable sensors using teach mode 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 22.

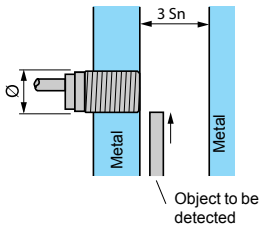
LED indicator

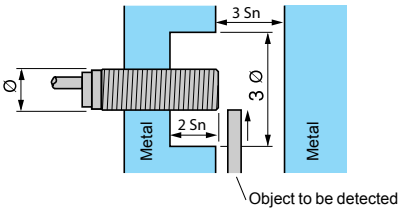


Output LED

All Telemecanique Sensors inductive proximity sensors incorporate an output state LED indicator.
The flush mountable sensors using teach mode 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





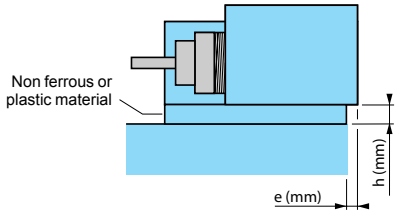
Flush mountable in metal

■ No side clearance required.
■ All flush mountable sensors using teach mode also enable detection of an object against a metal background. For further information, see pages 22 and 23.

Sensors not suitable for flush mounting in metal

■ Side clearance required.
Sensing distance greater than that for a standard flush mountable model.
■ Flush mountable sensors using teach mode eliminate the need for side clearance. For further information, see pages 22 and 23.

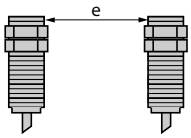
Mounting sensors on a metal support



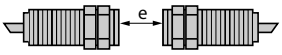
Mounting using fixing clamp

- ■ 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.
- ■ Flush mountable sensors using teach mode: e = 0, h = 0

Mounting distance between sensors



Mounting side by side
e ⩾ 2 Sn



Mounting face to face
e ⩾ 10 Sn

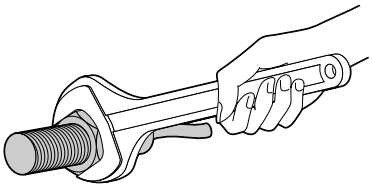
Standard sensors

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, the minimum mounting distances stated for the sensors should be adhered to or, alternatively, sensors with staggered oscillating frequencies should be used.

Staggered frequency sensors

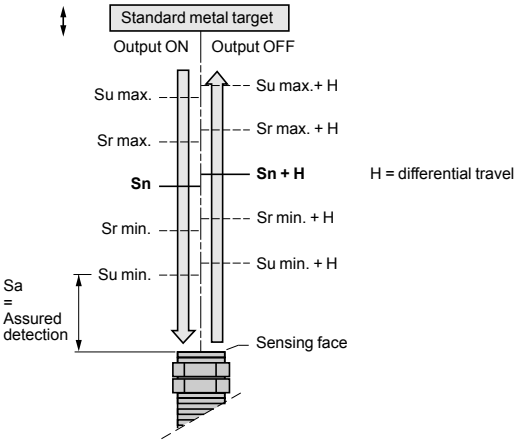
For applications where the minimum recommended mounting distances for standard sensors cannot be achieved, it is possible to overcome this restraint by using staggered frequency sensors. Please consult our Customer Care Centre.
In this case, a staggered frequency sensor is mounted adjacent to or opposite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

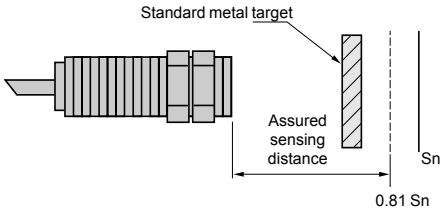
Tightening torque for cylindrical type sensors



	Maximum tightening torque for the various sensor case materials			
	Brass	Brass	Stainless steel	Plastic
Diameter of sensor (mm)	Short case model XS5●●B1 XS6●●B3	Long case model form A XS6●●B1 XS6●●B2 XS6●●B4 XSAV●	Long case model form A XS1●● XS2●●	All models XS4P●●
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	6 N.m	30 N.m	2 N.m
Ø 18	15 N.m	15 N.m	50 N.m	5 N.m
Ø 30	40 N.m	40 N.m	100 N.m	20 N.m

Sensing distance





Definitions

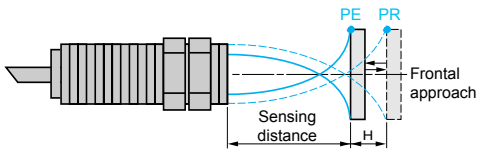
In order to ensure that customers can make reliable product comparisons and selection, the standard IEC 60947-5-2 defines various sensing distances, such as:

- **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).
- **Effective sensing distance (Sr)**
  The effective 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 ≤ Sr ≤ 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 effective sensing distance: 0.9 Sr ≤ Su ≤ 1.1 Sr.
- **Assured operating distance (Sa).**
  This is the operating zone of the sensor. The assured sensing distance is between 0 and 81% of the nominal sensing distance (Sn): 0 ≤ Sa ≤ 0.9 x 0.9 x 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



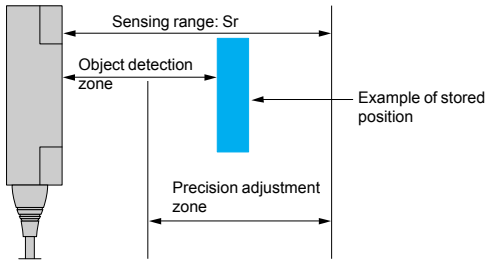
PE = pick-up point, the object is detected
PR = drop-out point, the object is no longer detected

Differential travel

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

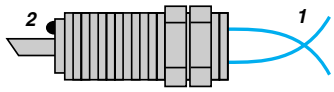
Repeat accuracy

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 the effective sensing distance Sr.
For all OsiSense XS sensors, the repeat accuracy is 3 %.



Detection zone and precision adjustment zone

- Flush mountable sensors using teach mode, due to adjustment of sensitivity whilst teaching, 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.

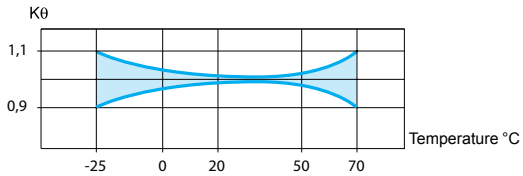
Correction coefficients to apply to the assured operating distance

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.

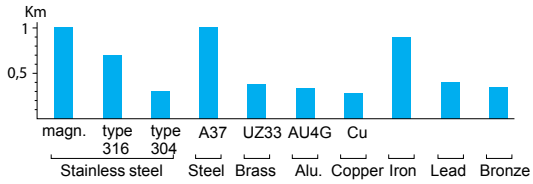
For the calculation of the assured operating distance for different operating conditions, one must take into account the correction coefficients that influence it.

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

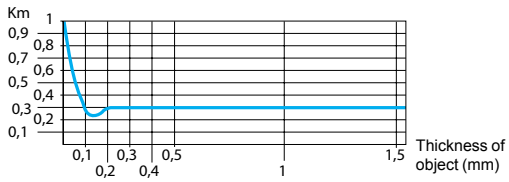
Apply a correction coefficient Kq, determined from the curve shown opposite.



Material of object to be detected

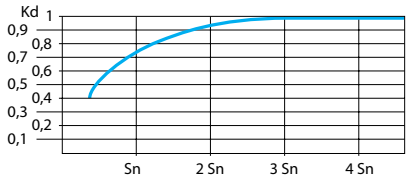
Apply a correction coefficient Km, determined from the diagram shown opposite.

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 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 sensing 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.

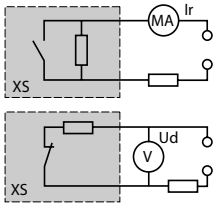
Selecting a sensor for a given application

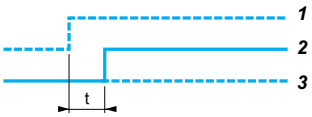
Application characteristics:
- object material and size: iron (Km = 0.9), 30 x 30 mm,
- temperature: 0 to 20 °C (Kθ = 0.98),
- object detection distance: 3 mm ± 1.5 mm, i.e. Sa max. = 4.5 mm,
- assume Kd = 1.

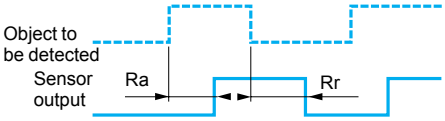
A sensor must be selected for which $\mathbf{Sn \geqslant \frac{Sa}{Kq \times Km \times Kd \times Kt} = \frac{4.5}{0.98 \times 0.9 \times 1 \times 0.9}}$

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*

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

Supply

Sensors for AC circuits (∿ and ≂ models)

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

Sensors for DC circuits

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

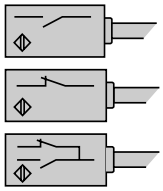
- ■ **AC source** (comprising transformer, rectifier, smoothing capacitor): the supply voltage must be within the operating limits specified for the sensor.

Where the voltage is derived from a single-phase AC supply, the voltage must be rectified and smoothed to ensure that:
- the peak voltage of the DC supply is lower than the maximum voltage rating of the sensor. Peak voltage = nominal voltage x $\sqrt{2}$
- the minimum voltage of the supply is greater than the minimum voltage rating of the sensor, given that :

$\Delta V = (I \times t) / C$
ΔV = max. ripple: 10 % (V),
I = anticipated load current (mA),
t = period of 1 cycle (10 ms full-wave rectified for a 50 Hz supply frequency),
C = capacitance (µF).
As a general rule, use a transformer with a lower secondary voltage (Ue) than the required DC voltage (U).

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

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)

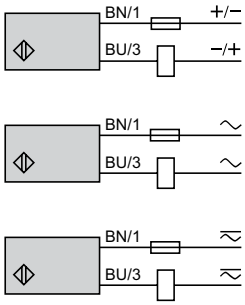
Corresponds to a sensor whose output changes to the open state when an object is present in the operating zone.

- ■ Complementary outputs (NO + NC)

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

Inductive proximity sensors
OsiSense XS

Outputs (continued)

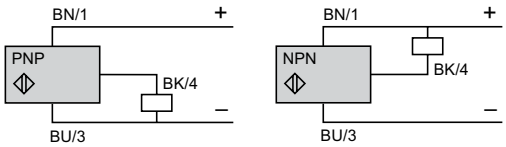


2-wire ⎓ type, non polarised NO or NC output

■ **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.

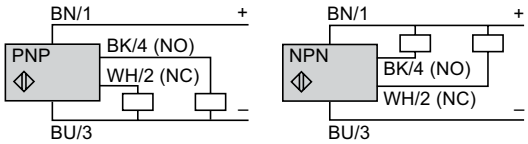
■ **Operating precautions**
- Check the possible effects of residual current and voltage drop on the actuator or input connected,
- For sensors that do not have overload and short-circuit protection (AC or AC/DC symbol), it is essential to connect a 0.4 A "quick-blow" fuse in series with the load.



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

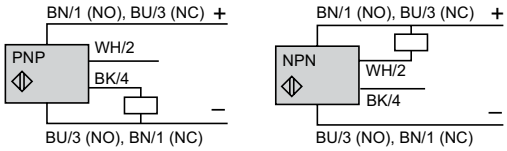
■ **Specific aspects**
- These sensors comprise 2 wires for the DC supply and a 3rd wire for the output signal,
- PNP type: switching the positive side to the load,
- NPN type: switching the negative side to the load.

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



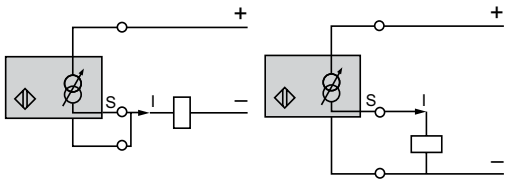
4-wire ⎓ type, complementary NO and NC outputs, PNP or NPN

■ **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.



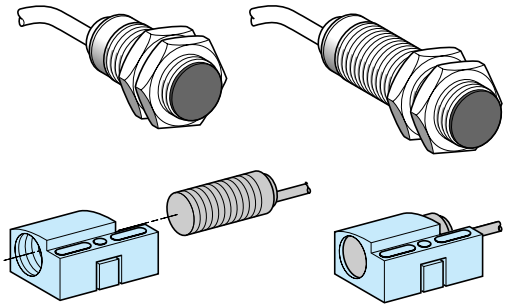
2-wire connection *3-wire connection*

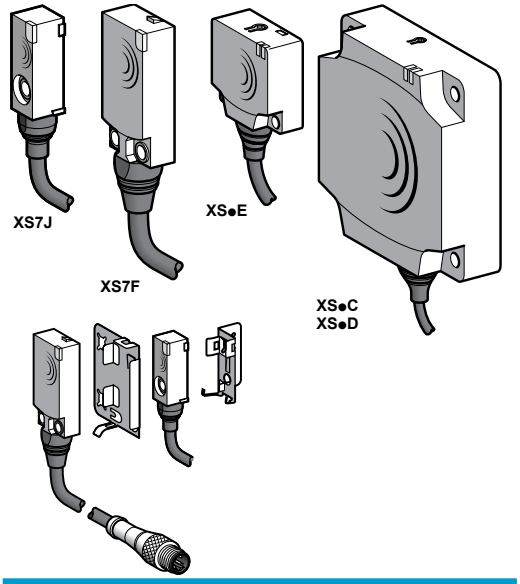
Specific output signals, analogue type

■ 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.

Inductive proximity sensors
OsiSense XS

Features of the various models





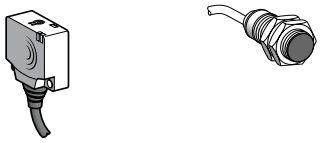
Types of case

■ **Cylindrical case**
- □ Fast installation and setting-up.
- □ Short case and long case, 2-wire ⎓ and 3-wire ⎓ versions available.
- □ Pre-cabled (moulded cable) and various integral connector (M8, M12, 7/8", M18) and remote connector (on flying lead) versions available.
- □ 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 with the flush mountable sensors using teach mode (see page 22).

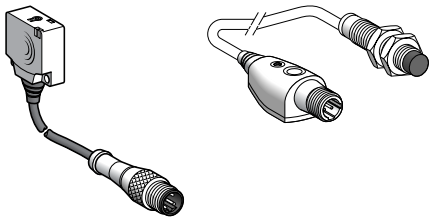
Electrical connection

1



2

3



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

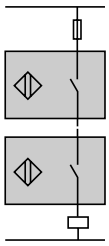
■ **Length of cable**
- □ No limitation up to 200 m or up to a line capacitance of < 100 nF (characteristics of sensor remain unaffected).
- □ In this case, it is important to take into account the voltage drop on the line.

■ **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.**

Setting-up precautions



Connection in series

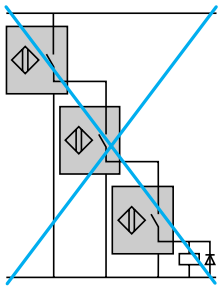
2-wire type sensors

- 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.

$$U\ sensor = \frac{\textbf{U (supply)}}{\textbf{n sensors}}$$

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

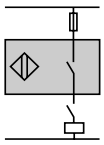
- If only one sensor in the circuit is in the open state, it will be supplied at a voltage almost equal to the supply voltage.
- When in the closed state, a small voltage drop is present across each sensor. The resultant loss of voltage at the load will be the sum of the individual voltage drops and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

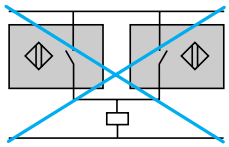
- The following points should be taken into account:
  - When the mechanical contact is open, the sensor is not supplied.
  - When the contact closes, the sensor does not operate until a certain time (t) has elapsed (corresponding to the first-up delay).

Connection in parallel

2-wire type sensors

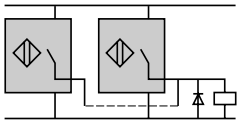
This connection method is not recommended.

- 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.



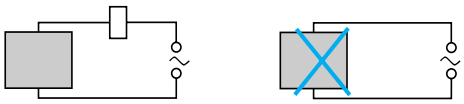
3-wire type sensors

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



AC supply

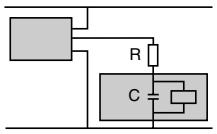
- **2-wire type sensors cannot be connected directly to an AC supply.**
  - This would result in immediate destruction of the sensor and considerable danger to the user.
  - An appropriate load (refer to the instruction sheet supplied with the sensor) must always be connected in series with the sensor.



Capacitive load (C > 0.1 µF)

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

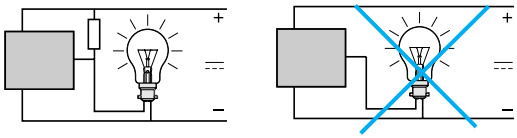
$$R = \frac{U\ supply}{I\ max.\ (sensor)}$$



Load comprising an incandescent lamp

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

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



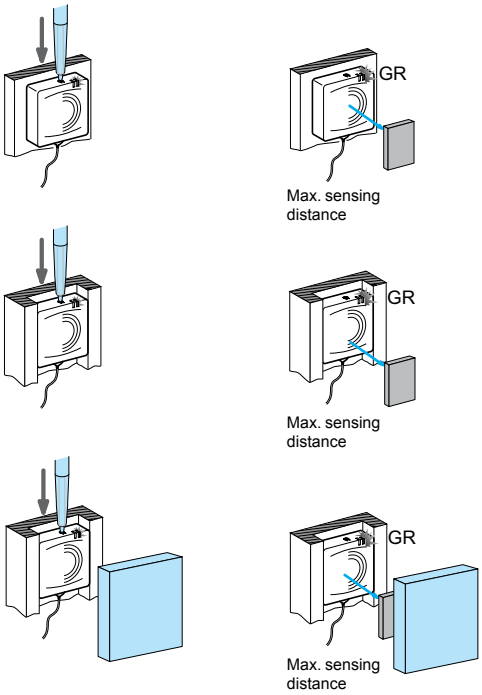
Fast trouble shooting guide

Problem	Possible causes	Remedy
The sensor's output will not change state when a metal object enters the detection zone	On a flush mountable sensor using teach mode: 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 flush mountable sensor using teach mode: 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.
	Sensing 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 DC supplies, when derived from rectified AC, are correctly smoothed (C > 400 µF). ■ Separate AC power cables from low-level DC cables (24 V low level). ■ Where very long distances are involved, use suitable cable: screened and twisted pairs of the correct cross-sectional area.
	Equipment prone to emitting electromagnetic interference	■ Position the sensors as far away as possible from any sources of interference.
	Response time of the sensor too slow for the particular object being detected	■ Check the suitability of the sensor for the position or 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

OsiSense XS

Flush mountability using teach mode: simplicity through innovation



Operating principle

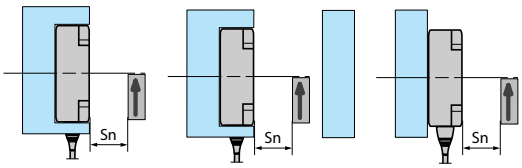
In proposing flush mountable sensors using teach mode, Telemecanique Sensors offers simplicity through innovation.

■ A single product enables flush mounting using teach mode and meets all the requirements for inductive detection of metal objects.
By simply pressing the “Teach mode” button, the sensor automatically acquires optimum configuration for all detection, flush mountability and environment requirements.

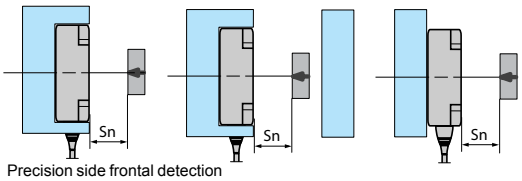
■ Other advantages of flush mountable sensors using teach mode
□ Increased performance:
- sensing distance guaranteed and optimised irrespective of the mounting method, object, environment or background,
- suitable for all metal environments.

□ Simplified use provided by:
- the flush mountability using teach mode technology, associated with the availability of the flattest and most compact sensors on the market, ensures full integration in the machine and limits the risks of mechanical damage,
- mechanical adjustments no longer necessary due to teach mode.

□ Lower costs due to:
- the elimination of adjustment times and complex supports
- 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



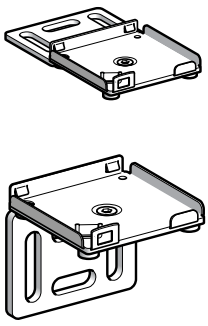
Precision side frontal detection

Precision position detection

All flush mountable inductive proximity sensors using teach mode 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 distance at which the object will be detected as it passes the sensor.
On the flush mountable sensors using teach mode, 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 distance at which the object will be detected as it approaches the sensor.
On the flush mountable sensors using teach mode, the desired detection position can be stored in memory by simply pressing the teach button.



Mounting accessories

Telemecanique Sensors offers a complete, inexpensive range of mounting accessories (clamps, plates, brackets, etc.) that provide solutions for all installation problems.

■ Fixing kits for quick installation or replacement of sensors

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

Inductive proximity sensors

OsiSense XS

Flush mountability using teach mode: simplicity through innovation

XS8E1A1

XS8C1A1

XS8D1A1

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		**XS8E1A1**	**XS8C1A1**	**XS8D1A1**
Page		78		

XS612B2

XS618B2

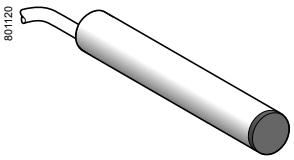
XS630B2

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		**XS612B2**	**XS618B2**	**XS630B2**
Page		76		

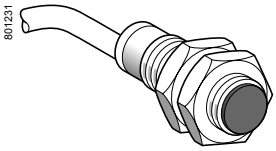
Inductive proximity sensors

OsiSense XS, general purpose

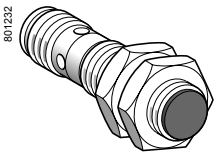
Cylindrical, standard range, flush mountable
Three-wire DC, solid-state output



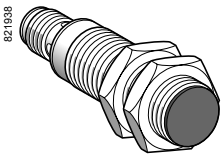
XS506B1●●L2



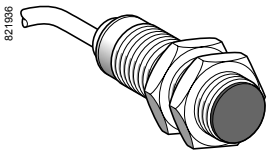
XS508B1●●L2



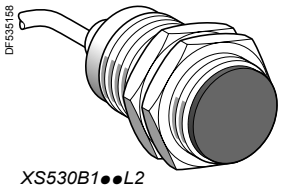
XS512B1●●M12



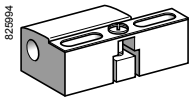
XS518B1●●M12



XS518B1●●●L2



XS530B1●●L2



XSZB1●●

Sensors, 3-wire ⎓ 12-24 V, short case model

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Ø 6.5, plain					
1.5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS506B1PAL2**	0.035
			M8 connector	**XS506B1PAM8**	0.025
			M12 connector	**XS506B1PAM12**	0.025
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS506B1NAL2**	0.035
			M8 connector	**XS506B1NAM8**	0.025
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS506B1PBL2**	0.035
			M8 connector	**XS506B1PBM8**	0.025
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS506B1NBL2**	0.035
			M8 connector	**XS506B1NBM8**	0.025
Ø 8, threaded M8 x 1					
1.5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS508B1PAL2**	0.035
			M8 connector	**XS508B1PAM8**	0.025
			M12 connector	**XS508B1PAM12**	0.025
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS508B1NAL2**	0.035
			M8 connector	**XS508B1NAM8**	0.025
			M12 connector	**XS508B1NAM12**	0.025
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS508B1PBL2**	0.035
			M8 connector	**XS508B1PBM8**	0.025
			M12 connector	**XS508B1PBM12**	0.025
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS508B1NBL2**	0.035
			M8 connector	**XS508B1NBM8**	0.025
			M12 connector	**XS508B1NBM12**	0.025
Ø 12, threaded M12 x 1					
2	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS512B1PAL2**	0.075
			M12 connector	**XS512B1PAM12**	0.035
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS512B1NAL2**	0.075
			M12 connector	**XS512B1NAM12**	0.035
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS512B1PBL2**	0.075
			M12 connector	**XS512B1PBM12**	0.035
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS512B1NBL2**	0.075
			M12 connector	**XS512B1NBM12**	0.035
Ø 18, threaded M18 x 1					
5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS518B1PAL2**	0.120
			M12 connector	**XS518B1PAM12**	0.060
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS518B1NAL2**	0.120
			M12 connector	**XS518B1NAM12**	0.060
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS518B1PBL2**	0.120
			M12 connector	**XS518B1PBM12**	0.060
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS518B1NBL2**	0.120
			M12 connector	**XS518B1NBM12**	0.060
Ø 30, threaded M30 x 1.5					
10	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS530B1PAL2**	0.205
			M12 connector	**XS530B1PAM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS530B1NAL2**	0.205
			M12 connector	**XS530B1NAM12**	0.145
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS530B1PBL2**	0.205
			M12 connector	**XS530B1PBM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS530B1NBL2**	0.205
			M12 connector	**XS530B1NBM12**	0.145

Accessories *(2)*

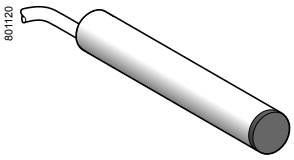
Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø 6.5 (plain)	**XSZB165**	0.005
	Ø 8	**XSZB108**	0.006
	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

*(1) For a 5 m cable replace L2 by **L5**; for a 10 m cable replace L2 by **L10**.*
*Example: **XS508B1PAL2** becomes **XS508B1PAL5** with a 5 m cable.*
(2) For more information, see page 122.

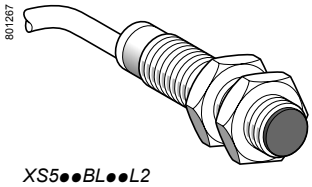
Inductive proximity sensors

OsiSense XS, general purpose

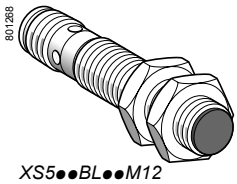
Cylindrical, standard range, flush mountable
Three-wire DC, solid-state output



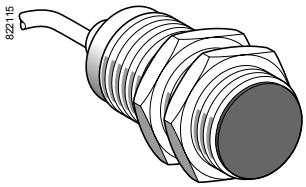
XS506BL●●L2



XS5●●BL●●L2



XS5●●BL●●M12



XS530BL●●L2

Sensors, 3-wire ⎓ 12-48 V, long case model

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Ø 6.5, plain					
1.5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS506BLPAL2**	0.035
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS506BLNAL2**	0.035
Ø 8, threaded M8 x 1					
1.5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS508BLPAL2**	0.035
			M12 connector	**XS508BLPAM12**	0.025
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS508BLNAL2**	0.035
			M12 connector	**XS508BLNAM12**	0.025
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS508BLPBL2**	0.035
			M12 connector	**XS508BLPBM12**	0.025
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS508BLNBL2**	0.035
			M12 connector	**XS508BLNBM12**	0.025
Ø 12, threaded M12 x 1					
2	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS512BLPAL2**	0.075
			M12 connector	**XS512BLPAM12**	0.035
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS512BLNAL2**	0.075
			M12 connector	**XS512BLNAM12**	0.035
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS512BLPBL2**	0.075
			M12 connector	**XS512BLPBM12**	0.035
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS512BLNBL2**	0.075
			M12 connector	**XS512BLNBM12**	0.035
Ø 18, threaded M18 x 1					
5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS518BLPAL2**	0.120
			M12 connector	**XS518BLPAM12**	0.060
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS518BLNAL2**	0.120
			M12 connector	**XS518BLNAM12**	0.060
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS518BLPBL2**	0.120
			M12 connector	**XS518BLPBM12**	0.060
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS518BLNBL2**	0.120
			M12 connector	**XS518BLNBM12**	0.060
Ø 30, threaded M30 x 1.5					
10	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS530BLPAL2**	0.205
			M12 connector	**XS530BLPAM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS530BLNAL2**	0.205
			M12 connector	**XS530BLNAM12**	0.145
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS530BLPBL2**	0.205
			M12 connector	**XS530BLPBM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS530BLNBL2**	0.205
			M12 connector	**XS530BLNBM12**	0.145

Accessories *(2)*

Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø 6.5 (plain)	**XSZB165**	0.005
	Ø 8	**XSZB108**	0.006
	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

*(1) For a 5 m cable replace L2 by **L5**; for a 10 m cable replace L2 by **L10**.*
*Example: **XS508BLPAL2** becomes **XS508BLPAL5** with a 5 m cable.*

(2) For more information, see page 122.

Inductive proximity sensors

OsiSense XS, general purpose
Cylindrical, standard range, flush mountable
Three-wire DC, solid-state output

Characteristics

Sensor type			XS5●●B1●●M8, XS5●●B1●●M12 XS5●●BL●●M8, XS5●●BL●●M12	XS5●●B1●●L2 XS5●●BL●●L2
Product certifications			UL, CSA, CE, E2	
Connection	Connector		M8 on Ø 6.5 and Ø 8, M12 on Ø 8, Ø 12, Ø 18 and Ø 30	–
	Pre-cabled		–	Length: 2 m
Operating zone	Ø 6.5 and 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 effective sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 65 and IP 67	IP 65 and IP 68, double insulation ⧈ (except Ø 6.5 and Ø 8: IP 67)
	Conforming to DIN 40050		IP 69K for Ø 12 to Ø 30	
Storage temperature		**°C**	-40…+85	
Operating temperature		**°C**	-25…+70	
Materials	Case		Nickel plated brass (except XS506 and XS508BL: stainless steel, grade 303)	
	Sensing face		PPS	
	Cable		–	PvR 3 x 0.34 mm² except **XS506** and **XS508**: 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			Yellow LED: 4 viewing ports at 90°	Yellow LED: annular
Rated supply voltage		**V**	⎓ 12…48 for XS5●●BL ⎓ 12…24 for XS5●●B1 with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10…58 for XS5●●BL ⎓ 10…36 for XS5●●B1	
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	**XS506, XS508, XS512**	**Hz**	5000	
	XS518	**Hz**	2000	
	XS530	**Hz**	1000	
Delays	First-up	**ms**	⩽ 10	
	Response	**ms**	⩽ 0.1: **XS506, XS508** and **XS512** ⩽ 0.15: **XS518** ⩽ 0.3: **XS530**	
	Recovery	**ms**	⩽ 0.1: **XS506, XS508** and **XS512** ⩽ 0.35: **XS518** ⩽ 0.7: **XS530**	

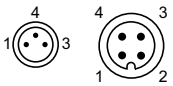
Inductive proximity sensors

OsiSense XS, general purpose
Cylindrical, standard range, flush mountable
Three-wire DC, solid-state output

Wiring schemes

Connector

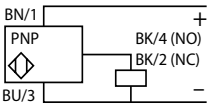
M8 M12



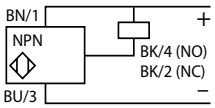
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP



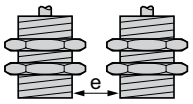
NPN

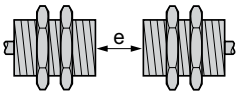


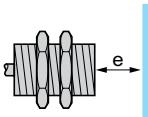
For M8 connector, NO and NC outputs on terminal 4

Setting-up

Minimum mounting distances (mm)

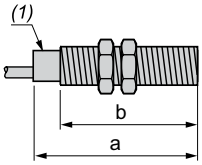






Flush mountable sensors	Side by side	Face to face	Facing a metal object
Ø 6.5	e ≥ 3	e ≥ 18	e ≥ 4.5
Ø 8	e ≥ 3	e ≥ 18	e ≥ 4.5
Ø 12	e ≥ 4	e ≥ 24	e ≥ 6
Ø 18	e ≥ 10	e ≥ 60	e ≥ 15
Ø 30	e ≥ 20	e ≥ 120	e ≥ 30

Dimensions



(1) LED

Sensors		Pre-cabled (mm)		M8 connector (mm)		M12 connector (mm)	
Short case model		a	b	a	b	a	b
Ø 6.5	**XS506B1**	33	–	42	–	45	–
Ø 8	**XS508B1**	33	25	42	26	45	24
Ø 12	**XS512B1**	35	25	–	–	50	30
Ø 18	**XS518B1**	39	28	–	–	50	28
Ø 30	**XS530B1**	43	32	–	–	55	32

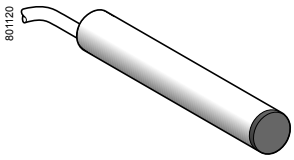
Sensors		Pre-cabled (mm)		M12 connector (mm)	
Long case model		a	b	a	b
Ø 6.5	**XS506BL**	51	–	–	–
Ø 8	**XS508BL**	51	42	62	40
Ø 12	**XS512BL**	53	42	62	42
Ø 18	**XS518BL**	62	52	74	52
Ø 30	**XS530BL**	62	52	74	52

Inductive proximity sensors

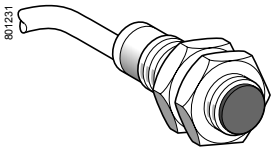
OsiSense XS, general purpose

Cylindrical, standard range, flush mountable

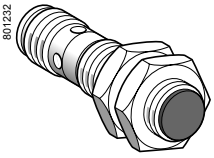
Two-wire DC



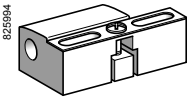
XS506BS●●L2



XS512BS●●L2



XS5●●BS●●M12



XSZB1●●

Sensors, 2-wire ⎓ 12-24 V, short case model

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
Ø 6.5, plain				
1.5	NO terminals 1 & 4 *(2)*	Pre-cabled (L = 2 m) *(1)*	**XS506BSCAL2**	0.035
		Remote M12 connector	**XS506BSCAL01M12**	0.050
	NC	Pre-cabled (L = 2 m) *(1)*	**XS506BSCBL2**	0.035
Ø 8, threaded M8 x 1				
1.5	NO terminals 1 & 4 *(2)*	Pre-cabled (L = 2 m) *(1)*	**XS508BSCAL2**	0.035
		Remote M12 connector	**XS508BSCAL01M12**	0.050
		Remote M12 connector	**XS508BSCAL08M12**	0.050
	NC	Pre-cabled (L = 2 m) *(1)*	**XS508BSCBL2**	0.035
		Remote M12 connector	**XS508BSCBL01M12**	0.050
Ø 12, threaded M12 x 1				
2	NO	Pre-cabled (L = 2 m) *(1)*	**XS512BSDAL2**	0.075
		M12 connector	**XS512BSDAM12**	0.035
	NO terminals 1 & 4 *(2)*	M12 connector	**XS512BSCAM12**	0.035
		Remote M12 connector	**XS512BSCAL08M12**	0.060
	NC	Pre-cabled (L = 2 m) *(1)*	**XS512BSDBL2**	0.075
		M12 connector	**XS512BSDBM12**	0.035
Ø 18, threaded M18 x 1				
5	NO	Pre-cabled (L = 2 m) *(1)*	**XS518BSDAL2**	0.120
		M12 connector	**XS518BSDAM12**	0.060
	NO terminals 1 & 4 *(2)*	M12 connector	**XS518BSCAM12**	0.060
		Remote M12 connector	**XS518BSCAL08M12**	0.085
	NC	Pre-cabled (L = 2 m) *(1)*	**XS518BSDBL2**	0.120
		M12 connector	**XS518BSDBM12**	0.060
Ø 30, threaded M30 x 1.5				
10	NO	Pre-cabled (L = 2 m) *(1)*	**XS530BSDAL2**	0.205
		M12 connector	**XS530BSDAM12**	0.145
	NO terminals 1 & 4 *(2)*	M12 connector	**XS530BSCAM12**	0.145
		Remote M12 connector	**XS530BSCAL08M12**	0.170
	NC	Pre-cabled (L = 2 m) *(1)*	**XS530BSDBL2**	0.205
		M12 connector	**XS530BSDBM12**	0.145

Accessories *(3)*

Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø 6.5 (plain)	**XSZB165**	0.005
	Ø 8	**XSZB108**	0.006
	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

*(1) For a 5 m cable replace L2 by **L5**; for a 10 m cable replace L2 by **L10**.*
*Example: XS508BSCAL2 becomes **XS508BSCAL5** with a 5 m cable.*

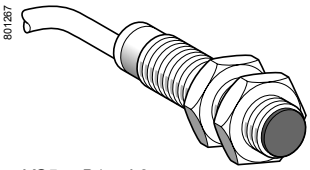
(2) The NO output is connected to terminals 1 and 4 of the M12 connector.

(3) For more information, see page 122.

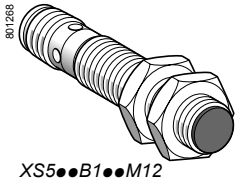
Inductive proximity sensors

OsiSense XS, general purpose

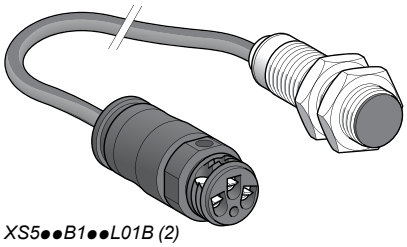
Cylindrical, standard range, flush mountable
Two-wire DC



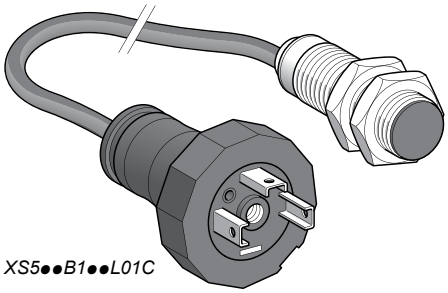
XS5●●B1●●L2



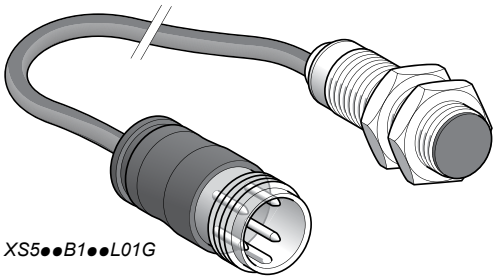
XS5●●B1●●M12



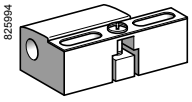
XS5●●B1●●L01B (2)



XS5●●B1●●L01C



XS5●●B1●●L01G



XSZB1●●

Sensors, 2-wire ⎓ 12-48 V, long case model

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
Ø 8, threaded M8 x 1				
1.5	NO	Pre-cabled (L = 2 m) *(1)*	**XS508B1DAL2**	0.035
		Remote M12 connector	**XS508B1DAL08M12**	0.050
		M12 connector	**XS508B1DAM12**	0.025
	NO terminals 1 & 4 *(3)*	M12 connector	**XS508B1CAM12**	0.025
		Remote M12 connector	**XS508B1CAL08M12**	0.050
	NC	Pre-cabled (L = 2 m) *(1)*	**XS508B1DBL2**	0.035
		M12 connector	**XS508B1DBM12**	0.025
Ø 12, threaded M12 x 1				
2	NO	Pre-cabled (L = 2 m) *(1)*	**XS512B1DAL2**	0.075
		Remote 7/8" connector	**XS512B1DAL08U78**	0.050
		M12 connector	**XS512B1DAM12**	0.035
	NO terminals 1 & 4 *(3)*	M12 connector	**XS512B1CAM12**	0.035
		Remote M12 connector	**XS512B1CAL08M12**	0.060
	NC	Pre-cabled (L = 2 m) *(1)*	**XS512B1DBL2**	0.075
		M12 connector	**XS512B1DBM12**	0.035
		Remote M12 connector	**XS512B1DBL08M12**	0.060
Ø 18, threaded M18 x 1				
5	NO	Pre-cabled (L = 2 m) *(1)*	**XS518B1DAL2**	0.120
		Low temperature version (-40 °C)	**XS518B1DAL2TF** *(5)*	0.120
		Remote screw terminal connector *(2)*	**XS518B1DAL01B**	0.085
		Remote EN 175301-803-A connector	**XS518B1DAL01C**	0.085
		Remote M18 connector	**XS518B1DAL01G**	0.085
		M12 connector	**XS518B1DAM12**	0.060
	NO terminals 1 & 4 *(3)*	M12 connector	**XS518B1CAM12**	0.060
		Remote M12 connector	**XS518B1CAL08M12**	0.085
	NC	Pre-cabled (L = 2 m) *(1)*	**XS518B1DBL2**	0.120
		M12 connector	**XS518B1DBM12**	0.060
		Remote M12 connector	**XS518B1DBL08M12**	0.085
		Remote screw terminal connector *(2)*	**XS518B1DBL01B**	0.120
Ø 30, threaded M30 x 1.5				
10	NO	Pre-cabled (L = 2 m) *(1)*	**XS530B1DAL2**	0.205
		Low temperature version (-40 °C)	**XS530B1DAL2TF** *(5)*	0.205
		M12 connector	**XS530B1DAM12**	0.145
		Remote screw terminal connector *(2)*	**XS530B1DAL01B**	0.205
		Remote EN 175301-803-A connector	**XS530B1DAL01C**	0.205
		Remote M18 connector	**XS530B1DAL01G**	0.205
	NO terminals 1 & 4 *(3)*	M12 connector	**XS530B1CAM12**	0.145
		Remote M12 connector	**XS530B1CAL08M12**	0.170
	NC	Pre-cabled (L = 2 m) *(1)*	**XS530B1DBL2**	0.205
		M12 connector	**XS530B1DBM12**	0.145
		Remote screw terminal connector *(2)*	**XS530B1DBL01B**	0.205

Accessories *(4)*

Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø 8	**XSZB108**	0.006
	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

*(1) For a 5 m cable replace L2 by **L5**; for a 10 m cable replace L2 by **L10**.*
*Example: XS508B1DAL2 becomes **XS508B1DAL5** with a 5 m cable.*
(2) Protective cable gland included with sensor.
(3) The NO output is connected to terminals 1 and 4 of the M12 connector.
(4) For more information, see page 122.
*(5) For a 5 m cable replace L2 by **L5**.*
*Example: XS518B1DAL2TF becomes **XS518B1DAL5TF** with a 5 m cable.*
For a PUR cable, replace the letter L by P in the reference.
*Example: XS518B1DAL2TF becomes **XS518B1DAP2TF**.*
*For a 5 m PUR cable, replace P2 by **P5**.*
*Example: XS518B1DAP2TF becomes **XS518B1DAP5TF** with a 5 m PUR cable.*

Inductive proximity sensors

OsiSense XS, general purpose
Cylindrical, standard range, flush mountable
Two-wire DC

Characteristics

Sensor type			XS5●●B1●●M12, XS5●●BS●●M12	XS5●●B1D●L2, XS5●●BS●●L2
Product certifications			UL, CSA, CE	
Connection	Connector		M12	–
	Pre-cabled		–	Length: 2 m
	Remote connector		M12 (L01M12), screw terminal (L01B), EN 175301-803-A (L01C) and M18 (L01G) remote connectors on 0.15 m flying lead M12 (L08M12) and 7/8" (L08U78) remote connectors on 0.80 m flying lead	
Operating zone	Ø 6.5	**mm**	**0…1.2**	
	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 effective sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 65 and IP 67	IP 65 and IP 68, double insulation ⧈ (except Ø 6.5 and Ø 8: IP 67)
Storage temperature		**°C**	-40…+85	
Operating temperature		**°C**	-25…+70; TF products: -40…+70	
Materials	Case		Nickel plated brass (except XS506 and XS508B1: stainless steel, grade 303)	
	Sensing face		PPS	
	Cable		–	PvR 2 x 0.34 mm² (except XS506 and XS508: 2 x 0.11 mm²) PUR available *(1)*
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 non polarised for XS5●●B1● ⎓ 12…24 non polarised for XS5●●BS (except Ø 6.5 short and Ø 8 short: polarised) with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10…58 for XS5●●B1● ⎓ 10…36 for XS5●●BS	
Switching capacity		**mA**	1.5...100 with overload and short-circuit protection	
Voltage drop, closed state		**V**	≤ 4.2	
Residual current, open state		**mA**	≤ 0.5	
Maximum switching frequency	**XS506, XS508**	**Hz**	1000 for XS5●●BS, 1400 for XS5●●B1●	
	XS512	**Hz**	1000	
	XS518	**Hz**	1200	
	XS530	**Hz**	1300	
Delays	First-up	**ms**	≤ 10	
	Response	**ms**	≤ 0.5: **XS506, XS508** and **XS512** ≤ 0.6: **XS518** ≤ 0.6: **XS530**	
	Recovery	**ms**	≤ 0.2 (except **XS530** ≤ 0.4)	

*(1) For PUR cable, replace the letter L in the reference by **P**. Example: XS506BSCAL2 becomes **XS506BSCAP2** with a PUR cable.*

Inductive proximity sensors

OsiSense XS, general purpose
Cylindrical, standard range, flush mountable
Two-wire DC

Wiring schemes

Connector

M12

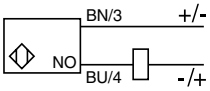
Pre-cabled

BU: Blue
BN: Brown

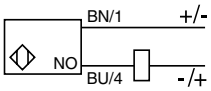
2-wire ⎓ non polarised

NO output

XS5●●B●DA●●●

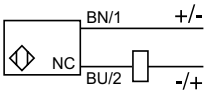


XS5●●B1CA●●●



NC output

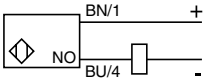
XS5●●B●DB●●●



2-wire ⎓ polarised

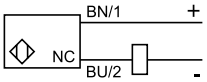
NO output

XS5●●BSCA●●●



NC output

XS5●●BSCB●●●

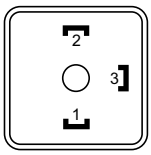


Remote connectors L01B, L01C, L01G

Screw terminal (L01B)

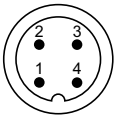
The terminal numbering differs according to the version (2-wire ⎓, 3-wire ⎓, 2-wire ∿).

EN 175301-803-A (L01C)



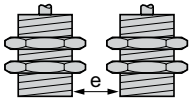
The NO or NC outputs are connected to terminal 2.

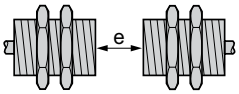
M18 (L01G)

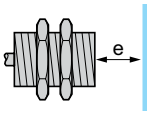


Setting-up

Minimum mounting distances (mm)

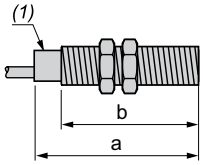






	Side by side	Face to face	Facing a metal object
Ø 6.5	e ⩾ 3	e ⩾ 18	e ⩾ 4.5
Ø 8	e ⩾ 3	e ⩾ 18	e ⩾ 4.5
Ø 12	e ⩾ 4	e ⩾ 24	e ⩾ 6
Ø 18	e ⩾ 10	e ⩾ 60	e ⩾ 15
Ø 30	e ⩾ 20	e ⩾ 120	e ⩾ 30

Dimensions



(1) LED

Sensors		Pre-cabled (mm)		M8 connector (mm)		M12 connector (mm)	
Short case model		**a**	**b**	**a**	**b**	**a**	**b**
Ø 6.5	**XS506BS**	33	–	42	–	45	–
Ø 8	**XS508BS**	33	25	42	26	45	24
Ø 12	**XS512BS**	35	25	–	–	50	30
Ø 18	**XS518BS**	39	28	–	–	50	28
Ø 30	**XS530BS**	43	32	–	–	55	32

Sensors		Pre-cabled (mm)		M12 connector (mm)	
Long case model		**a**	**b**	**a**	**b**
Ø 8	**XS508B1**	51	42	62	40
Ø 12	**XS512B1**	54	42	61	42
Ø 18	**XS518B1**	56	44	64	44
Ø 30	**XS530B1**	54	41	72	41

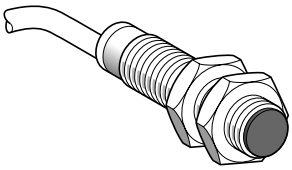
Inductive proximity sensors

OsiSense XS, general purpose

Cylindrical, standard range, flush mountable

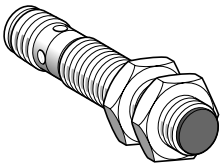
Two-wire AC or DC *(1)*

801277



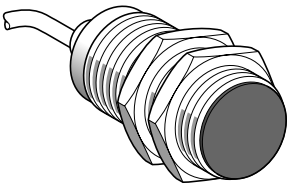
XS5●●B1M●L2

801278



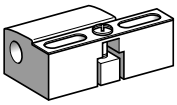
XS5●●B1M●U20

822115



XS530B1●●L2

825994



XSZB1●●

Sensors, 2-wire ≂ 24-240 V, long case model

Ø 12, threaded M12 x 1

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
2	NO	Pre-cabled (L = 2 m) *(2)*	**XS512B1MAL2**	0.075
		1/2"-20 UNF connector	**XS512B1MAU20**	0.025
	NC	Pre-cabled (L = 2 m) *(2)*	**XS512B1MBL2**	0.075
		1/2"-20 UNF connector	**XS512B1MBU20**	0.025

Ø 18, threaded M18 x 1

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
5	NO	Pre-cabled (L = 2 m) *(2)*	**XS518B1MAL2**	0.100
		1/2"-20 UNF connector	**XS518B1MAU20**	0.060
	NC	Pre-cabled (L = 2 m) *(2)*	**XS518B1MBL2**	0.100
		1/2"-20 UNF connector	**XS518B1MBU20**	0.060

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
10	NO	Pre-cabled (L = 2 m) *(2)*	**XS530B1MAL2**	0.205
		1/2"-20 UNF connector	**XS530B1MAU20**	0.145
	NC	Pre-cabled (L = 2 m) *(2)*	**XS530B1MBL2**	0.205
		1/2"-20 UNF connector	**XS530B1MBU20**	0.145

Accessories *(3)*

Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

(1) Ø 8 plastic, double insulation version available (see page 66).

*(2) For a 5 m cable replace L2 by **L5**; for a 10 m cable replace L2 by **L10**.*
*Example: **XS512B1MAL2** becomes **XS512B1MAL5** with a 5 m cable.*

(3) For more information, see page 122.

Inductive proximity sensors

OsiSense XS, general purpose
Cylindrical, standard range, flush mountable
Two-wire AC or DC

Characteristics

Sensor type			XS5●●B1M●U20	XS5●●B1M●L2
Product certifications			UL, CSA, CE	
Connection	Connector		1/2"-20 UNF	–
	Pre-cabled		–	Length: 2 m
Operating zone	Ø 12	**mm**	**0…1.6**	
	Ø 18	**mm**	**0…4**	
	Ø 30	**mm**	**0…8**	
Differential travel		**%**	1...15 of effective sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 65 and IP 67	IP 65 and IP 68, double insulation ⧈
	Conforming to DIN 40050		IP 69K	
Storage temperature		**°C**	-40…+85	
Operating temperature		**°C**	-25…+70	
Materials	Case		Nickel plated brass	
	Sensing face		PPS	
	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	**XS512B1M●●●**	**mA**	5…200 *(1)*	
	XS518B1M●●●, XS530B1M●●●	**mA**	∿ 5…300 or ⎓ 5…200 *(1)*	
Voltage drop, closed state		**V**	⩽ 5.5	
Residual current, open state		**mA**	⩽ 0.8	
Maximum switching frequency	**XS512B1●●●, XS518B1M●●●**	**Hz**	∿ 25 or ⎓ 1000	
	XS530B1M●●●	**Hz**	∿ 25 or ⎓ 500	
Delays	First-up	**ms**	⩽ 20 **XS512B1M●●●** ⩽ 25 **XS518B1M●●●** and **XS530B1M●●●**	
	Response	**ms**	⩽ 0.5	
	Recovery	**ms**	⩽ 0.2 **XS512B1M●●●** ⩽ 0.5 **XS518B1M●●●** ⩽ 2 **XS518B1M●●●**	

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

Wiring schemes

Connector

1/2"-20 UNF

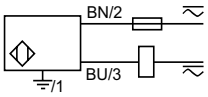
⎓: 2
⏚: 1
⎓: 3

Pre-cabled

BU: Blue
BN: Brown

2-wire ∿ or ⎓

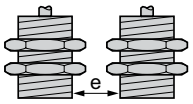
NO or NC output

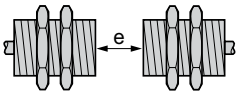


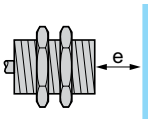
⏚: on connector models only

Setting-up

Minimum mounting distances (mm)

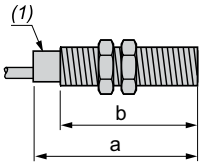






Sensor	Side by side	Face to face	Facing a metal object
Ø 12	e ⩾ 8	e ⩾ 48	e ⩾ 12
Ø 18	e ⩾ 16	e ⩾ 100	e ⩾ 25
Ø 30	e ⩾ 30	e ⩾ 180	e ⩾ 45

Dimensions



(1) LED

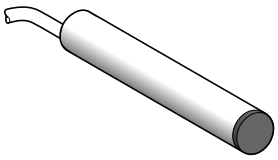
Sensor	XS6 Pre-cabled (mm) a	b	Connector (mm) a	b
XS512B1M	53	42	62	42
XS518B1M	62	52	73	52
XS530B1M	62	52	73	52

Inductive proximity sensors

OsiSense XS, general purpose

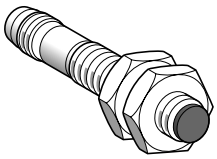
Cylindrical, increased range, flush mountable
Three-wire DC, solid-state output

801120



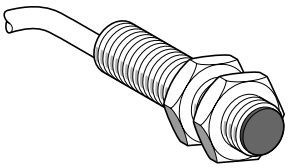
XS106B3●●L2

801167



XS108B3●●M8

801214



XS112B3●●L2

Sensors, 3-wire ⎓ 12-24 V, short case model

Sensing distance (Sn) mm	Function	Output	Connection	Sold in lots of	Unit reference	Weight kg
Ø 6.5, plain						
2.5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS106B3PAL2**	0.060
			M8 connector	1	**XS106B3PAM8**	0.030
			M12 connector	1	**XS106B3PAM12**	0.050
			Pre-cabled (L = 2 m)	20	**XS106B3PAL2TQ**	0.980
			M8 connector	20	**XS106B3PAM8TQ**	0.320
		NPN	Pre-cabled (L = 2 m)	1	**XS106B3NAL2**	0.060
			M8 connector	1	**XS106B3NAM8**	0.030
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS106B3PBL2**	0.060
			M8 connector	1	**XS106B3PBM8**	0.030
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS106B3NBL2**	0.060
			M8 connector	1	**XS106B3NBM8**	0.030
Ø 8, threaded M8 x 1						
2.5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS108B3PAL2**	0.070
			M8 connector	1	**XS108B3PAM8**	0.030
			M12 connector	1	**XS108B3PAM12**	0.060
			Pre-cabled (L = 2 m)	20	**XS108B3PAL2TQ**	1.120
			M8 connector	20	**XS108B3PAM8TQ**	0.460
			M12 connector	20	**XS108B3PAM12TQ**	0.940
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS108B3NAL2**	0.070
			M8 connector	1	**XS108B3NAM8**	0.030
			M12 connector	1	**XS108B3NAM12**	0.060
			Pre-cabled (L = 2 m)	20	**XS108B3NAL2TQ**	1.120
			M8 connector	20	**XS108B3NAM8TQ**	0.460
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS108B3PBL2**	0.070
			M8 connector	1	**XS108B3PBM8**	0.030
			M12 connector	1	**XS108B3PBM12**	0.060
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS108B3NBL2**	0.070
			M8 connector	1	**XS108B3NBM8**	0.030
			M12 connector	1	**XS108B3NBM12**	0.060
Ø 12, threaded M12 x 1						
4	NO	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS112B3PAL2**	0.090
			M12 connector	1	**XS112B3PAM12**	0.030
			Pre-cabled (L = 2 m)	20	**XS112B3PAL2TQ**	1.600
			M12 connector	20	**XS112B3PAM12TQ**	0.470
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS112B3NAL2**	0.090
			M12 connector	1	**XS112B3NAM12**	0.030
			Pre-cabled (L = 2 m)	20	**XS112B3NAL2TQ**	1.600
			M12 connector	20	**XS112B3NAM12TQ**	0.470
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS112B3PBL2**	0.090
			M12 connector	1	**XS112B3PBM12**	0.030
			M12 connector	20	**XS112B3PBM12TQ**	0.470
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS112B3NBL2**	0.090
			M12 connector	1	**XS112B3NBM12**	0.030

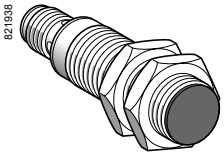
*(1) For a 5 m long cable replace L2 by **L5**.*
*Example: XS106B3PAL2 becomes **XS106B3PAL5** with a 5 m cable.*

Characteristics: page 37
Dimensions: page 37
Connections: page 37
Setting-up: page 37

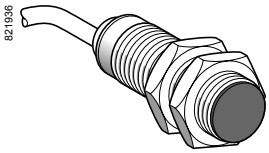
Inductive proximity sensors

OsiSense XS, general purpose

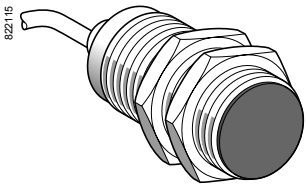
Cylindrical, increased range, flush mountable
Three-wire DC, solid-state output



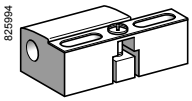
XS118B3●●M12



XS118B3●●L2



XS130B3●●L2



XSZB1●●

Sensors, 3-wire ⎓ 12-24 V, short case model *(continued)*

Sensing distance (Sn) mm	Function	Output	Connection	Sold in lots of	Unit reference	Weight kg
Ø 18, threaded M18 x 1						
8	NO	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS118B3PAL2**	0.110
			M12 connector	1	**XS118B3PAM12**	0.060
			Pre-cabled (L = 2 m)	20	**XS118B3PAL2TQ**	2.000
			M12 connector	20	**XS118B3PAM12TQ**	1.140
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS118B3NAL2**	0.110
			M12 connector	1	**XS118B3NAM12**	0.060
			Pre-cabled (L = 2 m)	20	**XS118B3NAL2TQ**	2.000
			M12 connector	20	**XS118B3NAM12TQ**	1.140
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS118B3PBL2**	0.110
			M12 connector	1	**XS118B3PBM12**	0.060
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS118B3NBL2**	0.110
			M12 connector	1	**XS118B3NBM12**	0.060
Ø 30, threaded M30 x 1.5						
15	NO	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS130B3PAL2**	0.180
			M12 connector	1	**XS130B3PAM12**	0.130
			Pre-cabled (L = 2 m)	20	**XS130B3PAL2TQ**	3.360
			M12 connector	20	**XS130B3PAM12TQ**	2.000
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS130B3NAL2**	0.180
			M12 connector	1	**XS130B3NAM12**	0.130
			M12 connector	20	**XS130B3NAM12TQ**	2.000
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS130B3PBL2**	0.180
			M12 connector	1	**XS130B3PBM12**	0.130
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS130B3NBL2**	0.180
			M12 connector	1	**XS130B3NBM12**	0.130

Accessories *(2)*

Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø 6.5 (plain)	**XSZB165**	0.005
	Ø 8 (M8 x1)	**XSZB108**	0.006
	Ø 12 (M12 x1)	**XSZB112**	0.006
	Ø 18 (M18 x1)	**XSZB118**	0.010
	Ø 30 (M30 x 1.5)	**XSZB130**	0.020

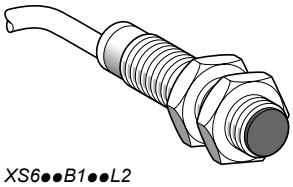
*(1) For a 5 m cable, replace L2 by **L5**.*
*Example: XS118B3PAL2 becomes **XS118B3PAL5** with a 5 m cable.*
(2) For more information, see page 122.

Inductive proximity sensors

OsiSense XS, general purpose

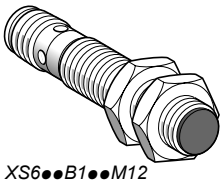
Cylindrical, increased range, flush mountable
Three-wire DC, solid-state output

801267

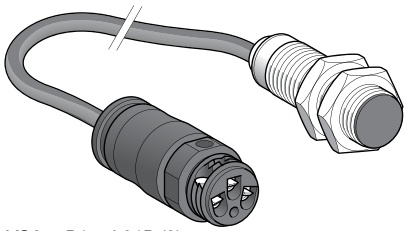


XS6●●B1●●L2

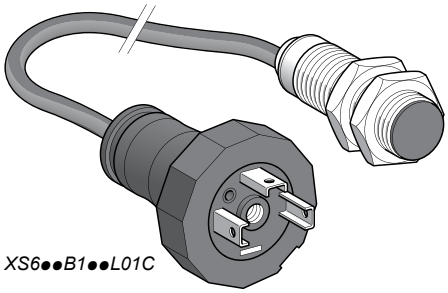
801268



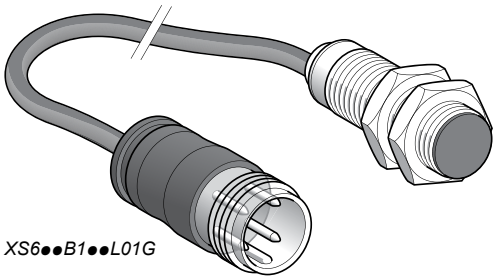
XS6●●B1●●M12



XS6●●B1●●L01B (2)

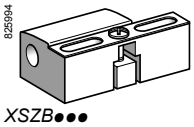


XS6●●B1●●L01C



XS6●●B1●●L01G

825994



XSZB●●●

Sensors, 3-wire ⎓ 12-48 V, long case model

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Ø 8, threaded M8 x 1					
2.5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS608B1PAL2**	0.035
			M12 connector	**XS608B1PAM12**	0.015
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS608B1NAL2**	0.035
			M12 connector	**XS608B1NAM12**	0.015
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS608B1PBL2**	0.035
			M12 connector	**XS608B1PBM12**	0.015
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS608B1NBL2**	0.035
			M12 connector	**XS608B1NBM12**	0.015
Ø 12, threaded M12 x 1					
4	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS612B1PAL2**	0.075
			M12 connector	**XS612B1PAM12**	0.020
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS612B1NAL2**	0.075
			M12 connector	**XS612B1NAM12**	0.020
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS612B1PBL2**	0.075
			M12 connector	**XS612B1PBM12**	0.020
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS612B1NBL2**	0.075
			M12 connector	**XS612B1NBM12**	0.020
Ø 18, threaded M18 x 1					
8	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS618B1PAL2**	0.100
			M12 connector	**XS618B1PAM12**	0.040
			Remote screw terminal connector	**XS618B1PAL01B** *(2)*	0.100
			Remote EN 175301-803-A connector	**XS618B1PAL01C**	0.100
			Remote M18 connector	**XS618B1PAL01G**	0.100
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS618B1NAL2**	0.100
			M12 connector	**XS618B1NAM12**	0.040
			Remote screw terminal connector	**XS618B1NAL01B** *(2)*	0.100
			Remote EN 175301-803-A connector	**XS618B1NAL01C**	0.100
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS618B1PBL2**	0.100
			M12 connector	**XS618B1PBM12**	0.040
			Remote screw terminal connector	**XS618B1PBL01B** *(2)*	0.100
			Remote EN 175301-803-A connector	**XS618B1PBL01C**	0.100
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS618B1NBL2**	0.100
			M12 connector	**XS618B1NBM12**	0.040
			Remote screw terminal connector	**XS618B1NBL01B** *(2)*	0.100
			Remote EN 175301-803-A connector	**XS618B1NBL01C**	0.100
Ø 30, threaded M30 x 1.5					
15	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS630B1PAL2**	0.205
			M12 connector	**XS630B1PAM12**	0.145
			Remote screw terminal connector	**XS630B1PAL01B** *(2)*	0.205
			Remote EN 175301-803-A connector	**XS630B1PAL01C**	0.205
			Remote M18 connector	**XS630B1PAL01G**	0.205
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS630B1NAL2**	0.205
			M12 connector	**XS630B1NAM12**	0.145
			Remote screw terminal connector	**XS630B1NAL01B** *(2)*	0.205
			Remote EN 175301-803-A connector	**XS630B1NAL01C**	0.205
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS630B1PBL2**	0.205
			M12 connector	**XS630B1PBM12**	0.145
			Remote screw terminal connector	**XS630B1PBL01B** *(2)*	0.205
			Remote EN 175301-803-A connector	**XS630B1PBL01C**	0.205
			Remote M18 connector	**XS630B1PBL01G**	0.205
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS630B1NBL2**	0.205
			M12 connector	**XS630B1NBM12**	0.145
			Remote screw terminal connector	**XS630B1NBL01B** *(2)*	0.205
			Remote EN 175301-803-A connector	**XS630B1NBL01C**	0.205

Accessories *(3)*

Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø 8	**XSZB108**	0.006
	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: XS608B1PAL2 becomes **XS608B1PAL5** with a 5 m cable.*
(2) Protective cable gland included with sensor.
(3) For more information, see page 122.

Inductive proximity sensors

OsiSense XS, general purpose
Cylindrical, increased range, flush mountable
Three-wire DC, solid-state output

Characteristics

Sensor type			XS1/XS6●●B●●●M8	XS1/XS6●●B●●●M12	XS1/XS6●●B●●●L2
Product certifications			UL, CSA, CE, E2		
Connection	Connector		M8	M12	–
	Pre-cabled		–	–	Length 2 m
	Remote connector		Screw terminal (L01B), EN 175301-803-A (L01C) and M18 (L01G) remote connectors on 0.15 m flying lead		
Operating zone *(1)*	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 effective sensing distance (Sr)		
Degree of protection	Conforming to IEC 60529		IP 65 and IP 67		IP 65 and IP 68, double insulation ⧈ except Ø 6.5 and Ø 8: IP 67
	Conforming to DIN 40050		IP 69K for Ø 12, 18 and 30 sensors		
Storage temperature		**°C**	-40…+85		
Operating temperature		**°C**	-25…+70		
Materials	Case		Nickel plated brass (except XS608: stainless steel, grade 303)		
	Sensing face		PPS		
	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**	**XS1**: ⎓ 12…24 with protection against reverse polarity **XS6**: ⎓ 12…48 with protection against reverse polarity		
Voltage limits (including ripple)		**V**	**XS1:** ⎓ 10…36; **XS6:** ⎓ 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	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 6.5, Ø 8 and Ø 12, ⩽ 0.3 for Ø 18, ⩽ 0.6 for Ø 30		
	Recovery	**ms**	⩽ 0.2 for Ø 6.5, Ø 8 and Ø 12, ⩽ 0.7 for Ø 18, ⩽ 1.4 for Ø 30		

(1) Detection curves, see page 126.

Wiring schemes

Connector *(1)*

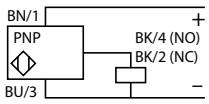
M8

M12

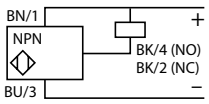
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP



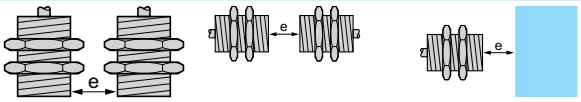
NPN



For M8 connector, NO and NC outputs on terminal 4

Setting-up

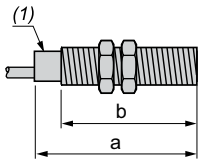
Minimum mounting distances (mm)



Sensors	Side by side	Face to face	Facing a metal object
Ø 6.5	e ⩾ 5	e ⩾ 30	e ⩾ 8
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

(1) For pin arrangement of remote connectors L01B, L01C and L01G, see page 31.

Dimensions



(1) LED

Sensors		Pre-cabled (mm)		M8 connector (mm)		M12 connector (mm)	
Short case model		**a**	**b**	**a**	**b**	**a**	**b**
Ø 6.5	**XS106B3**	33	–	42	–	45	–
Ø 8	**XS108B3**	33	25	42	26	45	24
Ø 12	**XS112B3**	35	25	–	–	50	30
Ø 18	**XS118B3**	39	28	–	–	50	28
Ø 30	**XS130B3**	43	32	–	–	55	32

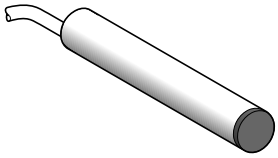
Sensors		Pre-cabled (mm)		M12 connector (mm)	
Long case model		**a**	**b**	**a**	**b**
Ø 8	**XS608B1**	51	42	62	40
Ø 12	**XS612B1**	53	42	62	42
Ø 18	**XS618B1**	62	52	74	52
Ø 30	**XS630B1**	62	52	74	52

Inductive proximity sensors

OsiSense XS, general purpose

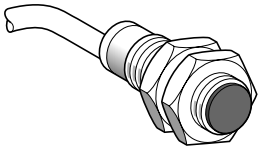
Cylindrical, increased range, flush mountable
Two-wire DC, solid-state output

801120



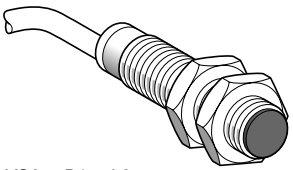
XS606B3●●L2

801231



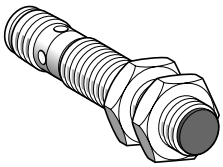
XS612B3●●L2

801267



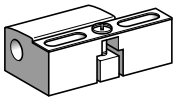
XS6●●B1●●L2

801268



XS6●●B1●●M12

825994



XSZB1●●

Sensors, 2-wire ⎓ 12-24 V, short case model

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
Ø 6.5, plain				
2.5	NO	Pre-cabled (L = 2 m) *(1)*	**XS606B3CAL2**	0.060
		Remote M12 connector	**XS606B3CAL01M12**	0.070
	NC	Pre-cabled (L = 2 m) *(1)*	**XS606B3CBL2**	0.060
Ø 8, threaded M8 x 1				
2.5	NO	Pre-cabled (L = 2 m) *(1)*	**XS608B3CAL2**	0.070
		Remote M12 connector	**XS608B3CAL01M12**	0.070
	NC	Pre-cabled (L = 2 m) *(1)*	**XS608B3CBL2**	0.070
		Remote M12 connector	**XS608B3CBL01M12**	0.070
Ø 12, threaded M12 x 1				
4	NO	Pre-cabled (L = 2 m) *(1)*	**XS612B3DAL2**	0.090
		M12 connector	**XS612B3DAM12**	0.030
	NC	Pre-cabled (L = 2 m) *(1)*	**XS612B3DBL2**	0.090
		M12 connector	**XS612B3DBM12**	0.030
Ø 18, threaded M18 x 1				
8	NO	Pre-cabled (L = 2 m) *(1)*	**XS618B3DAL2**	0.110
		M12 connector	**XS618B3DAM12**	0.060
	NC	Pre-cabled (L = 2 m) *(1)*	**XS618B3DBL2**	0.110
		M12 connector	**XS618B3DBM12**	0.060
Ø 30, threaded M30 x 1.5				
15	NO	Pre-cabled (L = 2 m) *(1)*	**XS630B3DAL2**	0.180
		M12 connector	**XS630B3DAM12**	0.130
	NC	Pre-cabled (L = 2 m) *(1)*	**XS630B3DBL2**	0.180
		M12 connector	**XS630B3DBM12**	0.180

Sensors, 2-wire ⎓ 12-48 V, long case model

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
Ø 6.5, plain				
2.5	NO	Pre-cabled (L = 2 m) *(1)*	**XS606B1DAL2**	0.060
	NC	Pre-cabled (L = 2 m) *(1)*	**XS606B1DBL2**	0.060
Ø 8, threaded M8 x 1				
2.5	NO	Pre-cabled (L = 2 m) *(1)*	**XS608B1DAL2**	0.035
		M12 connector	**XS608B1DAM12**	0.015
	NC	Pre-cabled (L = 2 m) *(1)*	**XS608B1DBL2**	0.035
		M12 connector	**XS608B1DBM12**	0.015
Ø 12, threaded M12 x 1				
4	NO	Pre-cabled (L = 2 m) *(1)*	**XS612B1DAL2**	0.180
		M12 connector	**XS612B1DAM12**	0.020
	NC	Pre-cabled (L = 2 m) *(1)*	**XS612B1DBL2**	0.075
		M12 connector	**XS612B1DBM12**	0.020
Ø 18, threaded M18 x 1				
8	NO	Pre-cabled (L = 2 m) *(1)*	**XS618B1DAL2**	0.100
		M12 connector	**XS618B1DAM12**	0.040
	NC	Pre-cabled (L = 2 m) *(1)*	**XS618B1DBL2**	0.100
		M12 connector	**XS618B1DBM12**	0.040
Ø 30, threaded M30 x 1.5				
15	NO	Pre-cabled (L = 2 m) *(1)*	**XS630B1DAL2**	0.205
		M12 connector	**XS630B1DAM12**	0.145
	NC	Pre-cabled (L = 2 m) *(1)*	**XS630B1DBL2**	0.205
		M12 connector	**XS630B1DBM12**	0.145

Accessories *(2)*

Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø 6.5 (plain)	**XSZB165**	0.005
	Ø 8 (M8 x1)	**XSZB108**	0.006
	Ø 12 (M12 x1)	**XSZB112**	0.006
	Ø 18 (M18 x1)	**XSZB118**	0.010
	Ø 30 (M30 x 1.5)	**XSZB130**	0.020

*(1) For a 5 m cable, replace L2 by **L5**.*
*Example: XS606B3CAL2 becomes **XS606B3CAL5** with a 5 m cable.*
(2) For more information, see page 122.

Inductive proximity sensors

OsiSense XS, general purpose

Cylindrical, increased range, flush mountable
Two-wire DC, solid-state output

Characteristics

Sensor type			XS6●●B3●●M12 XS6●●B1D●M12	XS6●●B3●●L2 XS6●●B1D●L2
Product certifications			UL, CSA, CE	
Connection	Connector		M12 or remote M12 connector (L01M12) on 0.15 m flying lead	
	Pre-cabled		Length 2 m	
Operating zone *(1)*	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 effective sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 65 and IP 67	IP 65 and IP 68, double insulation ⧈ (except Ø 6.5 and Ø 8: IP 67)
	Conforming to DIN 40050		IP 69K	
Storage temperature		°C	-40…+85	
Operating temperature		°C	-25…+70	
Materials	Case		Nickel plated brass (except XS606B1D or XS608B1D: stainless steel, grade 303)	
	Sensing face		PPS	
	Cable		PvR 2 x 0.34 mm² except Ø 6.5 and 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, 4 viewing ports at 90°	
Rated supply voltage		V	⎓ 12…48 non polarised for XS6●●B1D ⎓ 12…24 non polarised for XS6●●B3● (except Ø 6.5 short and Ø 8 short: polarised), with protection against reverse polarity	
Voltage limits (including ripple)		V	⎓ 10…58 for XS6●●B1D ⎓ 10…36 for XS6●●B3●	
Switching capacity		mA	⩽ 100 with overload and short-circuit protection	
Voltage drop, closed state		V	⩽ 4.2	
Residual current, open state		mA	⩽ 0.5 mA	
Maximum switching frequency	Ø 6.5, Ø 8	Hz	1400 for XS6●●B1D, 1100 for XS6●●B3●	
	Ø 12	Hz	1300	
	Ø 18	Hz	1500	
	Ø 30	Hz	800	
Delays	First-up	ms	⩽ 10	
	Response	ms	⩽ 0.5	
	Recovery	ms	⩽ 0.2 for Ø 6.5, Ø 8 and Ø 12; 0.3 for Ø 18; 0.6 for Ø 30	

(1) Detection curves, see page 126.

Wiring schemes

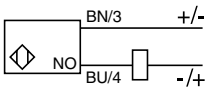
M12 connector

Pre-cabled

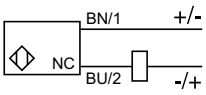
BU: Blue
BN: Brown

2-wire ⎓ non polarised

NO output

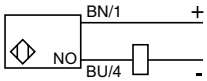


NC output

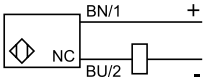


2-wire ⎓ polarised

XS6●●B3CA

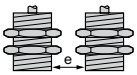


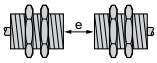
XS6●●B3CB

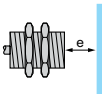


Setting-up

Minimum mounting distances (mm)

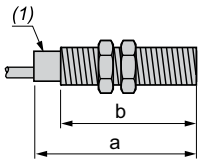






Sensors	Side by side	Face to face	Facing a metal object
Ø 6.5	e ⩾ 5	e ⩾ 30	e ⩾ 8
Ø 8	e ⩾ 5	e ⩾ 30	e ⩾ 8
Ø 12	e ⩾ 8	e ⩾ 50	e ⩾ 12
Ø 18	e ⩾ 16	e ⩾ 100	e ⩾ 25
Ø 30	e ⩾ 30	e ⩾ 180	e ⩾ 45

Dimensions



(1) LED

Sensors		Pre-cabled (mm)		M12 connector (mm)	
Short case model		**a**	**b**	**a**	**b**
Ø 6.5	**XS606B3C**	33	–	–	–
Ø 8	**XS608B3C**	33	25	–	24
Ø 12	**XS612B3D**	35	25	50	30
Ø 18	**XS618B3D**	40	28	50	28
Ø 30	**XS630B3D**	44	32	55	32
Long case model		**a**	**b**	**a**	**b**
Ø 6.5	**XS606B1D**	51	–	–	–
Ø 8	**XS608B1D**	51	42	62	40
Ø 12	**XS612B1D**	53	42	61	42
Ø 18	**XS618B1D**	62	52	74	52
Ø 30	**XS630B1D**	62	52	74	52

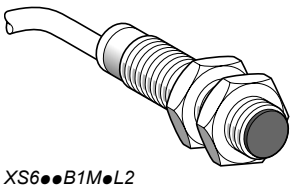
Inductive proximity sensors

OsiSense XS, general purpose

Cylindrical, increased range, flush mountable

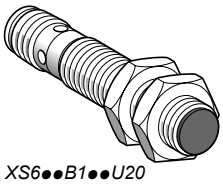
Two-wire AC or DC *(1)*

801267

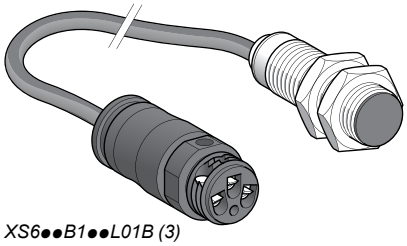


XS6●●B1M●L2

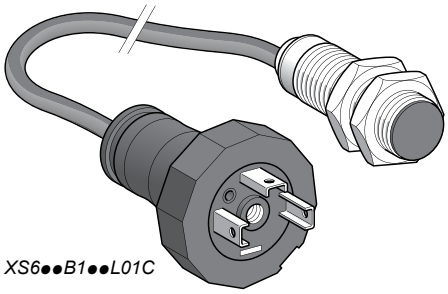
801268



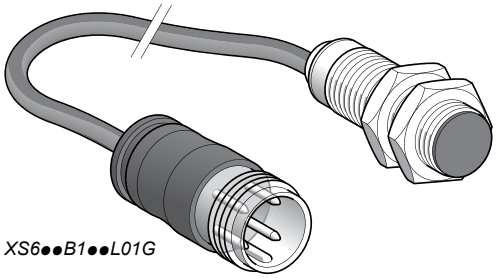
XS6●●B1●●U20



XS6●●B1●●L01B (3)

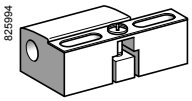


XS6●●B1●●L01C



XS6●●B1●●L01G

825994



XSZB1●●

Sensors, 2-wire ≂ 24-240 V, long case model

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
Ø 12, threaded M12 x 1				
4	NO	Pre-cabled (L = 2 m) *(2)*	**XS612B1MAL2**	0.075
		1/2"-20 UNF connector	**XS612B1MAU20**	0.025
	NC	Pre-cabled (L = 2 m) *(2)*	**XS612B1MBL2**	0.075
		1/2"-20 UNF connector	**XS612B1MBU20**	0.025
Ø 18, threaded M18 x 1				
8	NO	Pre-cabled (L = 2 m) *(2)*	**XS618B1MAL2**	0.100
		1/2"-20 UNF connector	**XS618B1MAU20**	0.060
		Remote screw terminal connector	**XS618B1MAL01B** *(3)*	0.100
		Remote EN 175301-803-A connector	**XS618B1MAL01C**	0.100
		Remote M18 connector	**XS618B1MAL01G**	0.100
	NC	Pre-cabled (L = 2 m) *(2)*	**XS618B1MBL2**	0.100
		1/2"-20 UNF connector	**XS618B1MBU20**	0.060
		Remote screw terminal connector	**XS618B1MBL01B** *(3)*	0.100
		Remote EN 175301-803-A connector	**XS618B1MBL01C**	0.100
		Remote M18 connector	**XS618B1MBL01G**	0.100
Ø 30, threaded M30 x 1.5				
15	NO	Pre-cabled (L = 2 m) *(2)*	**XS630B1MAL2**	0.205
		1/2"-20 UNF connector	**XS630B1MAU20**	0.145
		Remote screw terminal connector	**XS630B1MAL01B** *(3)*	0.205
		Remote EN 175301-803-A connector	**XS630B1MAL01C**	0.205
		Remote M18 connector	**XS630B1MAL01G**	0.205
	NC	Pre-cabled (L = 2 m) *(2)*	**XS630B1MBL2**	0.205
		1/2"-20 UNF connector	**XS630B1MBU20**	0.145
		Remote screw terminal connector	**XS630B1MBL01B** *(3)*	0.205
		Remote EN 175301-803-A connector	**XS630B1MBL01C**	0.205
		Remote M18 connector	**XS630B1MBL01G**	0.205

Accessories *(4)*

Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

(1) Ø8 plastic, double insulation version available (see page 66).

*(2) For a 5 m cable replace L2 by **L5**; for a 10 m cable replace L2 by **L10**.*
*Example: XS612B1MAL2 becomes **XS612B1MAL5** with a 5 m cable.*

(3) Protective cable gland included with sensor.

(4) For more information, see page 122.

Inductive proximity sensors

OsiSense XS, general purpose

Cylindrical, increased range, flush mountable
Two-wire AC or DC

Characteristics

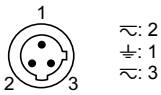
Sensor type			XS6●●B1M●U20	XS6●●B1M●L●
Product certifications			UL, CSA, CE	
Connection	Connector		1/2" - 20 UNF	–
	Pre-cabled		–	Length 2 m
	Remote connector		Screw terminal (L01B), EN 175301-803-A (L01C) and M18 (L01G) remote connectors on 0.15 m flying lead	
Operating zone *(1)*	Ø 12	mm	**0… 3.2**	
	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, IP 67	IP 65 and IP 68, double insulation ⧈
	Conforming to DIN 40050		IP 69K	
Storage temperature		°C	-40…+85	
Operating temperature		°C	-25…+70	
Materials	Case		Nickel plated brass	
	Sensing face		PPS	
	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: annular on pre-cabled version Yellow LED with 4 viewing ports at 90° on connector version	
Rated supply voltage		V	≂ 24…240 (~ 50/60 Hz)	
Voltage limits (including ripple)		V	≂ 20…264	
Switching capacity	**XS612B1M●●●**	mA	5…200 *(2)*	
	XS618B1M●●● **XS630B1M●●●**	mA	∼ 5…300 or ⎓ 5…200 *(2)*	
Voltage drop, closed state		V	⩽ 5.5	
Residual current, open state		mA	⩽ 0.8	
Maximum switching frequency (DC/AC)	Ø 12	Hz	⎓ 1000 / ∼ 25	
	Ø 18	Hz	⎓ 1000 / ∼ 25	
	Ø 30	Hz	⎓ 500 / ∼ 25	
Delays	First-up	ms	⩽ 25 for Ø 18 and Ø 30; ⩽ 20 for Ø 12	
	Response	ms	⩽ 0.5	
	Recovery	ms	⩽ 0.2 for Ø 12; ⩽ 0.5 for Ø 18; ⩽ 2 for Ø 30	

(1) Detection curves, see page 126.
(2) It is essential to connect a 0.4 A "quick-blow" fuse in series with the load.

Wiring schemes

Connector *(1)*

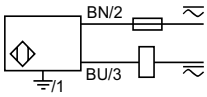
1/2"-20 UNF



Pre-cabled

BU: Blue
BN: Brown

2-wire ∼ or ⎓
NO or NC output

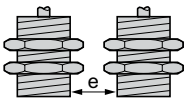


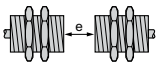
⏚: on connector models only

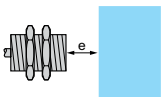
(1) For pin arrangement of remote connectors L01B, L01C and L01G, see page 31.

Setting-up

Minimum mounting distances (mm)

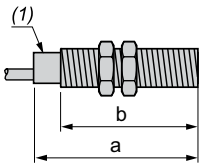






Sensors	Side by side	Face to face	Facing a metal object
Ø 12	e ⩾ 8	e ⩾ 50	e ⩾ 12
Ø 18	e ⩾ 16	e ⩾ 100	e ⩾ 25
Ø 30	e ⩾ 30	e ⩾ 180	e ⩾ 45

Dimensions



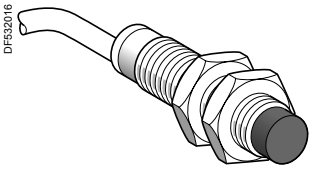
Sensors		Pre-cabled (mm)		Connector (mm)	
		a	b	a	b
Ø 12	**XS612B1M●**	53	42	62	42
Ø 18	**XS618B1M●**	62	52	73	52
Ø 30	**XS630B1M●**	62	52	73	52

(1) LED

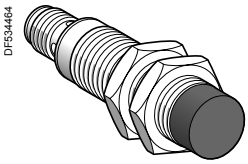
Inductive proximity sensors

OsiSense XS, general purpose

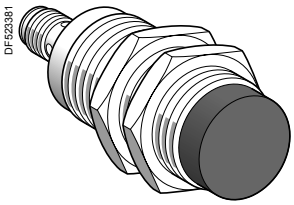
Cylindrical, increased range, non flush mountable
Three-wire DC, solid-state output



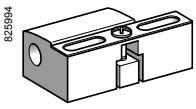
XS612B4●●L2



XS618B4●●M12



XS630B5●●M12



XSZB●●●

Sensors, 3-wire ⎓ 12...48 V, long case model

Ø 12, threaded M12 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
7	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS612B4PAL2**	0.075
			M12 connector	**XS612B4PAM12**	0.020
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS612B4NAL2**	0.075
			M12 connector	**XS612B4NAM12**	0.020
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS612B4PBL2**	0.075
			M12 connector	**XS612B4PBM12**	0.020
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS612B4NBL2**	0.075
			M12 connector	**XS612B4NBM12**	0.020

Ø 18, threaded M18 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
12	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS618B4PAL2**	0.100
			M12 connector	**XS618B4PAM12**	0.040
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS618B4NAL2**	0.100
			M12 connector	**XS618B4NAM12**	0.040
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS618B4PBL2**	0.100
			M12 connector	**XS618B4PBM12**	0.040
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS618B4NBL2**	0.100
			M12 connector	**XS618B4NBM12**	0.040

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
30	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS630B5PAL2**	0.205
			M12 connector	**XS630B5PAM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS630B5NAL2**	0.205
			M12 connector	**XS630B5NAM12**	0.145
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS630B5PBL2**	0.205
			M12 connector	**XS630B5PBM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS630B5NBL2**	0.205

Accessories *(2)*

Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: XS612B4PAL2 becomes **XS612B4PAL5** with a 5 m cable.*

(2) For more information, see page 122.

Inductive proximity sensors

OsiSense XS, general purpose

Cylindrical, increased range, non flush mountable
Three-wire DC, solid-state output

Characteristics

Sensor type			XS6●●B●●●M12	XS6●●B●●●L2
Product certifications			UL, CSA, CE, E2	
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…24**	
Differential travel		**%**	1...15 of effective sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 65 and IP 67	IP 65 and IP 68, double insulation ⧈
	Conforming to DIN 40050		IP 69K	–
Storage temperature		**°C**	-40…+85	
Operating temperature		**°C**	-25…+70	
Materials	Case		Nickel plated brass	
	Sensing face		PPS	
	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	**XS612B4●●●●**	**Hz**	2500	
	XS618B4●●●●	**Hz**	1000	
	XS630B5●●●●	**Hz**	500	
Delays	First-up	**ms**	⩽ 10 for Ø 12 and Ø 18; ⩽ 15 for Ø 30	
	Response	**ms**	⩽ 0.2 for Ø 12; ⩽ 0.3 for Ø 18; ⩽ 0.6 for Ø 30	
	Recovery	**ms**	⩽ 0.2 for Ø12; ⩽ 0.7 for Ø 18; ⩽ 1.4 for Ø 30	

Wiring schemes

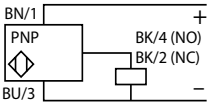
Connector

M12

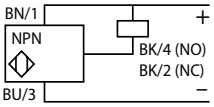
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP

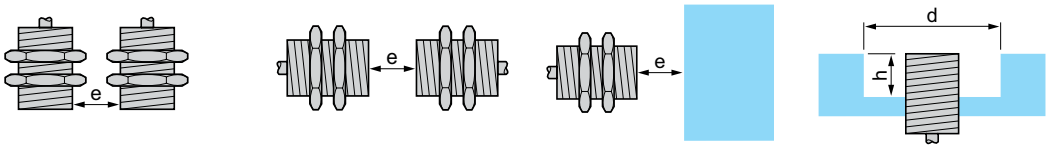


NPN



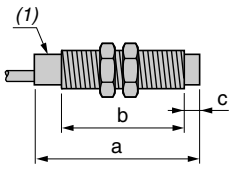
Setting-up

Minimum mounting distances (mm)



	Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 12	e ⩾ 48	e ⩾ 84	e ⩾ 21	d ⩾ 36, h ⩾ 12
Ø 18	e ⩾ 72	e ⩾ 144	e ⩾ 36	d ⩾ 54, h ⩾ 18
Ø 30	e ⩾ 300	e ⩾ 300	e ⩾ 90	d ⩾ 90, h ⩾ 35

Dimensions



XS6	Pre-cabled (mm) a	b	c	Connector (mm) a	b	c
Ø 12	54	42	5	66	42	5
Ø 18	60	44	8	72	44	8
Ø 30	64	39	13	74	39	13

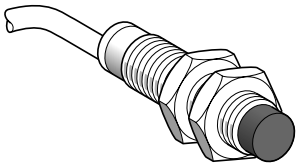
(1) LED

Inductive proximity sensors

OsiSense XS, general purpose

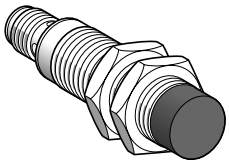
Cylindrical, increased range, non flush mountable
Three-wire DC, solid-state output

DF532016



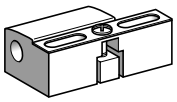
XS212B4●●L●

DF534464



XS218B4●●M12

8259942



XSZB1●●

Sensors, 3-wire ⎓ 12-24 V, short case model

Ø 12, threaded M12 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
8	NO	PNP	Pre-cabled (L = 2 m)	**XS212B4PAL2**	0.086
			Pre-cabled (L = 5 m)	**XS212B4PAL5**	0.160
			M12 connector	**XS212B4PAM12**	0.032
		NPN	Pre-cabled (L = 2 m)	**XS212B4NAL2**	0.086
			M12 connector	**XS212B4NAM12**	0.032
	NC	PNP	Pre-cabled (L = 2 m)	**XS212B4PBL2**	0.086
			M12 connector	**XS212B4PBM12**	0.032
		NPN	Pre-cabled (L = 2 m)	**XS212B4NBL2**	0.086

Ø 18, threaded M18 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
16	NO	PNP	Pre-cabled (L = 2 m)	**XS218B4PAL2**	0.105
			Pre-cabled (L = 5 m)	**XS218B4PAL5**	0.190
			M12 connector	**XS218B4PAM12**	0.052
		NPN	Pre-cabled (L = 2 m)	**XS218B4NAL2**	0.105
			M12 connector	**XS218B4NAM12**	0.052
	NC	PNP	Pre-cabled (L = 2 m)	**XS218B4PBL2**	0.105
			M12 connector	**XS218B4PBM12**	0.052

Accessories *(1)*

Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010

(1) For further information, see page 122.

Inductive proximity sensors

OsiSense XS, general purpose

Cylindrical, increased range, non flush mountable
Three-wire DC, solid-state output

Characteristics

Sensor type			XS21●B4●●M12	XS21●B4●●L●
Product certifications			UL, CSA, CE, E2	
Connection	Connector		M12	–
	Pre-cabled		–	Length: 2 or 5 m
Operating zone	Ø 12	**mm**	**0…6.4**	
	Ø 18	**mm**	**0…12.8**	
Differential travel		**%**	1…15 of effective sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 65 and IP 67	
	Conforming to DIN 40050		IP 69K	
Storage temperature		**°C**	- 40…+ 85	
Operating temperature		**°C**	- 25…+ 70	
Materials	Case		Brass	
	Sensing face		PPS	
	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…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	**XS212B4●●●●**	**Hz**	2000	
	XS218B4●●●●	**Hz**	1000	
Delays	First-up	**ms**	⩽ 15	
	Response	**ms**	⩽ 0.2 for Ø 12 ⩽ 0.3 for Ø 18	
	Recovery	**ms**	⩽ 0.2 for Ø 12 ⩽ 0.7 for Ø 18	

Wiring schemes

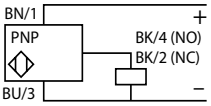
Connector

M12

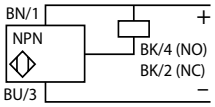
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP

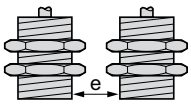


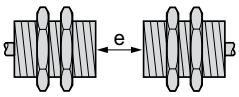
NPN

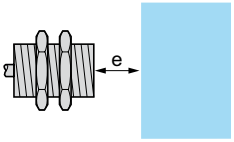


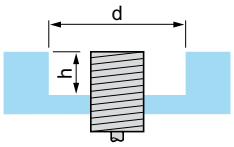
Setting-up

Minimum mounting distances (mm)



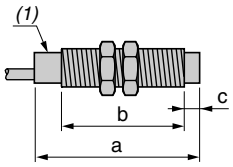






	Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 12	e ⩾ 100	e ⩾ 120	e ⩾ 24	d ⩾ 36, h ⩾ 15
Ø 18	e ⩾ 120	e ⩾ 200	e ⩾ 48	d ⩾ 54, h ⩾ 18

Dimensions



	Pre-cabled (mm)			M12 connector (mm)		
	a	b	c	a	b	c
Ø 12	37	20	5	51	26	5
Ø 18	41	21	8	51	21	8

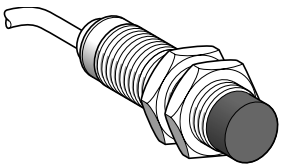
(1) LED

Inductive proximity sensors

OsiSense XS, general purpose

Cylindrical, increased range, non flush mountable
Two-wire AC or DC

822109



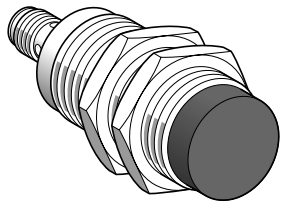
XS6●●B4M●L2

Sensors, 2-wire ≂ 24... 240 V, long case model

Ø 18, threaded M18 x 1

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
12	NO	Pre-cabled (L = 2 m) *(1)*	**XS618B4MAL2**	0.120
		1/2"-20 UNF connector	**XS618B4MAU20**	0.060
	NC	Pre-cabled (L = 2 m) *(1)*	**XS618B4MBL2**	0.120
		1/2"-20 UNF connector	**XS618B4MBU20**	0.060

523381

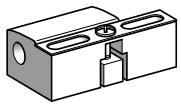


XS6●●B4M●U20

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
22	NO	Pre-cabled (L = 2 m) *(1)*	**XS630B4MAL2**	0.205
		1/2"-20 UNF connector	**XS630B4MAU20**	0.145
	NC	Pre-cabled (L = 2 m) *(1)*	**XS630B4MBL2**	0.205
		1/2"-20 UNF connector	**XS630B4MBU20**	0.145

825994



XSZB1●●

Accessories *(2)*

Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

*(1) For a 5 m cable replace L2 by **L5**; for a 10 m cable replace L2 by **L10**.*
*Example: XS618B4MAL2 becomes **XS618B4MAL5** with a 5 m cable.*
(2) For more information, see page 122.

Inductive proximity sensors

OsiSense XS, general purpose

Cylindrical, increased range, non flush mountable
Two-wire AC or DC

Characteristics

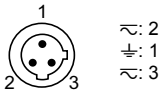
Sensor type			XS6●●B4M●U20	XS6●●B4M●L2
Product certifications			UL, CSA, CE	
Connection	Connector		1/2"-20 UNF	–
	1/2"-20 UNFPre-cabled		–	Length: 2 m
Operating zone	Ø 18	**mm**	**0…9.6**	
	Ø 30	**mm**	**0...17.6**	
Differential travel		**%**	1...15 of effective sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 65 and IP 67	IP 65 and IP 68, double insulation ⧈
Storage temperature		**°C**	-40…+85	
Operating temperature		**°C**	-25…+70	
Materials	Case		Nickel plated brass	
	Sensing face		PPS	
	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	**XS618B4M●●●**	**Hz**	∼ 25 or ⎓ 1000	
	XS630B4M●●●	**Hz**	∼ 25 or ⎓ 300	
Delays	First-up	**ms**	⩽ 30 **XS618B4M●●●** and **XS630B4M●●●**	
	Response	**ms**	⩽ 0.5	
	Recovery	**ms**	⩽ 0.5 **XS618B4M●●●**, ⩽ 2 **XS630B4M●●●**	

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

Wiring schemes

Connector

1/2"-20 UNF

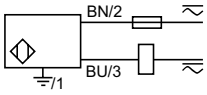


Pre-cabled

BU: Blue
BN: Brown

2-wire ∼ or ⎓

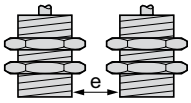
NO or NC output

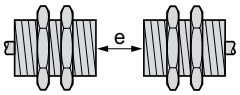


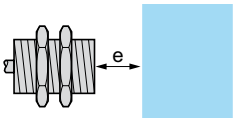
⏚: on connector models only

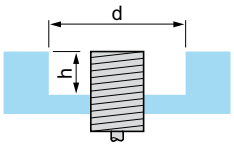
Setting-up

Minimum mounting distances (mm)



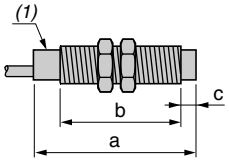






	Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 18	e ⩾ 72	e ⩾ 144	e ⩾ 36	d ⩾ 54, h ⩾ 18
Ø 30	e ⩾ 120	e ⩾ 264	e ⩾ 66	d ⩾ 90, h ⩾ 30

Dimensions



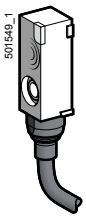
	Pre-cabled (mm)			Connector (mm)		
	a	b	c	a	b	c
Ø 18	60	44	8	72	44	8
Ø 30	63	41	13	74	41	13

(1) LED

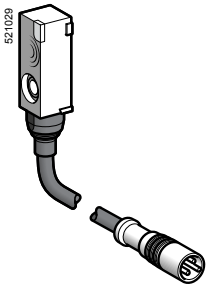
Inductive proximity sensors

OsiSense XS, general purpose, standard range

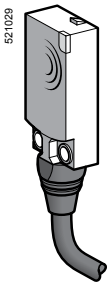
Flat format, flush mountable
Two-wire DC
Three-wire DC, solid-state output



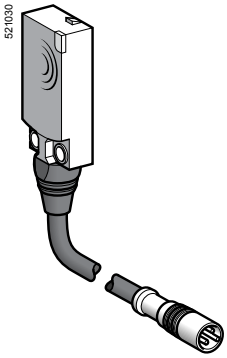
XS7J1A1●●L2



XS7J1A1●●L01M8



XS7F1A1●●L2



XS7F1A1●●L01M8

Flat, 8 x 22 x 8 mm format *(1) (2)*

Three-wire ⎓

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
2.5	NO	PNP	Pre-cabled (L = 2 m) *(3)*	**XS7J1A1PAL2**	0.060
			Remote M8 connector on 0.15 m flying lead	**XS7J1A1PAL01M8**	0.040
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS7J1A1NAL2**	0.060
			Remote M8 connector on 0.15 m flying lead	**XS7J1A1NAL01M8**	0.040
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS7J1A1PBL2**	0.060
			Remote M8 connector on 0.15 m flying lead	**XS7J1A1PBL01M8**	0.040
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS7J1A1NBL2**	0.060
			Remote M8 connector on 0.15 m flying lead	**XS7J1A1NBL01M8**	0.040

Two-wire ⎓

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
2.5	NO		Pre-cabled (L = 2 m) *(3)*	**XS7J1A1DAL2**	0.050
			Remote M8 connector on 0.15 m flying lead	**XS7J1A1DAL01M8**	0.035
	NC		Pre-cabled (L = 2 m) *(3)*	**XS7J1A1DBL2**	0.050
			Remote M8 connector on 0.15 m flying lead	**XS7J1A1DBL01M8**	0.035

Flat, 15 x 32 x 8 mm format *(1)*

Three-wire ⎓

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
5	NO	PNP	Pre-cabled (L = 2 m) *(3)*	**XS7F1A1PAL2**	0.065
			Remote M8 connector on 0.15 m flying lead	**XS7F1A1PAL01M8**	0.045
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS7F1A1NAL2**	0.065
			Remote M8 connector on 0.15 m flying lead	**XS7F1A1NAL01M8**	0.045
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS7F1A1PBL2**	0.065
			Remote M8 connector on 0.15 m flying lead	**XS7F1A1PBL01M8**	0.045
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS7F1A1NBL2**	0.065
			Remote M8 connector on 0.15 m flying lead	**XS7F1A1NBL01M8**	0.045

Two-wire ⎓

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
5	NO		Pre-cabled (L = 2 m) *(3)*	**XS7F1A1DAL2**	0.055
			Remote M8 connector on 0.15 m flying lead	**XS7F1A1DAL01M8**	0.045
	NC		Pre-cabled (L = 2 m) *(3)*	**XS7F1A1DBL2**	0.055
			Remote M8 connector on 0.15 m flying lead	**XS7F1A1DBL01M8**	0.045

(1) For accessories, see page 122.
*(2) Sensors **XS7J** include a fixing clamp with screw.*
*(3) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: **XS7J1A1PAL2** becomes **XS7J1A1PAL5** with a 5 m long cable.*

Inductive proximity sensors

OsiSense XS, general purpose, standard range
Flat format, flush mountable
Two-wire DC
Three-wire DC, solid-state output

Characteristics

Sensor type			XS7J●●●●●L01M8	XS7F●●●●●L01M8	XS7J●●●●●●L2, XS7F●●●●●●L2
Product certifications			CE	UL, CSA, CE	
Connection	Connector		Remote M8 connector on 0.15 m flying lead		–
	Pre-cabled		–		Length: 2 m
Operating zone	**XS7J**	**mm**	**0…2**		
	XS7F	**mm**	**0…4**		
Differential travel		**%**	1...15 of effective sensing distance (Sr)		
Degree of protection	Conforming to IEC 60529		IP 67 (**XS7J**), IP 68 (**XS7F**)		
Storage temperature		**°C**	- 40….+ 85		
Operating temperature		**°C**	- 25….+ 70		
Materials	Case		PBT		
	Cable		PvR 3 x 0.11 mm² or 2 x 0.11 mm² (XS7F: 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 **XS7J,** 5 for **XS7F**		
Delays	First-up	**ms**	Three-wire: 5		
		ms	Two-wire: 10 **XS7J**, 5 **XS7F**		
	Response	**ms**	Three-wire: 0,1		
		ms	Two-wire: 0,5 **XS7J**, 5 **XS7F**		
	Recovery	**ms**	Three-wire: 0,1		
		ms	Two-wire: 1 **XS7J**, 5 **XS7F**		

Wiring schemes

Connector

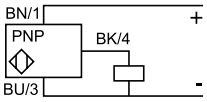
M8

See connection on page ???30210/3.

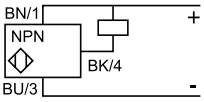
Pre-cabled

BU: Blue
BN: Brown
BK: Black

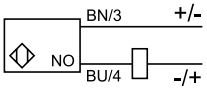
PNP NO or NC



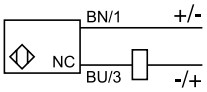
NPN NO or NC



2-wire NO

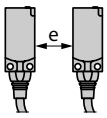


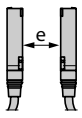
2-wire NC

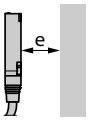


Setting-up

Minimum mounting distances (mm)



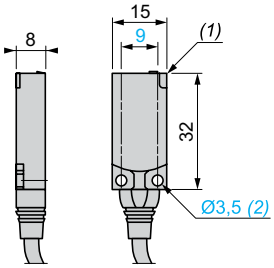




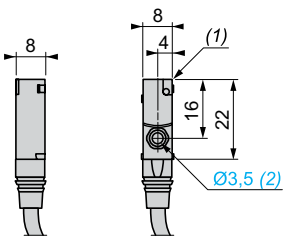
	Side by side	Face to face	Facing a metal object
XS7J	e ⩾ 7.5	e ⩾ 20	e ⩾ 7.5
XS7F	e ⩾ 15	e ⩾ 40	e ⩾ 15

Dimensions

XS7F



XS7J



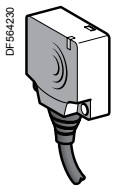
(1) LED
(2) For CHC type screws

ECOLAB certified

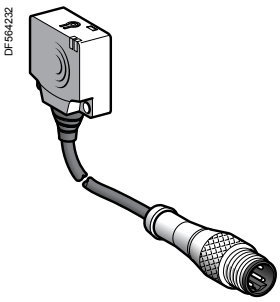
Inductive proximity sensors

OsiSense XS, general purpose, standard range

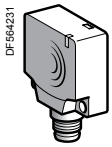
Flat format, flush mountable
Two-wire DC
Three-wire DC, solid-state output



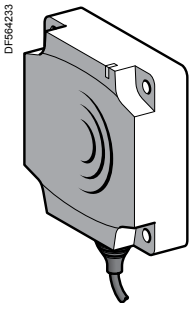
XS7E1A1●●L2



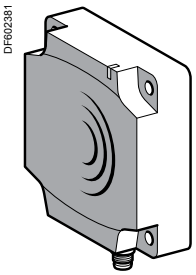
XS7●1A1●L0●M12



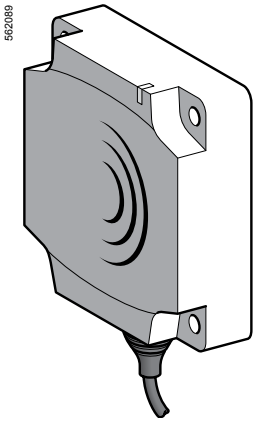
XS7E1A1●●M8



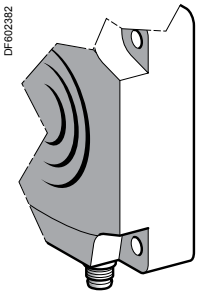
XS7C1A1●●L2



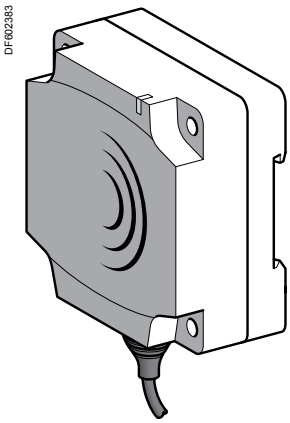
XS7C1A1●●M8



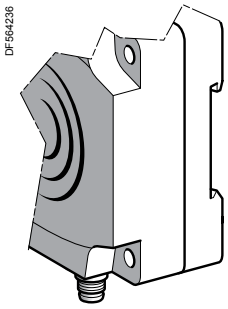
XS7D1A1●●L2



XS7D1A1●●M12



XS7D1A1●●L2DIN



XS7D1A1●●M12DIN

Sens. dist. (Sn) mm	Function	Output	Connection	Reference	Weight kg
Flat, 26 x 26 x 13 mm format *(1)*					
Three-wire ⎓					
10	NO	PNP	Pre-cabled (L = 2 m) *(4)*	**XS7E1A1PAL2**	0.075
			M8 connector	**XS7E1A1PAM8**	0.040
			Remote M12 connector	**XS7E1A1PAL01M12**	0.040
		NPN	Pre-cabled (L = 2 m) *(4)*	**XS7E1A1NAL2**	0.075
			M8 connector	**XS7E1A1NAM8**	0.075
			Remote M12 connector	**XS7E1A1NAL01M12**	0.040
	NC	PNP	Pre-cabled (L = 2 m) *(4)*	**XS7E1A1PBL2**	0.075
			M8 connector	**XS7E1A1PBM8**	0.040
			Remote M12 connector	**XS7E1A1PBL01M12**	0.040
		NPN	Pre-cabled (L = 2 m) *(4)*	**XS7E1A1NBL2**	0.075
			M8 connector	**XS7E1A1NBM8**	0.040
			Remote M12 connector	**XS7E1A1NBL01M12**	0.040
Two-wire ⎓					
10	NO		Pre-cabled (L = 2 m) *(4)*	**XS7E1A1DAL2**	0.070
			M8 connector	**XS7E1A1DAM8**	0.040
			Remote M12 connector	**XS7E1A1DAL01M12**	0.040
	NO terminals 1 and 4 *(2)*		Remote M12 connector	**XS7E1A1CAL01M12**	0.040
			Remote M12 connector *(3)*	**XS7E1A1CAL08M12**	0.065
	NC		Pre-cabled (L = 2 m) *(4)*	**XS7E1A1DBL2**	0.070
			M8 connector	**XS7E1A1DBM8**	0.040
			Remote M12 connector	**XS7E1A1DBL01M12**	0.040
Flat, 40 x 40 x 15 mm format *(1)*					
Three-wire ⎓					
15	NO	PNP	Pre-cabled (L = 2 m) *(4)*	**XS7C1A1PAL2**	0.095
			M8 connector	**XS7C1A1PAM8**	0.060
			Remote M12 connector	**XS7C1A1PAL01M12**	0.060
		NPN	Pre-cabled (L = 2 m) *(4)*	**XS7C1A1NAL2**	0.095
			M8 connector	**XS7C1A1NAM8**	0.060
			Remote M12 connector	**XS7C1A1NAL01M12**	0.060
	NC	PNP	Pre-cabled (L = 2 m) *(4)*	**XS7C1A1PBL2**	0.095
			M8 connector	**XS7C1A1PBM8**	0.060
			Remote M12 connector	**XS7C1A1PBL01M12**	0.060
		NPN	Pre-cabled (L = 2 m) *(4)*	**XS7C1A1NBL2**	0.095
			M8 connector	**XS7C1A1NBM8**	0.060
			Remote M12 connector	**XS7C1A1NBL01M12**	0.060
Two-wire ⎓					
15	NO		Pre-cabled (L = 2 m) *(4)*	**XS7C1A1DAL2**	0.090
			M8 connector	**XS7C1A1DAM8**	0.060
			Remote M12 connector	**XS7C1A1DAL01M12**	0.060
	NO terminals 1 and 4 *(2)*		Remote M12 connector	**XS7C1A1CAL01M12**	0.060
			Remote M12 connector *(3)*	**XS7C1A1CAL08M12**	0.090
	NC		Pre-cabled (L = 2 m) *(4)*	**XS7C1A1DBL2**	0.090
			M8 connector	**XS7C1A1DBM8**	0.060
			Remote M12 connector	**XS7C1A1DBL01M12**	0.060
Flat, 80 x 80 x 26 mm format *(1)*					
Three-wire ⎓					
40	NO	PNP	Pre-cabled (L = 2 m) *(4)*	**XS7D1A1PAL2** *(5)*	0.340
			M12 connector	**XS7D1A1PAM12** *(5)*	0.290
		NPN	Pre-cabled (L = 2 m) *(4)*	**XS7D1A1NAL2** *(5)*	0.340
			M12 connector	**XS7D1A1NAM12** *(5)*	0.290
	NC	PNP	Pre-cabled (L = 2 m) *(4)*	**XS7D1A1PBL2** *(5)*	0.340
			M12 connector	**XS7D1A1PBM12** *(5)*	0.290
		NPN	Pre-cabled (L = 2 m) *(4)*	**XS7D1A1NBL2** *(5)*	0.340
			M12 connector	**XS7D1A1NBM12** *(5)*	0.290
Two-wire ⎓					
40	NO		Pre-cabled (L = 2 m) *(4)*	**XS7D1A1DAL2** *(5)*	0.340
			M12 connector	**XS7D1A1DAM12** *(5)*	0.290
	NO terminals 1 and 4 *(2)*		M12 connector	**XS7D1A1CAM12** *(5)*	0.290
	NC		Pre-cabled (L = 2 m) *(4)*	**XS7D1A1DBL2** *(5)*	0.340
			M12 connector	**XS7D1A1DBM12** *(5)*	0.290

(1) For accessories, see page 122.
(2) The NO output is connected to terminals 1 and 4 of the M12 connector.
(3) Remote connector on 0.8 m flying lead.
*(4) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**. Example: **S7 J1A1PAL2** becomes **XS7J1A1PAL5** 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: **XS7D1A1PAL2** becomes **XS7D1A1PAL2DIN**.*

Inductive proximity sensors

OsiSense XS, general purpose, standard range
Flat format, flush mountable
Two-wire DC
Three-wire DC, solid-state output

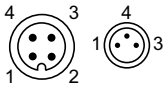
Characteristics

Sensor type				XS7E●●●●●M8, XS7C●●●●●M8, XS7D●●●●●M12	XS7E●●●●●L01M12, XS7C●●●●●L01M12	XS7E●●●●●L2, XS7C●●●●●L2, XS7D●●●●●L2
Product certifications				UL, CSA, CE, ECOLAB		
Connection	Connector			M8 except M12 on **XS7D●●●●●M12**	M12 on 0.15 m flying lead for **XS7●●●●●L01M12**	–
	Pre-cabled			–	–	Length: 2 m
Operating zone	**XS7E**		**mm**	**0…8**		
	XS7C		**mm**	**0…12**		
	XS7D		**mm**	**0…32**		
Differential travel			**%**	1...15 of effective sensing distance (Sr)		
Degree of protection	Conforming to IEC 60529			IP 67, double insulation ⧈ (except for M8 connector: IP 67)		IP 68, ⧈
Storage temperature			**°C**	- 40….+ 85		
Operating temperature			**°C**	- 25….+ 70		
Materials	Case			PBT		
	Cable			–	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	**XS7E, XS7C**		**kHz**	1		
	XS7D		**Hz**	100		
Delays	First-up	3-wire	**ms**	10 **XS7E** and **XS7C**, 30 **XS7D**		
		2-wire	**ms**	5 **XS7E** and **XS7D**, 10 **XS7D**		
	Response	3-wire	**ms**	2 **XS7E** and **XS7C**, 5 **XS7D**		
		2-wire	**ms**	0,3 **XS7E** and **XS7D**, 10 **XS7D**		
	Recovery	3-wire	**ms**	6 **XS7E**, 5 **XS7C**, 35 **XS7D**		
		2-wire	**ms**	0,7 **XS7E** and **XS7D**, 10 **XS7D**		

Wiring schemes

Connector

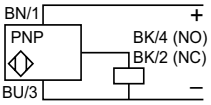
M12 M8



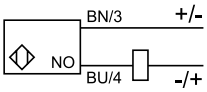
Pre-cabled

BU: Blue
BN: Brown
BK: Black

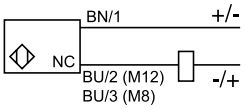
PNP/M12 or M8



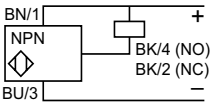
2-wire NO/M12 or M8



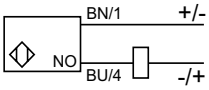
2-wire NC/M12 or M8



NPN/M12 or M8



2-wire NO/M12 XS7●●●●CA●●●

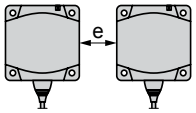


For M8 connector, NO and NC outputs on terminal 4

Setting-up

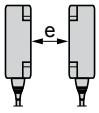
Minimum mounting distances (mm)

Side by side



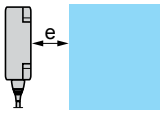
e ⩾	XS7E	XS7C	XS7D
	30	45	120

Face to face



e ⩾	XS7E	XS7C	XS7D
	72	110	300

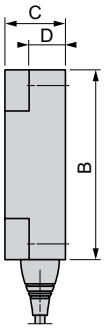
Facing a metal object



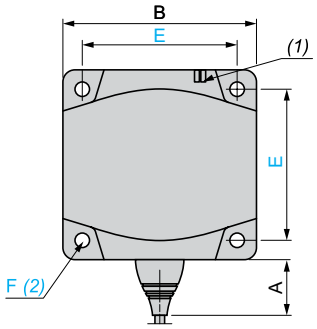
e ⩾	XS7E	XS7C	XS7D
	30	45	120

Dimensions

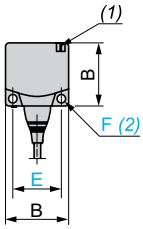
XS7C/D/E



XS7C/D



XS7E



(1) LED
(2) For CHC type screws

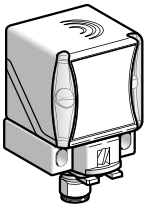
Sensor	A (cable)	A (connector)	B	C	D	E	F
XS7E	14	11	26	13	8.8	**20**	**3.5**
XS7C	14	11	40	15	9.8	**33**	**4.5**
XS7D	23	18	80	26	16	**65**	**5.5**
XS7D●●DIN	23	18	80	40	30	**65**	**5.1**

Inductive proximity sensors

OsiSense XS, general purpose

Cubic case, 40 x 40 x 70 mm, M12 or 1/2”-20UNF connector

5 position turret head

Sensor			Flush mountable in metal		Non flush mountable in metal
					
Nominal sensing distance (Sn)			15 mm	20 mm	40 mm
References					
4-wire ⎓	PNP	NO+NC	–	**XS8C2A1PCM12**	**XS8C2A4PCM12**
	NPN	NO+NC	–	**XS8C2A1NCM12**	**XS8C2A4NCM12**
3-wire ⎓	PNP	NO	**XS7C2A1PAM12**	–	–
	NPN	NO	**XS7C2A1NAM12**	–	–
	PNP	NC	**XS7C2A1PBM12**	–	–
	NPN	NC	**XS7C2A1NBM12**	–	–
2-wire ⎓	NO		**XS7C2A1DAM12**	**XS8C2A1DAM12**	**XS8C2A4DAM12**
	NC		**XS7C2A1DBM12**	**XS8C2A1DBM12**	**XS8C2A4DBM12**
2-wire (∿/⎓) unprotected *(1)*	NO		**XS7C2A1MAU20**	**XS8C2A1MAU20**	**XS8C2A4MAU20**
	NC		**XS7C2A1MBU20**	**XS8C2A1MBU20**	**XS8C2A4MBU20**
Weight (kg)			0.149	0.149	0.149
Characteristics					
Operating zone			0…12 mm	0…16 mm	0…32 mm
Product certifications			UL, CSA, CE, TÜV (4-wire), E2 (3-wire and 4-wire)		
Conformity to standards			IEC 60947-5-2		
Conformity to safety standards *(2)*	For XS8C2A●PCM12		EN 62061 (2005): SILcl2 EN 61508 (2010): SIL 2, EN ISO 13849 (2008): PL d		
Reliability data *(2)*	For XS8C2A●PCM12		MTTFd = 1546 years PFHd = 7.4 10-8 1/h		
Connection			M12 connector for ⎓ versions 1/2 "-20UNF connector for ∿/⎓ versions		
Differential travel			3…15% of Sr		
Degree of protection	Conforming to IEC 60529 and DIN 40050		IP 65, IP 67 and IP 69K		
Temperature	Storage		- 40….+ 85°C		
	Operation *(3)*		- 25….+ 70°C		
Material			Case: PBT		
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10…55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27		50 gn for 11 ms		
Indicators	Output state		Yellow LED		
	Power on		Green LED, for 4-wire ⎓, 3-wire ⎓ and 2-wire ∿/⎓ versions		
Rated supply voltage	4-wire ⎓		12…48 V with protection against reverse polarity		
	3-wire ⎓		12…24 V with protection against reverse polarity		
	2-wire ⎓		12…48 V with protection against reverse polarity		
	2-wire ∿/⎓		24…240 V (∿ 50/60 Hz)		
Voltage limits (including ripple)	4-wire ⎓		10…58 V		
	3-wire ⎓		10…36 V		
	2-wire ⎓		10…58 V		
	2-wire ∿/⎓		20…264 V		
Current consumption, no-load	3-wire and 4-wire ⎓		< 15 mA		
Residual current, open state	2-wire ⎓		< 0.6 mA		
	2-wire ∿/⎓		1.5 mA		
Switching capacity	3-wire and 4-wire ⎓		< 200 mA with overload and short-circuit protection		
	2-wire ⎓		< 100 mA with overload and short-circuit protection		
	2-wire ∿/⎓		∿: 5…300 mA *(1)* ⎓: 5…200 mA *(1)*		
Voltage drop, closed state	3-wire and 4-wire ⎓		< 2 V		
	2-wire ⎓		< 4.2 V		
	2-wire ⎓/∿		< 5.5 V		
Maximum switching frequency			Flush mountable: ⎓ 300 Hz, ∿ 25 Hz Non flush mountable: ⎓ 150 Hz, ∿ 25 Hz		
Delays	First-up		7 ms (3-wire and 4-wire ⎓), 20 ms (2-wire ⎓ and 2-wire ⎓/∿)		
	Response		Flush mountable: ≤ 1.2 ms. Non flush mountable: ≤ 1.4 ms		
	Recovery		Flush mountable: ≤ 1.8 ms. Non flush mountable: ≤ 3.5 ms		

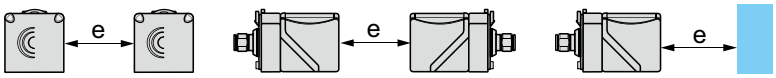
*(1) Sensor must be protected by a 0.4 A quick-blow fuse (reference **XUZE04**) connected in series with the load.*
(2) SIL 2 protection can only be obtained by connecting both outputs to a safety PLC. Please refer to the “Safety solutions using Preventa” catalogue.
*(3) Sensors are available for very low temperatures (suffix **TF**: - 40°C, + 70°C) or very high temperatures (suffix **TT**: - 25°C, + 85°C). Please consult our Customer Care Centre.*

Inductive proximity sensors

OsiSense XS, general purpose
Cubic case, 40 x 40 x 70 mm, M12 or 1/2”-20UNF connector
5 position turret head

Setting-up precautions

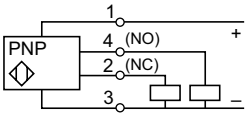
Minimum mounting distances (mm)

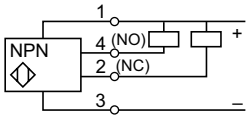


		Side by side	Face to face	Facing a metal object
Sensors flush mountable in metal	**XS7C2A1●●**	e ⩾ 60	e ⩾ 120	e ⩾ 45
	XS8C2A1●●	e ⩾ 80	e ⩾ 160	e ⩾ 60
Sensors non flush mountable in metal	**XS8C2A4●●**	e ⩾ 160	e ⩾ 320	e ⩾ 120

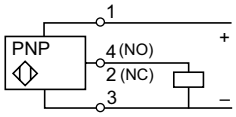
Wiring schemes

4-wire ⎓, NO + NC outputs

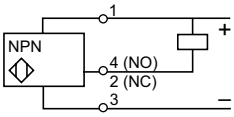




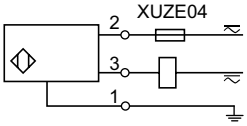
3-wire, PNP



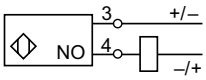
3-wire, NPN



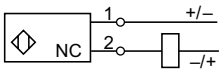
2-wire, 1/2”- 20UNF



2-wire ⎓, NO output
(M12 connector)



2-wire ⎓, NC output
(M12 connector)



M12 connector

+ V: 1
NC: 2
- V: 3
NO: 4

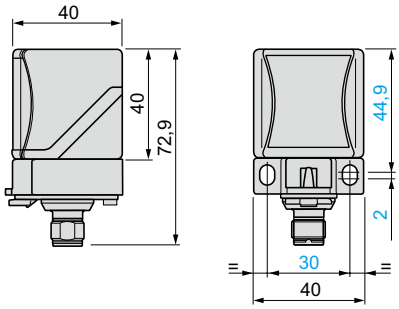
1/2”-20UNF connector

⎓: 2
⏚: 1
⎓: 3

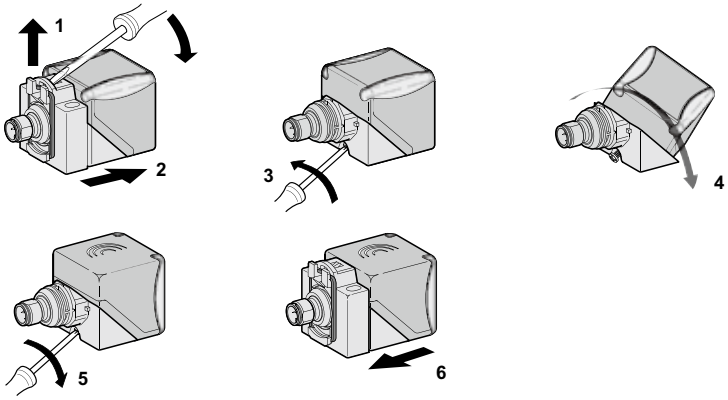
Accessory references

Description	Type	Length m	Reference	Weight kg
Pre-wired M12 connectors Female, 4-pin, zinc die-cast, nickel plated clamping ring	Straight	2	**XZCP1141L2**	0.090
		5	**XZCP1141L5**	0.190
		10	**XZCP1141L10**	0.370
	Elbowed	2	**XZCP1241L2**	0.090
		5	**XZCP1241L5**	0.190
		10	**XZCP1241L10**	0.370
Pre-wired 1/2”-20UNF connectors Female, 3-pin, zinc die-cast, nickel plated clamping ring	Straight	5	**XZCP1865L5**	0.180
		10	**XZCP1865L10**	0.350
	Elbowed	5	**XZCP1965L5**	0.180
		10	**XZCP1965L10**	0.350

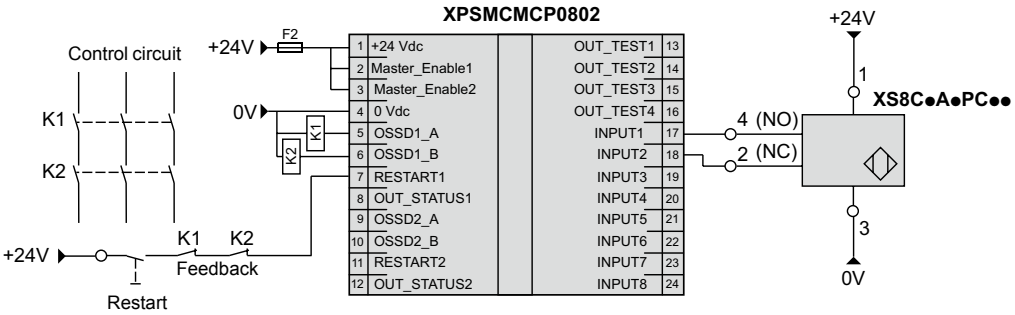
Dimensions



Head positions



Example SIL 2 wiring scheme (with Preventa XPSMCMCP0802 safety PLC)

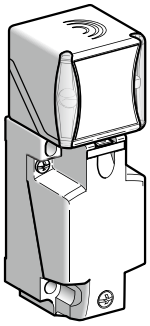


SFF (Safe Failure Fraction): 92,68 %
DC (Diagnosis Coverage): 75,8 %

Inductive proximity sensors

OsiSense XS, general purpose

Plastic case, 40 x 40 x 117 mm, plug-in
5 position turret head

Sensor			Flush mountable in metal		Non flush mountable in metal
					
Nominal sensing distance (Sn)			15 mm	20 mm	40 mm
References					
4-wire ⎓	PNP	NO+NC	–	**XS8C4A1PCP20**	**XS8C4A4PCP20**
	NPN	NO+NC	–	**XS8C4A1NCP20**	**XS8C4A4NCP20**
2-wire ⎓	NO or NC programmable		**XS7C4A1DPP20**	**XS8C4A1DPP20**	**XS8C4A4DPP20**
2-wire (∿/⎓) unprotected *(1)*	NO or NC programmable		**XS7C4A1MPP20**	**XS8C4A1MPP20**	**XS8C4A4MPP20**
Weight (kg)			0.244	0.244	0.244
			***Note**: These sensors have an M20 cable entry. They can also be supplied with a PG 13.5 cable entry (e.g. **XS8C4A4PCG13**) or a 1/2" NPT cable entry (e.g. **XS8C4A1MPN12**). Please consult our Customer Care Centre.*		
Characteristics					
Operating zone			0…12 mm	0…16 mm	0…32 mm
Product certifications			UL, CSA, CE, TÜV (4-wire), E2 (4-wire)		
Conformity to standards			IEC 60947-5-2		
Conformity to safety standards *(2)*	For XS8C4A●PCP20		EN 62061 (2005): SILcl2, EN 61508 (2010): SIL 2, EN ISO 13849 (2008): PL d		
Reliability data *(2)*	For XS8C4A●PCP20		MTTFd = 1546 years PFHd = 7.4 10-8 1/h		
Connection			Screw terminals, clamping capacity: 2 or 4 x 1.5 mm2 / 2 or 4 x 16 AWG *(3)*		
Differential travel			3…15% of Sr		
Degree of protection	Conforming to IEC 60529 and DIN 40050		IP 65, IP 67 and IP 69K		
Temperature	Storage		- 40….+ 85°C		
	Operation *(4)*		- 25….+ 70°C		
Material			Case: PBT		
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10…55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27		50 gn for 11 ms		
Indicators	Output state		Yellow LED		
	Power on		Green LED, for 4-wire ⎓ and 2-wire ∿/⎓ versions		
Rated supply voltage	4-wire ⎓		12…48 V with protection against reverse polarity		
	2-wire ⎓		12…48 V with protection against reverse polarity		
	2-wire ∿/⎓		24…240 V (∿ 50/60 Hz)		
Voltage limits (including ripple)	4-wire ⎓		10…58 V		
	2-wire ⎓		10…58 V		
	2-wire ∿/⎓		20…264 V		
Current consumption, no-load	4-wire ⎓		< 15 mA		
Residual current, open state	2-wire ⎓		< 0.6 mA		
	2-wire ∿/⎓		1.5 mA		
Switching capacity	4-wire ⎓		< 200 mA with overload and short-circuit protection		
	2-wire ⎓		< 100 mA with overload and short-circuit protection		
	2-wire ∿/⎓		∿: 5…300 mA *(1)* ⎓: 5…200 mA *(1)*		
Voltage drop, closed state	4-wire ⎓		< 2 V		
	2-wire ⎓		< 4.2 V		
	2-wire ⎓/∿		< 5.5 V		
Maximum switching frequency			Flush mountable: ⎓ 300 Hz, ∿ 25 Hz Non flush mountable: ⎓ 150 Hz, ∿ 25 Hz		
Delays	First-up		7 ms (3-wire and 4-wire ⎓), 20 ms (2-wire ⎓ and 2-wire ⎓/∿)		
	Response		Flush mountable: ⩽ 1.2 ms. Non flush mountable: ⩽ 1.4 ms		
	Recovery		Flush mountable: ⩽ 1.8 ms. Non flush mountable: ⩽ 3.5 ms		

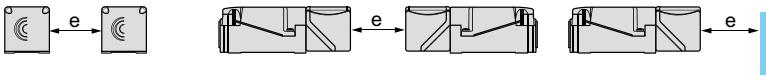
*(1) Sensor must be protected by a 0.4 A quick-blow fuse (reference **XUZE04**) connected in series with the load.*
(2) SIL 2 protection can only be obtained by connecting both outputs to a safety PLC. Please refer to the "Safety solutions using Preventa" catalogue.
*(3) These sensors are supplied without a cable gland. An adaptable PG 13.5 cable gland is available (reference **XSZPE13**). Accessories are available for connection to an M12 or 7/8"-16UN connector which can be added to the PG 13.5 sensor. Please consult our Customer Care Centre.*
*(4) Sensors are available for very low temperatures (suffix **TF**: - 40°C, + 70°C) or very high temperatures (suffix **TT**: - 25°C, + 85°C). Please consult our Customer Care Centre.*

Inductive proximity sensors

OsiSense XS, general purpose
Plastic case, 40 x 40 x 117 mm, plug-in
5 position turret head

Setting-up precautions

Minimum mounting distances (mm)

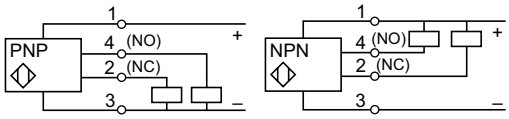


		Side by side	Face to face	Facing a metal object
Sensors flush mountable in metal	**XS7C4A1●●**	e ⩾ 60	e ⩾ 120	e ⩾ 45
	XS8C4A1●●	e ⩾ 80	e ⩾ 160	e ⩾ 60
Sensors non flush mountable in metal	**XS8C4A4●●**	e ⩾ 160	e ⩾ 320	e ⩾ 120

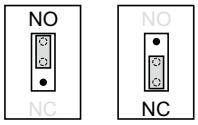
Wiring schemes

NO + NC outputs

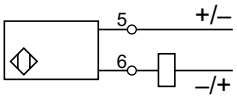
4-wire ⎓



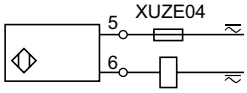
NO or NC outputs, depending on position of link



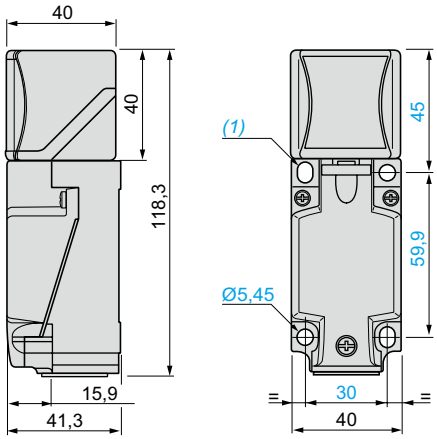
2-wire ⎓ (non polarised)



2-wire ∿ or ⎓ (programmable)

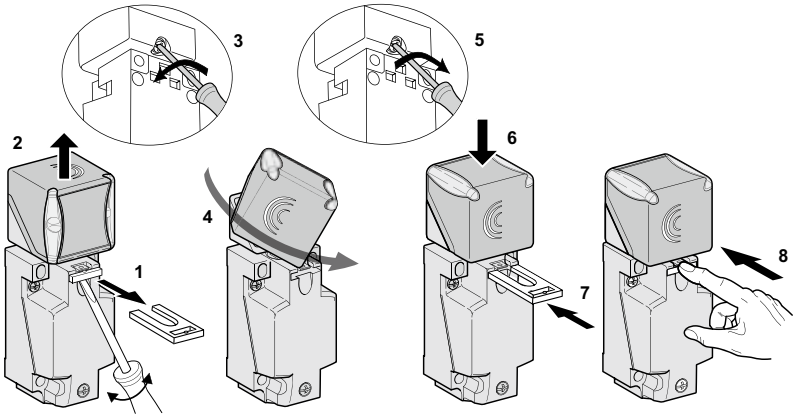


Dimensions

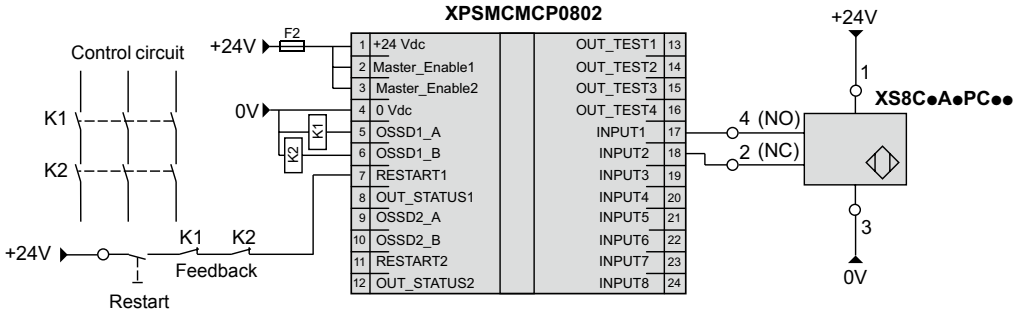


(1) 2 elongated holes Ø 5.3 x 7 cm.
Tightening torque of cover fixing screws and clamp screws: < 1.2 N.m / < 10.62 lb-in

Head positions



Example SIL 2 wiring scheme (with Preventa XPSMCMCP0802 safety PLC)



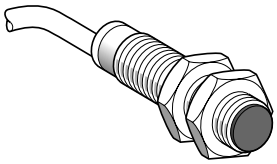
SFF (Safe Failure Fraction): 92,68 %
DC (Diagnosis Coverage): 75,8 %

Inductive proximity sensors

OsiSense XS, general purpose

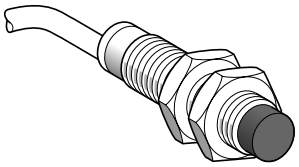
Multivoltage sensor, cylindrical, flush mountable and non flush mountable
Two-wire AC or DC, short-circuit protection

822102



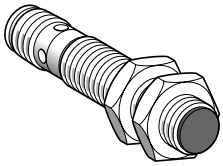
XS1M●●●●250

DF532016



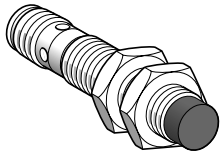
XS2M●●●●250

825982



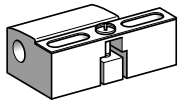
XS1M●●●●250K

801225



XS2M●●●●250K

825994



XSZB1●●

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)*	**XS1M12MA250**	0.075
		1/2"-20UNF connector	**XS1M12MA250K**	0.025
	NC	Pre-cabled (L = 2 m) *(1)*	**XS1M12MB250**	0.075
		1/2"-20UNF connector	**XS1M12MB250K**	0.025
Non flush mountable				
4	NO	Pre-cabled (L = 2 m) *(1)*	**XS2M12MA250**	0.075
		1/2"-20UNF connector	**XS2M12MA250K**	0.025
	NC	Pre-cabled (L = 2 m) *(1)*	**XS2M12MB250**	0.075
Ø 18, threaded M18 x 1				
Flush mountable				
5	NO	Pre-cabled (L = 2 m) *(1)*	**XS1M18MA250**	0.120
		1/2"-20UNF connector	**XS1M18MA250K**	0.060
	NC	Pre-cabled (L = 2 m) *(1)*	**XS1M18MB250**	0.120
		1/2"-20UNF connector	**XS1M18MB250K**	0.060
Non flush mountable				
8	NO	Pre-cabled (L = 2 m) *(1)*	**XS2M18MA250**	0.120
		1/2"-20UNF connector	**XS2M18MA250K**	0.060
	NC	Pre-cabled (L = 2 m) *(1)*	**XS2M18MB250**	0.120
		1/2"-20UNF connector	**XS2M18MB250K**	0.060
Ø 30, threaded M30 x 1.5				
Flush mountable				
10	NO	Pre-cabled (L = 2 m) *(1)*	**XS1M30MA250**	0.205
		1/2"-20UNF connector	**XS1M30MA250K**	0.145
	NC	Pre-cabled (L = 2 m) *(1)*	**XS1M30MB250**	0.205
		1/2"-20UNF connector	**XS1M30MB250K**	0.145
Non flush mountable				
15	NO	Pre-cabled (L = 2 m) *(1)*	**XS2M30MA250**	0.205
		1/2"-20UNF connector	**XS2M30MA250K**	0.145
	NC	Pre-cabled (L = 2 m) *(1)*	**XS2M30MB250**	0.205
		1/2"-20UNF connector	**XS2M30MB250K**	0.145

Accessories *(2)*

Description mm		Reference	Weight kg
Fixing clamps	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

*(1) For a 5 m long cable add **L1** to the reference; for a 10 m long cable add **L2** to the reference.*
*Example: **XS1M18MA250** becomes **XS1M18MA250L1** with a 5 m long cable.*
(2) For further information, see page 122.

Inductive proximity sensors

OsiSense XS, general purpose

Multivoltage sensor, cylindrical, flush mountable and non flush mountable

Two-wire AC or DC, 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 effective 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		Yellow LED, 4 viewing ports at 90°	Yellow LED
	Supply on		–	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

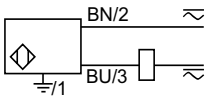
+/- : 2
⏚ : 1
+/- : 3

Pre-cabled

BU: Blue
BN: Brown

2-wire ∿ or ⎓

NO or NC output

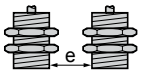


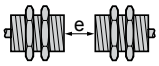
⏚ : on connector models only.

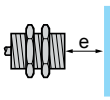
Setting-up

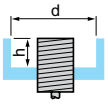
Minimum mounting distances (mm)

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

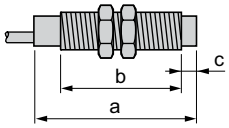








Dimensions



Sensor	Flush mountable in metal					Non flush mountable in metal				
	Pre-cabled		Connector			Pre-cabled		Connector		
	a	b	a	b	c	a	b	a	b	c
Ø 12	57	42	66	48	5	57	42	66	42	5
Ø 18	60	51	72	51	8	60	44	72	44	8
Ø 30	60	51	72	51	13	63	41	75	41	13

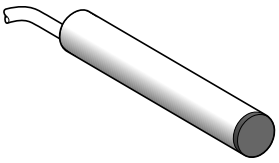
Inductive proximity sensors

OsiSense XS, general purpose

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

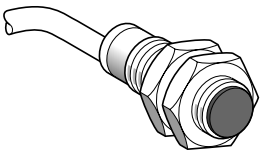
Four-wire DC, solid-state NO + NC output

801120



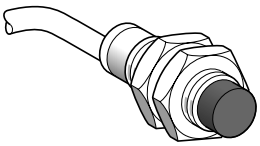
XS1L06●C410

801231



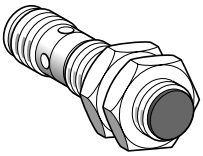
XS1●●●●C410

801233



XS2●●●●C410

801232



XS1N●●●C410D

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)	**XS1L06PC410**	0.025
		NPN	Pre-cabled (L = 2 m)	**XS1L06NC410**	0.025
Ø 8, threaded M8 x 1					
Stainless steel case, flush mountable					
1.5	NO + NC	PNP	Pre-cabled (L = 2 m)	**XS1M08PC410**	0.035
			M12 connector	**XS1M08PC410D**	0.025
		NPN	Pre-cabled (L = 2 m)	**XS1M08NC410**	0.035
			M12 connector	**XS1M08NC410D**	0.025
Stainless steel case, non flush mountable					
2.5	NO + NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2M08PC410**	0.035
			M12 connector	**XS2M08PC410D**	0.025
		NPN	Pre-cabled (L = 2 m)	**XS2M08NC410**	0.035
			M12 connector	**XS2M08NC410D**	0.025
Plastic case, non flush mountable					
2.5	NO + NC	PNP *(3)*	Pre-cabled (L = 2 m) *(1)*	**XS4P08PC410**	0.035
Ø 12, threaded M12 x 1					
Brass case, flush mountable					
2	NO + NC	PNP	Pre-cabled (L = 2 m) *(1) (2)*	**XS1N12PC410**	0.070
			M12 connector	**XS1N12PC410D**	0.020
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS1N12NC410**	0.070
			M12 connector	**XS1N12NC410D**	0.020
Plastic case, non flush mountable					
4	NO + NC	PNP *(3)*	Pre-cabled (L = 2 m) *(1)*	**XS4P12PC410**	0.070
			M12 connector	**XS4P12PC410D**	0.020

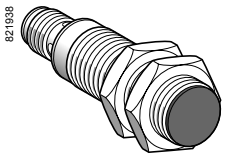
*(1) For a 5 m long cable add **L1** to the reference. Example: **XS1N12PC410** becomes **XS1N12PC410L1** with a 5 m long cable.*
*(2) For a 10 m long cable add **L2** to the reference. Example: **XS1N12PC410** becomes **XS1N12PC410L2** with a 10 m long cable.*
(3) These sensors can be supplied in NPN versions. Please contact our Customer Care Centre.

Inductive proximity sensors

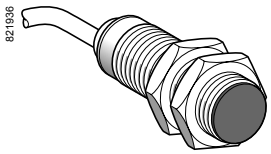
OsiSense XS, general purpose

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

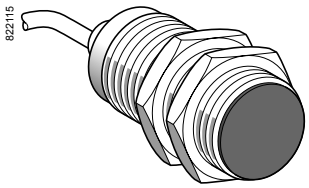
Four-wire DC, solid-state NO + NC output



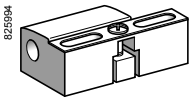
XS●●18●C410



XS●●18●C410D



XS●●30●C410



XSZB1●●

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Ø 18, threaded M18 x 1					
Brass case, flush mountable					
5	NO + NC	PNP	Pre-cabled (L = 2 m) *(1) (2)*	**XS1N18PC410**	0.100
			M12 connector	**XS1N18PC410D**	0.040
		NPN	Pre-cabled (L = 2 m)	**XS1N18NC410**	0.100
			M12 connector	**XS1N18NC410D**	0.040
Plastic case, non flush mountable					
8	NO + NC	PNP *(3)*	Pre-cabled (L = 2 m)	**XS4P18PC410**	0.100
			M12 connector	**XS4P18PC410D**	0.040
Ø 30, threaded M30 x 1.5					
Brass case, flush mountable					
10	NO + NC	PNP	Pre-cabled (L = 2 m) *(1) (2)*	**XS1N30PC410**	0.160
			M12 connector	**XS1N30PC410D**	0.100
		NPN	Pre-cabled (L = 2 m)	**XS1N30NC410**	0.160
			M12 connector	**XS1N30NC410D**	0.100
Plastic case, non flush mountable					
15	NO + NC	PNP *(3)*	Pre-cabled (L = 2 m)	**XS4P30PC410**	0.160
			M12 connector	**XS4P30PC410D**	0.100

Accessories *(4)*

Description		Reference	Weight kg
Fixing clamps	Ø 8	**XSZB108**	0.006
	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

*(1) For a 5 m long cable add **L1** to the reference. Example: **XS1N18PC410** becomes **XS1N18PC410L1** with a 5 m long cable.*
*(2) For a 10 m long cable add **L2** to the reference. Example: **XS1N18PC410** becomes **XS1N18PC410L2** with a 10 m long cable.*
(3) These sensors can be supplied in NPN versions. Please contact our Customer Care Centre.
(4) For further information, see page 122.

Inductive proximity sensors

OsiSense XS, general purpose

Cylindrical, metal and plastic, flush mountable and non flush mountable
Four-wire DC, solid-state NO + NC output

Characteristics

Sensor type			XS●●●●PC410D	XS●●●●NC410D	XS●●●●PC410	XS●●●●NC410
Product certifications	Ø 6.5 and Ø 8		UL, CSA, CE			
	Ø 12, Ø 18 and Ø 30		UL, CSA, CE, E2 *(1)*	UL, CSA, CE	UL, CSA, CE, E2 *(2)*	UL, CSA, CE
Conformity to safety standards	Ø 6.5 and Ø 8		–			
	Ø 12, Ø 18 and Ø 30		EN/IEC 61508: SIL 2 EN/ISO 13849-1: PL =d IEC 62061: SILcl2 *(3)*	–	EN/IEC 61508: SIL 2 EN/ISO 13849-1: PL =d IEC 62061: SILcl2 *(4)*	–
Reliability data	Ø 12, Ø 18 and Ø 30		MTTFd = 1810 years, PFHd = 69.9 10^{-9} 1/h, SFF > 92 %, DC > 75 % (with a safety controller) *(3)*	–	MTTFd = 1810 years, PFHd = 69.9 10^{-9} 1/h, SFF > 92 %, DC > 75 % (with a safety controller) *(4)*	–
Connection			M12 connector		Pre-cabled, length: 2 m	
Operating zone	Ø 6.5 and Ø 8 flush mountable	**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 effective sensing distance (Sr)			
Degree of protection	Conforming to IEC 60529		IP 65 and IP 67	IP 67	IP 67, double insulation (Ø 6.5 and Ø 8) IP 68, double insulation (Ø 12, Ø 18 and Ø 30)	
	Conforming to DIN 40050		IP 69K (Ø 12, Ø 18 and Ø 30)	–	–	
Storage temperature		**°C**	- 40…+ 85			
Operating temperature		**°C**	- 25…+ 70 *(5)*			
Materials	Case		Nickel plated brass for XS1N●●●. Stainless steel 303 for XS1M08●●● and XS2M08●●●. Plastic, PPS, for XS4P●●●.			
	Cable		–		PvR 4 x 0.08 mm² (Ø 6.5 and Ø 8) PvR 4 x 0.22 mm² (Ø 12, Ø 18 and Ø 30)	
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**	⎓ 9…36 (⎓ 10…36 for XS4P●●●)	⎓ 10…36	⎓ 9…36 (⎓ 10…36 for XS4P18●●●)	⎓ 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			

*(1) Except **XS4P●●●**: UL, CSA and CE.*
*(2) Except **XS4P18●●●**: UL, CSA and CE.*
*(3) Except **XS4P●●●**.*
*(4) Except **XS4P18●●●**.*
*(5) Sensors are available for very low temperatures (suffix **TF**: -40°C, + 70°C) or very high temperatures (suffix **TT**: - 25°C, + 85°C). Please consult our Customer Care Centre.*

Inductive proximity sensors

OsiSense XS, general purpose
Cylindrical, metal and plastic, flush mountable and non flush mountable
Four-wire DC, solid-state NO + NC output

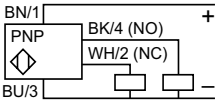
Wiring schemes

M12 connector

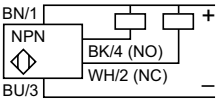
Pre-cabled

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

PNP 4-wire



NPN 4-wire

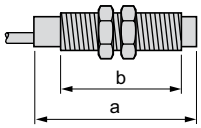


Setting-up

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	**XS1L06**	e ≥ 3	e ≥ 18	e ≥ 4.5	d ≥ 6.5 h ≥ 0
Ø 8 flush mountable	**XS1M08**	e ≥ 3	e ≥ 18	e ≥ 4.5	d ≥ 8 h ≥ 0
Ø 8 non flush mountable	**XS4P08**	e ≥ 10	e ≥ 30	e ≥ 7.5	d ≥ 24 h ≥ 5
Ø 12 flush mountable	**XS1N12**	e ≥ 4	e ≥ 24	e ≥ 6	d ≥ 12 h ≥ 0
Ø 12 non flush mountable	**XS4P12**	e ≥ 16	e ≥ 48	e ≥ 12	d ≥ 36 h ≥ 8
Ø 18 flush mountable	**XS1N18**	e ≥ 10	e ≥ 60	e ≥ 15	d ≥ 18 h ≥ 0
Ø 18 non flush mountable	**XS4P18**	e ≥ 16	e ≥ 96	e ≥ 24	d ≥ 54 h ≥ 16
Ø 30 flush mountable	**XS1N30**	e ≥ 20	e ≥ 120	e ≥ 30	d ≥ 30 h ≥ 0
Ø 30 non flush mountable	**XS4P30**	e ≥ 60	e ≥ 180	e ≥ 45	d ≥ 90 h ≥ 30

Dimensions



Flush mountable in metal

Sensor		Pre-cabled (mm)		M12 connector (mm)	
		a	b	a	b
Ø 6.5 stainless steel	**XS1L06**	50	–	–	–
Ø 8 stainless steel	**XS1M08**	51	42	62	40
Ø 12 brass	**XS1N12**	37	25	50	31
Ø 18 brass	**XS1N18**	41	29	51	28
Ø 30 brass	**XS1N30**	45	33	54	33

Non flush mountable in metal

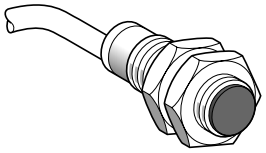
Sensor		Pre-cabled (mm)		M12 connector (mm)	
		a	b	a	b
Ø 8 stainless steel	**XS2M08**	54	42	65	40
Ø 8 plastic	**XS4P08**	34	25	–	–
Ø 12 plastic	**XS4P12**	37	25	50	31
Ø 18 plastic	**XS4P18**	41	29	51	28
Ø 30 plastic	**XS4P30**	45	33	54	33

Inductive proximity sensors

OsiSense XS, general purpose

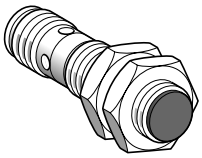
Cylindrical, metal, increased range, flush mountable
Four-wire DC, solid-state NO + NC output

801231



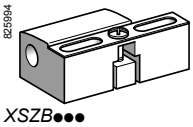
XS1●●B3PCL2

801232



XS112B3PCM12

825994



XSZB●●●

Sensors, 4-wire

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Ø 12, threaded M12 x 1					
4	NO + NC	PNP	Pre-cabled (L = 2 m)	**XS112B3PCL2**	0.070
			M12 connector	**XS112B3PCM12**	0.020
Ø 18, threaded M18 x 1					
8	NO + NC	PNP	Pre-cabled (L = 2 m)	**XS118B3PCL2**	0.100
			M12 connector	**XS118B3PCM12**	0.040
Ø 30, threaded M30 x 1.5					
15	NO + NC	PNP	Pre-cabled (L = 2 m)	**XS130B3PCL2**	0.160
			M12 connector	**XS130B3PCM12**	0.100

Accessories *(1)*

Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

(1) For further information, see page 122.

Inductive proximity sensors

OsiSense XS, general purpose

Cylindrical, metal, increased range, flush mountable
Four-wire DC, solid-state NO + NC output

Characteristics

Sensor type			XS1●●B3PCM12	XS1●●B3PCL2
Product certifications			UL, CSA, CE, E2	
Conformity to safety standards			EN/IEC 61508: SIL 2 EN/ISO 13849-1: PL =d IEC 62061: SILcl2	
Reliability data			MTTFd = 1810 years, PFHd = 69.9 10^{-9} 1/h, SFF > 92 %, DC > 75 % (with a safety controller)	
Connection	Connector		M12	–
	Pre-cabled		–	Length 2 m
Operating zone *(1)*	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	IP 65 and IP 68, double insulation ⧈
	Conforming to DIN 40050		IP 69K	–
Storage temperature		**°C**	- 40…+ 85	
Operating temperature		**°C**	- 25…+ 70 *(2)*	
Materials	Case		Nickel plated brass	
	Sensing face		PPS	
	Cable		–	PvR 4 x 0.22 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
Tension assignée d'alimentation		**V**	⎓ 12…24 with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 9…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 12	**Hz**	2500	
	Ø 18	**Hz**	1000	
	Ø 30	**Hz**	500	
Delays	First-up	**ms**	⩽ 10	
	Response	**ms**	⩽ 0.2 for Ø 12, ⩽ 0.3 for Ø 18, ⩽ 0.6 for Ø 30	
	Recovery	**ms**	⩽ 0.2 for Ø 12, ⩽ 0.7 for Ø 18, ⩽ 1.4 for Ø 30	

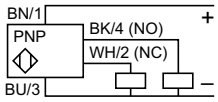
Wiring schemes

M12 connector

Pre-cabled

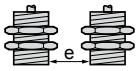
BU: Blue
BN: Brown
BK: Black
WH: White

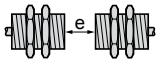
PNP 4-wire

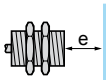


Setting-up

Minimum mounting distances (mm)

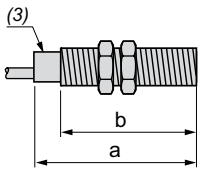






Sensors	Side by side	Face to face	Facing a metal object
Ø 12	e ⩾ 8	e ⩾ 50	e ⩾ 12
Ø 18	e ⩾ 16	e ⩾ 100	e ⩾ 25
Ø 30	e ⩾ 30	e ⩾ 180	e ⩾ 45

Dimensions



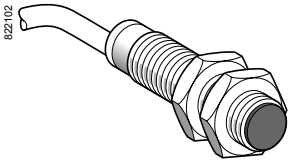
	Pre-cabled (mm)		M12 connector (mm)	
Sensors	**a**	**b**	**a**	**b**
Ø 12	37	25	50	31
Ø 18	41	29	51	28
Ø 30	45	33	54	33

(1) Detection curves, see page 126.
*(2) Sensors are available for very low temperatures (suffix **TF**: -40°C, + 70°C) or very high temperatures (suffix **TT**: - 25°C, + 85°C). Please consult our Customer Care Centre.*
(3) LED.

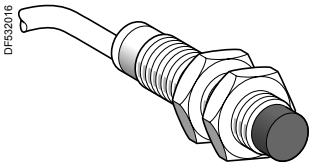
Inductive proximity sensors

OsiSense XS, general purpose

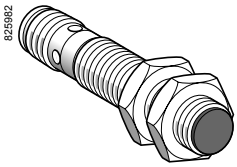
Cylindrical, metal and plastic, flush and non flush mountable
Four-wire DC, solid-state PNP + NPN NO/NC programmable output



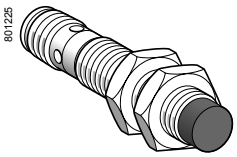
XS1M●●KP340
XS4P●●KP340



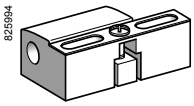
XS2M●●KP340



XS1M●●KP340D
XS4P●●KP340D



XS2M●●KP340D



XSZB1●●

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)*	**XS1M12KP340**	0.075
			M12 connector	**XS1M12KP340D**	0.025
Metal case, non flush mountable					
4	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS2M12KP340**	0.075
			M12 connector	**XS2M12KP340D**	0.025
Plastic case, non flush mountable					
4	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS4P12KP340**	0.075
			M12 connector	**XS4P12KP340D**	0.025
Ø 18, threaded M18 x 1					
Metal case, flush mountable					
5	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS1M18KP340**	0.120
			M12 connector	**XS1M18KP340D**	0.060
Metal case, non flush mountable					
8	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS2M18KP340**	0.120
			M12 connector	**XS2M18KP340D**	0.060
Plastic case, non flush mountable					
8	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS4P18KP340**	0.120
			M12 connector	**XS4P18KP340D**	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)*	**XS1M30KP340**	0.205
			M12 connector	**XS1M30KP340D**	0.145
Metal case, non flush mountable					
15	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS2M30KP340**	0.205
			M12 connector	**XS2M30KP340D**	0.145
Plastic case, non flush mountable					
15	NO/NC programmable	PNP + NPN	Pre-cabled (L = 2 m) *(1)*	**XS4P30KP340**	0.205
			M12 connector	**XS4P30KP340D**	0.145

Accessories *(2)*

Description mm		Reference	Weight kg
Fixing clamps	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

*(1) For a 5 m long cable add **L1** to the reference; for a 10 m long cable add **L2** to the reference.*
*Example: **XS1M12KP340** becomes **XS1M12KP340L1** with a 5 m long cable.*
(2) For further information, see page 122.

Inductive proximity sensors

OsiSense XS, general purpose

Cylindrical, metal and plastic, flush and non flush mountable
Four-wire DC, 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 effective 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 XS1M and XS2M, PPS for XS4P	
	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

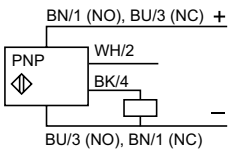
Pre-cabled

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

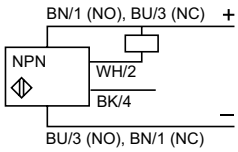
PNP + NPN

4-wire programmable, NO or NC output

PNP



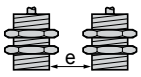
NPN

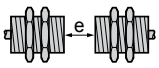


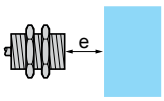
Setting-up

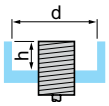
Minimum mounting distances (mm)

Sensor	Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 12 flush mountable **XS1M12**	e ≥ 4	e ≥ 24	e ≥ 6	d ≥ 12 h ≥ 0
Ø 12 non flush mountable **XS2M12** and **XS4P12**	e ≥ 16	e ≥ 48	e ≥ 12	d ≥ 36 h ≥ 8
Ø 18 flush mountable **XS1M18**	e ≥ 10	e ≥ 60	e ≥ 15	d ≥ 18 h ≥ 0
Ø 18 non flush mountable **XS2M18** and **XS4P18**	e ≥ 16	e ≥ 96	e ≥ 24	d ≥ 54 h ≥ 16
Ø 30 flush mountable **XS1M30**	e ≥ 20	e ≥ 120	e ≥ 30	d ≥ 30 h ≥ 0
Ø 30 non flush mountable **XS2M30** and **XS4P30**	e ≥ 60	e ≥ 180	e ≥ 45	d ≥ 90 h ≥ 30

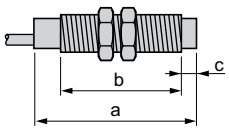








Dimensions



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	54	42	61	42	55	42	66	42	5
Ø 12 plastic	–	–	–	–	54	42	61	43	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	63	41	75	41	13
Ø 30 plastic	–	–	–	–	60	51	70	51	0

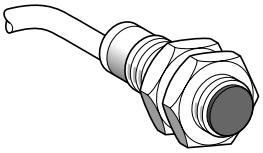
Inductive proximity sensors

OsiSense XS, general purpose

Plastic, cylindrical, non flush mountable
Two-wire AC or DC
Three-wire DC, solid-state output

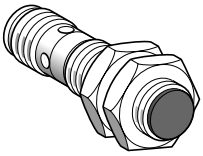
ECOLAB certified

801231



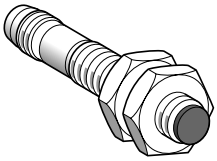
XS4P●●●●340
XS4P●●●●370
XS4P●●●●230

801232



XS4P●●●●340D
XS4P●●●●370D
XS4P●●●●230K

801167



XS4P08●●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)*	**XS4P08PA340**	0.025
		NPN	Pre-cabled (L = 2 m) *(1) (2)*	**XS4P08NA340**	0.025
	NC	PNP	Pre-cabled (L = 2 m) *(1) (2)*	**XS4P08PB340**	0.025
		NPN	Pre-cabled (L = 2 m) *(1) (2)*	**XS4P08NB340**	0.025
Three-wire ⎓ 12-48 V					
2.5	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS4P08PA370**	0.030
		NPN	Pre-cabled (L = 2 m)	**XS4P08NA370**	0.030
	NC	PNP	Pre-cabled (L = 2 m)	**XS4P08PB370**	0.030
		NPN	Pre-cabled (L = 2 m)	**XS4P08NB370**	0.030
Two-wire ∿ or ⎓ 24-240 V					
2.5	NO		Pre-cabled (L = 2 m) *(1)*	**XS4P08MA230**	0.030
			1/2"-20UNF connector	**XS4P08MA230K**	0.020
	NC		Pre-cabled (L = 2 m) *(1)*	**XS4P08MB230**	0.030
			1/2"-20UNF connector	**XS4P08MB230K**	0.020
Ø 12, threaded M12 x 1					
Three-wire ⎓ 12-24 V					
4	NO	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P12PA340**	0.060
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P12NA340**	0.060
	NC	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P12PB340**	0.060
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P12NB340**	0.060
Three-wire ⎓ 12-48 V					
4	NO	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P12PA370**	0.065
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P12NA370**	0.065
	NC	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P12PB370**	0.065
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS4P12NB370**	0.065
Two-wire ∿ or ⎓ 24-240 V					
4	NO		Pre-cabled (L = 2 m) *(1)*	**XS4P12MA230**	0.065
			1/2"-20UNF connector	**XS4P12MA230K**	0.030
	NC		Pre-cabled (L = 2 m) *(1)*	**XS4P12MB230**	0.065
			1/2"-20UNF connector	**XS4P12MB230K**	0.030
Ø 18, threaded M18 x 1					
Three-wire ⎓ 12-24 V					
8	NO	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P18PA340**	0.090
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P18NA340**	0.090
	NC	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P18PB340**	0.090
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P18NB340**	0.090
Three-wire ⎓ 12-48 V					
8	NO	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P18PA370**	0.100
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P18NA370**	0.100
	NC	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P18PB370**	0.100
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS4P18NB370**	0.100
Two-wire ∿ or ⎓ 24-240 V					
8	NO		Pre-cabled (L = 2 m) *(1)*	**XS4P18MA230**	0.100
			1/2"-20UNF connector	**XS4P18MA230K**	0.040
	NC		Pre-cabled (L = 2 m) *(1)*	**XS4P18MB230**	0.100
			1/2"-20UNF connector	**XS4P18MB230K**	0.040
Ø 30, threaded M30 x 1.5					
Three-wire ⎓ 12-24 V					
15	NO	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P30PA340**	0.120
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P30NA340**	0.120
	NC	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P30PB340**	0.120
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P30NB340**	0.120
Three-wire ⎓ 12-48 V					
15	NO	PNP	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P30PA370**	0.140
		NPN	Pre-cabled (L = 2 m) *(1) (3)*	**XS4P30NA370**	0.140
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS4P30PB370**	0.140
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS4P30NB370**	0.140
Two-wire ∿ or ⎓					
15	NO		Pre-cabled (L = 2 m) *(1)*	**XS4P30MA230**	0.140
			1/2"-20UNF connector	**XS4P30MA230K**	0.080
	NC		Pre-cabled (L = 2 m) *(1)*	**XS4P30MB230**	0.140
			1/2"-20UNF connector	**XS4P30MB230K**	0.080

*(1) For a 5 m long cable add **L1** to the reference; for a 10 m long cable add **L2** to the reference. Example: **XS4P08PA340** becomes **XS4P08PA340L1** with a 5 m long cable.*
*(2) For an M8 connector, add **S** to the reference. Example: **XS4P08PA340** becomes **XS4P08PA340S** with an M8 connector.*
*(3) For an M12 connector, add **D** to the reference. Example: **XS4P12PA370** becomes **XS4P12PA370D** with an M12 connector.*

Inductive proximity sensors

OsiSense XS, general purpose
Plastic, cylindrical, non flush mountable
Two-wire AC or DC
Three-wire DC, solid-state output

Characteristics

Sensor type			XS4P●●●●340●	XS4P●●●●370●	XS4P●●M●230●
Product certifications			UL, CSA, CE, ECOLAB		
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 effective 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

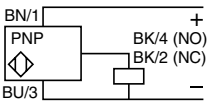
1/2"-20UNF

⎓: 2
⎓: 3

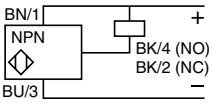
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP

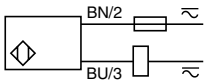


NPN



For M8 connector, NO and NC outputs on terminal 4

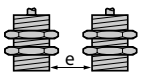
2-wire ∼ or ⎓

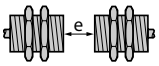


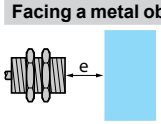
Setting-up

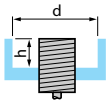
Minimum mounting distances (mm)

	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

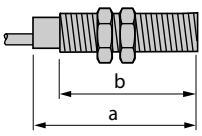








Dimensions

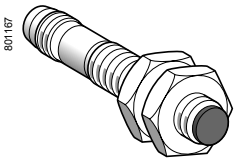


XS4P	3-wire ⎓ 12-24 V Pre-cabled (mm) a	b	Connector (mm) a	b	3-wire ⎓ 12-48 V or 2-wire ∼/⎓ 24-240 V Pre-cabled (mm) a	b	Connector (mm) a	b
Ø 8	33	26	42	26	50	42	61	40
Ø 12	35	25	48	27	54	42	61	42
Ø 18	36	25	48	29	62	52	70	52
Ø 30	43	32	50	34	62	52	70	52

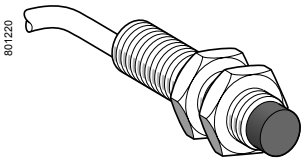
Inductive proximity sensors

OsiSense XS, general purpose

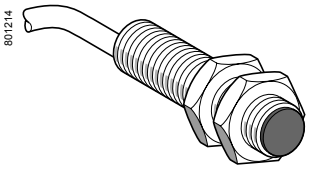
Basic, cylindrical, metal, flush and non flush mountable
Three-wire DC, solid-state output



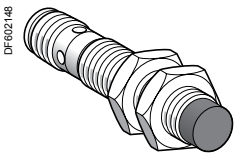
XS108BLPAM8



XS208BL●AL●



XS112BL●●L●



XS212BL●AM12

Sensing distance (Sn)	Function	Output	Connection	Reference	Weight
mm					kg
Ø 8, threaded M8 x 1					
Three-wire ⎓ 12-24 V, flush mountable					
1.5	NO	PNP	Pre-cabled (L = 2 m)	**XS108BLPAL2**	0.035
			Pre-cabled (L = 5 m)	**XS108BLPAL5**	0.105
			M8 connector	**XS108BLPAM8**	0.008
			M12 connector	**XS108BLPAM12**	0.015
		NPN	Pre-cabled (L = 2 m)	**XS108BLNAL2**	0.035
			M12 connector	**XS108BLNAM12**	0.015
Three-wire ⎓ 12-24 V, non flush mountable					
2.5	NO	PNP	Pre-cabled (L = 2 m)	**XS208BLPAL2**	0.035
			Pre-cabled (L = 5 m)	**XS208BLPAL5**	0.105
			M8 connector	**XS208BLPAM8**	0.008
			M12 connector	**XS208BLPAM12**	0.015
		NPN	Pre-cabled (L = 2 m)	**XS208BLNAL2**	0.035
			M12 connector	**XS208BLNAM12**	0.015
Ø 12, threaded M12 x 1					
Three-wire ⎓ 12-24 V, flush mountable					
2	NO	PNP	Pre-cabled (L = 2 m)	**XS112BLPAL2**	0.070
			Pre-cabled (L = 3 m)	**XS112BLPAL3**	0.095
			Pre-cabled (L = 5 m)	**XS112BLPAL5**	0.140
			M12 connector	**XS112BLPAM12**	0.015
		NPN	Pre-cabled (L = 2 m)	**XS112BLNAL2**	0.070
			M12 connector	**XS112BLNAM12**	0.015
	NC	PNP	Pre-cabled (L = 2 m)	**XS112BLPBL2**	0.070
			M12 connector	**XS112BLPBM12**	0.015
Three-wire ⎓ 12-24 V, non flush mountable					
4	NO	PNP	Pre-cabled (L = 2 m)	**XS212BLPAL2**	0.070
			Pre-cabled (L = 5 m)	**XS212BLPAL5**	0.140
			M12 connector	**XS212BLPAM12**	0.015
		NPN	Pre-cabled (L = 2 m)	**XS212BLNAL2**	0.070
			Pre-cabled (L = 7 m)	**XS212BLNAL7**	0.185
			M12 connector	**XS212BLNAM12**	0.015
	NC	PNP	Pre-cabled (L = 2 m)	**XS212BLPBL2**	0.070
			Pre-cabled (L = 5 m)	**XS212BLPBL5**	0.140
		NPN	Pre-cabled (L = 2 m)	**XS212BLNBL2**	0.070

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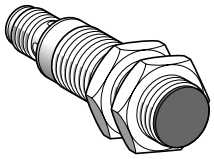
Schemes: page 70
Dimensions: page 71

Inductive proximity sensors

OsiSense XS, general purpose

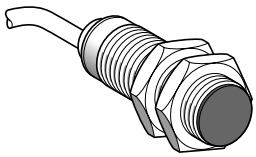
Basic, cylindrical, metal, flush and non flush mountable
Three-wire DC, solid-state output

821938



XS118BL●●M12

821936



XS118BL●●L2●

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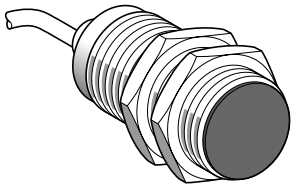
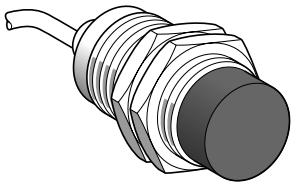


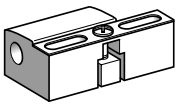
XS130BL●●L●

822116



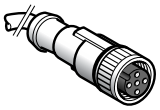
XS230BL●●L●

825994



XSZB1●●

DF532604



XZCPV1141L●●

Sensing distance (Sn)	Function	Output	Connection	Reference	Weight
mm					kg
Ø 18, threaded M18 x 1					
Three-wire ⎓ 12-24 V, flush mountable					
5	NO	PNP	Pre-cabled (L = 2 m)	**XS118BLPAL2**	0.105
			Pre-cabled (L = 5 m)	**XS118BLPAL5**	0.175
			M12 connector	**XS118BLPAM12**	0.035
		NPN	Pre-cabled (L = 2 m)	**XS118BLNAL2**	0.105
			Pre-cabled (L = 5 m)	**XS118BLNAL5**	0.175
			M12 connector	**XS118BLNAM12**	0.035
	NC	PNP	Pre-cabled (L = 2 m)	**XS118BLPBL2**	0.105
			M12 connector	**XS118BLPBM12**	0.035
Three-wire ⎓ 12-24 V, non flush mountable					
8	NO	PNP	Pre-cabled (L = 2 m)	**XS218BLPAL2**	0.105
			Pre-cabled (L = 5 m)	**XS218BLPAL5**	0.175
			M12 connector	**XS218BLPAM12**	0.035
		NPN	Pre-cabled (L = 2 m)	**XS218BLNAL2**	0.105
			Pre-cabled (L = 5 m)	**XS218BLNAL5**	0.175
			Pre-cabled (L = 7 m)	**XS218BLNAL7**	0.220
			M12 connector	**XS218BLNAM12**	0.035
	NC	PNP	Pre-cabled (L = 2 m)	**XS218BLPBL2**	0.105
		NPN	Pre-cabled (L = 2 m)	**XS218BLNBL2**	0.105
Ø 30, threaded M30 x 1.5					
Three-wire ⎓ 12-24 V, flush mountable					
10	NO	PNP	Pre-cabled (L = 2 m)	**XS130BLPAL2**	0.165
			M12 connector	**XS130BLPAM12**	0.075
		NPN	Pre-cabled (L = 2 m)	**XS130BLNAL2**	0.165
			Pre-cabled (L = 3 m)	**XS130BLNAL3**	0.190
			M12 connector	**XS130BLNAM12**	0.075
	NC	PNP	Pre-cabled (L = 2 m)	**XS130BLPBL2**	0.165
			M12 connector	**XS130BLPBM12**	0.075
Three-wire ⎓ 12-24 V, non flush mountable					
15	NO	PNP	Pre-cabled (L = 2 m)	**XS230BLPAL2**	0.155
			Pre-cabled (L = 5 m)	**XS230BLPAL5**	0.225
			M12 connector	**XS230BLPAM12**	0.085
		NPN	Pre-cabled (L = 2 m)	**XS230BLNAL2**	0.155
			Pre-cabled (L = 7 m)	**XS230BLNAL7**	0.225
			M12 connector	**XS230BLNAM12**	0.085
	NC	PNP	Pre-cabled (L = 2 m)	**XS230BLPBL2**	0.155

Fixing accessories *(1)*

Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø 8	**XSZB108**	0.006
	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

Cabling accessories

Description	Length of cable	Reference	Weight
	m		kg
Pre-wired connectors female straight M12 connector, 4 pins PVC cable	5	**XZCPV1141L5**	0.210
	10	**XZCPV1141L10**	0.390

(1) For further information, see page 122.

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Schemes: page 70
Dimensions: page 71

Inductive proximity sensors

OsiSense XS, general purpose

Basic, cylindrical, metal, flush and non flush mountable
Three-wire DC, solid-state output

Characteristics

Sensor type			XS1••BLP•L• XS1••BLN•L•	XS1••BLP•M• XS1••BLN•M•	XS2••BLP•L XS2••BLN•L	XS2••BLP•M• XS2••BLN•M•
Product certifications			UL, CSA, CE			
Connection	Pre-cabled		Length 2, 3 or 5 m, depending on model	–	Length 2, 5 or 7m, depending on model	–
	Connector		–	M8 on Ø 8 M12 on Ø 8, Ø 12, Ø 18 and Ø 30	–	M8 on Ø 8 M12 onØ 8, Ø 12, Ø 18 and Ø 30
Operating zone *(1)*	Ø 8	**mm**	**0…1.2**		**0…2**	
	Ø 12	**mm**	**0…1.6**		**0…3.2**	
	Ø 18	**mm**	**0…4**		**0…6.4**	
	Ø 30	**mm**	**0…8**		**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		PVC 3 x 0.14 mm² except Ø 8 : 3 x 0.11 mm²	–	PVC 3 x 0.14 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: 2 viewing ports at 180°	Yellow LED, on rear	Yellow LED: 2 viewing ports at 180°
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity			
Voltage limits (including ripple)		**V**	⎓ 10…36			
Switching capacity		**mA**	≤ 200 (except Ø 8: ≤ 50) with overload and short-circuit protection *(2)*			
Voltage drop, closed state		**V**	≤ 2			
Current consumption, no-load		**mA**	≤ 10			
Residual current, open state		**mA**	–			
Maximum switching frequency	Ø 8	**Hz**	1000		1000	
	Ø 12	**Hz**	2500		1200	
	Ø 18	**Hz**	1200		500	
	Ø 30	**Hz**	500		300	
Delays First-up		**ms**	≤ 15		≤ 15	
Response	Ø 8	**ms**	≤ 5		≤ 5	
	Ø 12	**ms**	≤ 0.1		≤ 0.1	
	Ø 18	**ms**	≤ 0.1		≤ 0.1	
	Ø 30	**ms**	≤ 0.1		≤ 0.2	
Recovery	Ø 8	**ms**	≤ 0.3		≤ 0.3	
	Ø 12	**ms**	≤ 0.15		≤ 0.4	
	Ø 18	**ms**	≤ 0.3		≤ 1	
	Ø 30	**ms**	≤ 1		≤ 1.4	

Wiring schemes

Connector

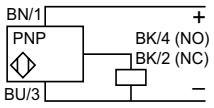
M8

M12

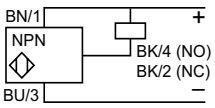
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP



NPN



(1) Detection curves, see page 126.
(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 122.

References:
pages 68 and 69

Dimensions:
page 71

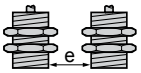
Inductive proximity sensors

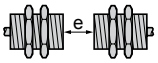
OsiSense XS, general purpose

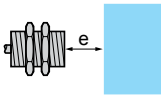
Basic, cylindrical, metal, flush and non flush mountable
Three-wire DC, solid-state output

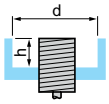
Setting-up

Minimum mounting distances (mm)



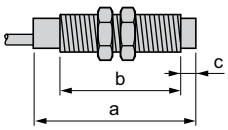






Sensors		Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 8 flush mountable	**XS108**	e ≥ 3	e ≥ 18	e ≥ 4.5	d ≥ 8 h ≥ 0
Ø 8 non flush mountable	**XS208**	e ≥ 10	e ≥ 30	e ≥ 7.5	d ≥ 24 h ≥ 5
Ø 12 flush mountable	**XS112**	e ≥ 4	e ≥ 24	e ≥ 6	d ≥ 12 h ≥ 0
Ø 12 non flush mountable	**XS212**	e ≥ 16	e ≥ 48	e ≥ 12	d ≥ 36 h ≥ 8
Ø 18 flush mountable	**XS118**	e ≥ 10	e ≥ 60	e ≥ 15	d ≥ 18 h ≥ 0
Ø 18 non flush mountable	**XS218**	e ≥ 16	e ≥ 96	e ≥ 24	d ≥ 54 h ≥ 16
Ø 30 flush mountable	**XS130**	e ≥ 20	e ≥ 120	e ≥ 30	d ≥ 30 h ≥ 0
Ø 30 non flush mountable	**XS230**	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 8	**XS108**	42	40	53	42	62	39
Ø 12	**XS112**	44	31	–	–	55	34
Ø 18	**XS118**	53	41	–	–	64	43
Ø 30	**XS130**	57	44	–	–	68	47

Non flush mountable in metal

Sensors		Pre-cabled (mm)			M8 connector (mm)			M12 connector (mm)		
		a	b	c	a	b	c	a	b	c
Ø 8	**XS208**	42	36	4	53	38	4	62	36	4
Ø 12	**XS212**	44	26	5	–	–	–	55	29	5
Ø 18	**XS218**	53	33	8	–	–	–	64	35	8
Ø 30	**XS230**	57	32	13	–	–	–	68	34	13

References:
pages 68 and 69

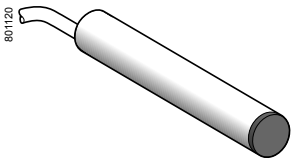
Characteristics:
page 70

Schemes:
page 70

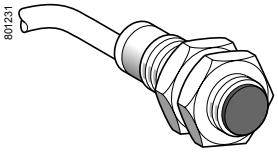
Inductive proximity sensors

OsiSense XS, general purpose

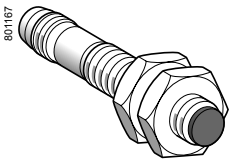
Cylindrical, almost flush mountable, increased range
Three-wire DC, solid-state output



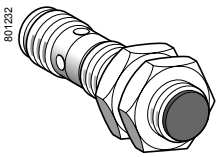
XS1L06●A349



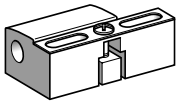
XS1N●●●●349



XS1N08●●349S



XS1N●●●●349D



XSZB1●●

Sensing distance (Sn) (mm)	Function	Output	Connection	Reference	Weight kg
Ø 6.5, plain					
2.5	NO	PNP	Pre-cabled (L = 2 m)	**XS1L06PA349**	0.025
			M8 connector	**XS1L06PA349S**	0.010
			M12 connector	**XS1L06PA349D**	0.015
		NPN	Pre-cabled (L = 2 m)	**XS1L06NA349**	0.025
			M8 connector	**XS1L06NA349S**	0.010
			M12 connector	**XS1L06NA349D**	0.015
	NC	PNP	Pre-cabled (L = 2 m)	**XS1L06PB349**	0.025
			M8 connector	**XS1L06PB349S**	0.010
		NPN	Pre-cabled (L = 2 m)	**XS1L06NB349**	0.025
			M8 connector	**XS1L06NB349S**	0.010
Ø 8, threaded M8 x 1					
2.5	NO	PNP	Pre-cabled (L = 2 m)	**XS1N08PA349**	0.035
			M8 connector	**XS1N08PA349S**	0.015
			M12 connector	**XS1N08PA349D**	0.020
		NPN	Pre-cabled (L = 2 m)	**XS1N08NA349**	0.035
			M8 connector	**XS1N08NA349S**	0.015
			M12 connector	**XS1N08NA349D**	0.020
	NC	PNP	Pre-cabled (L = 2 m)	**XS1N08PB349**	0.035
			M8 connector	**XS1N08PB349S**	0.015
			M12 connector	**XS1N08PB349D**	0.020
		NPN	Pre-cabled (L = 2 m)	**XS1N08NB349**	0.035
			M8 connector	**XS1N08NB349S**	0.015
			M12 connector	**XS1N08NB349D**	0.020
Ø 12, threaded M12 x 1					
4	NO	PNP	Pre-cabled (L = 2 m)	**XS1N12PA349**	0.070
			M12 connector	**XS1N12PA349D**	0.020
		NPN	Pre-cabled (L = 2 m)	**XS1N12NA349**	0.070
			M12 connector	**XS1N12NA349D**	0.020
	NC	PNP	Pre-cabled (L = 2 m)	**XS1N12PB349**	0.070
			M12 connector	**XS1N12PB349D**	0.020
		NPN	Pre-cabled (L = 2 m)	**XS1N12NB349**	0.070
			M12 connector	**XS1N12NB349D**	0.020
Ø 18, threaded M18 x 1					
10	NO	PNP	Pre-cabled (L = 2 m)	**XS1N18PA349**	0.100
			M12 connector	**XS1N18PA349D**	0.040
		NPN	Pre-cabled (L = 2 m)	**XS1N18NA349**	0.100
			M12 connector	**XS1N18NA349D**	0.040
	NC	PNP	Pre-cabled (L = 2 m)	**XS1N18PB349**	0.100
			M12 connector	**XS1N18PB349D**	0.040
		NPN	Pre-cabled (L = 2 m)	**XS1N18NB349**	0.100
			M12 connector	**XS1N18NB349D**	0.040
Ø 30, threaded M30 x 1.5					
20	NO	PNP	Pre-cabled (L = 2 m)	**XS1N30PA349**	0.160
			M12 connector	**XS1N30PA349D**	0.100
		NPN	Pre-cabled (L = 2 m)	**XS1N30NA349**	0.160
			M12 connector	**XS1N30NA349D**	0.100
	NC	PNP	Pre-cabled (L = 2 m)	**XS1N30PB349**	0.160
			M12 connector	**XS1N30PB349D**	0.100
		NPN	Pre-cabled (L = 2 m)	**XS1N30NB349**	0.160
			M12 connector	**XS1N30NB349D**	0.100

Accessories *(1)*

Description mm		Reference	Weight kg
Fixing clamps	Ø 6.5 (plain)	**XSZB165**	0.005
	Ø 8	**XSZB108**	0.006
	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

(1) For further information, see page 122.

Inductive proximity sensors

OsiSense XS, general purpose

Cylindrical, almost flush mountable, increased range
Three-wire DC, 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 effective 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 for 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 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

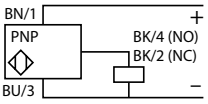
M8

M12

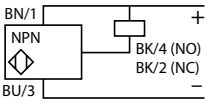
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP 3-wire



NPN 3-wire

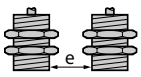


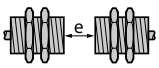
For M8 connector, NO and NC outputs on terminal 4

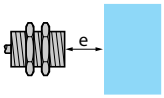
Setting-up precautions

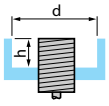
Minimum mounting distances (mm)

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

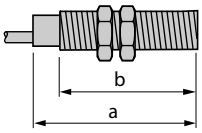








Dimensions



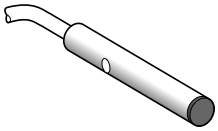
Sensor	Flush mountable in metal: Pre-cabled a	Pre-cabled b	M8 connector a	M8 connector b	M12 connector a	M12 connector b
Ø 6.5	33	–	42	–	45	–
Ø 8	33	25	42	26	45	23
Ø 12	35	25	–	–	50	30
Ø 18	39	28	–	–	50	28
Ø 30	43	32	–	–	55	32

Inductive proximity sensors

OsiSense XS, general purpose

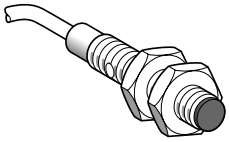
Miniature, cylindrical, flush and non flush mountable
Three-wire DC, solid-state output

801308



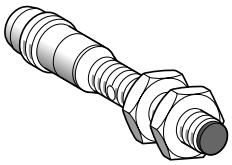
XS1L04●●310

801316



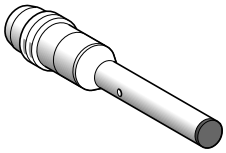
XS1N05●●310

801315



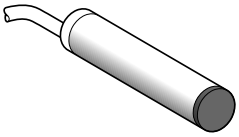
XS1N05●●311S

801309



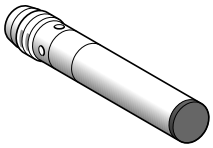
XS1L04●●310S

801131



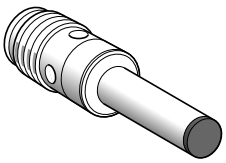
XS●L06●●340

801132



XS●L06●●340S
XS●L06●●349S

801141



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)	**XS1L04PA310**	0,025
			M8 connector	**XS1L04PA310S**	0.010
		NPN	Pre-cabled (L = 2 m)	**XS1L04NA310**	0.025
			M8 connector	**XS1L04NA310S**	0.010
	NC	PNP	Pre-cabled (L = 2 m)	**XS1L04PB310**	0.025
			M8 connector	**XS1L04PB310S**	0.010
		NPN	Pre-cabled (L = 2 m)	**XS1L04NB310**	0.025
			M8 connector	**XS1L04NB310S**	0.010
Stainless steel case, flush mountable					
0,8	NO	PNP	Pre-cabled (L = 2 m)	**XS1L04PA311**	0.025
			M8 connector	**XS1L04PA311S**	0.010
		NPN	Pre-cabled (L = 2 m)	**XS1L04NA311**	0.025
			M8 connector	**XS1L04NA311S**	0.010
	NC	PNP	Pre-cabled (L = 2 m)	**XS1L04PB311**	0.025
			M8 connector	**XS1L04PB311S**	0,010
		NPN	Pre-cabled (L = 2 m)	**XS1L04NB311**	0.025
			M8 connector	**XS1L04NB311S**	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)	**XS1N05PA310**	0,030
		NPN	Pre-cabled (L = 2 m)	**XS1N05NA310**	0,030
	NC	PNP	Pre-cabled (L = 2 m)	**XS1N05PB310**	0,030
		NPN	Pre-cabled (L = 2 m)	**XS1N05NB310**	0,030
Stainless steel case, flush mountable					
0.8	NO	PNP	Pre-cabled (L = 2 m)	**XS1N05PA311**	0.030
			M8 connector	**XS1N05PA311S**	0.015
		NPN	Pre-cabled (L = 2 m)	**XS1N05NA311**	0.030
			M8 connector	**XS1N05NA311S**	0.015
	NC	PNP	Pre-cabled (L = 2 m)	**XS1N05PB311**	0.030
			M8 connector	**XS1N05PB311S**	0.015
		NPN	Pre-cabled (L = 2 m)	**XS1N05NB311**	0.030
			M8 connector	**XS1N05NB311S**	0.015

Ø 6.5 plain *(1)*

Sensing distance (Sn) mm	Function	Output	Connection *(2)*	Reference	Weight kg
Stainless steel case, non flush mountable					
2.5	NO	PNP	Pre-cabled (L = 2 m)	**XS2L06PA340**	0.025
			M8 connector	**XS2L06PA340S**	0.010
			M12 connector	**XS2L06PA340D**	0.015
		NPN	Pre-cabled (L = 2 m)	**XS2L06NA340**	0.025
			M8 connector	**XS2L06NA340S**	0.010
			M12 connector	**XS2L06NA340D**	0.015
	NC	PNP	Pre-cabled (L = 2 m)	**XS2L06PB340**	0.025
			M8 connector	**XS2L06PB340S**	0.010
			M12 connector	**XS2L06PB340D**	0.015
		NPN	Pre-cabled (L = 2 m)	**XS2L06NB340**	0.025
			M8 connector	**XS2L06NB340S**	0.010
			M12 connector	**XS2L06NB340D**	0.015

(1) For accessories, see page 122.
*(2) For a 5 m long cable add **L1** to the reference; for a 10 m long cable add **L2** to the reference.*
*Example: **XS1L04PA310** becomes **XS1L04PA310L1** with a 5 m long cable.*

Inductive proximity sensors

OsiSense XS, general purpose

Miniature, cylindrical, flush and non flush mountable
Three-wire DC, solid-state output

Characteristics

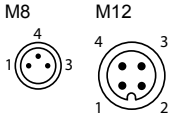
Sensor type			XS1●●●●●●●●S, XS1●●●●●●●●D, XS2L06●A340●	XS1●●●●●●●, XS2L06●A340
Product certifications			UL, CSA, CE	
Connection *(1)*	Connector		M8 on **XS1●●●●●●●●S** and M12 on **XS1●●●●●●●●D**	–
	Pre-cabled		–	Length: 2 m
Operating zone	Ø 4	**mm**	**0…0.8 (brass), 0…0.6 (stainless steel)**	
	Ø 5	**mm**	**0…0.8 (brass), 0…0.6 (stainless steel)**	
	Ø 6.5 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 303	
	Cable		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 **XS1L04●●●●●●** and **XS1N05●●●●●●** ⎓ 12…24 for **XS2L06●●●●●●**	
Voltage limits (including ripple)		**V**	⎓ 5…30 for **XS1L04●●●●●●** and **XS1N05●●●●●●** ⎓ 10…38 for **XS2L06●●●●●●**	
Current consumption, no-load		**mA**	⩽ 10	
Switching capacity	3-wire PNP/NPN	**mA**	⩽ 100 with overload and short-circuit protection ⩽ 200 for **XS2L06** 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 126

Wiring schemes

Connector

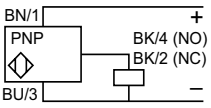
M8 M12



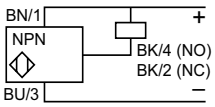
Pre-cabled

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

PNP 3-wire



NPN 3-wire

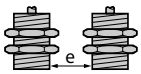


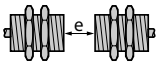
For M8 connector, NO and NC outputs on terminal 4.

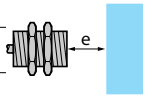
Setting-up

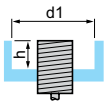
Minimum mounting distances (mm)

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 ⩾ 5	e ⩾ 30	e ⩾ 7.5	d1 ⩾ 10, h ⩾ 4





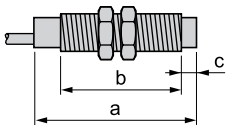




Tightening torque

Stainless steel: 2.2 N.m. Brass: 1.6 N.m (values obtained with washers mounted)

Dimensions

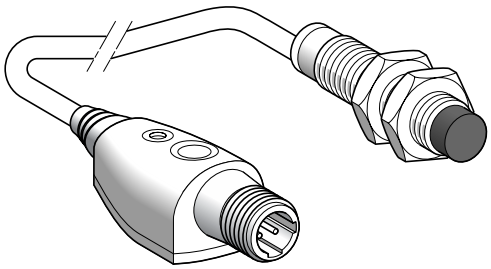


Sensor	Pre-cabled			M8 connector			M12 connector		
	a	b	c	a	b	c	a	b	c
Ø 4	28	–	–	42	–	–	–	–	–
Ø 5	28	24	–	42	24	–	–	–	–
Ø 6.5	33	–	4	46	–	4	49	–	4

Inductive proximity sensors

OsiSense XS Application
Adjustable range sensors
Cylindrical, flush mountable and non flush mountable
Three-wire DC, solid-state output

520030



XS6●●B2●●L01M12

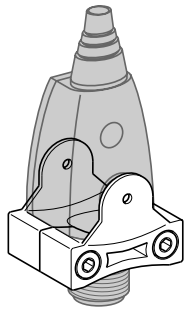
Ø 12, threaded M12 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
5	NO	PNP	Remote M12 connector on 0.15 m flying lead	**XS612B2PAL01M12**	0.100
		NPN	Remote M12 connector on 0.15 m flying lead	**XS612B2NAL01M12**	0.100
	NC	PNP	Remote M12 connector on 0.15 m flying lead	**XS612B2PBL01M12**	0.100
		NPN	Remote M12 connector on 0.15 m flying lead	**XS612B2NBL01M12**	0.100

Ø 18, threaded M18 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
9	NO	PNP	Remote M12 connector on 0.15 m flying lead	**XS618B2PAL01M12**	0.140
		NPN	Remote M12 connector on 0.15 m flying lead	**XS618B2NAL01M12**	0.140
	NC	PNP	Remote M12 connector on 0.15 m flying lead	**XS618B2PBL01M12**	0.140
		NPN	Remote M12 connector on 0.15 m flying lead	**XS618B2NBL01M12**	0.140

520031

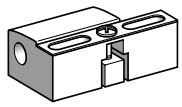


XSZBPM12

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
18	NO	PNP	Remote M12 connector on 0.15 m flying lead	**XS630B2PAL01M12**	0.220
		NPN	Remote M12 connector on 0.15 m flying lead	**XS630B2NAL01M12**	0.220
	NC	PNP	Remote M12 connector on 0.15 m flying lead	**XS630B2PBL01M12**	0.220
		NPN	Remote M12 connector on 0.15 m flying lead	**XS630B2NBL01M12**	0.220

825994



XSZB●●●

Accessories *(1)*

Description		Reference	Weight kg
Remote control fixing clamp		**XSZBPM12**	0.015
Sensor fixing clamps	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

(1) For further information, see page 122.

Inductive proximity sensors

OsiSense XS Application
Adjustable range sensors
Cylindrical, flush mountable and non flush mountable
Three-wire DC, solid-state output

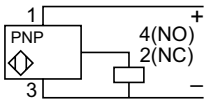
Characteristics

Sensor type				XS6●●B2●●L01M12
Product certifications				UL, CSA, CE
Connection	Connector			Remote M12 connector on 0.15 m flying lead
Sensing distance and adjustment zone	Ø 12	Nominal sensing distance (Sn)	**mm**	**0…5** non flush mounted / **0…3.4** flush mounted
		Precision adjustment zone	**mm**	**1.7…5** non flush mounted / **1.7…3.4** flush mounted
	Ø 18	Nominal sensing distance (Sn)	**mm**	**0…9** non flush mounted / **0…6** flush mounted
		Precision adjustment zone	**mm**	**3…9** non flush mounted / **3…6** flush mounted
	Ø 30	Nominal sensing distance (Sn)	**mm**	**0…18** non flush mounted / **0…11** flush mounted
		Precision adjustment zone	**mm**	**6…18** non flush mounted / **6…11** flush mounted
Differential travel			**%**	**1...15** of effective 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
	Remote control			PBT
	Cable			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
Indicators	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

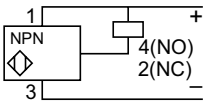
Wiring schemes

Connector

PNP

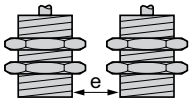


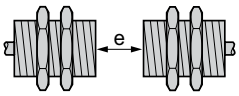
NPN

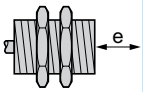


Setting-up

Minimum mounting distances (mm)



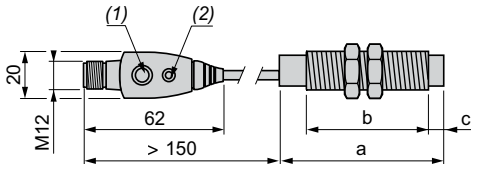




	Side by side		Face to face		Facing a metal object
	flush mounted	not flush mounted	flush mounted	not flush mounted	
Ø 12	e ≥ 14	50	e ≥ 50	100	e ≥ 3.4
Ø 18	e ≥ 28	100	e ≥ 100	200	e ≥ 6
Ø 30	e ≥ 48	180	e ≥ 180	360	e ≥ 11

Dimensions

XS6



(1) Teach mode button
(2) LED

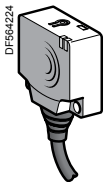
	Connector (mm)		
	a	b	c
Ø 12	59	42	5
Ø 18	64	44	8
Ø 30	62.6	41	13

Inductive proximity sensors

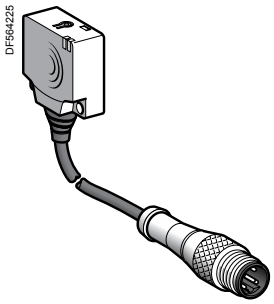
OsiSense XS, general purpose with increased range

Flat, flush mountable/non flush mountable + teach mode *(1)*
Two-wire AC or DC
Three-wire DC, solid-state output

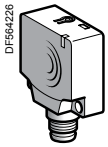
ECOLAB certified



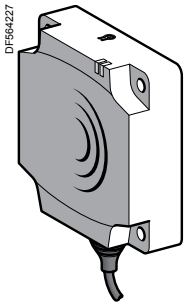
XS8E1A1●●L2



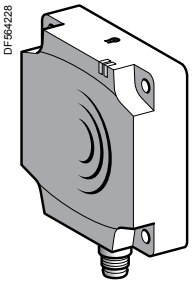
XS8●1A1●●L01M12
XS8●1A1●●L01U20



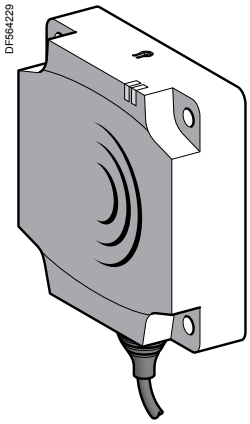
XS8E1A1●●M8



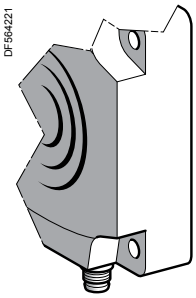
XS8C1A1●●L2



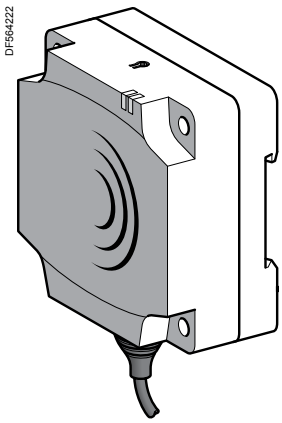
XS8C1A1●●M8



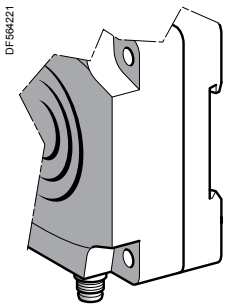
XS8D1A1●●L2



XS8D1A1●●M12



XS8D1A1●●L2DIN



XS8D1A1●●M12DIN

Flat, 26 x 26 x 13 mm format *(2)*

Sensing distance (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)*	**XS8E1A1PAL2**	0.075
			M8 connector	**XS8E1A1PAM8**	0.040
			Remote M12 connector	**XS8E1A1PAL01M12**	0.040
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS8E1A1NAL2**	0.075
			M8 connector	**XS8E1A1NAM8**	0.040
			Remote M12 connector	**XS8E1A1NAL01M12**	0.040
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS8E1A1PBL2**	0.075
			M8 connector	**XS8E1A1PBM8**	0.040
			Remote M12 connector	**XS8E1A1PBL01M12**	0.040
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS8E1A1NBL2**	0.075
			M8 connector	**XS8E1A1NBM8**	0.040
			Remote M12 connector	**XS8E1A1NBL01M12**	0.040
Two-wire ∿ or ⎓ unprotected *(4)*					
15	NO	–	Pre-cabled (L = 2 m) *(3)*	**XS8E1A1MAL2**	0.070
			Remote 1/2"-20UNF connector	**XS8E1A1MAL01U20**	0.040
	NC	–	Pre-cabled (L = 2 m) *(3)*	**XS8E1A1MBL2**	0.070
			Remote 1/2"-20UNF connector	**XS8E1A1MBL01U20**	0.040

Flat, 40 x 40 x 15 mm format *(2)*

Sensing distance (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)*	**XS8C1A1PAL2**	0.095
			M8 connector	**XS8C1A1PAM8**	0.060
			Remote M12 connector	**XS8C1A1PAL01M12**	0.060
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS8C1A1NAL2**	0.095
			M8 connector	**XS8C1A1NAM8**	0.060
			Remote M12 connector	**XS8C1A1NAL01M12**	0.060
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS8C1A1PBL2**	0.095
			M8 connector	**XS8C1A1PBM8**	0.060
			Remote M12 connector	**XS8C1A1PBL01M12**	0.060
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS8C1A1NBL2**	0.095
			M8 connector	**XS8C1A1NBM8**	0.060
			Remote M12 connector	**XS8C1A1NBL01M12**	0.060
Two-wire ∿ or ⎓ unprotected *(4)*					
25	NO	–	Pre-cabled (L = 2 m) *(3)*	**XS8C1A1MAL2**	0.090
			Remote 1/2"-20UNF connector	**XS8C1A1MAL01U20**	0.060
	NC	–	Pre-cabled (L = 2 m) *(3)*	**XS8C1A1MBL2**	0.090
			Remote 1/2"-20UNF connector	**XS8C1A1MBL01U20**	0.060

Flat, 80 x 80 x 26 mm format *(2)*

Sensing distance (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)*	**XS8D1A1PAL2** *(5)*	0.390
			M12 connector	**XS8D1A1PAM12** *(5)*	0.340
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS8D1A1NAL2** *(5)*	0.390
			M12 connector	**XS8D1A1NAM12** *(5)*	0.340
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS8D1A1PBL2** *(5)*	0.390
			M12 connector	**XS8D1A1PBM12** *(5)*	0.340
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS8D1A1NBL2** *(5)*	0.390
			M12 connector	**XS8D1A1NBM12** *(5)*	0.340
Two-wire ∿ or ⎓ unprotected *(4)*					
60	NO	–	Pre-cabled (L = 2 m) *(3)*	**XS8D1A1MAL2** *(5)*	0.390
			1/2"-20UNF connector	**XS8D1A1MAU20** *(5)*	0.340
	NC	–	Pre-cabled (L = 2 m) *(3)*	**XS8D1A1MBL2** *(5)*	0.390
			1/2"-20UNF connector	**XS8D1A1MBU20** *(5)*	0.340

(1) For further information on flush or non flush mountable sensors using teach mode, see page 22.
(2) For accessories, see page 122.
*(3) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **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: **XS8D1A1PAL2DIN**.*

Inductive proximity sensors

OsiSense XS, general purpose with increased range

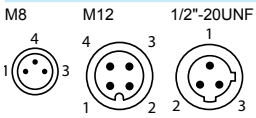
Flat, flush mountable/non flush mountable + teach mode *(1)*
Two-wire AC or DC
Three-wire DC, solid-state output

Characteristics

Sensor type				**XS8E●●●●●M8, XS8C●●●●●M8, XS8D●●●●●M12, XS8D●●●●●U20**	**XS8E●●●●●L01M12, XS8E●●●●●L01U20, XS8C●●●●●L01M12, XS8C●●●●●L01U20**	**XS8E●●●●●L2, XS8C●●●●●L2, XS8D●●●●●L2**
Product certifications				UL, CSA, CE, ECOLAB		
Connection	Connector			M8 except XS8●●●●●●M12: M12 XS8●●●●●●U20: 1/2"-20UNF	Remote on 0.15 m flying lead XS8●●●●●●L01M12: M12 XS8●●●●●●L01U20: 1/2"-20UNF	–
	Pre-cabled			–	–	Length: 2 m
Sensing distance and adjustment zone	XS8E	Nominal sensing dist. Sn	mm	**0…15** not flush mounted / **0…10** flush mounted		
		Fine adjustment zone	mm	**5…15** not flush mounted / **5…10** flush mounted		
	XS8C	Nominal sensing dist. Sn	mm	**0…25** not flush mounted / **0…15** flush mounted		
		Fine adjustment zone	mm	**8…25** not flush mounted / **8…15** flush mounted		
	XS8D	Nominal sensing dist. Sn	mm	**0…60** not flush mounted / **0…40** flush mounted		
		Fine adjustment zone	mm	**20…60** not flush mounted / **20…40** flush mounted		
Differential travel			%	**1...15** of effective sensing distance (Sr)		
Degree of protection	Conforming to IEC 60529			IP 67, double insulation ⧈ (except M8 connector: IP 67)		IP 68, ⧈
Storage temperature			°C	- 40….+85		
Operating temperature			°C	- 25….+70		
Materials	Case			PBT		
	Cable			–	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		
Indicators	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 **XS8E**, ⩽ 200 **XS8C** and **XS8D**, with overload and short-circuit protection		
	2-wire		mA	5…200 ∿ **XS8E**, 5…300 ∿ **XS8C** and **XS8D**, 5…200 ⎓ **XS8C** and **XS8D**		
Voltage drop, closed state	3-wire		V	⩽ 2		
	2-wire		V	⩽ 5.5		
Maximum switching frequency			Hz	2000 **XS8E**, 1000 **XS8C**, 150 **XS8D**		
Delays	First-up		ms	⩽ 10 **XS8E**, **XS8C** and **XS8D** (3-wire), ⩽ 10 **XS8E** and **XS8C**, ⩽ 15 **XS8D** (2-wire)		
	Response		ms	⩽ 0.3		
	Recovery		ms	⩽ 0.8 **XS8E** and **XS8C**, ⩽ 6 **XS8D**		

Wiring schemes

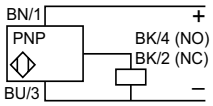
Connector



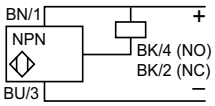
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP/M12 or M8

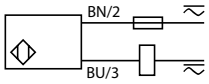


NPN/M12 or M8



For M8 connector, NO and NC outputs on terminal 4

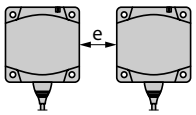
2-wire 1/2"-20UNF



Setting-up

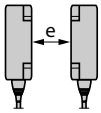
Minimum mounting distances (mm)

Side by side



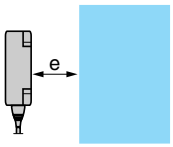
e ⩾	XS8E	XS8C	XS8D
Flush mounted	40	60	200
Not flush mounted	150	125	600

Face to face



e ⩾	XS8E	XS8C	XS8D
Flush mounted	80	120	400
Not flush mounted	300	250	not recom-mended

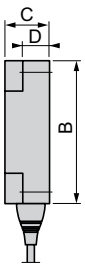
Facing a metal object



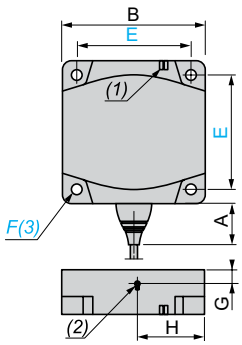
e ⩾	XS8E	XS8C	XS8D
	10	15	40

Dimensions

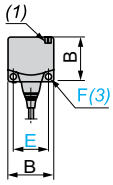
XS8C/D/E



XS8C/D



XS8E



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

Sensor	A (cable)	A (connector)	B	C	D	E	F	G	H
XS8E	14	11	26	13	8.8	**20**	**3.5**	6.8	6.6
XS8C	14	11	40	15	9.8	**33**	**4.5**	8.3	13.6
XS8D	23	18	80	26	16	**65**	**5.5**	8.5	37.8
XS8D●●DIN	23	18	80	40	30	**65**	**5.1**	22.5	37.8

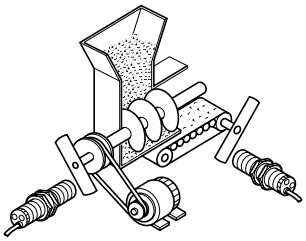
Inductive proximity sensors

OsiSense XS Application

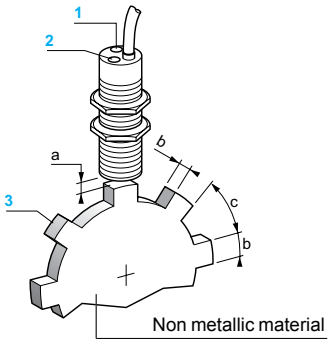
Sensors for rotation monitoring, slip detection, shaft overload detection
Cylindrical form

Example:
Coupling breakage monitoring

822138



DF602242



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 XSAV 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.*

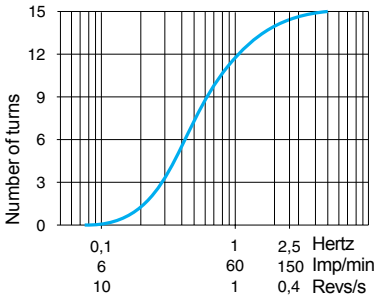
Adjustment of frequency threshold

- 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 (–).

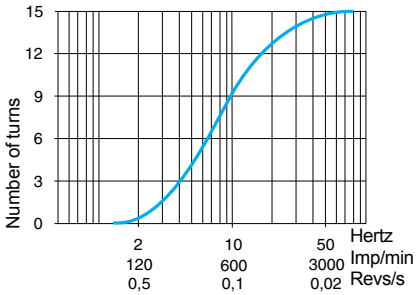
	Diameter of sensor			
1: Potentiometer		a	b	c
2: LED				
3: Metal target	M30	4…6 mm	30 mm	60 mm

Potentiometer adjustment curves (for **XSAV1●801**, 2-wire ∿ or ⎓ sensors)

Low speed version (6…150 impulses/minute)



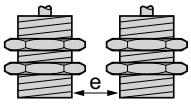
High speed version (120…3000 impulses/minute)



Setting-up

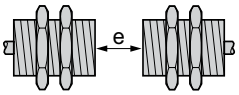
Minimum distances (mm)

Side by side



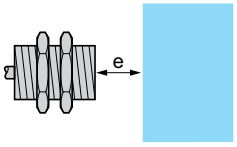
e ⩾ 20

Face to face



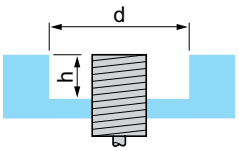
e ⩾ 120

Facing a metal object



e ⩾ 30

Mounted in a metal support



d ⩾ 30, h ⩾ 0

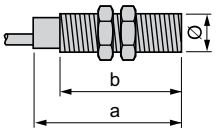
Fixing nut tightening torque: < 50 N.m

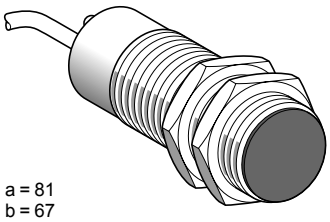
Inductive proximity sensors

OsiSense XS Application

Sensors for rotation monitoring, slip detection, shaft overload detection
Cylindrical form

Flush mountable in metal





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

a = 81
b = 67
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

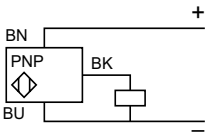
3-wire ⎓	**PNP / NC**	**XSAV11373**	**XSAV12373**	–	–
2-wire	**⎓ or ∿ / NC**	–	–	**XSAV11801**	**XSAV12801**
Weight (kg)		0.300			

Characteristics

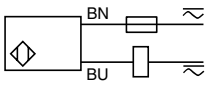
Connection	**Pre-cabled, 3 x 0.34 mm², length 2 m** *(1)*	**Pre-cabled, 2 x 0.34 mm², length 2 m** *(1)*
Degree of protection conforming to IEC 60529	IP 67	
Operating zone	0…8 mm	
Repeat accuracy	3 % of Sr	
Differential travel	3…15 % of Fr	
Operating temperature	- 25…+ 70 °C	
Output state indication	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	6000 impulses/min (for **XSAV11●●●**); 48,000 impulses/min (for **XSAV12●●●**)	
"Run-up" delay following power-up	9 seconds ± 20 % + 1/Fr (3)	

Wiring schemes

3-wire ⎓
XSAV1●373



2-wire ∿ or ⎓
XSAV1●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: XSAV11373 becomes **XSAV11373L05** 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 122.
*(3) For a sensor without a "run-up" delay following power-up, replace XSAV1 in the reference by XSAV0. Example: XSAV11801 becomes **XSAV01801** without a "run-up" delay. For a reduced "run-up" delay of 3 s, replace XSAV1 in the reference by XSAV3.*

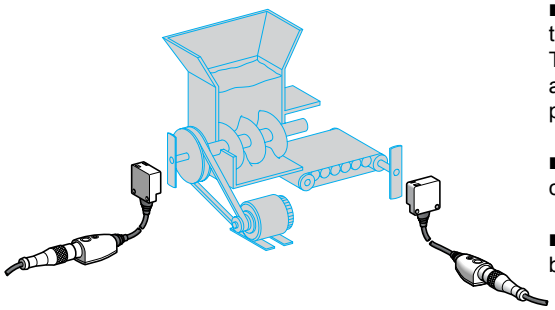
Accessories:
page 122

Inductive proximity sensors

OsiSense XS Application

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

Operating principle and applications

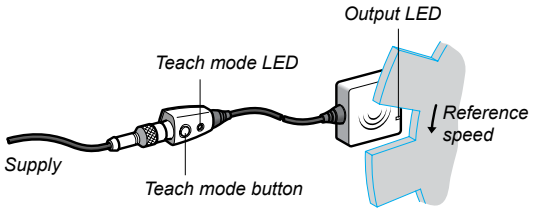


■ These inductive proximity sensors are designed for monitoring rotational speed or the speed of the flow of objects to be protected or monitored.
They operate on the principle of comparing a speed threshold preset by the operator against the instantaneous measurement of the speed of the moving object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

■ They provide a simple, economical solution for detecting slip, belt breakage, coupling breakage and overload, etc.

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

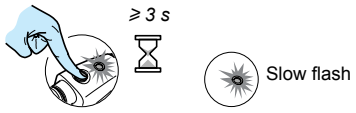
Installation and setting-up

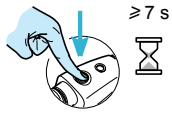


Setting-up and positioning the sensor

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

■ Using this system, the positioning is therefore made 100 % reliable and can be checked at any time without altering the settings of the sensor.





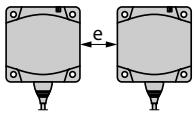
Speed adjustment in teach mode

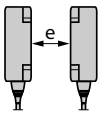
■ The normal or reference speed of the moving object (1) to be monitored is adjusted by simply pressing the teach mode button (*2*) and is then validated by the display LED.
□ If in doubt, the sensor can be reset at any time to the factory settings.

(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 on underspeed when the speed of the moving object drops below 1000 - (1000 x 0.3) = 700 rpm.
- 20 %, - 11 % and - 6 % thresholds can be obtained by pressing the teach mode button.

Setting-up

Minimum mounting distances (mm)

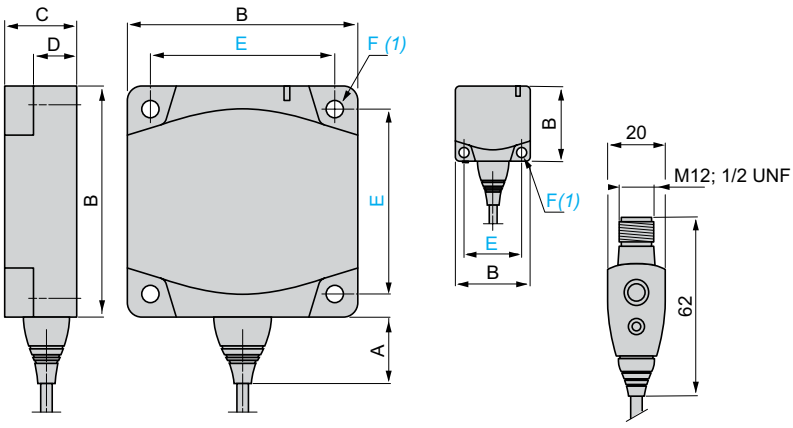




Type	Side by side	Face to face
XS9E	e ≥ 40	e ≥ 80
XS9C	e ≥ 60	e ≥ 120

Dimensions

XS9E, XS9C



(1) For CHC type screws

Type	A	B	C	D	E	F
XS9E	14	26	13	8.8	20	3.5
XS9C	14	40	15	9.8	33	4.5

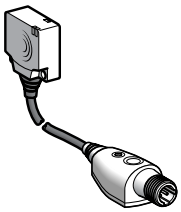
Inductive proximity sensors

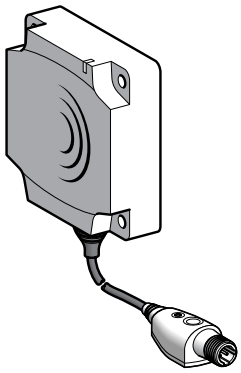
OsiSense XS Application

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	**XS9E11RPBL01M12**	**XS9C11RPBL01M12**	–	–
2-wire	⎓ or ∿ / NC	–	–	**XS9E11RMBL01U20**	**XS9C11RMBL01U20**
Weight (kg)		0.040	0.060	0.040	0.060
Characteristics					
Product certifications		UL, CSA, CE			
Connection		Remote M12 connector on 0.15 m flying lead		Remote 1/2"-20UNF connector on 0.15 m flying lead	
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		- 40…+ 85 °C			
Operating temperature		- 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			
Indicators	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			
"Run-up" delay following power-up		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 schemes

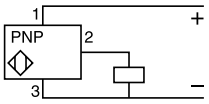
Connector

M12

1/2"-20UNF

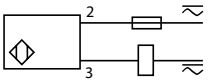
3-wire ⎓

XS9●11RPBL01M12

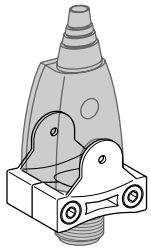


2-wire ∿ or ⎓

XS9●11RMBL01U20



Accessory *(1)*



XSZBPM12

Description	Reference	Weight kg
Remote control fixing clamp	**XSZBPM12**	0.015

(1) For accessories, see page 122.

Inductive proximity sensors

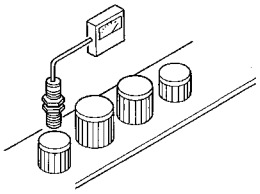
OsiSense XS Application

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

For position, displacement and deformation control/monitoring

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 many sectors, particularly for applications involving:

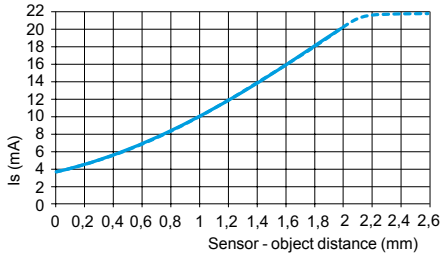
- deformation and displacement monitoring,
- vibration amplitude and frequency monitoring,
- control of dimensional tolerances,
- position control,
- concentricity or eccentricity monitoring.

Operating principle

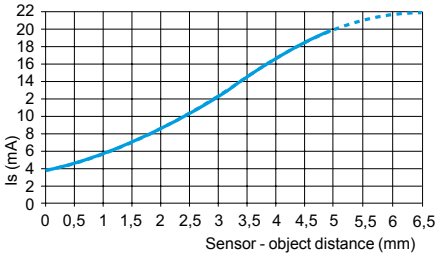
The operating principle of the sensor is that of a damped oscillator. The degree of damping will depend on the distance of an object from the sensing face. The sensor will sense the distance and produce an output current with a value directly proportional to this distance.

Output curves 4..0.20 mA, 2-wire connection

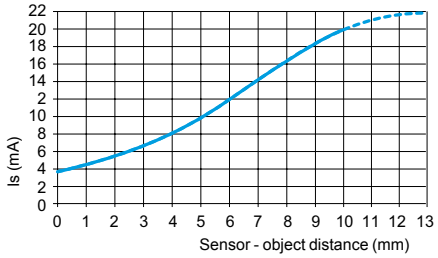
XS1M12AB120
Sn = 0.2…2 mm **Ø 12 mm**



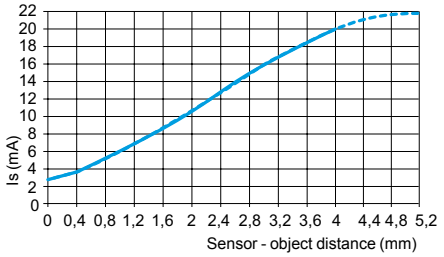
XS1M18AB120
Sn = 0.5…5 mm **Ø 18 mm**



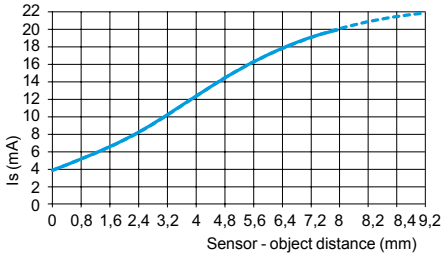
XS1M30AB120
Sn = 1…10 mm **Ø 30 mm**



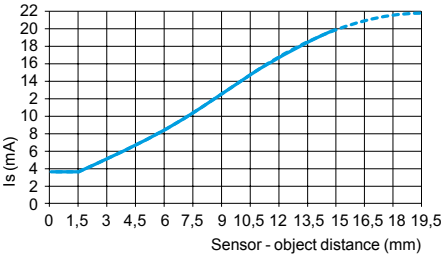
XS4P12AB120
Sn = 0.4…4 mm **Ø 12 mm**



XS4P18AB120
Sn = 0.8…8 mm **Ø 18 mm**

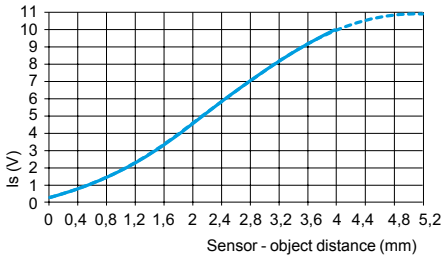


XS4P30AB120
Sn = 1.5…15 mm **Ø 30 mm**

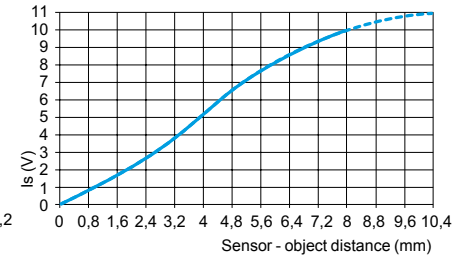


Output curves 0...10 V, 3-wire connection

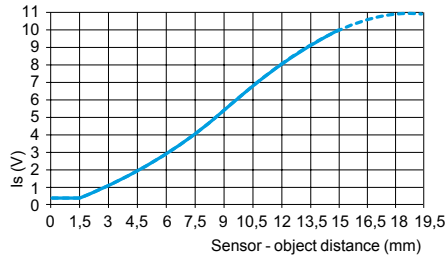
XS4P12AB110
Sn = 0.4…4 mm **Ø 12 mm**



XS4P18AB110
Sn = 0.8…8 mm **Ø 18 mm**

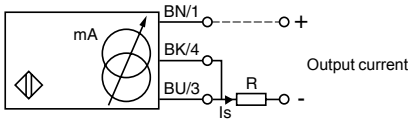


XS4P30AB110
Sn = 1.5…15 mm **Ø 30 mm**



Wiring schemes

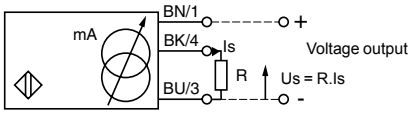
2-wire connection



	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 85 to 87

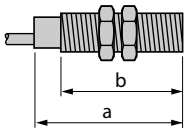
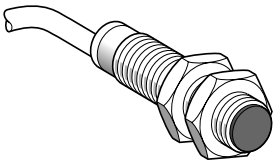
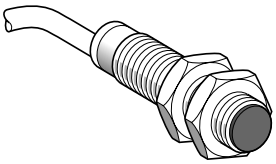
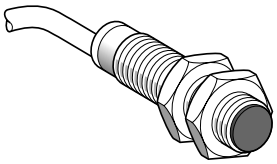
Characteristics:
pages 85 to 87

Inductive proximity sensors

OsiSense XS Application

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

For position, displacement and deformation control/monitoring

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 = 54 b = 42
	Metal case	**Plastic case**	**Plastic case**
Nominal sensing distance (Sn)	2 mm	4 mm	4 mm

References

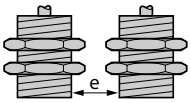
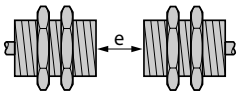
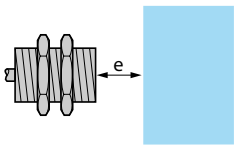
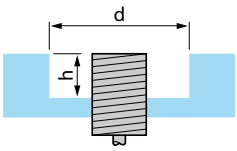
3-wire ⎓ Output 0…10 V *(2)*	–	–	**XS4P12AB110**
2-wire ⎓ Output 4…20 mA *(2)*	**XS1M12AB120**	**XS4P12AB120**	–
Weight (kg)	0.075	0.065	0.065

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…36 V	⎓ 10…36 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 84.

Setting-up

Minimum mounting distances (mm)	Side by side	Face to face	Facing a metal object	Mounted in a metal support
				
XS1M12AB120 flush mountable	e ⩾ 4	e ⩾ 24	e ⩾ 6	d ⩾ 12, h ⩾ 0
XS4P12AB110 non flush mountable	e ⩾ 16	e ⩾ 48	e ⩾ 12	d ⩾ 36, h ⩾ 8
XS4P12AB120 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 our Customer Care Centre.

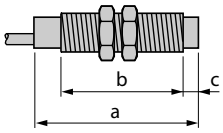
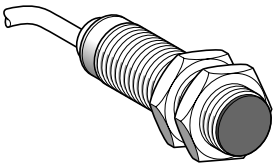
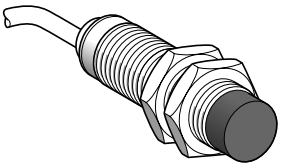
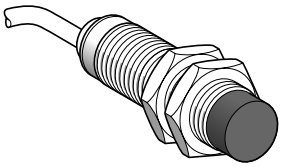
Accessories:
page 122

Functions:
page 84

Inductive proximity sensors

OsiSense 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 = 53 b = 44 c = 0	a = 41 b = 26 c = 8	a = 41 b = 26 c = 8
	Metal case	**Plastic case**	**Plastic case**
Nominal sensing distance (Sn)	5 mm	8 mm	8 mm

References

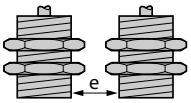
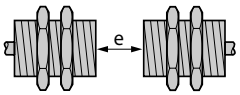
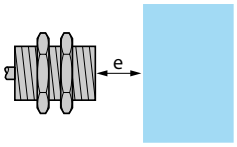
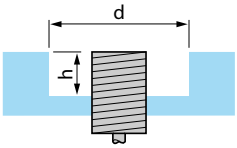
3-wire ⎓	Output 0…10 V *(2)*	–	–	**XS4P18AB110**
2-wire ⎓	Output 4…20 mA *(2)*	**XS1M18AB120**	**XS4P18AB120**	–
Weight (kg)		0.120	0.080	0.080

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…36 V	⎓ 10…36 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 84.

Setting-up

Minimum mounting distances (mm)	Side by side	Face to face	Facing a metal object	Mounted in a metal support
				
XS1M18AB120 flush mountable	e ⩾ 10	e ⩾ 60	e ⩾ 15	d ⩾ 18, h ⩾ 0
XS4P18AB110 non flush mountable	e ⩾ 32	e ⩾ 96	e ⩾ 24	d ⩾ 54, h ⩾ 16
XS4P18AB120 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 our Customer Care Centre.

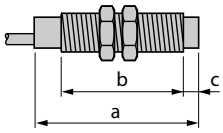
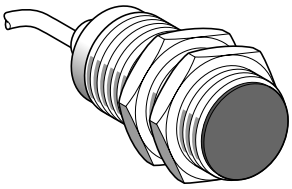
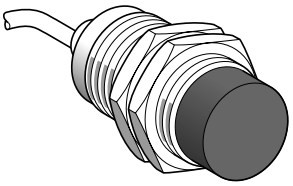
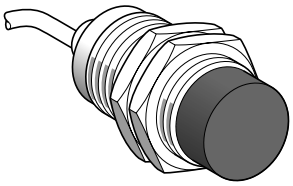
Accessories:
page 122

Schemes:
page 84

Inductive proximity sensors

OsiSense 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 = 53 b = 32 c = 13	a = 53 b = 32 c = 13
	Metal case	**Plastic case**	**Plastic case**
Nominal sensing distance (Sn)	10 mm	15 mm	15 mm

References

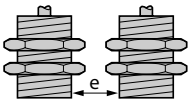
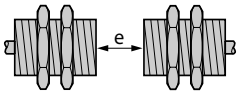
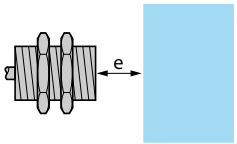
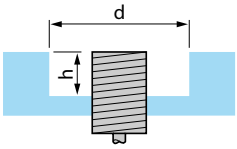
3-wire ⎓	Output 0…10 V *(2)*	–	–	**XS4P30AB110**
2-wire ⎓	Output 4…20 mA *(2)*	**XS1M30AB120**	**XS4P30AB120**	–
Weight (kg)		0.200	0.100	0.100

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…36 V	⎓ 10…36 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 84.

Setting-up

Minimum mounting distances (mm)	Side by side	Face to face	Facing a metal object	Mounted in a metal support
				
XS1M30AB120 flush mountable	e ≥ 20	e ≥ 120	e ≥ 30	d ≥ 30, h ≥ 0
XS4P30AB110 non flush mountable	e ≥ 60	e ≥ 180	e ≥ 45	d ≥ 90, h ≥ 30
XS4P30AB120 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 our Customer Care Centre.

Accessories: page 122
Schemes: page 84

Inductive proximity sensors

OsiSense XS Application

Sensors with analogue output signal 0…10 V *(1)*
For position, displacement and deformation control/monitoring

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 many sectors, particularly for applications involving:

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

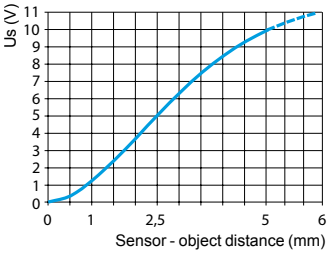
Operating principle

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

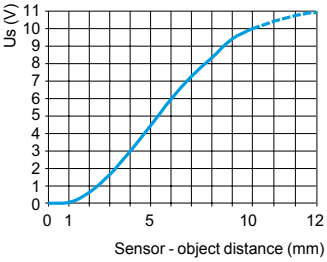
XS9F

Sn = 1…5 mm



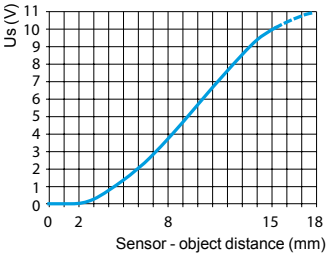
XS9E

Sn = 1…10 mm



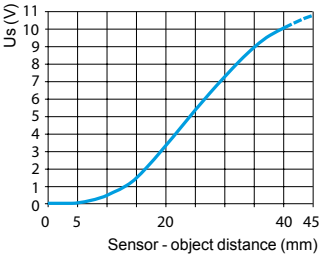
XS9C

Sn = 2…15 mm



XS9D

Sn = 5…40 mm



Wiring schemes

Connector

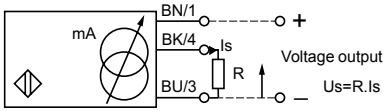
M8

M12

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

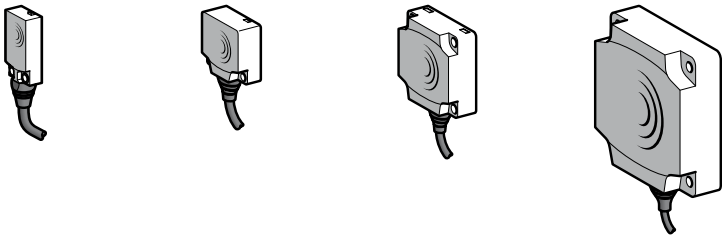
OsiSense XS Application

Sensors with analogue output signal 0…10 V *(1)*
For position, displacement and deformation control/monitoring

Flush mountable in metal

ECOLAB certified

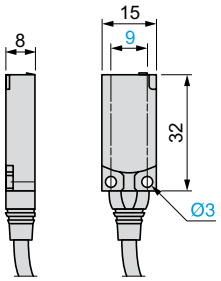
PBT case



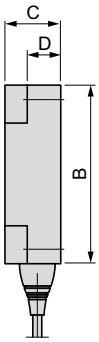
Nominal sensing distance (Sn)		**5 mm**	**10 mm**	**15 mm**	**40 mm**
References					
3-wire ⎓ 0…10 V	Pre-cabled (L = 2 m) *(2)*	**XS9F111A1L2**	**XS9E111A1L2**	**XS9C111A1L2**	**XS9D111A1L2**
	Connector	**XS9F111A1L01M8**	**XS9E111A1L01M12**	**XS9C111A1L01M12**	**XS9D111A1M12**
Weight (kg)	Pre-cabled (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	UL, CSA, CE, ECOLAB		
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

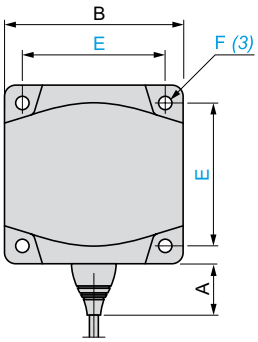
XS9F



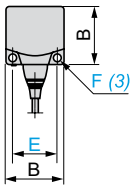
XS9E/C/D



XS9C/D



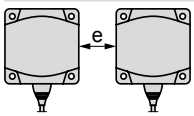
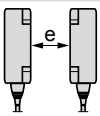
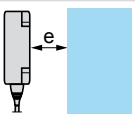
XS9E



(3) For CHC type screws

Type	A (L2)	A (M12)	B	C	D	E	F
XS9E	14	–	26	13	8.8	20	3.5
XS9C	14	–	40	15	9.8	33	4.5
XS9D	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	
XS9F		e ⩾ 15		e ⩾ 36		e ⩾ 15
XS9E		e ⩾ 30		e ⩾ 72		e ⩾ 30
XS9C		e ⩾ 45		e ⩾ 110		e ⩾ 45
XS9D		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: XS9C111A1L2 becomes **XS9C111A1L5** with a 5 m long cable.*

Accessories:
page 122

Inductive proximity sensors

OsiSense XS Application

Sensors with analogue output signal 4…20 mA
For position, displacement and deformation control/monitoring

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 many sectors, particularly for applications involving:

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

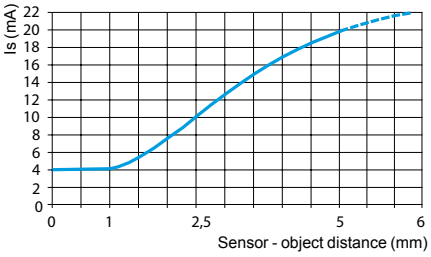
Operating principle

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

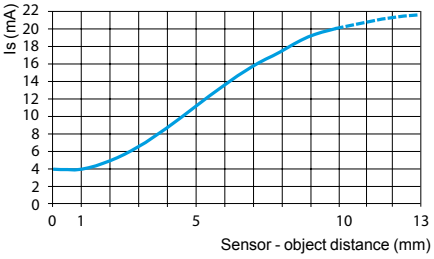
XS9F

Sn = 1…5 mm



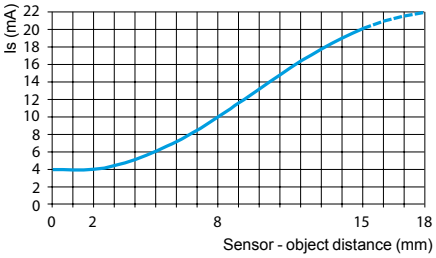
XS9E

Sn = 1…10 mm



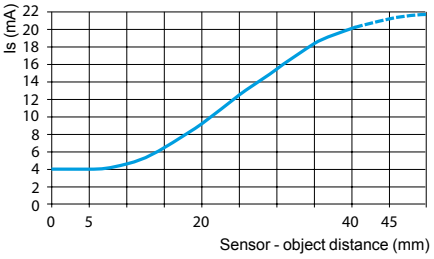
XS9C

Sn = 2…15 mm



XS9D

Sn = 5…40 mm



Wiring schemes

Connector

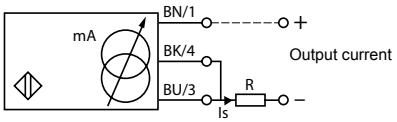
M8

M12

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

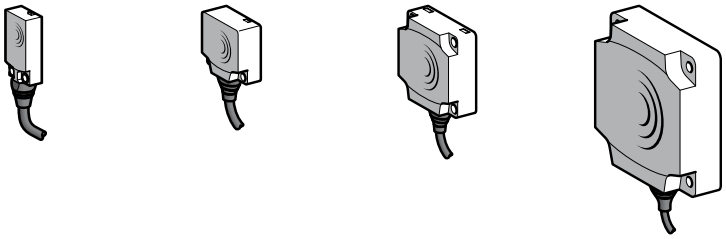
OsiSense XS Application

Sensors with analogue output signal 4…20 mA
For position, displacement and deformation control/monitoring

Flush mountable in metal

ECOLAB® certified

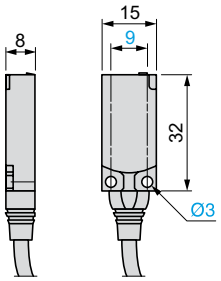
PBT case



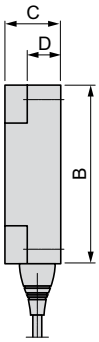
Nominal sensing distance (Sn)		**5 mm**	**10 mm**	**15 mm**	**40 mm**
References					
2-wire ⎓ 4…20 mA	Pre-cabled (L = 2 m) *(1)*	**XS9F111A2L2**	**XS9E111A2L2**	**XS9C111A2L2**	**XS9D111A2L2**
	Connector	**XS9F111A2L01M8**	**XS9E111A2L01M12**	**XS9C111A2L01M12**	**XS9D111A2M12**
Weight (kg)	Pre-cabled (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	UL, CSA, CE, ECOLAB		
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…+ 60 °C	- 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

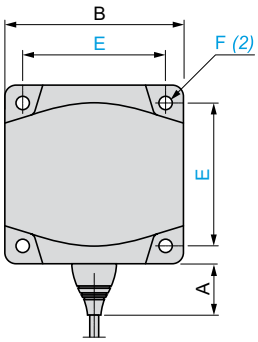
XS9F



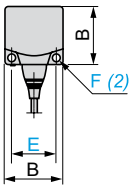
XS9E/C/D



XS9C/D



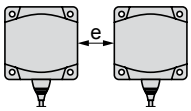
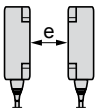
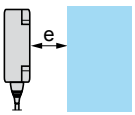
XS9E



(2) For CHC type screws

Type	A (L2)	A (M12)	B	C	D	E	F
XS9E	14	–	26	13	8.8	20	3.5
XS9C	14	–	40	15	9.8	33	4.5
XS9D	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	
XS9F		e ⩾ 15		e ⩾ 36		e ⩾ 15
XS9E		e ⩾ 30		e ⩾ 72		e ⩾ 30
XS9C		e ⩾ 45		e ⩾ 110		e ⩾ 45
XS9D		e ⩾ 120		e ⩾ 300		e ⩾ 120

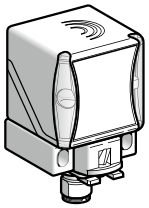
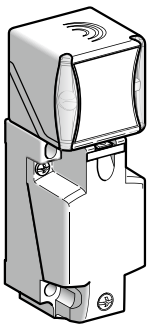
*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: XS9F111A2L2 becomes **XS9F111A2L5** with a 5 m long cable.*

Accessories:
page 122

Inductive proximity sensors

OsiSense XS Application

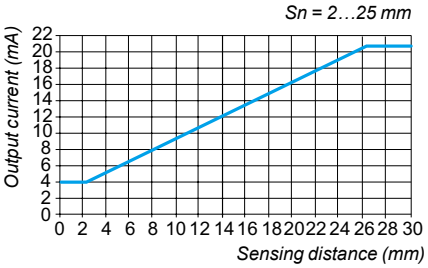
Sensors with analogue output signal 0…10 V *(1)* or 4…20 mA. Plastic case, 40 x 40 mm front face 5 position turret head

Sensor		**Non flush mountable in metal**	
Dimensions		**40 x 40 x 70 mm**	**40 x 40 x 117 mm**
			
Nominal sensing distance (Sn)		25 mm	
References			
3-wire ⎓	0…10 V output *(1)*	**XS9C2A2A1M12**	**XS9C4A2A1P20** *(2)*
2-wire ⎓	4…20 mA output	**XS9C2A2A2M12**	**XS9C4A2A2P20** *(2)*
		XS9C4●●●P20 sensors are available with an ISO M20 cable entry and can be supplied with a PG 13.5 (e.g. **XS9C4A2A1G13**) or a 1/2" NPT (e.g. **XS9C4A2A2N12**) cable entry: please consult our Customer Care Centre for more information.	
Weight (kg)		0.149	0.244
Characteristics			
Product certifications		UL, CSA, CE	
Conformity to standards		IEC 60947-5-2 and IEC 60947-5-7	
Connection		M12 connector (4-pin)	Screw terminals, clamping capacity 3 x 1.5 mm^2 / 3 x 16 AWG
Operating zone		2…27 mm	
Linearity error		< 3%	
Repeat accuracy		< 3%	
Output current drift		< 5%	
Degree of protection	Conforming to IEC 60529 and DIN 40050	IP 65, IP 67 and IP 69K	
Temperature	Storage	- 40….+ 85°C	
	Operation *(3)*	- 25….+ 70°C	
Material		Case: PBT	
Vibration resistance	Conforming to IEC 60068-2-6	25 gn, amplitude ± 2 mm (f = 10…55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27	50 gn for 11 ms	
Indicators	Output state (alignment aid)	Yellow LED	
Rated supply voltage	4...20 mA	⎓ 12…24 V with protection against reverse polarity	
	0...10 V	⎓ 24 V with protection against reverse polarity	
Voltage limits (including ripple)	4...20 mA	⎓ 12…36 V	
	0...10 V	⎓ 15…36 V	
Current consumption, no-load	3-wire ⎓	< 4 mA	
Delays	First-up	< 7 ms	
	Response	< 6 ms	
	Recovery	< 6 ms	

Analogue outputs 4-20 mA and 0-10 V

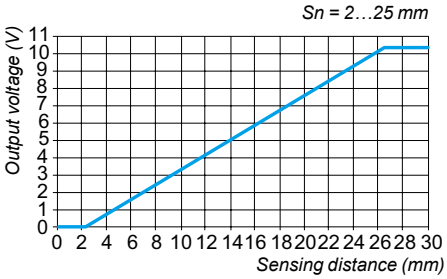
XS9C2A2A2M12 and **XS9C4A2A2P20**

Sn = 2…25 mm



XS9C2A2A1M12 and **XS9C4A2A1P20**

Sn = 2…25 mm



(1) Voltage range only obtained with a load impedance of 1000 Ω.
(2) These sensors are supplied without a cable gland. An adaptable PG 13.5 cable gland is available (reference **XSZPE13***).*
(3) Sensors are available for very low temperatures (suffix ***TF****: - 40°C, + 70°C) or very high temperatures (suffix* ***TT****: - 25°C, + 85°C); please consult our Customer Care Centre.*

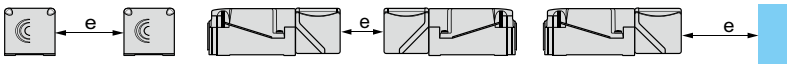
Inductive proximity sensors

OsiSense XS Application

Sensors with analogue output signal 0…10 V *(1)* or 4…20 mA. Plastic case, 40 x 40 mm front face 5 position turret head

Setting-up precautions

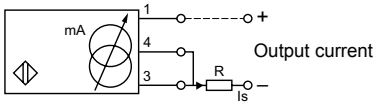
Minimum mounting distances (mm)



	Side by side	Face to face	Facing a metal object
Sensors non flush mountable in metal	e ⩾ 120	e ⩾ 240	e ⩾ 90

Wiring schemes

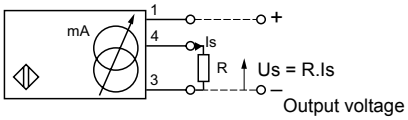
2-wire



	Output current	Load impedance value
12 V	4...20 mA	R ⩽ 82 Ω
24 V	4...20 mA	R ⩽ 560 Ω

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

3-wire

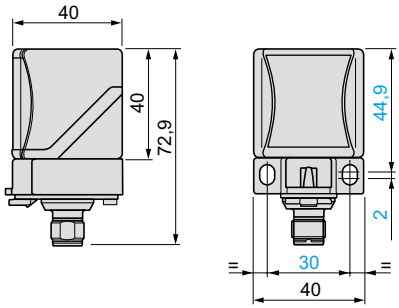


	Output current	Load impedance value	Output voltage	Load impedance value
12 V	0...10 mA	R ⩽ 630 Ω	–	–
24 V	0...10 mA	R ⩽ 1500 Ω	0...10 V	R = 1000 Ω

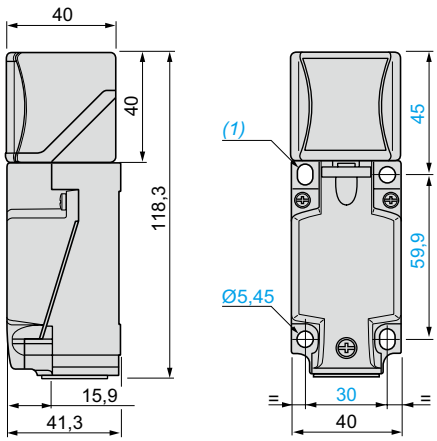
Ensure a minimum of 5 V between the + and the sensor output (terminal 4).

Dimensions

XS9C2A2A1M12 and **XS9C2A2A2M12**



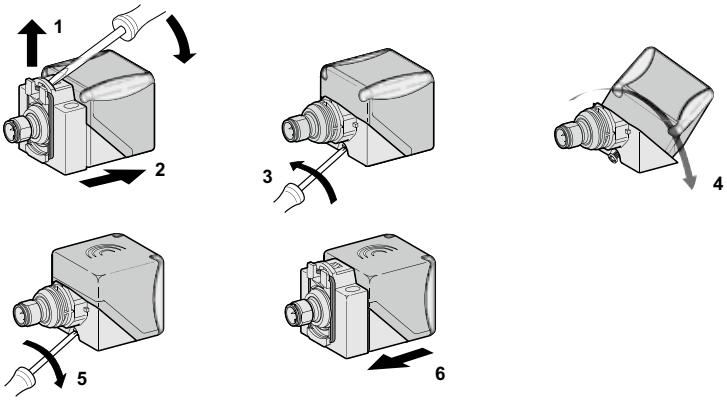
XS9C4A2A1P20 and **XS9C4A2A2P20**



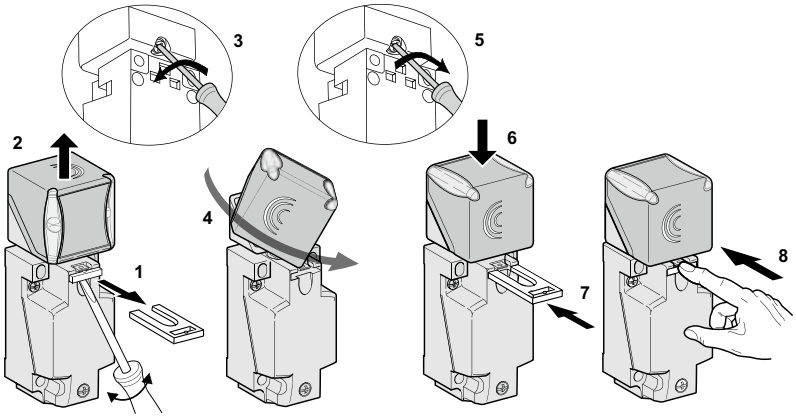
(1) 2 elongated holes Ø 5.3 x 7 mm.
Tightening torque of cover fixing screws and clamp screws: < 1.2 N.m / < 10.62 lb-in

Head positions

XS9C2A2A1M12 and **XS9C2A2A2M12**



XS9C4A2A1P20 and **XS9C4A2A2P20**



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

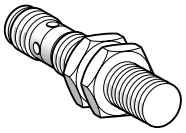
Inductive proximity sensors

OsiSense XS Application

Cylindrical, stainless steel 316L front face
for food and beverage applications and harsh industrial environments. Three-wire DC, solid-state output

ECOLAB® certified

DF513369



XS912●1PAM12

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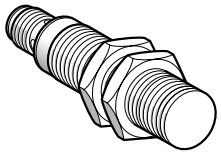

XS918●1PAM12

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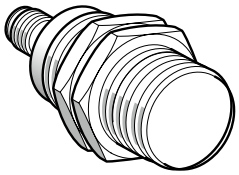

XS930●1PAM12

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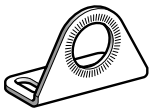

XUZA118

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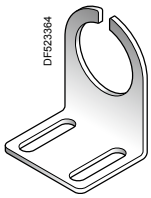

XSZBS30

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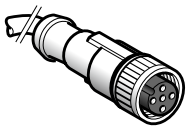

XZCP1141L●

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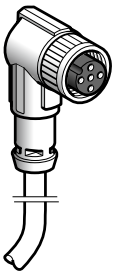


XZCP1241L●

Ø 12 mm, threaded M12 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Three-wire 12-24V ⎓, flush mountable					
6	NO	PNP	M12	**XS912S1PAM12**	0.024
Three-wire 12-24V ⎓, non flush mountable					
10	NO	PNP	M12	**XS912S4PAM12**	0.023

Ø 18 mm, threaded M18 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Three-wire 12-24V ⎓, flush mountable					
10	NO	PNP	M12	**XS918S1PAM12**	0.051
Three-wire 12-24V ⎓, non flush mountable					
20	NO	PNP	M12	**XS918S4PAM12**	0.051

Ø 30 mm, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Three-wire 12-24V ⎓, flush mountable					
20	NO	PNP	M12	**XS930S1PAM12**	0.140
Three-wire 12-24V ⎓, non flush mountable					
40	NO	PNP	M12	**XS930S4PAM12**	0.145

Accessories

Description	For use with sensor	Reference	Weight kg
Stainless steel mounting bracket	Ø 12	**XSZBS12**	0.090
	Ø 18	**XUZA118**	0.190
	Ø 30	**XSZBS30**	0.370

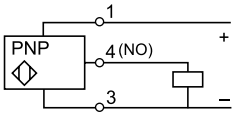
Connecting cables (PVC) *(1)*

Description	Type	Length m	Reference	Weight kg
Pre-wired M12 connectors Female, 4-pin Stainless steel clamping ring	Straight	2	**XZCPA1141L2**	0.090
		5	**XZCPA1141L5**	0.190
		10	**XZCPA1141L10**	0.370
	Elbowed	2	**XZCPA1241L2**	0.090
		5	**XZCPA1241L5**	0.190
		10	**XZCPA1241L10**	0.370

Wiring schemes

M12 connector

PNP



(1) For further information, please consult the catalogue "Cabling accessories OsiSense XZ" on our site www.tesensors.com.

Inductive proximity sensors

OsiSense XS Application

Cylindrical, stainless steel 316L front face for food and beverage applications and harsh industrial environments. Three-wire DC, solid-state output

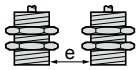
Characteristics

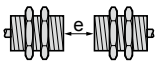
Sensor type	Flush		XS912S1PAM12	XS918S1PAM12	XS930S1PAM12
	Non flush		XS912S4PAM12	XS918S4PAM12	XS930S4PAM12
Product certifications			CE, cULus, ECOLAB		
Connection	Connector		M12		
Operating zone	Flush	mm	0…4.8	0…8	0…16
	Non flush	mm	0…8	0…16	0…32
Differential travel		%	1…15 (real sensing distance Sr)		
Degree of protection	Conforming to IEC 60529		IP 68 (5 meters underwater for 1 month)		
	Conforming to DIN 40050		IP 69K		
Storage temperature		°C	-25…+ 85 (-13…185°F)		
Operating temperature		°C	-25…+ 85 (-13…185°F)		
Materials	Case		Stainless steel 316L		
Front face thickness		mm	0.4	0.6	1.0
Mechanical shock resistance	Conforming to EN 50102		IK10		
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 1 mm (f = 10 to 55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms		
Output state indication			Yellow LED, 4 viewing points at 90° (blinking from 0.8 Sr and Sr)		
Rated supply voltage		V	⎓ 12…24 with protection against reverse polarity		
Voltage limits (including ripple)		V	⎓ 10…30		
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	Flush	Hz	600	300	100
	Non flush	Hz	400	200	90
Delays	First set-up	ms	40		
	Response	µs	0.06		
	Recovery	µs	15		

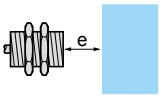
Setting-up

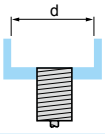
Minimum mounting distances in mm, flush version

Side by side		Face to face	Facing a metal object	Mounted in a metal support
Ø 12	e ≥ 38	e ≥ 30	e ≥ 20	d ≥ 24
Ø 18	e ≥ 42	e ≥ 40	e ≥ 30	d ≥ 50
Ø 30	e ≥ 80	e ≥ 70	e ≥ 60	d ≥ 90



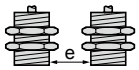


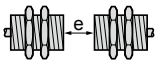


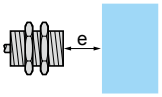


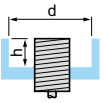
Minimum mounting distances in mm, non flush version

Side by side		Face to face	Facing a metal object	Mounted in a metal support	
Ø 12	e ≥ 108	e ≥ 40	e ≥ 30	d ≥ 30	h ≥ 22
Ø 18	e ≥ 182	e ≥ 70	e ≥ 60	d ≥ 60	h ≥ 34
Ø 30	e ≥ 270	e ≥ 130	e ≥ 120	d ≥ 120	h ≥ 34

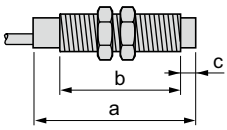








Dimensions



Lengths (mm):
a = overall
b = threaded
c = for non flush mountable sensors

	Flush sensor			Non flush sensor		
	M12	M18	M30	M12	M18	M30
a (mm)	60	63.5	63.5	60	63.5	63.5
b (mm)	41	42	42	36	35	32
c (mm)	0	0	0	5	7	10

Reduction coefficient

Flush-non mounted

		Flush sensor			Non flush sensor		
		M12	M18	M30	M12	M18	M30
Steel		1	1	1	1	1	1
Aluminum		1	1	1	1	1	1
Brass		1.3	1.2	1.3	1.4	1.35	1.2
Cupper		0.85	0.8	0.9	0.8	0.9	0.9
Stainless steel	Thickness 1 mm	0.5	0.5	0.35	*(1)*	0.3	*(1)*
	Thickness 2 mm	0.9	0.9	0.7	0.66	0.6	0.25

(1) No detection.

Flush mounted

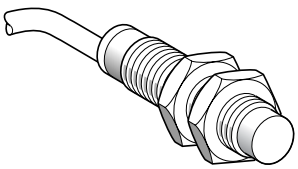
	M12	M18	M30
Steel	0.7	0.75	0.9
Aluminum	1.15	0.9	0.7
Brass	1.05	0.75	0.6
Stainless steel	0.8	0.8	1.3

Inductive proximity sensors

OsiSense XS Application, food and beverage processing series

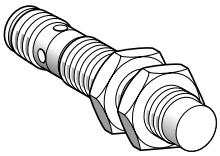
Cylindrical, stainless steel, non flush mountable
Three-wire DC, solid-state output

DF532016



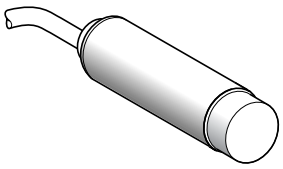
XS2●●SA●●L2

DF532015



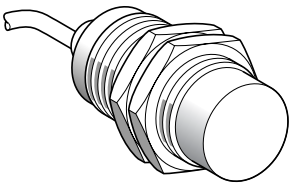
XS2●●SA●●M12

534440



XS2L2SA●●L2

822116

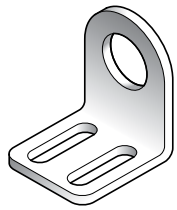


XS230SA●●L2

503663

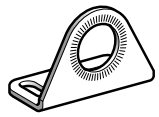
XUZB2005

523363



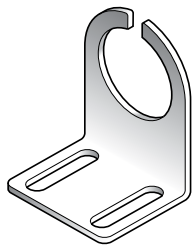
XSZBS12

805817



XUZA118

523364



XSZBS30

Ø 12, threaded M12 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
7	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS212SAPAL2**	0.075
			M12 connector	**XS212SAPAM12**	0.035
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS212SANAL2**	0.075
			M12 connector	**XS212SANAM12**	0.035

Ø 18, threaded M18 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
12	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS218SAPAL2**	0.120
			M12 connector	**XS218SAPAM12**	0.060
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS218SANAL2**	0.120
			M12 connector	**XS218SANAM12**	0.060

Ø 18, plain

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
12	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS2L2SAPAL2**	0.120
			M12 connector	**XS2L2SAPAM12**	0.060
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS2L2SANAL2**	0.120
			M12 connector	**XS2L2SANAM12**	0.060

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
22	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS230SAPAL2**	0.205
			M12 connector	**XS230SAPAM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS230SANAL2**	0.205
			M12 connector	**XS230SANAM12**	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	**XUZB2005**	0.007
Stainless steel fixing bracket	Ø 12 sensor	**XSZBS12**	0.060
	Ø 18 sensor	**XUZA118**	0.045
	Ø 30 sensor	**XSZBS30**	0.080

Connecting cables

Description	Type	Length m	Reference	Weight kg
Pre-wired M12 connectors Female, 4-pin, stainless steel clamping ring	Straight	2	**XZCPA1141L2**	0.090
		5	**XZCPA1141L5**	0.210
		10	**XZCPA1141L10**	0.410
	Elbowed	2	**XZCPA1241L2**	0.090
		5	**XZCPA1241L5**	0.210
		10	**XZCPA1241L10**	0.410
M12 jumper cable Male, 3-pin, stainless steel clamping ring	Straight	2	**XZCRA151140A2**	0.095
		5	**XZCRA151140A5**	0.200

*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: **XS212SAPAL2** becomes **XS212SAPAL5** with a 5 m long cable.*
(2) For further information, see page 122.

Inductive proximity sensors

OsiSense XS Application, food and beverage processing series

Cylindrical, stainless steel, non flush mountable
Three-wire DC, solid-state output

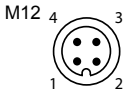
Characteristics

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 effective 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 *(1)*	
Operating temperature		**°C**	- 25…+ 85	
Materials	Case		Stainless steel 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	**XS212SA●●●●**	**Hz**	2500	
	XS218SA●●●● and **XS2L2●●●●**	**Hz**	1000	
	XS230SA●●●●	**Hz**	500	
Delays	First-up	**ms**	⩽ 10	
	Response	**ms**	⩽ 0.2 Ø 12, ⩽ 0.3 Ø 18, ⩽ 0.6 Ø 30	
	Recovery	**ms**	⩽ 0.2 Ø 12, ⩽ 0.7 Ø 18, ⩽ 1.4 Ø 30	

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

Wiring schemes

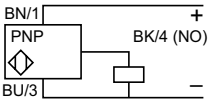
Connector



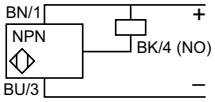
Pre-cabled

BU: Blue
BN: Brown
BK: Black

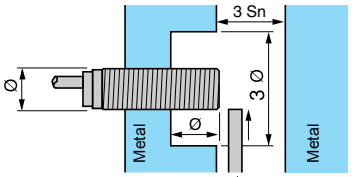
PNP



NPN

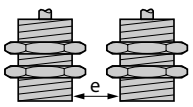


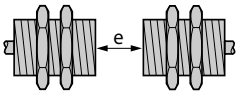
Setting-up

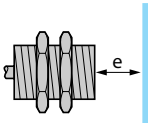


Object to be detected

Minimum mounting distances (mm)



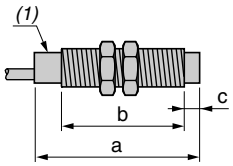




	Side by side	Face to face	Facing a metal object
Ø 12	e ⩾ 48	e ⩾ 84	e ⩾ 21
Ø 18	e ⩾ 72	e ⩾ 144	e ⩾ 36
Ø 30	e ⩾ 120	e ⩾ 264	e ⩾ 66

Dimensions

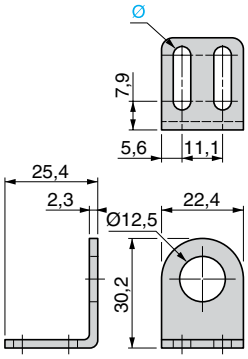
XS2



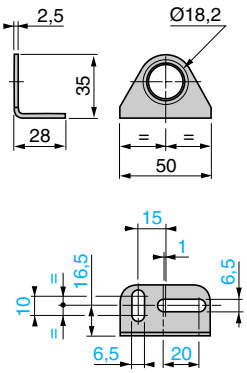
(1) LED

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

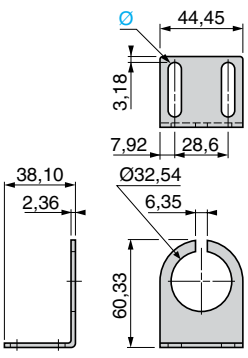
XSZBS12



XUZA118



XSZBS30



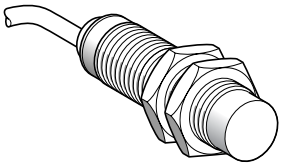
Ø: 2 elongated holes Ø 4.8 x 12.7

Inductive proximity sensors

OsiSense Application, food and beverage processing series

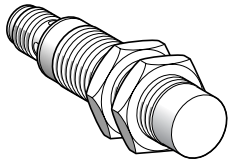
Cylindrical, stainless steel, non flush mountable
Two-wire AC or DC

523361



XS218SAM●L2

523362



XS218SAM●U20

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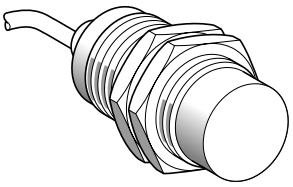
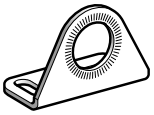


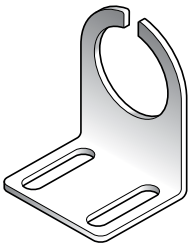
XS230SAM●L2

806817



XUZA118

523364



XSZBS30

Ø 18, threaded M18 x 1

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
12	NO	Pre-cabled (L = 2 m) *(1)*	**XS218SAMAL2**	0.120
		1/2"-20UNF connector	**XS218SAMAU20**	0.060

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
22	NO	Pre-cabled (L = 2 m) *(1)*	**XS230SAMAL2**	0.205
		1/2"-20UNF connector	**XS230SAMAU20**	0.145

Connecting cables

Description	Type	Length m	Reference	Weight kg
Pre-wired connectors 1/2"-20UNF 3-pin female, stainless steel clamping ring	Straight	5	**XZCPA1865L5**	0.210
		10	**XZCPA1865L10**	0.410
	Elbowed	5	**XZCPA1965L5**	0.250
		10	**XZCPA1965L10**	0.485

Accessories

Description	For use with	Reference	Weight kg
Stainless steel fixing brackets	Ø 18 sensor	**XUZA118**	0.045
	Ø 30 sensor	**XSZBS30**	0.080

*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: **XS218SAMAL2** becomes **XS218SAMAL5** with a 5 m long cable.*

Inductive proximity sensors

OsiSense Application, food and beverage processing series

Cylindrical, stainless steel, non flush mountable
Two-wire AC or DC

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 effective 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 *(1)*	
Operating temperature		**°C**	- 25…+ 85	
Materials	Case		Stainless steel 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	**XS218SAM●●●**	**Hz**	∼ 25 or ⎓ 1000	
	XS230SAM●●●	**Hz**	∼ 25 or ⎓ 300	
Delays	First-up	**ms**	⩽ 30	
	Response	**ms**	⩽ 0.5	
	Recovery	**ms**	⩽ 0.5 **XS218SAM●●●**, ⩽ 2 **XS230SAM●●●**	

(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

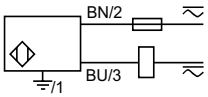
AC/DC: 2
⏚ : 1
AC/DC: 3

Pre-cabled

BU: Blue
BN: Brown

2-wire ∼ or ⎓

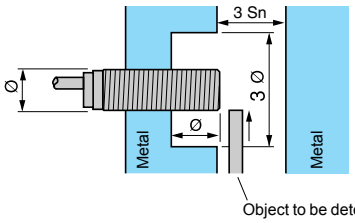
NO output

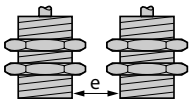


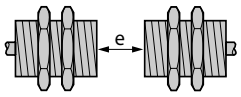
⏚: on connector models only

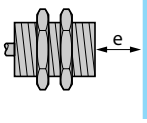
Setting-up

Minimum mounting distances (mm)





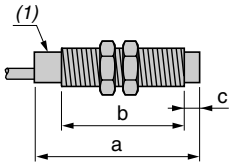




	Side by side	Face to face	Facing a metal object
Ø 18	e ⩾ 72	e ⩾ 144	e ⩾ 36
Ø 30	e ⩾ 120	e ⩾ 264	e ⩾ 66

Dimensions

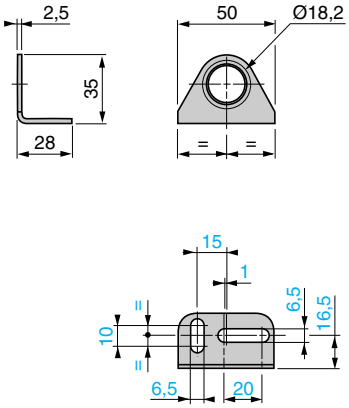
XS2



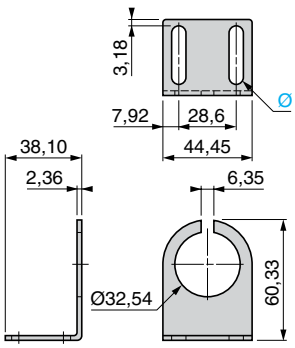
(1) LED

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

XSZA118



XSZBS30

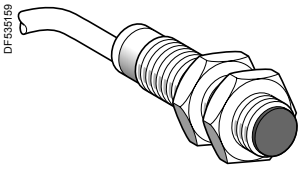


Ø: 2 elongated holes Ø 7.14 x 29.36

Inductive proximity sensors

OsiSense Application, food and beverage processing series

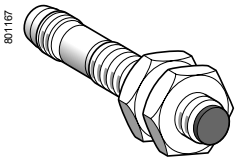
Cylindrical, plastic, non flush mountable
Three-wire DC, solid-state output



XS2●●AA●●L2

Ø 12, threaded M12 x 1

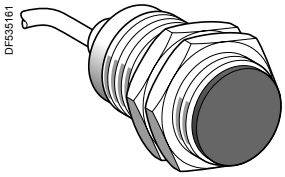
Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
7	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS212AAPAL2**	0.065
			M12 connector	**XS212AAPAM12**	0.030
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS212AANAL2**	0.065
			M12 connector	**XS212AANAM12**	0.030



XS2●●AA●●M12

Ø 18, threaded M18 x 1

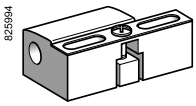
Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
12	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS218AAPAL2**	0.100
			M12 connector	**XS218AAPAM12**	0.040
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS218AANAL2**	0.100
			M12 connector	**XS218AANAM12**	0.040



XS230AA●●L2

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
22	NO	PNP	Pre-cabled (L = 2 m) *(1)*	**XS230AAPAL2**	0.140
			M12 connector	**XS230AAPAM12**	0.080
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS230AANAL2**	0.140
			M12 connector	**XS230AANAM12**	0.080



XSZB●●●

Accessories *(2)*

Description		Reference	Weight kg
Fixing clamps	Ø 12	**XSZB112**	0.006
	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

Connecting cables

Description	Type	Length m	Reference	Weight kg
Pre-wired M12 connectors Female, 4-pin, stainless steel clamping ring	Straight	2	**XZCPA1141L2**	0.090
		5	**XZCPA1141L5**	0.190
		10	**XZCPA1141L10**	0.370
	Elbowed	2	**XZCPA1241L2**	0.090
		5	**XZCPA1241L5**	0.190
		10	**XZCPA1241L10**	0.370
M12 jumper cable Male, 3-pin, stainless steel clamping ring	Straight	2	**XZCRA151140A2**	0.090
		5	**XZCRA151140A5**	0.190

*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: **XS212AAPAL2** becomes **XS212AAPAL5** with a 5 m long cable.*
(2) For further information, see page 122.

Inductive proximity sensors

OsiSense Application, food and beverage processing series

Cylindrical, plastic, non flush mountable
Three-wire DC, 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 effective 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 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	**XS212AA●●●●**	**Hz**	2500	
	XS218AA●●●●	**Hz**	1000	
	XS230AA●●●●	**Hz**	500	
Delays	First-up	**ms**	≤ 10	
	Response	**ms**	≤ 0.2 Ø 12, ≤ 0.3 Ø 18, ≤ 0.6 Ø 30	
	Recovery	**ms**	≤ 0.2 Ø 12, ≤ 0.7 Ø 18, ≤ 1.4 Ø 30	

Wiring schemes

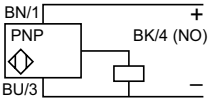
Connector

M12

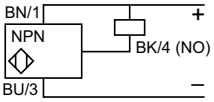
Pre-cabled

BU: Blue
BN: Brown
BK: Black

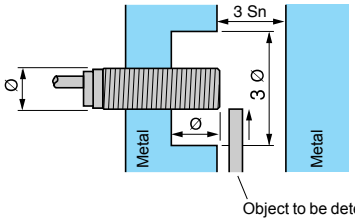
PNP



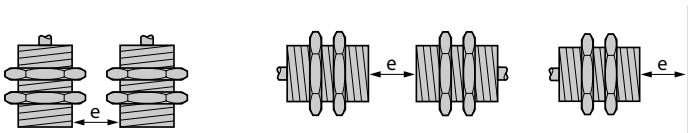
NPN



Setting-up

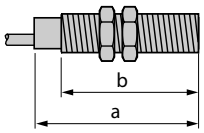


Minimum mounting distances (mm)



	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

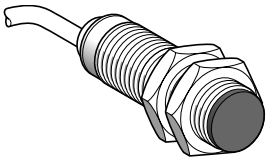
	Pre-cabled (mm)		Connector (mm)	
XS2	**a**	**b**	**a**	**b**
Ø 12	50	42	61	43
Ø 18	60	51	70	52
Ø 30	60	51	70	52

Inductive proximity sensors

OsiSense XS Application, food and beverage processing series

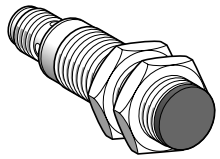
Cylindrical, plastic, non flush mountable
Two-wire AC or DC

535156



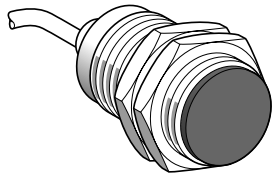
XS2●●AAM●L2

523382



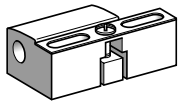
XS2●●AAM●U20

535158



XS230AAM●L2

825994



XSZB1●●

Ø 18, threaded M18 x 1

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
12	NO	Pre-cabled (L = 2 m) *(1)*	**XS218AAMAL2**	0.100
		1/2"-20UNF connector	**XS218AAMAU20**	0.040

Ø 30, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
22	NO	Pre-cabled (L = 2 m) *(1)*	**XS230AAMAL2**	0.140
		1/2"-20UNF connector	**XS230AAMAU20**	0.080

Accessories *(2)*

Description		Reference	Weight kg
Fixing clamps	Ø 18	**XSZB118**	0.010
	Ø 30	**XSZB130**	0.020

Connecting cables

Description	Type	Length m	Reference	Weight kg
Pre-wired connectors 1/2"-20UNF 3-pin female, stainless steel 316 L clamping ring	Straight	5	**XZCPA1865L5**	0.180
		10	**XZCPA1865L10**	0.350
	Elbowed	5	**XZCPA1965L5**	0.180
		10	**XZCPA1965L10**	0.350

*(1) For a 5 m long cable replace L2 by **L5**; for a 10 m long cable replace L2 by **L10**.*
*Example: **XS218AAMAL2** becomes **XS218AAMAL5** with a 5 m long cable.*
(2) For further information, see page 122.

Inductive proximity sensors

OsiSense XS Application, food and beverage processing series

Cylindrical, plastic, non flush mountable
Two-wire AC or DC

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 effective 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	**XS218AAM●●●**	**Hz**	∼ 25 or ⎓ 1000	
	XS230AAM●●●	**Hz**	∼ 25 or ⎓ 300	
Delays	First-up	**ms**	⩽ 30	
	Response	**ms**	⩽ 0.5	
	Recovery	**ms**	⩽ 0.5 **XS218AAM●●●**, ⩽ 2 **XS230AAM●●●**	

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

Wiring schemes

Connector

1/2"-20UNF

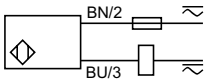
⎓: 2
⎓: 3

Pre-cabled

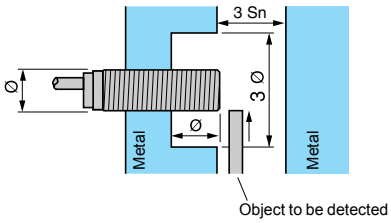
BU: Blue
BN: Brown

2-wire ∼ or ⎓

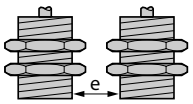
NO output

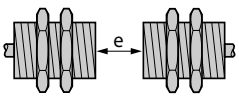


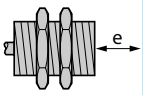
Setting-up



Minimum mounting distances (mm)



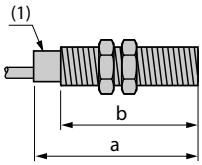




	Side by side	Face to face	Facing a metal object
Ø 18	e ⩾ 72	e ⩾ 144	e ⩾ 36
Ø 30	e ⩾ 120	e ⩾ 264	e ⩾ 66

Dimensions

XS2



(1) LED

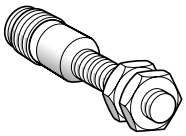
XS2	Pre-cabled (mm) a	Pre-cabled (mm) b	Connector (mm) a	Connector (mm) b
Ø 18	60	51	70	52
Ø 30	60	51	70	52

Inductive proximity sensors

OsiSense XS Application

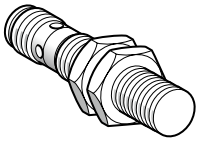
Cylindrical, stainless steel 303 front face
for harsh industrial environments
Three-wire DC, solid-state output

DF513376



XS908●1PAM12

DF513369



XS912●1PAM12

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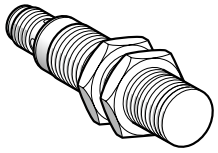

XS918●1PAM12

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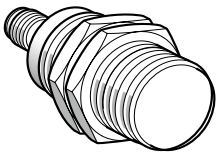

XS930●1PAM12

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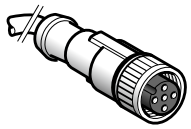

XZCP1141L●

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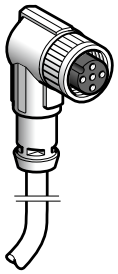


XZCP1241L●

Ø 8 mm, threaded M8 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Three-wire 12-24V ⎓, flush mountable					
3	NO	PNP	M12	**XS908R1PAM12**	0.018
Three-wire 12-24V ⎓, non flush mountable					
6	NO	PNP	M12	**XS908R4PAM12**	0.018

Ø 12 mm, threaded M12 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Three-wire 12-24V ⎓, flush mountable					
6	NO	PNP	M12	**XS912R1PAM12**	0.024
Three-wire 12-24V ⎓, non flush mountable					
10	NO	PNP	M12	**XS912R4PAM12**	0.023

Ø 18 mm, threaded M18 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Three-wire 12-24V ⎓, flush mountable					
10	NO	PNP	M12	**XS918R1PAM12**	0.044
Three-wire 12-24V ⎓, non flush mountable					
20	NO	PNP	M12	**XS918R4PAM12**	0.051

Ø 30 mm, threaded M30 x 1.5

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Three-wire 12-24V ⎓, flush mountable					
20	NO	PNP	M12	**XS930R1PAM12**	0.140
Three-wire 12-24V ⎓, non flush mountable					
40	NO	PNP	M12	**XS930R4PAM12**	0.144

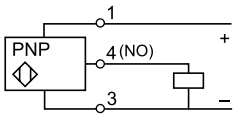
Connecting cables (PUR) *(1)*

Description	Type	Length m	Reference	Weight kg
Pre-wired M12 connectors Female, 4-pin Metal clamping	Straight	2	**XZCP1141L2**	0.090
		5	**XZCP1141L5**	0.190
		10	**XZCP1141L10**	0.370
	Elbowed	2	**XZCP1241L2**	0.090
		5	**XZCP1241L5**	0.190
		10	**XZCP1241L10**	0.370

Wiring schemes

M12 connector

PNP



(1) For further information, please consult the catalogue "Cabling accessories OsiSense XZ", on our site www.tesensors.com.

Inductive proximity sensors

OsiSense XS Application

Cylindrical, stainless steel 303 front face
for harsh industrial environments
Three-wire DC, solid-state output

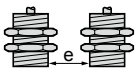
Characteristics

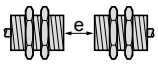
Sensor type	Flush		XS908R1PAM12	XS912R1PAM12	XS918R1PAM12	XS930R1PAM12
	Non flush		XS908R4PAM12	XS912R4PAM12	XS918R4PAM12	XS930R4PAM12
Product certifications			CE, cULus			
Connection	Connector		M12			
Operating zone	Flush	mm	0…2.4	0…4.8	0…8	0…16
	Non flush	mm	0…4.8	0…8	0…16	0…32
Differential travel		%	1…15 (real sensing distance Sr)			
Degree of protection	Conforming to IEC 60529		IP 67	IP 68 (5 meters underwater for 1 month)		
	Conforming to DIN 40050		IP 69K			
Storage temperature		°C	-25…+ 70 (-13…158°F)			
Operating temperature		°C	-25…+ 70 (-13…158°F)			
Materials	Case		Stainless steel, 303 grade			
Front face thickness		mm	0.25	0.4	0.6	1.0
Mechanical shock resistance	Conforming to EN 50102		IK10			
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 1 mm (f = 10 to 55 Hz)			
Shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms			
Output state indication			Yellow LED, 4 viewing points at 90° (blinking from 0.8 Sr and Sr)			
Rated supply voltage		V	⎓ 12…24 with protection against reverse polarity			
Voltage limits (including ripple)		V	⎓ 10…30			
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	Flush	Hz	1000	600	300	100
	Non flush	Hz	700	400	200	90
Delays	First set-up	ms	40			
	Response	µs	0.05	0.06		
	Recovery	µs	23	15		

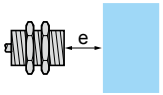
Setting-up

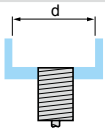
Minimum mounting distances in mm, flush version

	Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 8	e ≥ 14	e ≥ 15	e ≥ 10	d ≥ 12
Ø 12	e ≥ 38	e ≥ 30	e ≥ 20	d ≥ 24
Ø 18	e ≥ 42	e ≥ 40	e ≥ 30	d ≥ 50
Ø 30	e ≥ 80	e ≥ 70	e ≥ 60	d ≥ 90



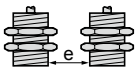


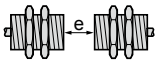


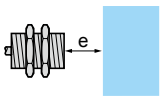


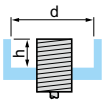
Minimum mounting distances in mm, non flush version

	Side by side	Face to face	Facing a metal object	Mounted in a metal support	
Ø 8	e ≥ 52	e ≥ 25	e ≥ 20	d ≥ 20	h ≥ 15
Ø 12	e ≥ 108	e ≥ 40	e ≥ 30	d ≥ 30	h ≥ 22
Ø 18	e ≥ 182	e ≥ 70	e ≥ 60	d ≥ 60	h ≥ 34
Ø 30	e ≥ 270	e ≥ 130	e ≥ 120	d ≥ 120	h ≥ 34

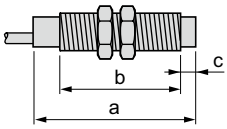








Dimensions



Lengths (mm):
a = overall
b = threaded
c = for non flush mountable sensors

	Flush sensor				Non flush sensor			
	M8	M12	M18	M30	M8	M12	M18	M30
a (mm)	66	60	63.5	63.5	66	60	63.5	63.5
b (mm)	46	41	42	42	42	36	35	32
c (mm)	0	0	0	0	4	5	7	10

Reduction coefficient

Non flush mounted

		Flush sensor				Non flush sensor			
		M8	M12	M18	M30	M8	M12	M18	M30
Steel		1	1	1	1	1	1	1	1
Aluminum		1	1	1	1	1	1	1	1
Brass		1.35	1.3	1.2	1.3	1.4	1.4	1.35	1.2
Cupper		0.9	0.85	0.8	0.9	0.85	0.8	0.9	0.9
Stainless steel	Thickness 1 mm	0.3	0.5	0.5	0.35	0.3	*(1)*	0.3	*(1)*
	Thickness 2 mm	0.6	0.9	0.9	0.7	0.9	0.66	0.6	0.25

(1) No detection.

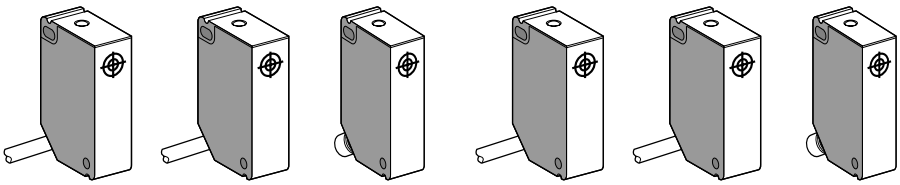
Flush mounted

	M8	M12	M18	M30
Steel	1	0.7	0.75	0.9
Aluminum	0.9	1.15	0.9	0.7
Brass	0.9	1.05	0.75	0.6
Stainless steel	1	0.8	0.8	1.3

Inductive proximity sensors

OsiSense XS Application

For assembly, packaging and light material 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	**XS7G12PA140**	–	**XS7G12PA140S**	**XS8G12PA140**	–	**XS8G12PA140S**
	NPN NO	**XS7G12NA140**	–	**XS7G12NA140S**	**XS8G12NA140**	–	**XS8G12NA140S**
4-wire ⎓ (complementary outputs)	PNP NO + NC	–	**XS7G12PC440**	–	–	**XS8G12PC440**	–
	NPN NO + NC	–	**XS7G12NC440**	–	–	**XS8G12NC440**	–
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		- 40…+ 85 °C					
Operating temperature		- 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 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 **XS7G12PA140** with 5 m long cable becomes **XS7G12PA140L1.**

(2) With overload and short-circuit protection

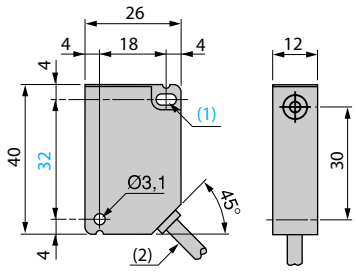
Inductive proximity sensors

OsiSense XS Application

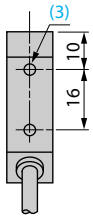
For assembly, packaging and light material handling
Plastic case, 12 x 26 x 40 mm
DC supply, solid-state output

Dimensions

XS● G12●A140, XS● G12●C440

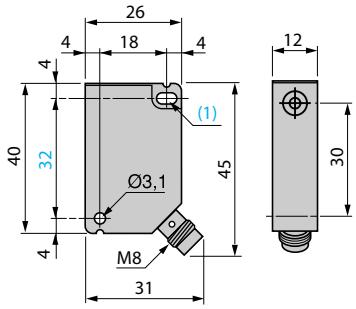


Rear view

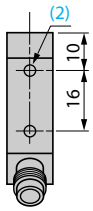


(1) 1 elongated hole Ø 3.1 x 5.1.
(2) Cable L = 2 m.
(3) 2 holes M3 x 5.

XS● G12●A140S



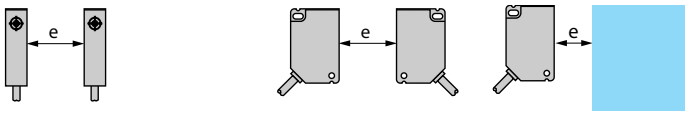
Rear view



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

Setting-up

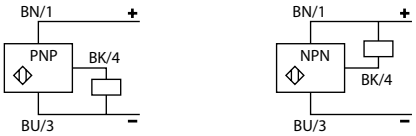
Minimum mounting distances (mm)



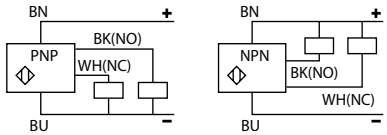
	Side by side	Face to face	Facing a metal object and mounting in a metal support
XS7G flush mountable	e ⩾ 0	e ⩾ 15	e ⩾ 6
XS8G non flush mountable	e ⩾ 10	e ⩾ 60	e ⩾ 12

Wiring schemes

3-wire ⎓, NO output



4-wire ⎓, NO + NC output



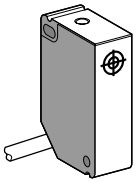
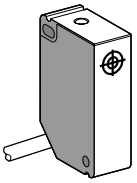
Connector

M8

Inductive proximity sensors

OsiSense XS Application

For assembly, packaging and light material handling
Plastic case, 12 x 26 x 40 mm
AC or DC supply

Sensor		Flush mountable in metal	Non flush mountable in metal
			
Nominal sensing distance (Sn)		2 mm	4 mm
References			
2-wire ⎓ or ∿	NO	**XS7G12MA230**	**XS8G12MA230**
	NC	**XS7G12MB230**	**XS8G12MB230**
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		- 40…+ 85 °C	
Operating temperature		- 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 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 **XS7G12MA230** with 5 m long cable becomes **XS7G12MA230L1.**

(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.

Inductive proximity sensors

OsiSense XS Application

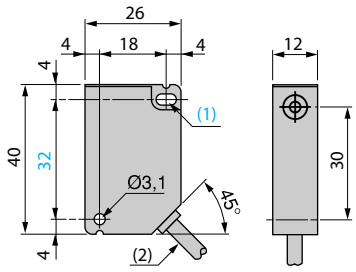
For assembly, packaging and light material handling

Plastic case, 12 x 26 x 40 mm

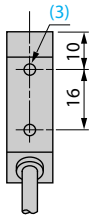
AC or DC supply

Dimensions

XS●G12M●230



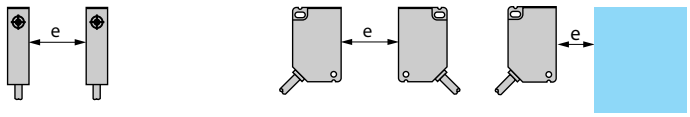
Rear view



(1) 1 elongated hole Ø 3.1 x 5.1.
(2) Cable L = 2 m.
(3) 2 holes M3 x 5.

Setting-up

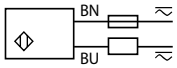
Minimum mounting distances (mm)



	Side by side	Face to face	Facing a metal object and mounting in a metal support
XS7G flush mountable	e ⩾ 0	e ⩾ 15	e ⩾ 6
XS8G non flush mountable	e ⩾ 10	e ⩾ 60	e ⩾ 12

Wiring schemes

2-wire ∼ or ⎓, NO or NC output

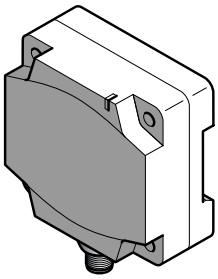


Inductive proximity sensors

OsiSense XS Application

Flat sensor, flush mountable, increased range, switching capacity 300 mA
80 x 80 x 40 format, 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)
Reference		
2-wire ⎓ (non polarised)	NO	**XS7D1A3CAM12DIN**
Weight (kg)		0.374
Characteristics		
Product certifications		CE
Degree of protection	Conforming to IEC 60529	IP 67, double insulation ⧈
Temperature	Operating	- 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

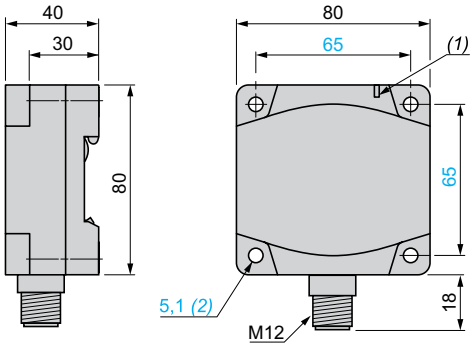
Inductive proximity sensors

OsiSense XS Application

Flat sensor, flush mountable, increased range, switching capacity 300 mA
80 x 80 x 40 format, DIN rail mounting, solid-state output

Dimensions

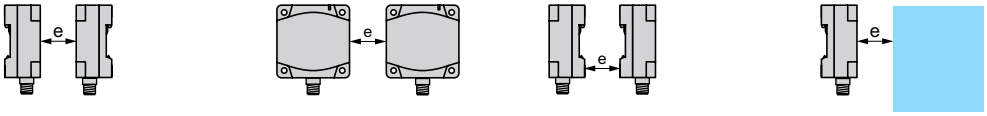
XS7D1A3CAM12DIN



(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

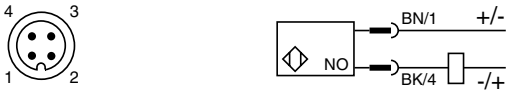
Flush/non flush conditions

In A37 steel

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

Wiring schemes

2-wire NO/M12 XS7D1A3CAM12DIN

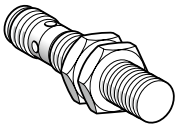


Inductive proximity sensors

OsiSense XS Application

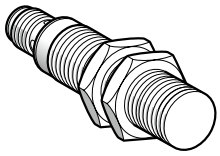
Cylindrical, stainless steel 303 front face
for welding environments
Three-wire DC, solid-state output

DF513369



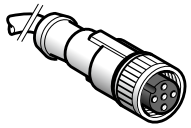
XS912RWPAM12

DF513373



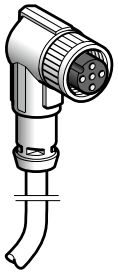
XS918RWPAM12

DF532604



XZCP1141L●

DF503630



XZCP1241L●

Ø 12 mm, threaded M12 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Three-wire 12-24V ⎓, flush mountable					
6	NO	PNP	M12	**XS912RWPAM12**	0.024

Ø 18 mm, threaded M18 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Three-wire 12-24V ⎓, flush mountable					
10	NO	PNP	M12	**XS918RWPAM12**	0.051

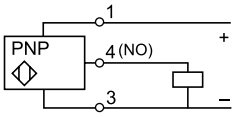
Connecting cables (PUR) *(1)*

Description	Type	Length m	Reference	Weight kg
Pre-wired M12 connectors Female, 4-pin Metal clamping ring	Straight	2	**XZCP1141L2**	0.090
		5	**XZCP1141L5**	0.190
		10	**XZCP1141L10**	0.370
	Elbowed	2	**XZCP1241L2**	0.090
		5	**XZCP1241L5**	0.190
		10	**XZCP1241L10**	0.370

Wiring schemes

M12 connector

PNP



(1) For further information, please consult the catalogue "Cabling accessories OsiSense XZ" on our site www.tesensors.com.

Inductive proximity sensors

OsiSense XS Application

Cylindrical, stainless steel 303 front face
for welding environments
Three-wire DC, solid-state output

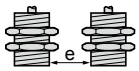
Characteristics

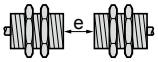
Sensor type	Flush		XS912RWPAM12	XS918RWPAM12
Product certifications			CE, cULus	
Connection	Connector		M12	
Operating zone		mm	0…4.8	0…8
Differential travel		%	1…15 (real sensing distance Sr)	
Degree of protection	Conforming to IEC 60529		IP 68 (5 meters underwater for 1 month)	
	Conforming to DIN 40050		IP 69K	
Storage temperature		°C	-25…+ 70 (-13…158°F)	
Operating temperature		°C	-25…+ 70 (-13…158°F)	
Materials	Case		Stainless steel, 303 grade	
Front face thickness		mm	0.4	0.6
Mechanical shock resistance	Conforming to EN 50102		IK10	
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 1 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		30 gn, duration 11 ms	
Output state indication			Yellow LED, 4 viewing points at 90° (blinking from 0.8 Sr and Sr)	
Rated supply voltage		V	⎓ 12…24 with protection against reverse polarity	
Voltage limits (including ripple)		V	⎓ 10…30	
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		Hz	15	
Delays	First set-up	ms	80	
	Response	µs	100	
	Recovery	µs	15	

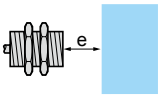
Setting-up

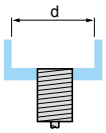
Minimum mounting distances in mm, flush version

Side by side		Face to face	Facing a metal object	Mounted in a metal support
Ø 12	e ≥ 38	e ≥ 30	e ≥ 20	d ≥ 24
Ø 18	e ≥ 42	e ≥ 40	e ≥ 30	d ≥ 50

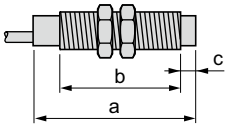








Dimensions



Lengths (mm):
a = overall
b = threaded
c = for non flush mountable sensors

	Flush sensor	
	M12	M18
a (mm)	60	63.5
b (mm)	41	42
c (mm)	0	0

Reduction coefficient

Non flush mounted

		Flush sensor	
		M12	M18
Steel		1	1
Aluminum		1	1
Brass		1.3	1.2
Cupper		0.85	0.8
Stainless steel	Thickness 1 mm	0.5	0.5
	Thickness 2 mm	0.9	0.9

Flush mounted

	M12	M18
Steel	0.7	0.75
Aluminum	1.15	0.9
Brass	1.05	0.75
Stainless steel	0.8	0.8

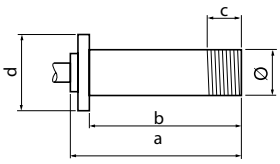
Inductive proximity sensors

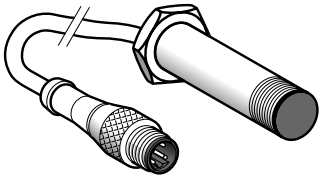
OsiSense XS Application

For welding machine applications

Cylindrical type. Metal case, plain, with shoulder

Flush mountable in metal





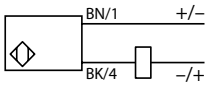
Lengths (mm):
a = Overall
b = To shoulder
c = Removal
d = Shoulder

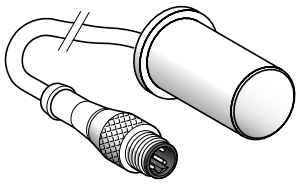
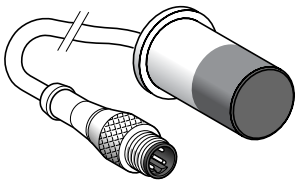
Ø = 12
a = 55
b = 50
c = 9 (threaded end)
d = 15 hexagonal

Nominal sensing distance (Sn)			**3 mm**	**3 mm**	**3 mm**
References					
2-wire ⎓ (non polarised) Terminal connections	1-4	NO	**XSLC1401393L1**	**XSLC1401393L3**	**XSLC1401393L4**
Weight (kg)			0.050	0.065	0.050
Characteristics					
Connection			Remote M12 connector on 1.2 m flying lead	Remote M12 connector on 0.8 m flying lead	Remote M12 connector on 0.15 m flying lead
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			Yellow LED, 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: ≤ 05 ms; recovery: ≤ 0.5 ms		

Wiring schemes

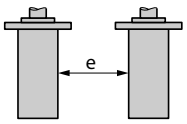
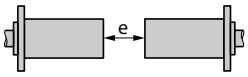
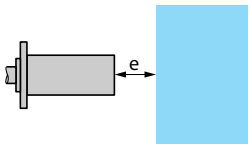
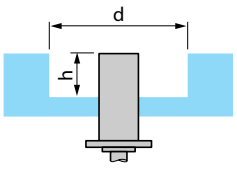
2-wire ⎓ , non polarised, NO output



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**
XSLC1401392L1	**XSLC1401405L3**	**XSLC1401405L4**
0.100	0.065	0.050
Remote M12 connector on 1.2 m flying lead	Remote M12 connector on 0.8 m flying lead	Remote M12 connector on 0.15 m flying lead
IP 67		
0…5 mm	0…8 mm	
3 % of Sr		
1…15 % of Sr		
- 25…+ 70 °C		
Yellow LED, 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)

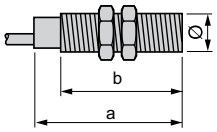
		Side by side	Face to face	Facing a metal object	Mounted in a metal support
					
XSLC	**Ø 12 (flush mountable)**	e ⩾ 10	e ⩾ 60	e ⩾ 15	d = 12, h = 0
	Ø 18 (non flush mountable)	e ⩾ 16	e ⩾ 96	e ⩾ 24	d = 54, h = 16

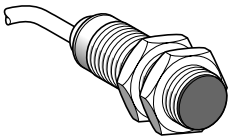
Inductive proximity sensors

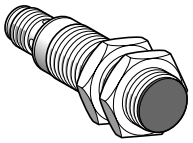
OsiSense XS

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

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	**XS1M18KPM40**	**XS1M18KPM40D**
Weight (kg)		0.120	0.060

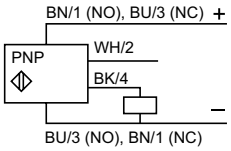
Characteristics

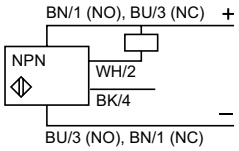
Product certifications		CE, UL, CSA	
Connection		**Pre-cabled, PvR 4 x 0.34 mm², length 2 m** *(2)*	**M12 connector**
Degree of protection	Conforming to IEC 60529	IP 68	IP 67
Operating zone		**0…4 mm**	
Repeat accuracy		3 % of Sr	
Differential travel		1…15 % of Sr	
Operating temperature		0…+ 50 °C	
Output 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, NO or NC output**	
		PNP	**NPN**

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



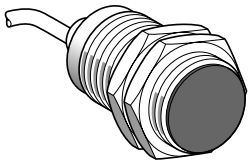


(1) The variation in sensing distance between ferrous and non ferrous materials is typically less than 5 %.
(2) Sensors available with other cable lengths: please consult our Customer Care Centre.

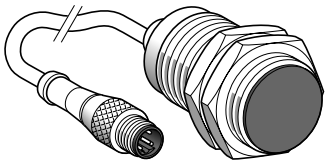
Inductive proximity sensors

OsiSense XS

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 = 60
b = 51.5
Ø = M30 x 1.5

Stainless steel case	**Stainless steel case**
10 mm	**10 mm**

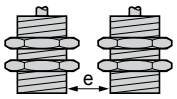
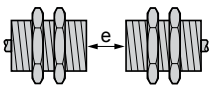
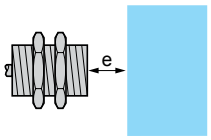
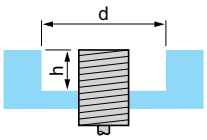
References

XS1M30KPM40	**XS1M30KPM40LD**
0.205	0.145

Characteristics

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
				
XS1M18 flush mountable	e ≥ 10	e ≥ 60	e ≥ 15	d ≥ 18, h ≥ 0
XS1M30 flush mountable	e ≥ 20	e ≥ 120	e ≥ 30	d ≥ 30, h ≥ 0

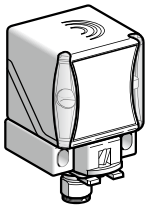
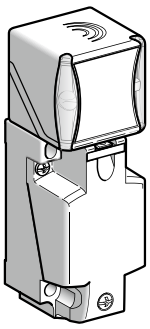
***Fixing nut tightening torque: XS1M18**: < 35 N.m, **XS1M30**: < 100 N.m*

(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 our Customer Care Centre.

Inductive proximity sensors

OsiSense XS Application

Factor 1 sensors for ferrous or non ferrous material detection and welding applications. Plastic case, 40 x 40 mm front face. 5 position turret head

Sensor		**Flush mountable in metal**	
Dimensions		**40 x 40 x 70 mm**	**40 x 40 x 117 mm**
			
Nominal sensing distance (Sn)		20 mm	

References

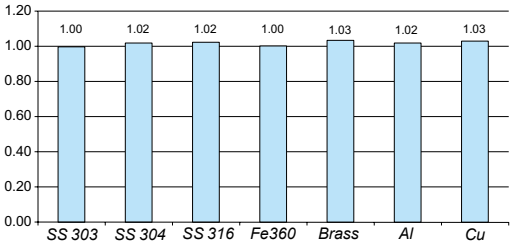
4-wire ⎓	PNP NO+NC	**XS9C2A1PCM12**	**XS9C4A1PCP20** *(1)*
	NPN NO+NC	**XS9C2A1NCM12**	**XS9C4A1NCP20** *(1)*
		XS9C4●●●P20 sensors are available with an ISO M20 cable entry and can be supplied with a Pg 13.5 (e.g. **XS9C4A1PCG13**) or a 1/2" NPT (e.g. **XS9C4A1PCN12**) cable entry: please consult our Customer Care Centre for more information.	
Weight (kg)		0.110	0.220

Characteristics

Product certifications		UL, CSA, CE	
Conformity to standards		IEC 60947-5-2	
Connection		M12 connector (4-pin)	Screw terminals, clamping capacity 4 x 1.5 mm^2 / 4 x 16 AWG
Operating zone		0…16 mm	
Differential travel		3…15% of Sr	
Repeat accuracy		< 3%	
Immunity to magnetic fields		< 250 mTesla	
Degree of protection	Conforming to IEC 60529 and DIN 40050	IP 65, IP 67 and IP 69K	
Temperature	Storage	- 40….+ 85°C	
	Operation *(2)*	- 25….+ 70°C	
Material		Case: PBT	
Vibration resistance	Conforming to IEC 60068-2-6	25 gn, amplitude ± 2 mm (f = 10…55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27	50 gn for 11 ms	
Indicators		Output state: yellow LED. Supply on: green LED	
Rated supply voltage	4-wire ⎓	⎓ 12…24 V with protection against reverse polarity	
Voltage limits (including ripple)	4-wire ⎓	⎓ 10…36 V	
Current consumption, no-load	4-wire ⎓	< 30 mA	
Switching capacity	4-wire ⎓	< 200 mA with protection against overload and short-circuit	
Voltage drop, closed state	4-wire ⎓	< 2 V	
Maximum switching frequency	4-wire ⎓	250 Hz	
Delays	First-up	< 15 ms	
	Response	< 2.5 ms	
	Recovery	< 2.5 ms	

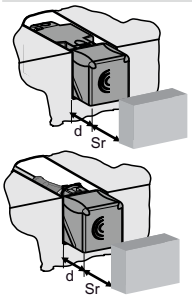
Setting-up

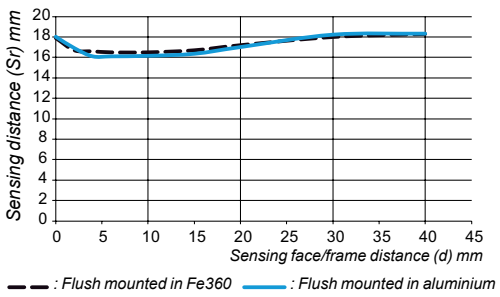
Sensing distance correction factor



SS: stainless steel, Fe: steel, Al: aluminium, Cu: copper.

Operating distance (according to the sensor's level of flush mounting)





*(1) These sensors are supplied without a cable gland. A suitable Pg 13.5 cable gland is available (reference **XSZPE13**).*
*(2) Sensors are available for very low temperatures (suffix **TF**: - 40°C, + 70°C) or very high temperatures (suffix **TT**: - 25°C, + 85°C); please consult our Customer Care Centre.*

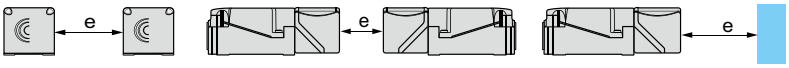
Inductive proximity sensors

OsiSense XS Application

Factor 1 sensors for ferrous or non ferrous material detection and welding applications. Plastic case, 40 x 40 mm front face. 5 position turret head

Setting-up *(continued)*

Minimum mounting distances (mm)



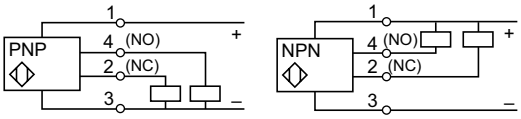
	Side by side	Face to face	Facing a metal object
Sensors flush mountable in metal	e ⩾ 80	e ⩾ 200	e ⩾ 60

Wiring schemes

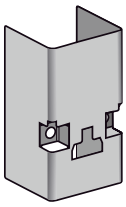
M12 connector

1: + V
2: NC Output
3: 0 V
4: NO Output

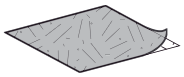
4-wire ⎓, NO + NC outputs



Accessories



XSZPSC2

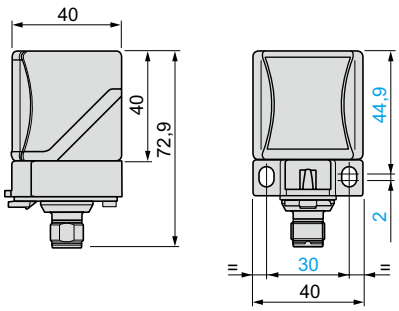


XSZPKC2

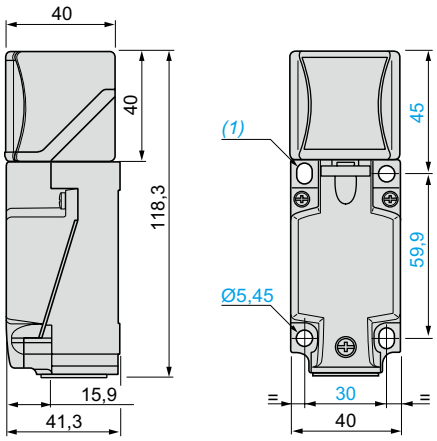
Description	Use for	Reference	Weight kg
Stainless steel rigid protective cover (only suitable for use when detecting from the top)	Welding	**XSZPSC2**	0.010
Protective sheet (for sensing face of sensor) Sold in lots of 5	Welding	**XSZPKC2**	0.010

Dimensions

XS9C2A1PCM12 and **XS9C2A1NCM12**



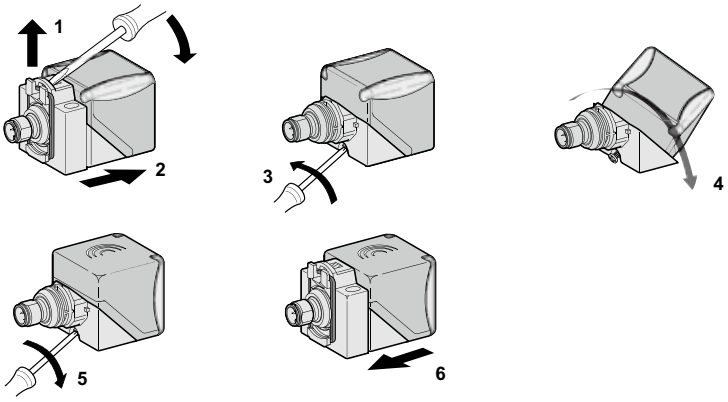
XS9C4A1PCP20 and **XS9C4A1NCP20**



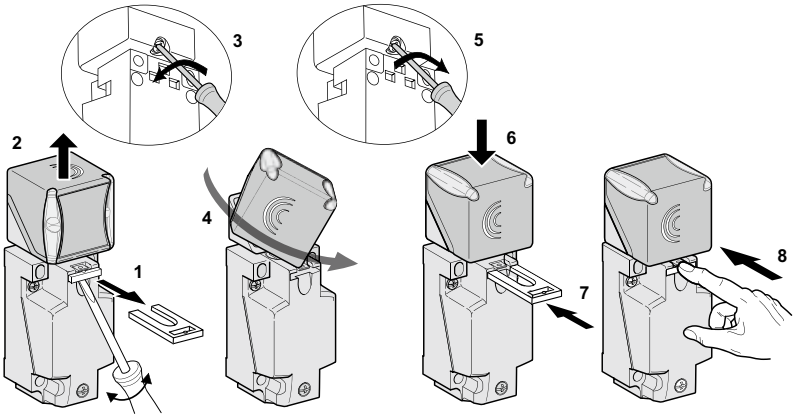
(1) 2 elongated holes Ø 5.3 x 7 mm.
Tightening torque of cover fixing screws and clamp screws: < 1.2 N.m / < 10.62 lb-in.

Head positions

XS9C2A1PCM12 and **XS9C2A1NCM12**



XS9C4A1PCP20 and **XS9C4A1NCP20**



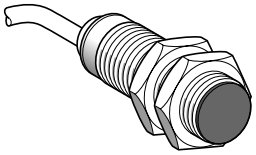
Inductive proximity sensors

OsiSense XS 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	**XS1M18PAS40**
3-wire, non ferrous version Insensitive to ferrous materials	PNP	NO	**XS1M18PAS20**
Weight (kg)			0.120

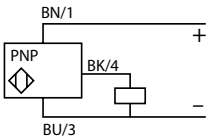
Characteristics

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		- 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 with other cable lengths: please consult our Customer Care Centre.

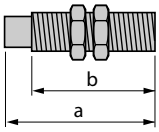
Wiring schemes

3-wire ⎓ PNP



Dimensions

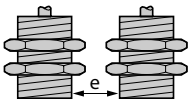
XS1M

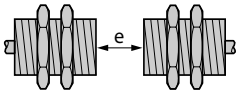


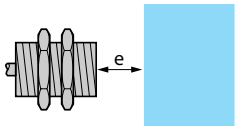
a (mm)	b (mm)
60	51.5

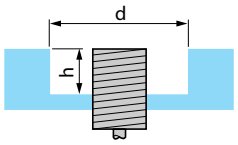
Setting-up

Minimum mounting distances (mm)









	Side by side	Face to face	Facing a metal object	Mounted in a metal support
XS1M18	e ⩾ 10	e ⩾ 60	e ⩾ 15	d ⩾ 18, h ⩾ 0 (ferrous metal) d ⩾ 18, h ⩾ 5 (non ferrous metal)

Accessories:
pages 122

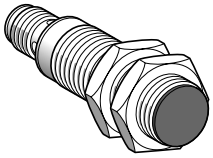
Inductive proximity sensors

OsiSense XS 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

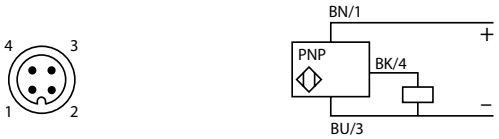
3-wire, ferrous version Insensitive to non ferrous materials	PNP	NO	**XS1M18PAS40D**
3-wire, non ferrous version Insensitive to ferrous materials	PNP	NO	**XS1M18PAS20D**
Weight (kg)			0.060

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		- 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

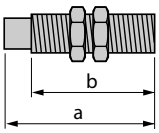
Wiring schemes

M12 connector | **3-wire ⎓ PNP**



Dimensions

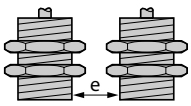
XS1M

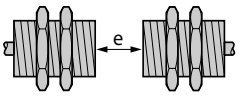


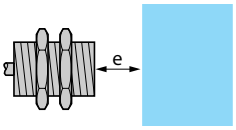
a (mm)	b (mm)
70	51.5

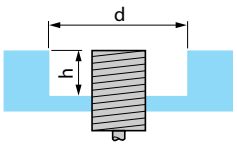
Setting-up

Minimum mounting distances (mm)





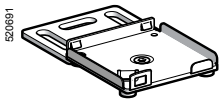




	Side by side	Face to face	Facing a metal object	Mounted in a metal support
XS1M18	e ≥ 10	e ≥ 60	e ≥ 15	d ≥ 18, h ≥ 0 (ferrous metal) d ≥ 18, h ≥ 5 (non ferrous metal)

Accessories:
pages 122

Inductive proximity sensors
OsiSense XS
Accessories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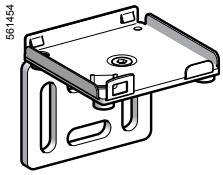
XSZB●00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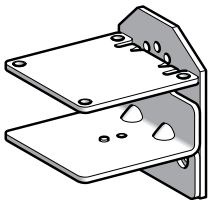
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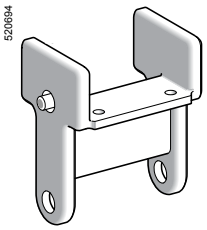
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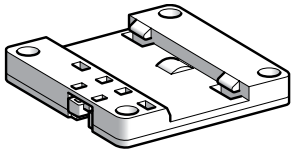
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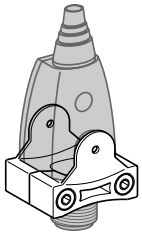
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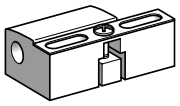
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XSZB1●●

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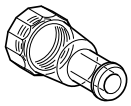
XSZA0●●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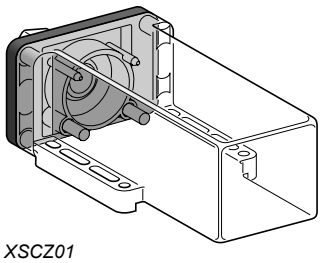
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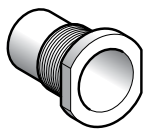
XSZF10


821980
XTAZ30

Mounting and fixing accessories

Description	For use with sensor Type	Diameter (mm)	Unit reference	Weight kg
"Clip" mounting plate Can be mounted without "clip" on threaded holes	XS●J	–	**XSZBJ00**	0.003
	XS●F	–	**XSZBF00**	0.005
	XS●E	–	**XSZBE00**	0.025
	XS●C	–	**XSZBC00**	0.060
"Clip" 90° mounting bracket Can be mounted without "clip" on threaded holes	XS●J	–	**XSZBJ90**	0.003
	XS●F	–	**XSZBF90**	0.005
	XS●E	–	**XSZBE90**	0.025
	XS●C	–	**XSZBC90**	0.060
Replacement bracket	XS●E Replaces: XS7T2, XS8T2, XSE	–	**XSZBE10**	0.060
	XS●C Replaces: XS7T4, XS7C40, XS8T4, XS8C40 and XSC	–	**XSZBC10**	0.110
	XS●D (for XSD) *(1)*	–	**XSZBD10**	0.065
Fixing clamp for remote control	XS9, XS6●●●B2	–	**XSZBPM12**	0.015
Fixing clamps	XS1	4 (plain)	**XSZB104**	0.005
		5 (M5 x 0.5)	**XSZB105**	0.005
	XS1, XS2	6.5 (plain)	**XSZB165**	0.005
	XS1, XS2, XS4, XS5, XS6	8 (M8 x 1)	**XSZB108**	0.006
	XS1, XS2, XS4, XS5, XS6, XT1	12 (M12 x 1)	**XSZB112**	0.006
		18 (M18 x 1)	**XSZB118**	0.010
		30 (M30 x 1.5)	**XSZB130**	0.020
	XT1	32 (plain)	**XUZB32**	0.050
Set of 2 metal fixing nuts, nickel plated	XS1	5 (M5 x 0.5)	**XSZE105**	0.010
	XS1, XS2, XS5, XS6	8 (M8 x 1)	**XSZE108**	0.015
	XS1, XS2, XT1, XS5, XS6	12 (M12 x 1)	**XSZE112**	0.015
		18 (M18 x 1)	**XSZE118**	0.020
		30 (M30 x 1.5)	**XSZE130**	0.050
Set of 2 stainless steel fixing nuts	XS1, XS2, XS5, XS6	8 (M8 x 1)	**XSZE308**	0.015
	XS1, XS2, XT1, XS5, XS6	12 (M12 x 1)	**XSZE312**	0.015
		18 (M18 x 1)	**XSZE318**	0.020
		30 (M30 x 1.5)	**XSZE330**	0.050
Set of 2 plastic fixing nuts	XS4	8 (M8 x 1)	**XSZE208**	0.002
		12 (M12 x 1)	**XSZE212**	0.003
	XS4	18 (M18 x 1)	**XSZE218**	0.004
		30 (M30 x 1.5)	**XSZE230**	0.005
Adaptor collar Ø 20	XS●, XT●	18 (M18 x 1)	**XSZA020**	0.005
Ø 34	XS●, XT●	30 (M30 x 1.5)	**XSZA034**	0.005

Protection accessories

Cable sleeve adaptor (CNOMO type)	XS●, XT●	12 (M12 x 1)	**XSZP112**	0.005
		18 (M18 x 1)	**XSZP118**	0.005
		30 (M30 x 1.5)	**XSZP130**	0.010
Outer cover (IP 68)	XT7, XS7, XS8 and XS9 (C format)	–	**XSCZ01**	0.100
Thread adaptor	XS●, XT●	30 (M30 x 1.5)	**XTAZ30**	0.035
13P cable gland	Clamping capacity Ø 9 to 12 mm		**XSZPE13**	0.010
Protective cover Sold in lots of 50	M12 universal connectors		**XSZF10**	0.020

Fixings

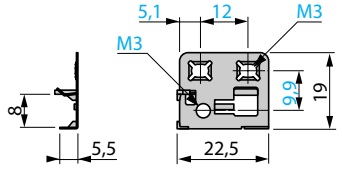
Threaded inserts for rear fixing	XS●E	M3	**XSZVF03**	0.002
	XS●C	M4	**XSZVF04**	0.005
	XS●D	M5	**XSZVF05**	0.006

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

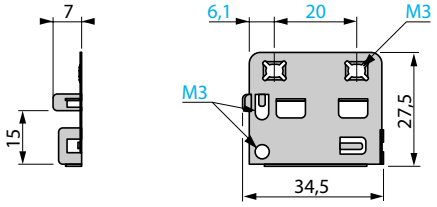
Description	Type	Sold in lots of	Unit reference	Weight kg
Cartridge fuses 5 x 20	0.4 A "quick-blow"	10	**XUZE04**	0.001
	0.63 A "quick-blow"	10	**XUZE06**	0.001
	0.8 A "quick-blow"	10	**XUZE08**	0.001
Fuse terminal block for XUZE0●		50	**AB1FU10135U**	0.040

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

XSZBJ00



XSZBF00



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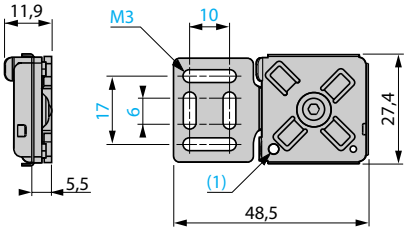
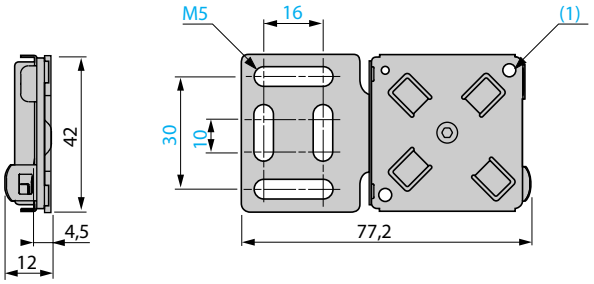


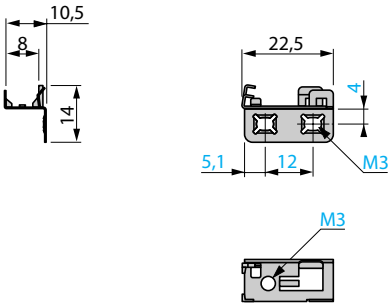
(1) 2 screws M3 x 12 (included).

XSZBC00

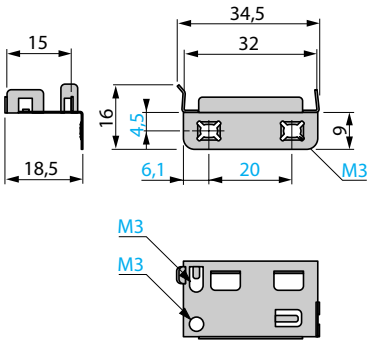


(1) 4 screws M4 x 14 (included).

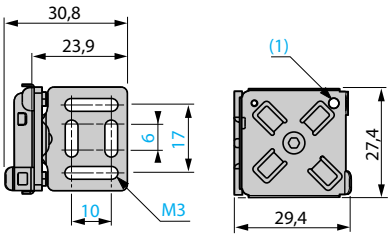
XSZBJ90



XSZBF90

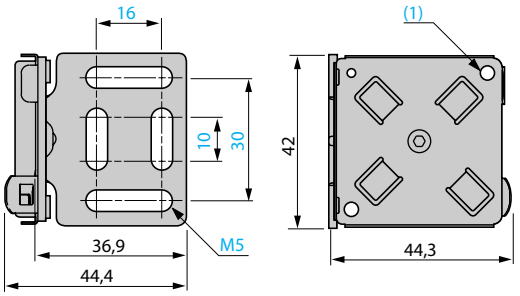


XSZBE90



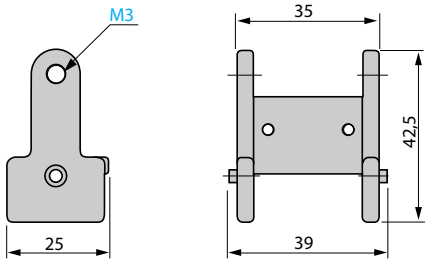
(1) 2 screws M3 x 12 (included).

XSZBC90

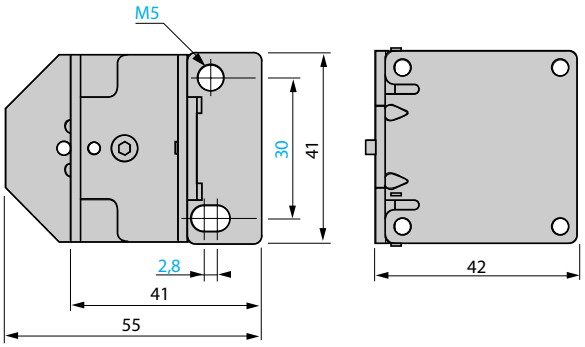


(1) 4 screws M4 x 14 (included).

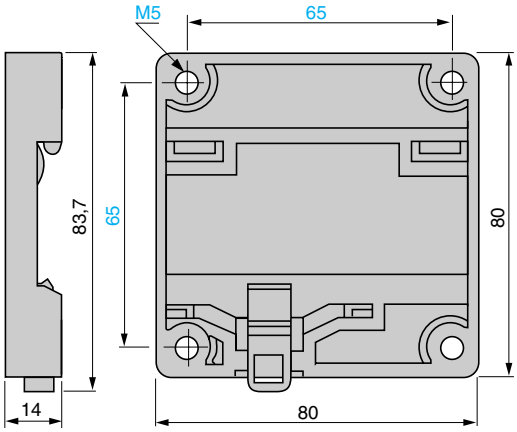
XSZBE10



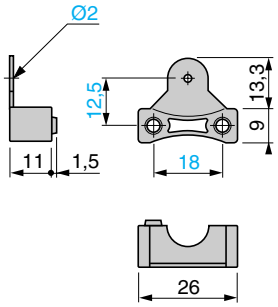
XSZBC10



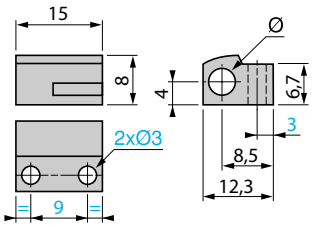
XSZBD10 (for mounting on XS●D●●●●)



XSZBPM12



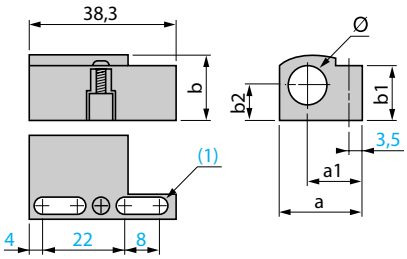
XSZB104, B105



XSZ	Ø
B104	4
B105	5

Note: *for fixing clamps XSZB118 and XSZB130, see mounting precautions, page 19.*

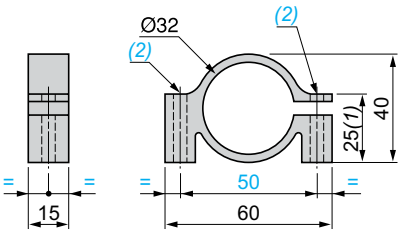
XSZB108, B112, B118, B130, B165



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

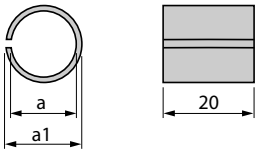
(1) 2 elongated holes 4 x 8 mm.

XUZB32



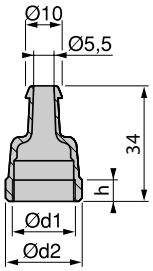
(1) Maximum value
(2) 2 holes Ø 5.5
2 x M5 screws, HM head, included with fixing clamp

XSZA0●●



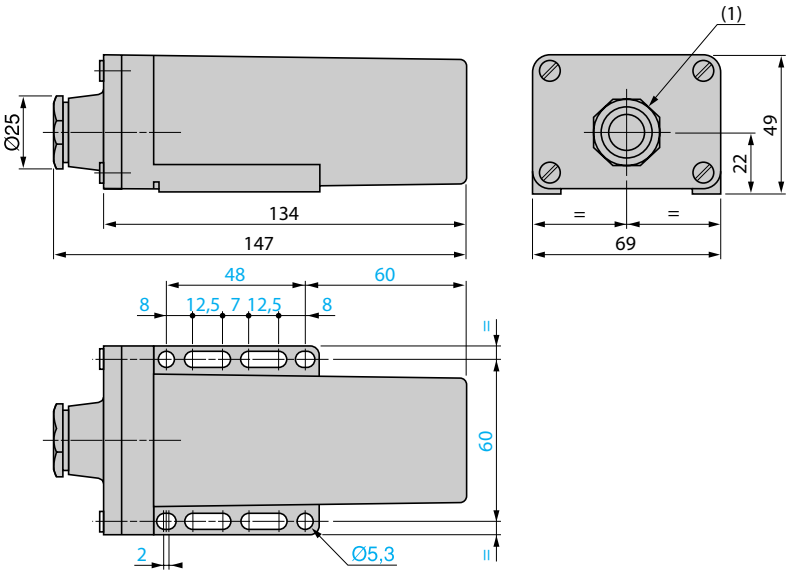
XSZ	a	a1
A020	Ø18	Ø20
A034	Ø30	Ø34

XSZP112, P118, P130



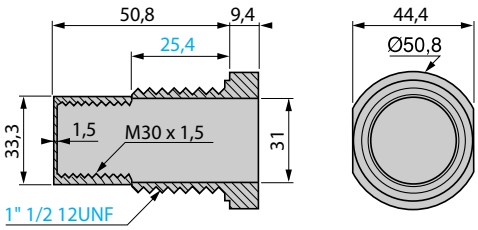
XSZ	h	Ø d1	Ø d2
P112	7	12	16,8
P118	6,2	18	23
P130	6,2	30	34,4

XSCZ01



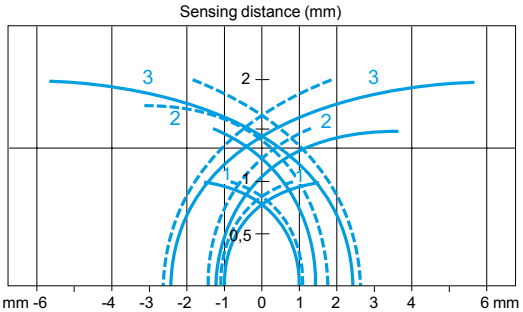
(1) 13P cable gland

XTAZ30



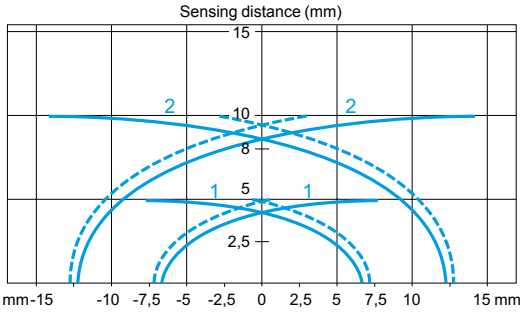
Cylindrical type sensors

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

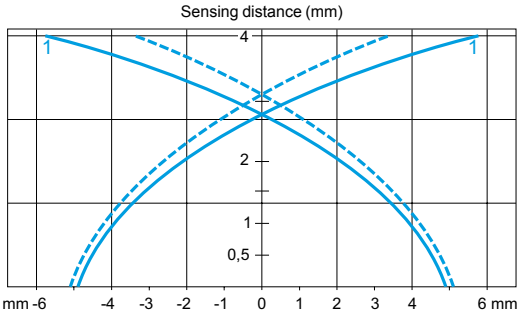
pick-up points
drop-out points (object approaching from the side)
1 Ø 4 (plain) XS1 and Ø 5 (M5 x 0.5) XS1
2 Ø 6.5 (plain) XS1 and Ø 8 (M8 x 1) XS5
3 Ø 12 (M12 x 1) XS5



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

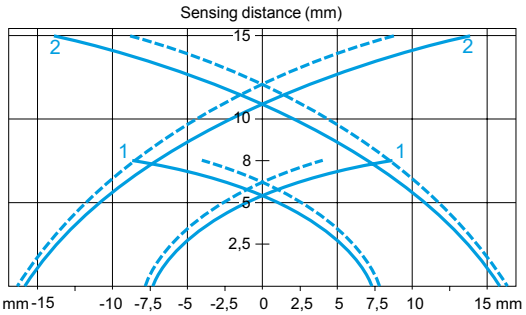
pick-up points
drop-out points (object approaching from the side)
1 Ø 18 (M18 x 1) XS5
2 Ø 30 (M30 x 1.5) XS5

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



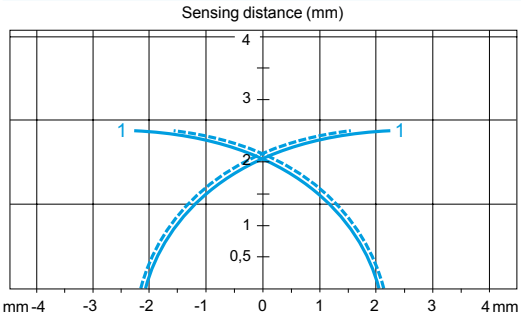
Sensor (mm)	Standard steel target (mm)	Operating zone (mm)
Ø 18	24 x 24 x 1	0…6.4
Ø 30	45 x 45 x 1	0…12

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 sensors, increased range

Flush mountable in metal

Non flush mountable in metal



Sensor (mm)

Ø 6,5 and Ø 8

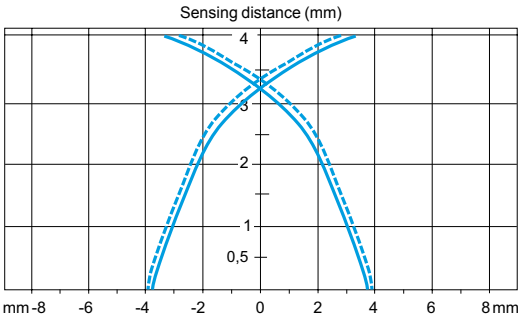
Standard steel target (mm)

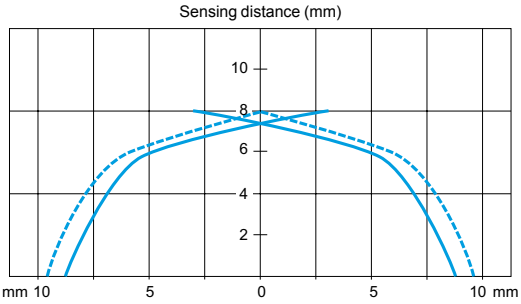
8 x 8 x 1

Operating zone (mm)

0…2 (flush mounted)

1 Ø 6.5 (plain) XS106B3●● and Ø 8 (M8 x 1) XS108B3 and XS608●●





Sensor (mm)

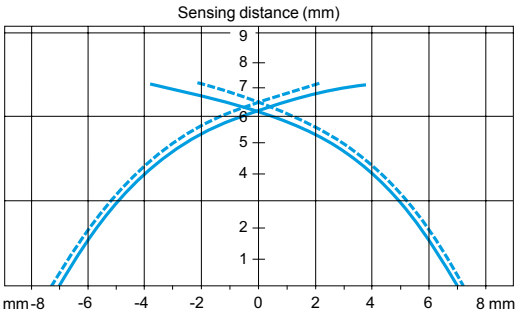
Ø 12

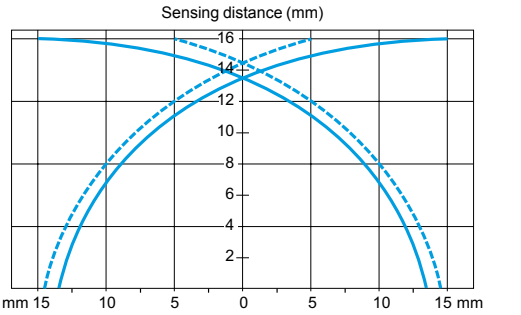
Standard steel target (mm)

12 x 12 x 1

Operating zone (mm)

0…3.2 (flush mounted)
0…6.4 (not flush mounted)





Sensor (mm)

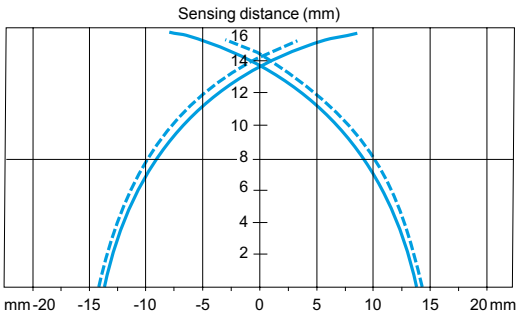
Ø 18

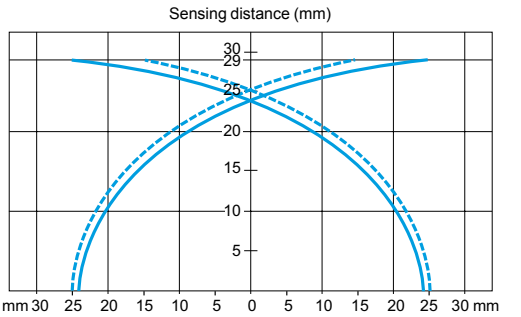
Standard steel target (mm)

24 x 24 x1

Operating zone (mm)

0…6.4 (flush mounted)
0…12.8 (not flush mounted)





Sensor (mm)

Ø 30

Standard steel target (mm)

45 x 45 x 1

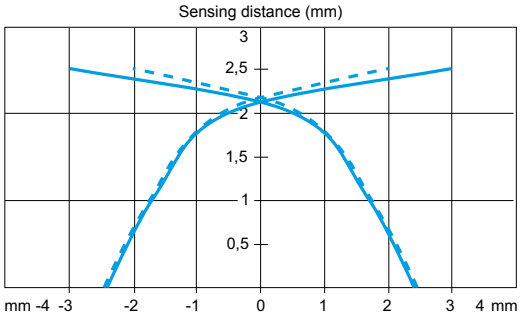
Operating zone (mm)

0…12 (flush mounted)
0…24 (not flush mounted)

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

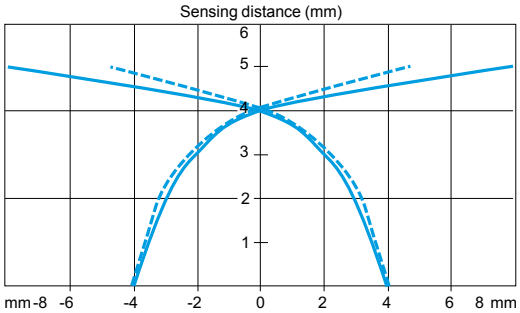
Cubic, flat or rectangular type sensors

Flush mountable in metal



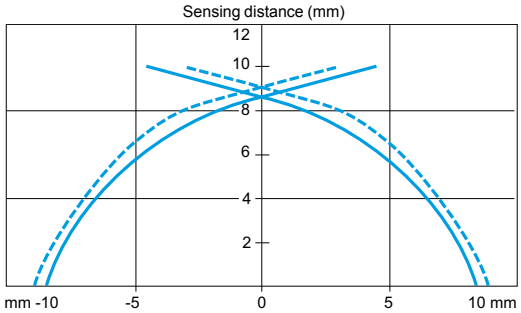
Sensor	Standard steel target (mm)	Operating zone (mm)
XS7J1A1	5 x 5 x 1	0...2

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



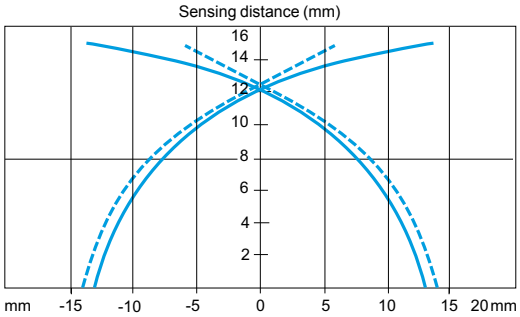
Sensor	Standard steel target (mm)	Operating zone (mm)
XS7F1A1	5 x 5 x 1	0...4

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



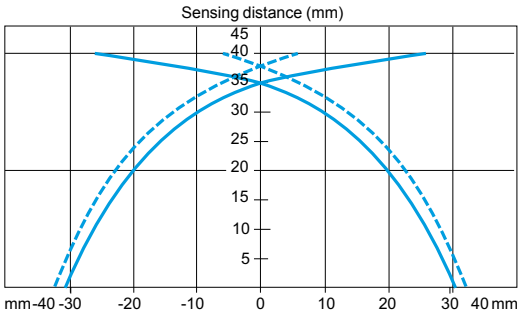
Sensor	Standard steel target (mm)	Operating zone (mm)
XS7E1A1	8 x 8 x 1	0...8

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



Sensor	Standard steel target (mm)	Operating zone (mm)
XS7C1A1 **XS7C2A1**	18 x 18 x 1	0...12

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

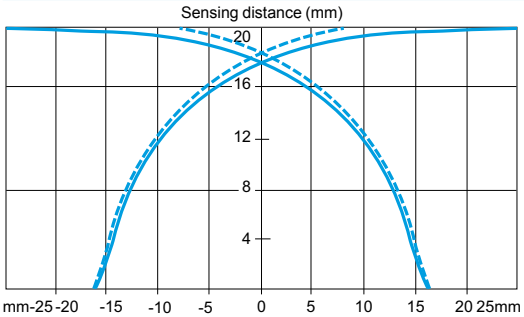


Sensor	Standard steel target (mm)	Operating zone (mm)
XS7D1A1	30 x 30 x 1	0...32

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

Cubic or rectangular type sensors, increased range

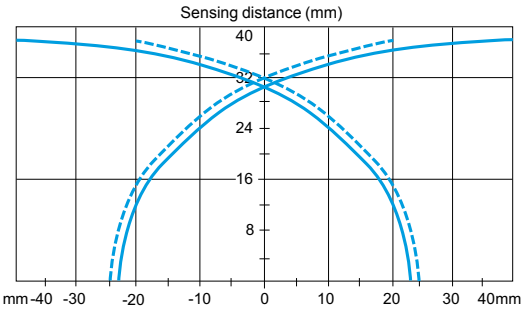
Flush mountable in metal



Sensor	Standard steel target (mm)	Operating zone (mm)
XS8C●A1●●	30 x 30 x 1	0…16

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

Non flush mountable in metal

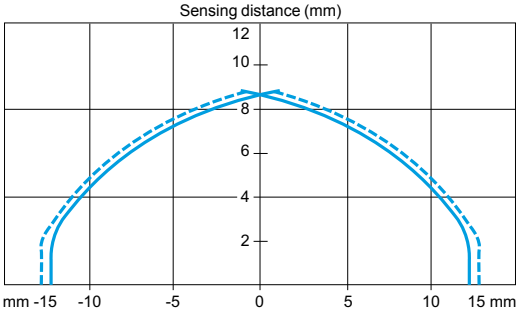


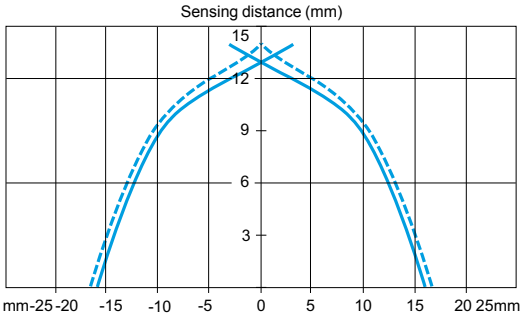
Sensor	Standard steel target (mm)	Operating zone (mm)
XS8C●A4●	45 x 45 x 1	0…32

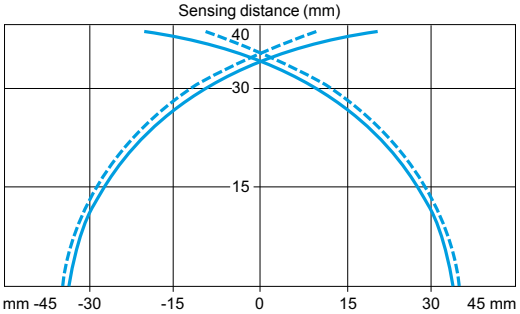
pick-up points
drop-out points (object approaching from the side)

Flat type sensors, increased range

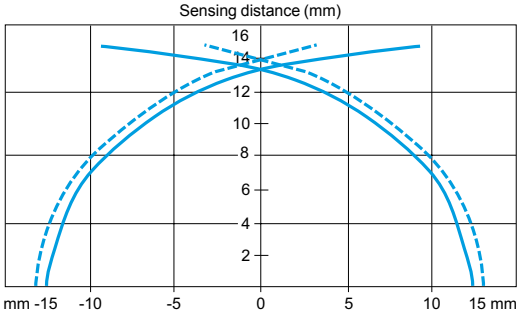
Flush mountable in metal

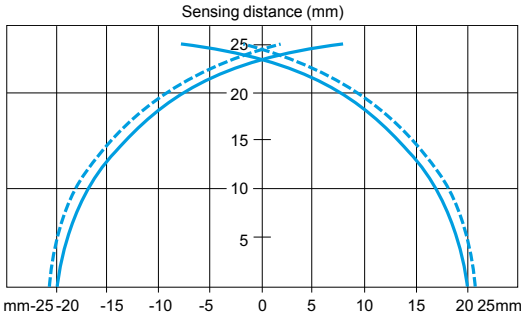


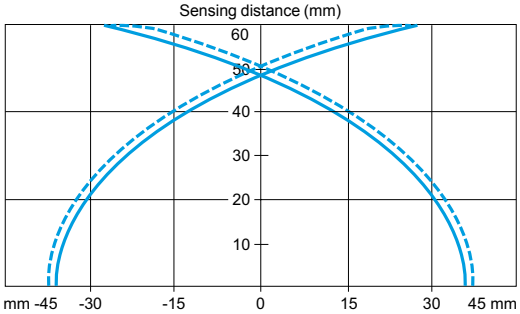




Non flush mountable in metal







Sensor
XS8E
Standard steel target (mm)
18 x 18 x 1
Operating zone (mm)
5…10 (flush mounted) 5…15 (not flush mounted)

Sensor
XS8C
Standard steel target (mm)
30 x 30 x 1
Operating zone (mm)
8…15 (flush mounted) 8…25 (not flush mounted)

Sensor
XS8D
Standard steel target (mm)
45 x 45 x 1
Operating zone (mm)
20…40 (flush mounted) 0…60 (not flush mounted)

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

Old sensor	**New OsiSense XS sensor**
Cylindrical type, DC	
Diameter 6.5 mm	
XS1	
XS1L06NA340	**XS506B1NAL2**
XS1L06NA340S	**XS506B1NAM8**
XS1L06NB340	**XS506B1NBL2**
XS1L06NB340S	**XS506B1NBM8**
XS1L06PA340	**XS506B1PAL2**
XS1L06PA340L1	**XS506B1PAL5**
XS1L06PA340D	**XS506B1PAM12**
XS1L06PA340S	**XS506B1PAM8**
XS1L06PB340	**XS506B1PBL2**
XS1L06PB340L1	**XS506B1PBL5**
XS1L 06PB340S	**XS506B1PBM8**
XS1L06NA349	**XS106B3NAL2**
XS1L06NA349S	**XS106B3NAM8**
XS1L06NB349	**XS106B3NBL2**
XS1L06NB349S	**XS106B3NBM8**
XS1L06PA349	**XS106B3PAL2**
XS1L06PA349L1	**XS106B3PAL5**
XS1L06PA349D	**XS106B3PAM12**
XS1L06PA349S	**XS106B3PAM8**
XS1L06PB349	**XS106B3PBL2**
XS1L06PB349L1	**XS106B3PBL5**
XS1L06PB349S	**XS106B3PBM8**
Diameter 8 mm	
XS1	
XS1D08NA140	**XS108BLNAL2**
XS1D08NA140D	**XS108BLNAM12**
XS1D08PA140	**XS108BLPAL2**
XS1D08PA140D	**XS108BLPAM12**
XS1D08PA140L1	**XS108BLPAL5**
XS1M08DA210	**XS508B1DAL2**
XS1M08DA210D	**XS508B1DAM12**
XS1M08DA210L1	**XS508B1DAL5**
XS1M08DA210L2	**XS508B1DAL10**
XS1M08DA210LD	**XS508B1DAL08M12**
XS1M08DB210	**XS508B1DBL2**
XS1M08DB210D	**XS508B1DBM12**
XS1M08DB210L1	**XS508B1DBL5**
XS1M08DB210LD	**XS508B1DBM12** *(1)*
XS1M08DA214D	**XS508B1CAM12**
XS1M08DA214LD	**XS508B1CAL08M12**

Old sensor	**New OsiSense XS sensor**
XS1M08NA370	**XS508BLNAL2**
XS1M08NA370D	**XS508BLNAM12**
XS1M08NA370L1	**XS508BLNAL5**
XS1M08NB370	**XS508BLNBL2**
XS1M08NB370D	**XS508BLNBM12**
XS1M08PA370	**XS508BLPAL2**
XS1M08PA370D	**XS508BLPAM12**
XS1M08PA370L1	**XS508BLPAL5**
XS1M08PA370L2	**XS508BLPAL10**
XS1M08PA370LD	**XS508BLPAM12** *(1)*
XS1M08PA370S	**XS508BLPAM12** *(2)*
XS1M08PB370	**XS508BLPBL2**
XS1M08PB370D	**XS508BLPBM12**
XS1M08PB370L1	**XS508BLPBL5**
XS1M08PB370L2	**XS508BLPBL10**
XS1N08NA340	**XS508B1NAL2**
XS1N08NA340D	**XS508B1NAM12**
XS1N08NA340L1	**XS508B1NAL5**
XS1N08NA340L2	**XS508B1NAL10**
XS1N08NA340S	**XS508B1NAM8**
XS1N08NB340	**XS508B1NBL2**
XS1N08NB340D	**XS508B1NBM12**
XS1N08NB340S	**XS508B1NBM8**
XS1N08PA340	**XS508B1PAL2**
XS1N08PA340D	**XS508B1PAM12**
XS1N08PA340L1	**XS508B1PAL5**
XS1N08PA340L2	**XS508B1PAL10**
XS1N08PA340LD	**XS508B1PAM12**
XS1N08PA340S	**XS508B1PAM8**
XS1N08PB340	**XS508B1PBL2**
XS1N08PB340D	**XS508B1PBM12**
XS1N08PB340L1	**XS508B1PBL5**
XS1N08PB340L2	**XS508B1PBL10**
XS1N08PB340S	**XS508B1PBM8**
XS1N08NA349	**XS108B3NAL2**
XS1N08NA349L1	**XS108B3NAL5**
XS1N08NA349D	**XS108B3NAM12**
XS1N08NA349S	**XS108B3NAM8**
XS1N08NB349	**XS108B3NBL2**
XS1N08NB349L1	**XS108B3NBL5**
XS1N08NB349D	**XS108B3NBM12**
XS1N08NB349S	**XS108B3NBM8**
XS1N08PA349	**XS108B3PAL2**
XS1N08PA349L1	**XS108B3PAL5**
XS1N08PA349D	**XS108B3PAM12**
XS1N08PA349S	**XS108B3PAM8**
XS1N08PB349	**XS108B3PBL2**

Old sensor	**New OsiSense XS sensor**
XS1N08PB349L1	**XS108B3PBL5**
XS1N08PB349D	**XS108B3PBM12**
XS1N08PB349S	**XS108B3PBM8**
XS2	
XS2M08NA340	**XS608B1NAL2**
XS2N08NA340	**XS108B3NAL2**
XS2N08NA340D	**XS108B3NAM12**
XS2N08NA340L1	**XS108B3NAL5**
XS2N08NA340L2	**XS108B3NAL10**
XS2N08NA340S	**XS108B3NAM8**
XS2N08NB340	**XS108B3NBL2**
XS2N08NB340D	**XS108B3NBM12**
XS2N08NB340S	**XS108B3NBM8**
XS2N08PA340	**XS108B3PAL2**
XS2N08PA340D	**XS108B3PAM12**
XS2N08PA340L1	**XS108B3PAL5**
XS2N08PA340L2	**XS108B3PAL10**
XS2N08PA340S	**XS108B3PAM8**
XS2N08PB340	**XS108B3PBL2**
XS2N08PB340D	**XS108B3PBM12**
XS2N08PB340S	**XS108B3PBM8**
XS3	
XS3P08NA340	**XS508B1NAL2** *(3)*
XS3P08NA340D	**XS508B1NAM12** *(3)*
XS3P08NA340L1	**XS508B1NAL5** *(3)*
XS3P08PA340	**XS508B1PAL2** *(3)*
XS3P08PA340D	**XS508B1PAM12** *(3)*
XS3P08PA340L1	**XS508B1PAL5** *(3)*
XS3P08NA370	**XS508BLNAL2** *(3)*
XS3P08NA370L1	**XS508BLNAL5** *(3)*
XS3P08PA370	**XS508BLPAL2** *(3)*
XS3P08PA370L1	**XS508BLPAL5** *(3)*

(1) For the new sensor an integral M12 connector replaces the remote 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 OsiSense XS sensor, the metal case replaces the plastic case.

Old sensor	**New OsiSense XS sensor**
Cylindrical type, DC *(continued)*	
Diameter 12 mm	
XS1	
XS1M12DA210	**XS512B1DAL2**
XS1M12DA210D	**XS512B1DAM12**
XS1M12DA210L1	**XS512B1DAL5**
XS1M12DA210L2	**XS512B1DAL10**
XS1M12DA210LA	**XS512B1DAL08U78**
XS1M12DA210LD	**XS512B1DAL08M12**
XS1M12DB210	**XS512B1DBL2**
XS1M12DB210D	**XS512B1DBM12**
XS1M12DB210L1	**XS512B1DBL5**
XS1M12DB210L2	**XS512B1DBL10**
XS1M12DB210LD	**XS512B1DBL08M12**
XS1M12DA214D	**XS512B1CAM12**
XS1M12DA214LD	**XS512B1CAL08M12**
XS1M12NA370	**XS512BLNAL2**
XS1M12NA370D	**XS512BLNAM12**
XS1M12NA370L1	**XS512BLNAL5**
XS1M12NA370L2	**XS512BLNAL10**
XS1M12NA370S	**XS612B1NAM12** *(2)*
XS1M12NB370	**XS512BLNBL2**
XS1M12NB370D	**XS512BLNBM12**
XS1M12PA370	**XS512BLPAL2**
XS1M12PA370D	**XS512BLPAM12**
XS1M12PA370L1	**XS512BLPAL5**
XS1M12PA370L2	**XS512BLPAL10**
XS1M12PA370LA	**XS612B1PAL08U78**
XS1M12PA370LD	**XS612B1PAL08M12**
XS1M12PB370	**XS512BLPBL2**
XS1M12PB370D	**XS512BLPBM12**
XS1M12PB370L1	**XS512BLPBL5**
XS1M12PB370L2	**XS512BLPBL10**
XS1M12PB370LD	**XS612B1PAM12** *(1)*
XS1N12NA340	**XS512B1NAL2**
XS1N12NA340D	**XS512B1NAM12**
XS1N12NA340L1	**XS512B1NAL5**
XS1N12NA340L2	**XS512B1NAL10**
XS1N12NB340	**XS512B1NBL2**
XS1N12NB340D	**XS512B1NBM12**
XS1N12NC410L2	**XS1N12NC410D + XZCPV1141L10**
XS1N12PA340	**XS512B1PAL2**
XS1N12PA340D	**XS512B1PAM12**
XS1N12PA340L1	**XS512B1PAL5**
XS1N12PA340L2	**XS512B1PAL10**
XS1N12PA340LD	**XS512B1PAM12** *(1)*

Old sensor	**New OsiSense XS sensor**
XS1N12PA340S	**XS512B1PAM12** *(2)*
XS1N12PB340	**XS512B1PBL2**
XS1N12PB340D	**XS512B1PBM12**
XS1N12PB340L1	**XS512B1PBL5**
XS1M12PA349D	**XS612B1PAM12**
XS1N12NA349	**XS112B3NAL2**
XS1N12NA349L1	**XS112B3NAL5**
XS1N12NA349D	**XS112B3NAM12**
XS1N12NB349	**XS112B3NBL2**
XS1N12NB349L1	**XS112B3NBL5**
XS1N12NB349D	**XS112B3NBM12**
XS1N12PA349	**XS112B3PAL2**
XS1N12PA349L1	**XS112B3PAL5**
XS1N12PA349D	**XS112B3PAM12**
XS1N12PB349	**XS112B3PBL2**
XS1N12PB349L1	**XS112B3PBL5**
XS1N12PB349D	**XS112B3PBM12**
XS2	
XS2M12NA370	**XS612B1NAL2**
XS2M12NA370D	**XS612B1NAM12**
XS2M12NA370L1	**XS612B1NAL5**
XS2M12NA370L2	**XS612B1NAL10**
XS2M12NB370	**XS612B1NBL2**
XS2M12NB370D	**XS612B1NBM12**
XS2M12PA370	**XS612B1PAL2**
XS2M12PA370D	**XS612B1PAM12**
XS2M12PA370L1	**XS612B1PAL5**
XS2M12PA370L2	**XS612B1PAL10**
XS2M12PA370LA	**XS612B1PAL08U78**
XS2M12PA370LD	**XS612B1PAL08M12**
XS2M12PB370	**XS612B1PBL2**
XS2M12PB370D	**XS612B1PBM12**
XS2M12PB370L1	**XS612B1PBL5**
XS2M12PB370S	**XS612B1PBM12** *(2)*
XS2N12NA340	**XS112B3NAL2**
XS2N12NA340D	**XS112B3NAM12**
XS2N12NA340L1	**XS112B3NAL5**
XS2N12NA340L2	**XS112B3NAL10**
XS2N12NB340	**XS112B3NBL2**
XS2N12NB340D	**XS112B3NBM12**
XS2N12NC410L1	**XS2N12NC410D + XZCPV1141L5**
XS2N12PA340	**XS112B3PAL2**
XS2N12PA340D	**XS112B3PAM12**
XS2N12PA340L1	**XS112B3PAL5**
XS2N12PA340L2	**XS112B3PAL10**
XS2N12PC410	**XS112B3PCL2**

Old sensor	**New OsiSense XS sensor**
XS2N12PC410D	**XS112B3PCM12**
XS2N12PC410L1	**XS112B3PCM12 + XZCPV1141L5**
XS2N12PC410L2	**XS112B3PCM12 + XZCPV1141L10**
XS2N12PB340	**XS112B3PBL2**
XS2N12PB340D	**XS112B3PBM12**
XS2N12PB340L1	**XS112B3PBL5**
XS3	
XS3P12NA340	**XS512B1NAL2** *(3)*
XS3P12NA340D	**XS512B1NAM12** *(3)*
XS3P12NA340L1	**XS512B1NAL5** *(3)*
XS3P12PA340	**XS512B1PAL2** *(3)*
XS3P12PA340D	**XS512B1PAM12** *(3)*
XS3P12PA340L1	**XS512B1PAL5** *(3)*
XS3P12NA370	**XS512BLNAL2** *(3)*
XS3P12NA370L1	**XS512BLNAL5** *(3)*
XS3P12PA370	**XS512BLPAL2** *(3)*
XS3P12PA370L1	**XS512BLPAL5** *(3)*
XS4	
XS4P12PC410L2	**XS4P12PC410D + XZCPV1141L10**

(1) For the new sensor an integral M12 connector replaces the remote 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 OsiSense XS sensor, the metal case replaces the plastic case.

Old sensor	**New OsiSense XS sensor**
Cylindrical type, DC *(continued)*	
Diameter 18 mm	
XS1	
XS1M18DA210	**XS518B1DAL2**
XS1M18DA210B	**XS518B1DAL01B** *(4)*
XS1M18DA210C	**XS518B1DAL01C** *(4)*
XS1M18DA210D	**XS518B1DAM12**
XS1M18DA210G	**XS518B1DAL01G** *(4)*
XS1M18DA210L1	**XS518B1DAL5**
XS1M18DA210L2	**XS518B1DAL10**
XS1M18DA210LD	**XS518B1DAL08M12**
XS1M18DB210	**XS518B1DBL2**
XS1M18DB210B	**XS518B1DBL01B** *(4)*
XS1M18DB210D	**XS518B1DBM12**
XS1M18DB210LD	**XS518B1DBL08M12**
XS1M18DA214D	**XS518B1CAM12**
XS1M18DA214LD	**XS518B1CAL08M12**
XS1M18NA370	**XS518BLNAL2**
XS1M18NA370A	**XS618B1NAL01U78** *(4)*
XS1M18NA370B	**XS618B1NAL01B** *(4)*
XS1M18NA370C	**XS618B1NAL01C** *(4)*
XS1M18NA370D	**XS518BLNAM12**
XS1M18NA370L1	**XS518BLNAL5**
XS1M18NA370L2	**XS518BLNAL10**
XS1M18NB370	**XS518BLNBL2**
XS1M18NB370B	**XS618B1NBL01B** *(4)*
XS1M18NB370C	**XS618B1NBL01C** *(4)*
XS1M18NB370D	**XS518BLNBM12**
XS1M18NB370L1	**XS518BLNBL5**
XS1M18NB370L2	**XS518BLNBL10**
XS1M18PA370	**XS518BLPAL2**
XS1M18PA370A	**XS618B1PAL01U78** *(4)*
XS1M18PA370B	**XS618B1PAL01B** *(4)*
XS1M18PA370C	**XS618B1PAL01C** *(4)*
XS1M18PA370D	**XS518BLPAM12**
XS1M18PA370G	**XS618B1PAL01G** *(4)*
XS1M18PA370DTQ	**XS518BLPAM12TQ**
XS1M18PA370G	**XS618B1PAL01G** *(4)*
XS1M18PA370L1	**XS518BLPAL5**
XS1M18PA370L2	**XS518BLPAL10**
XS1M18PA370LA	**XS618B1PAL08U78**
XS1M18PA370LD	**XS518BLPAM12** *(1)*
XS1M18PA370DTQ	**XS518BLPAM12TQ**
XS1M18PA370TF	**XS518BLPAL2TF**
XS1M18PB370	**XS518BLPBL2**
XS1M18PB370A	**XS618B1PBL01U78** *(4)*
XS1M18PB370B	**XS618B1PBL01B** *(4)*

Old sensor	**New OsiSense XS sensor**
XS1	
XS1M18PB370D	**XS518BLPBM12**
XS1M18PB370L1	**XS518BLPBL5**
XS1M18PB370L2	**XS518BLPBL10**
XS1M18PB370C	**XS618B1PBL01C** *(4)*
XS1N18NA340	**XS518B1NAL2**
XS1N18NA340D	**XS518B1NAM12**
XS1N18NA340L1	**XS518B1NAL5**
XS1N18NA340L2	**XS518B1NAL10**
XS1N18NB340	**XS518B1NBL2**
XS1N18NB340D	**XS518B1NBM12**
XS1N18NB340L2	**XS518B1NBL10**
XS1N18NC410L1	**XS1N18NC410D + XZCPV1141L5**
XS1N18PA340	**XS518B1PAL2**
XS1N18PA340D	**XS518B1PAM12**
XS1N18PA340L1	**XS518B1PAL5**
XS1N18PA340L2	**XS518B1PAL10**
XS1N18PB340	**XS518B1PBL2**
XS1N18PB340D	**XS518B1PBM12**
XS1N18PB340L2	**XS518B1PBL10**
XS2	
XS2N18NA340	**XS118B3NAL2**
XS2N18NA340D	**XS118B3NAM12**
XS2N18NA340L1	**XS118B3NAL5**
XS2N18NA340L2	**XS118B3NAL10**
XS2N18NB340	**XS118B3NBL2**
XS2N18NC410L2	**XS2N18NC410D + XZCPV1141L10**
XS2N18PC410	**XS118B3PCL2**
XS2N18PC410D	**XS118B3PCM12**
XS2N18PC410L1	**XS118B3PCM12 + XZCPV1141L5**
XS2N18NB340D	**XS118B3NBM12**
XS2N18PA340	**XS118B3PAL2**
XS2N18PA340D	**XS118B3PAM12**
XS2N18PA340L1	**XS118B3PAL5**
XS2N18PA340L2	**XS118B3PAL10**
XS2N18PB340	**XS118B3PBL2**
XS2N18PB340D	**XS118B3PBM12**
XS2M18NA370	**XS618B1NAL2**
XS2M18NA370A	**XS618B1NAL01U78** *(4)*
XS2M18NA370B	**XS618B1NAL01B** *(4)*
XS2M18NA370C	**XS618B1NAL01C** *(4)*
XS2M18NA370D	**XS618B1NAM12**
XS2M18NA370L1	**XS618B1NAL5**
XS2M18NA370L2	**XS618B1NAL10**
XS2M18NB370	**XS618B1NBL2**

Old sensor	**New OsiSense XS sensor**
XS2M18NB370B	**XS618B1NBL01B** *(4)*
XS2M18NB370C	**XS618B1NBL01C** *(4)*
XS2M18NB370D	**XS618B1NBM12**
XS2M18NB370L1	**XS618B1NBL5**
XS2M18NB370L2	**XS618B1NBL10**
XS2M18PA370	**XS618B1PAL2**
XS2M18PA370A	**XS618B1PAL01U78** *(4)*
XS2M18PA370B	**XS618B1PAL01B** *(4)*
XS2M18PA370C	**XS618B1PAL01C** *(4)*
XS2M18PA370D	**XS618B1PAM12**
XS2M18PA370G	**XS618B1PAL01G** *(4)*
XS2M18PA370LA	**XS618B1PAL08U78** *(4)*
XS2M18PA370L1	**XS618B1PAL5**
XS2M18PA370L2	**XS618B1PAL10**
XS2M18PB370	**XS618B1PBL2**
XS2M18PB370A	**XS618B1PBL01U78** *(4)*
XS2M18PB370B	**XS618B1PBL01B** *(4)*
XS2M18PB370C	**XS618B1PBL01C** *(4)*
XS2M18PB370D	**XS618B1PBM12**
XS2M18PB370L1	**XS618B1PBL5**
XS2M18PB370L2	**XS618B1PBL10**
XS3	
XS3P18NA340	**XS518B1NAL2** *(3)*
XS3P18NA340D	**XS518B1NAM12** *(3)*
XS3P18NA340L1	**XS518B1NAL5** *(3)*
XS3P18PA340	**XS518B1PAL2** *(3)*
XS3P18PA340D	**XS518B1PAM12** *(3)*
XS3P18PA340L1	**XS518B1PAL5** *(3)*
XS3P18NA370	**XS518BLNAL2** *(3)*
XS3P18NA370L1	**XS518BLNAL5** *(3)*
XS3P18PA370	**XS518BLPAL2** *(3)*
XS3P18PA370L1	**XS518BLPAL5** *(3)*
XS3P18PA370L2	**XS518BLPAL10** *(3)*
XS4	
XS4P18NA370B	**XS4P18NA370L01B** *(4)*
XS4P18NB370B	**XS4P18NB370L01B** *(4)*
XS4P18PA370B	**XS4P18PA370L01B** *(4)*
XS4P18PB370B	**XS4P18PB370L01B** *(4)*
XS4P18PC410L1	**XS4P18PC410D + XZCPV1141L5**

(1) For the new sensor an integral M12 connector replaces the remote M12 connector on a 0.80 m flying lead.
(3) For the new OsiSense XS sensor, the metal case replaces the plastic case.
(4) For the new sensor, connectors A, B, C and G on 0.1 m flying lead replace integral connectors A, B, C and G.

Old sensor	**New OsiSense XS sensor**
Cylindrical type, DC *(continued)*	
Diameter 30 mm	
XS1	
XS1M30DA210	**XS530B1DAL2**
XS1M30DA210B	**XS530B1DAL01B** *(4)*
XS1M30DA210C	**XS530B1DAL01C** *(4)*
XS1M30DA210D	**XS530B1DAM12**
XS1M30DA210G	**XS530B1DAL01G** *(4)*
XS1M30DA210L1	**XS530B1DAL5**
XS1M30DA210L2	**XS530B1DAL10**
XS1M30DA210LD	**XS530B1DAL08M12**
XS1M30DB210	**XS530B1DBL2**
XS1M30DB210B	**XS530B1DBL01B** *(4)*
XS1M30DB210D	**XS530B1DBM12**
XS1M30DB210LD	**XS530B1DBM12** *(1)*
XS1M30DA214D	**XS530B1CAM12**
XS1M30DA214LD	**XS530B1CAL08M12**
XS1M30PA349D	**XS630B1PAM12** *(5)*
XS1M30NA370	**XS530BLNAL2**
XS1M30NA370B	**XS630B1NAL01B** *(4)*
XS1M30NA370C	**XS630B1NAL01C** *(4)*
XS1M30NA370D	**XS530BLNAM12**
XS1M30NA370L1	**XS530BLNAL5**
XS1M30NA370L2	**XS530BLNAL10**
XS1M30NB370	**XS530BLNBL2**
XS1M30NB370B	**XS630B1NBL01B** *(4)*
XS1M30NB370C	**XS630B1NBL01C** *(4)*
XS1M30NB370D	**XS530BLNBM12**
XS1M30NB370L1	**XS530BLNBL5**
XS1M30NB370L2	**XS530BLNBL10**
XS1M30PA370	**XS530BLPAL2**
XS1M30PA370A	**XS630B1PAL01U78** *(4)*
XS1M30PA370B	**XS630B1PAL01B** *(4)*
XS1M30PA370C	**XS630B1PAL01C** *(4)*
XS1M30PA370D	**XS530BLPAM12**
XS1M30PA370G	**XS630B1PAL01G** *(4)*
XS1M30PA370L1	**XS530BLPAL5**
XS1M30PA370L2	**XS530BLPAL10**
XS1M30PB370	**XS530BLPBL2**
XS1M30PB370B	**XS630B1PBL01B** *(4)*
XS1M30PB370C	**XS630B1PBL01C** *(4)*
XS1M30PB370D	**XS530BLPBM12**
XS1M30PB370G	**XS630B1PBL01G** *(4)*
XS1M30PB370L1	**XS530BLPBL5**
XS1M30PB370L2	**XS530BLPBL10**

Old sensor	**New OsiSense XS 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**
XS2	
XS2N30NA340	**XS130B3NAL2**
XS2N30NA340D	**XS130B3NAM12**
XS2N30NA340L1	**XS130B3NAL5**
XS2N30NA340L2	**XS130B3NAL10**
XS2N30NB340	**XS130B3NBL2**
XS2N30NC410L1	**XS2N30NC410D + XZCPV1141L5**
XS2N30PC410	**XS130B3PCL2**
XS2N30PC410D	**XS130B3PCM12**
XS2N30PC410L1	**XS130B3PCM12 + XZCPV1141L5**
XS2N30NB340D	**XS130B3NBM12**
XS2N30PA340	**XS130B3PAL2**
XS2N30PA340D	**XS130B3PAM12**
XS2N30PA340L1	**XS130B3PAL5**
XS2N30PA340L2	**XS130B3PAL10**
XS2N30PB340	**XS130B3PBL2**
XS2N30PB340D	**XS130B3PBM12**
XS2M30NA370	**XS630B1NAL2**
XS2M30NA370B	**XS630B1NAL01B** *(4)*
XS2M30NA370C	**XS630B1NAL01C** *(4)*
XS2M30NA370D	**XS630B1NAM12**
XS2M30NA370L1	**XS630B1NAL5**
XS2M30NA370L2	**XS630B1NAL10**
XS2M30NB370	**XS630B1NBL2**
XS2M30NB370B	**XS630B1NBL01B** *(4)*
XS2M30NB370C	**XS630B1NBL01C** *(4)*
XS2M30NB370D	**XS630B1NBM12**
XS2M30NB370L1	**XS630B1NBL5**
XS2M30NB370L2	**XS630B1NBL10**
XS2M30PA370	**XS630B1PAL2**
XS2M30PA370A	**XS630B1PAL01U78** *(4)*
XS2M30PA370B	**XS630B1PAL01B** *(4)*
XS2M30PA370C	**XS630B1PAL01C** *(4)*
XS2M30PA370D	**XS630B1PAM12**

Old sensor	**New OsiSense XS sensor**
XS2M30PA370G	**XS630B1PAL01G** *(4)*
XS2M30PA370L1	**XS630B1PAL5**
XS2M30PA370L2	**XS630B1PAL10**
XS2M30PB370	**XS630B1PBL2**
XS2M30PB370B	**XS630B1PBL01B** *(4)*
XS2M30PB370C	**XS630B1PBL01C** *(4)*
XS2M30PB370D	**XS630B1PBM12**
XS2M30PB370G	**XS630B1PBL01G** *(4)*
XS2M30PB370L1	**XS630B1PBL5**
XS2M30PB370L2	**XS630B1PBL10**
XS3	
XS3P30NA340	**XS530B1NAL2** *(3)*
XS3P30NA340D	**XS530B1NAM12** *(3)*
XS3P30NA340L1	**XS530B1NAL5** *(3)*
XS3P30PA340	**XS530B1PAL2** *(3)*
XS3P30PA340D	**XS530B1PAM12** *(3)*
XS3P30PA340L1	**XS530B1PAL5** *(3)*
XS3P30PA340L2	**XS530B1PAL10** *(3)*
XS3P30PA370	**XS530BLPAL2** *(3)*
XS3P30PA370L1	**XS530BLPAL5** *(3)*
XS3P30PA370L2	**XS530BLPAL10** *(3)*
XS3P30NA370	**XS530BLNAL2** *(3)*
XS3P30NA370L1	**XS530BLNAL5** *(3)*
XS4	
XS4P30NA370B	**XS4P30NA370L01B** *(4)*
XS4P30NB370B	**XS4P30NB370L01B** *(4)*
XS4P30NC410L2	**XS4P30NC410D + XZCPV1141L10**
XS4P30PA370B	**XS4P30PA370L01B** *(4)*
XS4P30PB370B	**XS4P30PB370L01B** *(4)*
XS4P30PC410L1	**XS4P30PC410D + XZCPV1141L5**
XS4P30PC410L2	**XS4P30PC410D + XZCPV1141L10**

(1) For the new sensor an integral M12 connector replaces the remote M12 connector on a 0.80 m flying lead.
(3) For the new OsiSense XS sensor, the metal case replaces the plastic case.
(4) For the new sensor, connectors A, B, C and G on 0.1 m flying lead replace integral connectors A, B, C and G.
(5) For the new sensor, Sn = 15 mm instead of 20 mm.

Old sensor	**New OsiSense XS sensor**
Cylindrical type, AC or DC	
Diameter 12 mm	
XS1	
XS1M12MA230	**XS512B1MAL2**
XS1M12MA230K	**XS512B1MAU20**
XS1M12MA230L1	**XS512B1MAL5**
XS1M12MA230L2	**XS512B1MAL10**
XS1M12MB230	**XS512B1MBL2**
XS1M12MB230K	**XS512B1MBU20**
XS1M12MB230L1	**XS512B1MBL5**
XS1M12MB230L2	**XS512B1MBL10**
XS1M12MA239	**XS612B1MAL2**
XS1M12MA239K	**XS612B1MAU20**
XS2	
XS2M12MA230	**XS612B1MAL2**
XS2M12MA230K	**XS612B1MAU20**
XS2M12MA230L1	**XS612B1MAL5**
XS2M12MA230L2	**XS612B1MAL10**
XS2M12MB230	**XS612B1MBL2**
XS2M12MB230K	**XS612B1MBU20**
XS2M12MB230L1	**XS612B1MBL5**
XS2M12MB230L2	**XS612B1MBL10**
XS3	
XS3P12MA230	**XS612B1MAL2** *(3)*
XS3P12MA230K	**XS612B1MAU20** *(3)*
XS3P12MA230L1	**XS612B1MAL5** *(3)*
XS3P12MA230L2	**XS612B1MAL10** *(3)*
XS3P12MB230	**XS612B1MBL2** *(3)*
XS3P12MB230K	**XS612B1MBU20** *(3)*
XS3P12MB230L1	**XS612B1MBL5** *(3)*
Diameter 18 mm	
XS1	
XS1M18MA230	**XS518B1MAL2**
XS1M18MA230A	**XS618B1MAL01U78** *(4)*
XS1M18MA230B	**XS618B1MAL01B** *(4)*
XS1M18MA230C	**XS618B1MAL01C** *(4)*
XS1M18MA230G	**XS618B1MAL01G** *(4)*
XS1M18MA230K	**XS518B1MAU20**
XS1M18MA230L1	**XS518B1MAL5**
XS1M18MA230L2	**XS518B1MAL10**
XS1M18MB230	**XS518B1MBL2**
XS1M18MB230A	**XS618B1MBL01U78** *(4)*
XS1M18MB230B	**XS618B1MBL01B** *(4)*
XS1M18MB230C	**XS618B1MBL01C** *(4)*
XS1M18MB230G	**XS618B1MBL01G** *(4)*
XS1M18MB230K	**XS518B1MBU20**
XS1M18MB230L1	**XS518B1MBL5**
XS1M18MB230L2	**XS518B1MBL10**
XS1M18MA239	**XS618B1MAL2** *(5)*

Old sensor	**New OsiSense XS sensor**
Diameter 18 mm *(continued)*	
XS1	
XS1M18MA239A	**XS1M18MA239L01A** *(4)*
XS1M18MA239K	**XS618B1MAU20** *(5)*
XS2	
XS2M18MA230	**XS618B1MAL2**
XS2M18MA230A	**XS618B1MAL01U78** *(4)*
XS2M18MA230B	**XS618B1MAL01B** *(4)*
XS2M18MA230C	**XS618B1MAL01C** *(4)*
XS2M18MA230G	**XS618B1MAL01G** *(4)*
XS2M18MA230K	**XS618B1MAU20**
XS2M18MA230L1	**XS618B1MAL5**
XS2M18MA230L2	**XS618B1MAL10**
XS2M18MB230	**XS618B1MBL2**
XS2M18MB230A	**XS618B1MBL01U78** *(4)*
XS2M18MB230B	**XS618B1MBL01B** *(4)*
XS2M18MB230C	**XS618B1MBL01C** *(4)*
XS2M18MB230G	**XS618B1MBL01G** *(4)*
XS2M18MB230K	**XS618B1MBU20**
XS2M18MB230L1	**XS618B1MBL5**
XS2M18MB230L2	**XS618B1MBL10**
XS3	
XS3P18MA230	**XS618B1MAL2** *(3)*
XS3P18MA230K	**XS618B1MAU20** *(3)*
XS3P18MA230L1	**XS618B1MAL5** *(3)*
XS3P18MA230L2	**XS618B1MAL10** *(3)*
XS3P18MB230	**XS618B1MBL2** *(3)*
XS3P18MB230A	**XS618B1MBU20** *(3)*
XS3P18MB230K	**XS618B1MBU20** *(3)*
XS3P18MB230L1	**XS618B1MBL5** *(3)*
XS4	
XS4P18MA230B	**XS4P18MA230L01B** *(4)*
XS4P18MA230C	**XS4P18MA230L01C** *(4)*
XS4P18MA230G	**XS4P18MA230L01G** *(4)*
XS4P18MB230B	**XS4P18MB230L01B** *(4)*
XS4P18MB230C	**XS4P18MB230L01C** *(4)*
Diameter 30 mm	
XS1	
XS1M30MA230	**XS530B1MAL2**
XS1M30MA230A	**XS630B1MAL01U78** *(4)*
XS1M30MA230B	**XS630B1MAL01B** *(4)*
XS1M30MA230C	**XS630B1MAL01C** *(4)*
XS1M30MA230G	**XS630B1MAL01G** *(4)*
XS1M30MA230K	**XS530B1MAU20**
XS1M30MA230L1	**XS530B1MAL5**
XS1M30MA230L2	**XS530B1MAL10**
XS1M30MB230	**XS530B1MBL2**
XS1M30MB230A	**XS630B1MBL01U78** *(4)*
XS1M30MB230B	**XS630B1MBL01B** *(4)*

Old sensor	**New OsiSense XS sensor**
Diameter 30 mm *(continued)*	
XS1M30MB230C	**XS630B1MBL01C** *(4)*
XS1M30MB230G	**XS630B1MBL01G** *(4)*
XS1M30MB230K	**XS530B1MBU20**
XS1M30MB230L1	**XS530B1MBL5**
XS1M30MB230L2	**XS530B1MBL10**
XS1M30MA239	**XS630B1MAL2** *(5)*
XS1M30MA239A	**XS1M30MA239L01A** *(4)*
XS2	
XS2M30MA230	**XS630B1MAL2**
XS2M30MA230A	**XS630B1MAL01U78** *(4)*
XS2M30MA230B	**XS630B1MAL01B** *(4)*
XS2M30MA230C	**XS630B1MAL01C** *(4)*
XS2M30MA230G	**XS630B1MAL01G** *(4)*
XS2M30MA230K	**XS630B1MAU20**
XS2M30MA230L1	**XS630B1MAL5**
XS2M30MA230L2	**XS630B1MAL10**
XS2M30MB230	**XS630B1MBL2**
XS2M30MB230A	**XS630B1MBL01U78** *(4)*
XS2M30MB230B	**XS630B1MBL01B** *(4)*
XS2M30MB230C	**XS630B1MBL01C** *(4)*
XS2M30MB230G	**XS630B1MBL01G** *(4)*
XS2M30MB230K	**XS630B1MBU20**
XS2M30MB230L1	**XS630B1MBL5**
XS2M30MB230L2	**XS630B1MBL10**
XS3	
XS3P30MA230	**XS630B1MAL2** *(3)*
XS3P30MA230K	**XS630B1MAU20** *(3)*
XS3P30MA230L1	**XS630B1MAL5** *(3)*
XS3P30MA230L2	**XS630B1MAL10** *(3)*
XS3P30MB230	**XS630B1MBL2** *(3)*
XS3P30MB230K	**XS630B1MBU20** *(3)*
XS3P30MB230L1	**XS630B1MBL5** *(3)*
XS4	
XS4P30MA230B	**XS4P30MA230L01B** *(4)*
XS4P30MA230C	**XS4P30MA230L01C** *(4)*
XS4P30MA230G	**XS4P30MA230L01G** *(4)*
XS4P30MB230B	**XS4P30MB230L01B** *(4)*
XS4P30MB230C	**XS4P30MB230L01C** *(4)*

(3) For the new OsiSense XS sensor, the metal case replaces the plastic case.
(4) For the new sensor, connectors A, B, C and G on 0.1 m flying lead replace integral connectors A, B, C and G.
(5) For the new sensor, Sn = 8 mm instead of 10 mm.

Old sensor	**New OsiSense XS sensor**
Block type	
40 x 40 x 70 mm and 40 x 40 x 117 mm	
XS7	
XS7C40DA210	**XS7C4A1DPG13**
XS7C40DA210A	**XS7C4A1DPU78**
XS7C40DA210D	**XS7C4A1DPM12**
XS7C40DA210H29	**XS7C4A1DPP20**
XS7C40DA210H7	**XS7C4A1DPN12**
XS7C40DA214D	**XS7C4A1DPM12**
XS7C40DP210	**XS7C4A1DPG13**
XS7C40DP210H29	**XS7C4A1DPP20**
XS7C40DP210H7	**XS7C4A1DPN12**
XS7C40FP260	**XS7C4A1MPG13**
XS7C40FP260A	**XS7C4A1MPU78**
XS7C40FP260H29	**XS7C4A1MPP20**
XS7C40FP260H7	**XS7C4A1MPN12**
XS7C40KPM40	**XS9C4A1PCG13**
XS7C40KPM40H29	**XS9C4A1PCP20**
XS7C40KPM40H7	**XS9C4A1PCN12**
XS7C40MP230	**XS7C4A1MPG13**
XS7C40MP230A	**XS7C4A1MPU78**
XS7C40MP230H29	**XS7C4A1MPP20**
XS7C40MP230H7	**XS7C4A1MPN12**
XS7C40NC440	**XS8C4A1NCG13**
XS7C40NC440D	**XS8C4A1NCM12**
XS7C40NC440H29	**XS8C4A1NCP20**
XS7C40NC440H7	**XS8C4A1NCN12**
XS7C40NC449	**XS8C4A1NCG13**
XS7C40NC449H29	**XS8C4A1NCP20**
XS7C40NC449H7	**XS8C4A1NCN12**
XS7C40PC440	**XS8C4A1PCG13**
XS7C40PC440D	**XS8C4A1PCM12**
XS7C40PC440H29	**XS8C4A1PCP20**
XS7C40PC440H7	**XS8C4A1PCN12**
XS7C40PC449	**XS8C4A1PCG13**
XS7C40PC449D	**XS8C4A1PCM12**
XS7C40PC449H29	**XS8C4A1PCP20**
XS7C40PC449H7	**XS8C4A1PCN12**
XS7T4DA210	**XS7C2A1DAM12 + XZCP1141L2**
XS7T4DA214LD	**XS8C2A1CAM12**
XS7T4DA214LD01	**XS8C2A1CAM12**
XS7T4DA214LD01W	**XS8C2A1CAM12 + XSZPKC2**
XS7T4DA214LDW	**XS8C2A1CAM12 + XSZPKC2**
XS7T4NC440	**XS8C2A1NCM12 + XZCP1141L2**
XS7T4NC440LD	**XS8C2A1NCM12**
XS7T4NC440LD01	**XS8C2A1NCM12**
XS7T4PC440	**XS8C2A1PCM12 + XZCP1141L2**
XS7T4PC440LD	**XS8C2A1PCM12**

Old sensor	**New OsiSense XS sensor**
40 x 40 x 70 mm and 40 x 40 x 117 mm *(continued)*	
XS8	
XS8C40DA210	**XS8C4A1DPG13**
XS8C40DA210H29	**XS8C4A1DPP20**
XS8C40DA214D	**XS8C4A1DPM12**
XS8C40DP210	**XS8C4A1DPG13**
XS8C40DP210H29	**XS8C4A1DPP20**
XS8C40DP210H7	**XS8C4A1DPN12**
XS8C40FP260	**XS8C4A1MPG13**
XS8C40FP260H29	**XS8C4A1MPP20**
XS8C40FP260H7	**XS8C4A1MPN12**
XS8C40MP230	**XS8C4A1MPG13**
XS8C40MP230H29	**XS8C4A1MPP20**
XS8C40MP230H7	**XS8C4A1MPN12**
XS8C40NC440	**XS8C4A1NCG13**
XS8C40NC440H29	**XS8C4A1NCP20**
XS8C40NC449	**XS8C4A4NCG13**
XS8C40NC449H29	**XS8C4A4NCP20**
XS8C40NC449H7	**XS8C4A4NCN12**
XS8C40PC440	**XS8C4A1PCG13**
XS8C40PC440D	**XS8C4A1PCM12**
XS8C40PC440H29	**XS8C4A1PCP20**
XS8C40PC440H7	**XS8C4A1PCN12**
XS8C40PC449	**XS8C4A4PCG13**
XS8C40PC449D	**XS8C4A4PCM12**
XS8C40PC449H29	**XS8C4A4PCP20**
XS8C40PC449H7	**XS8C4A4PCN12**
XS8T4NC440	**XS8C2A1NCM12 + XZCP1141L2**
XS8T4NC440LD01	**XS8C2A1NCM12**
XS8T4PC440	**XS8C2A1PCM12 + XZCP1141L2**
XS8T4PC440L1	**XS8C2A1PCM12 + XZCP1141L5**
XS8T4PC440L2	**XS8C2A1PCM12 + XZCP1141L10**
XS8T4PC440LD	**XS8C2A1PCM12**
XS8T4PC440LD01	**XS8C2A1PCM12**
40 x 40 x 117 mm	
XSCH	
XSCH203629	**XS9C4A2A2G13**
XSCH203629H7	**XS9C4A2A2N12**
XSCH207629	**XS9C4A2A1G13**
XSCH207629H7	**XS9C4A2A1N12**

Depending on the climatic and environmental conditions in which the equipment is placed, Telemecanique Sensors can offer specially adapted products to meet your requirements.

In order to make the correct choice of protective finish, two points should be remembered:
■ the prevailing climate of the country is never the only criterion,
■ only the atmosphere in the immediate vicinity of the equipment need be considered.

All climates treatment “TC”

This is the standard treatment for Telemecanique Sensors brand equipment and is suitable for the vast majority of applications. It is the equivalent of treatments described as “Klimafest”, “Climateproof”.
In particular, it meets the requirements specified in the following publications:
■ Publication UTE C 63-100 (method I), successive cycles of humid heat at:
+ 40 °C and 95 % relative humidity.
■ DIN 50016 - Variations of ambient conditions within a climatic chamber:
+ 23 °C and 83 % relative humidity,
+ 40 °C and 92 % relative humidity.

It also meets the requirements of the following marine classification societies: BV-LR-GL-DNV-RINA.

Characteristics

■ Steel components are usually treated with zinc. When they have a mechanical function, they may also be painted.
■ Insulating materials are selected for their high electrical, dielectric and mechanical characteristics.
■ Metal enclosures have a stoved paint finish, applied over a primary phosphate protective coat, or are galvanised (e.g. some prefabricated busbar trunking components).

Limits for use of “TC” (All climates) treatment

■ “TC” treatment is suitable for the following temperatures and humidity:

Temperature (°C)	**Relative humidity** (%)
20	95
40	80
50	50

“TC” treatment is therefore suitable for all latitudes and in particular tropical and equatorial regions where the equipment is mounted in normally ventilated industrial premises. Being sheltered from external climatic conditions, temperature variations are small, the risk of condensation is minimised and the risk of dripping water is virtually non-existent.

Extension of use of “TC” (All climates) treatment

In cases where the humidity around the equipment exceeds the conditions described above, or in equatorial regions if the equipment is mounted outdoors, or if it is placed in a very humid location (laundries, sugar refineries, steam rooms, etc.), “TC” treatment can still be used if the following precautions are taken:
■ The enclosure in which the equipment is mounted must be protected with a “TH” finish (see next page) and must be well ventilated to avoid condensation and dripping water (e.g. enclosure base plate mounted on spacers).
■ Components mounted inside the enclosure must have a “TC” finish.
■ If the equipment is to be switched off for long periods, a heater must be provided (0.2 to 0.5 kW per square decimetre of enclosure), that switches on automatically when the equipment is turned off. This heater keeps the inside of the enclosure at a temperature slightly higher than the outside surrounding temperature, thereby avoiding any risk of condensation and dripping water (the heat produced by the equipment itself during normal running is sufficient to provide this temperature difference).
■ Special considerations for “Operator dialog” and “Detection” products:
for certain pilot devices, the use of “TC” treatment can be extended to outdoor use provided their enclosure is made of light alloys, zinc alloys or plastic material. In this case, it is also essential to ensure that the degree of protection against penetration of liquids and solid objects is suitable for the applications involved.

“TH” treatment for hot and humid environments

This treatment is suitable for hot and humid atmospheres where installations are regularly subject to condensation, dripping water and the risk of fungi.

In addition, plastic insulating components are resistant to attacks from insects such as termites and cockroaches. These properties have often led to this treatment being described as “Tropical Finish”, but this does not mean that all equipment installed in tropical and equatorial regions must systematically have undergone “TH” treatment. On the other hand, certain operating conditions in temperate climates may well require the use of “TH” treated equipment (see limitations for use of “TC” treatment).

Special characteristics of “TH” treatment

■ All insulating components are made of materials which are either resistant to fungi or treated with a fungicide, and which have increased resistance to creepage (Standards IEC 60112, NF C 26-220, DIN 5348).

■ Metal enclosures receive a top-coat of stoved, fungicidal paint, applied over a rust inhibiting undercoat. Components with “TH” treatment may be subject to a surcharge *(1)*. Please consult your Customer Care Centre.

Protective treatment selection guide

Surrounding environment	Duty cycle	Internal heating of enclosure when not in use	Type of climate	Protective treatment of equipment	Protective treatment of enclosure
Indoors					
No dripping water or condensation	Unimportant	Not necessary	Unimportant	“TC”	“TC”
Presence of dripping water or condensation	Frequent switching off for periods of more than 1 day	No	Temperate	“TC”	“TH”
			Equatorial	“TH”	“TH”
		Yes	Unimportant	“TC”	“TH”
	Continuous	Not necessary	Unimportant	“TC”	“TH”
Outdoors (sheltered)					
No dripping water or dew	Unimportant	Not necessary	Temperate	“TC”	“TC”
			Equatorial	“TH”	“TH”
Exposed outdoors or near the sea					
Frequent and regular presence of dripping water or dew	Frequent switching off for periods of more than 1 day	No	Temperate	“TC”	“TH”
			Equatorial	“TH”	“TH”
		Yes	Unimportant	“TC”	“TH”
	Continuous	Not necessary	Unimportant	“TC”	“TH”

These treatments cover, in particular, the applications defined by methods I and II of guide UTE C 63-100.

Special precautions for electronic equipment

Electronic products always meet the requirements of “TC” treatment. A number of them are “TH” treated as standard.

Some electronic products (for example: programmable controllers, flush mountable controllers CCX and flush mountable operator terminals XBT) require the use of an enclosure providing a degree of protection to at least IP 54, as defined by standards IEC 60664 and NF C 20 040, for use in industrial applications or in environmental conditions requiring “TH” treatment.

These electronic products, including flush mountable products, must have a degree of protection to at least IP 20 (provided either by their own enclosure or by their installation method) for restricted access locations where the degree of pollution does not exceed 2 (a test booth not containing machinery or other dust producing activities, for example).

Special treatments

For particularly harsh industrial environments, Telemecanique Sensors is able to offer special protective treatments. Please consult your Customer Care Centre.

(1) A large number of the Telemecanique Sensors brand products are “TH” treated as standard and are, therefore, not subject to a surcharge.

Standardisation

Conformity to standards

Telemecanique Sensors products satisfy, in the majority of cases, national (for example: BS in Great Britain, NF in France, DIN in Germany), European (for example: CENELEC) or international (IEC) standards. These product standards precisely define the performance of the designated products (such as IEC 60947 for low voltage equipment).
When used correctly, as designated by the manufacturer and in accordance with regulations and correct practices, these products will allow users to build equipment, machine systems or installations that conform to their appropriate standards (for example: IEC 60204-1, relating to electrical equipment used on industrial machines).
Telemecanique Sensors is able to provide proof of conformity of its production to the standards it has chosen to comply with, through its quality assurance system.
On request, and depending on the situation, Telemecanique Sensors can provide the following:
- a declaration of conformity,
- a certificate of conformity (ASEFA/LOVAG),
- a homologation certificate or approval, in the countries where this procedure is required or for particular specifications, such as those existing in the merchant navy.

Code	Certification authority		Country
	Name	Abbreviation	
ANSI	American National Standards Institute	ANSI	USA
BS	British Standards Institution	BSI	Great Britain
CEI	Comitato Elettrotecnico Italiano	CEI	Italy
DIN/VDE	Verband Deutscher Electrotechniker	VDE	Germany
EN	Comité Européen de Normalisation Electrotechnique	CENELEC	Europe
GOST	Gosudarstvenne Komitet Standartov	GOST	Russia
IEC	International Electrotechnical Commission	IEC	Worldwide
JIS	Japanese Industrial Standards Committee	JISC	Japan
NBN	Institut Belge de Normalisation	IBN	Belgium
NEN	Nederlands Normalisatie Institut	NNI	Netherlands
NF	Union Technique de l'Electricité	UTE	France
SAA	Standards Association of Australia	SAA	Australia
UNE	Asociacion Española de Normalizacion y Certificacion	AENOR	Spain

European EN standards

These are technical specifications established in conjunction with, and with approval of, the relative bodies within the various CENELEC member countries (European Union, European Free Trade Association and many central and eastern European countries having «member» or «affiliated» status). Prepared in accordance with the principle of consensus, the European standards are the result of a weighted majority vote. Such adopted standards are then integrated into the national collection of standards, and contradictory national standards are withdrawn.
European standards incorporated within the French collection of standards carry the prefix NF EN. At the 'Union Technique de l'Electricité' *(Technical Union of Electricity)* (UTE), the French version of a corresponding European standard carries a dual number: European reference (NF EN …) and classification index (C …).
Therefore, the standard NF EN 60947-4-1 relating to motor contactors and starters, effectively constitutes the French version of the European standard EN 60947-4-1 and carries the UTE classification C 63-110.
This standard is identical to the British standard BS EN 60947-4-1 or the German standard DIN EN 60947-4-1.
Whenever reasonably practical, European standards reflect the international standards (IEC).
With regard to automation system components and distribution equipment, in addition to complying with the requirements of French NF standards, Telemecanique Sensors brand components conform to the standards of all other major industrial countries.

Regulations

European Directives

Opening up of European markets assumes harmonisation of the regulations pertaining to each of the member countries of the European Union.
The purpose of the European Directive is to eliminate obstacles hindering the free circulation of goods within the European Union, and it must be applied in all member countries. Member countries are obliged to transcribe each Directive into their national legislation and to simultaneously withdraw any contradictory regulations. The Directives, in particular those of a technical nature which concern us, only establish the objectives to be achieved, referred to as "essential requirements".
The manufacturer must take all the necessary measures to ensure that his products conform to the requirements of each Directive applicable to his production.
As a general rule, the manufacturer certifies conformity to the essential requirements of the Directive(s) for his product by affixing the CE mark.
The CE mark is affixed to Telemecanique Sensors brand products concerned, in order to comply with French and European regulations.

Significance of the CE mark
- The CE mark affixed to a product signifies that the manufacturer certifies that the product conforms to the relevant European Directive(s) which concern it; this condition must be met to allow free distribution and circulation within the countries of the European Union of any product subject to one or more of the E.U. Directives.
- The CE mark is intended solely for national market control authorities.
- The CE mark must not be confused with a conformity marking.

European Directives (continued)

For electrical equipment, only conformity to standards signifies that the product is suitable for its designated function, and only the guarantee of an established manufacturer can provide a high level of quality assurance.
For Telemecanique Sensors brand products, one or several Directives are likely to be applicable, depending on the product, and in particular:

- the Low Voltage Directive 2006/95/EC: the CE mark relating to this Directive has been compulsory since 16th January 2007.
- the Electromagnetic Compatibility Directive 89/336/EEC, amended by Directives 92/31/EEC and 93/68/EEC: the CE mark on products covered by this Directive has been compulsory since 1st January 1996.

ASEFA-LOVAG certification

The function of ASEFA (Association des Stations d'Essais Française d'Appareils électriques - *Association of French Testing Stations for Low Voltage Industrial Electrical Equipment)* is to carry out tests of conformity to standards and to issue certificates of conformity and test reports.
ASEFA laboratories are authorised by the French authorisation committee (COFRAC).
ASEFA is now a member of the European agreement group LOVAG (Low Voltage Agreement Group). This means that any certificates issued by LOVAG/ASEFA are recognised by all the authorities which are members of the group and carry the same validity as those issued by any of the member authorities.

Quality labels

When components can be used in domestic and similar applications, it is sometimes recommended that a "Quality label" be obtained, which is a form of certification of conformity.

Code	Quality label	Country
CEBEC	Comité Electrotechnique Belge	Belgium
KEMA-KEUR	Keuring van Electrotechnische Materialen	Netherlands
NF	Union Technique de l'Electricité	France
ÖVE	Österreichischer Verband für Electrotechnik	Austria
SEMKO	Svenska Electriska Materiel Kontrollanatalten	Sweden

Product certifications

In some countries, the certification of certain electrical components is a legal requirement. In this case, a certificate of conformity to the standard is issued by the official test authority.
Each certified device must bear the relevant certification symbols when these are mandatory:

Code	Certification authority	Country
CSA	Canadian Standards Association	Canada
UL	Underwriters Laboratories	USA
CCC	China Compulsory Certification	China

Note on certifications issued by the Underwriters Laboratories (UL). There are two levels of approval:

"Recognized" (UL) — The component is fully approved for inclusion in equipment built in a workshop, where the operating limits are known by the equipment manufacturer and where its use within such limits is acceptable by the Underwriters Laboratories.
The component is not approved as a "Product for general use" because its manufacturing characteristics are incomplete or its application possibilities are limited.
A "Recognized" component does not necessarily carry the certification symbol.

"Listed" (UL) — The component conforms to all the requirements of the classification applicable to it and may therefore be used both as a "Product for general use" and as a component in assembled equipment. A "Listed" component must carry the certification symbol.

Marine classification societies

Prior approval (= certification) by certain marine classification societies is generally required for electrical equipment which is intended for use on board merchant vessels.

Code	Classification authority	Country
BV	Bureau Veritas	France
DNV	Det Norske Veritas	Norway
GL	Germanischer Lloyd	Germany
LR	Lloyd's Register	Great Britain
NKK	Nippon Kaiji Kyokaï	Japan
RINA	Registro Italiano Navale	Italy
RRS	Register of Shipping	Russia

Note

For further details on a specific product, please refer to the "Characteristics" pages in this catalogue or consult your Customer Care Centre.

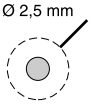
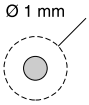
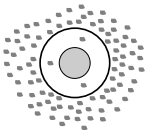
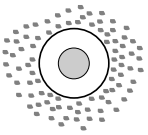
Degrees of protection against the penetration of solid bodies, water and personnel access to live parts

The European standard EN 60529 dated October 1991, IEC publication 529 (2nd edition - November 1989), defines a coding system (IP code) for indicating the degree of protection provided by electrical equipment enclosures against accidental direct contact with live parts and against the ingress of solid foreign objects or water.
This standard does not apply to protection against the risk of explosion or conditions such as humidity, corrosive gasses, fungi or vermin.
Certain equipment is designed to be mounted on an enclosure which will contribute towards achieving the required degree of protection (example : control devices mounted on an enclosure).
Different parts of an equipment can have different degrees of protection (example : enclosure with an opening in the base).
Standard NF C 15-100 (May 1991 edition), section 512, table 51 A, provides a cross-reference between the various degrees of protection and the environmental conditions classification, relating to the selection of equipment according to external factors.
Practical guide UTE C 15-103 shows, in the form of tables, the characteristics required for electrical equipment (including minimum degrees of protection), according to the locations in which they are installed.

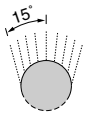
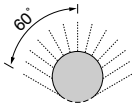
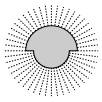
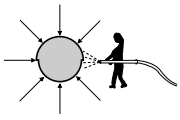
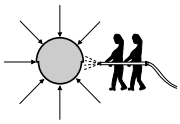
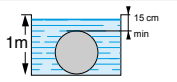
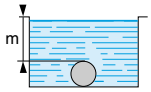
IP ●●● code

The IP code comprises **2 characteristic numerals** (e.g. **IP 55**) and may include **an additional letter** when the actual protection of personnel against direct contact with live parts is better than that indicated by the first numeral (e.g. IP 20C).
Any characteristic numeral which is unspecified is replaced by an X (e.g. IP XXB).

1st characteristic numeral:
corresponds to protection of the equipment against penetration of solid objects and protection of personnel against direct contact with live parts.

	Protection of the equipment		Protection of personnel
0	Non-protected		Non-protected
1	Ø 50 mm	Protected against the penetration of solid objects having a diameter greater than or equal to 50 mm	Protected against direct contact with the back of the hand (accidental contacts).
2	Ø 12,5 mm	Protected against the penetration of solid objects having a diameter greater than or equal to 12.5 mm.	Protected against direct finger contact.
3	Ø 2,5 mm 	Protected against the penetration of solid objects having a diameter greater than or equal to 2.5 mm.	Protected against direct contact with a Ø 2.5 mm tool.
4	Ø 1 mm 	Protected against the penetration of solid objects having a diameter greater than or equal to 1 mm.	Protected against direct contact with a Ø 1 mm wire.
5		Dust protected (no harmful deposits).	Protected against direct contact with a Ø 1 mm wire.
6		Dust tight.	Protected against direct contact with a Ø 1 mm wire.

2nd characteristic numeral:
corresponds to protection of the equipment against penetration of water with harmful effects.

0	Non-protected	
1		Protected against vertical dripping water, (condensation).
2		Protected against dripping water at an angle of up to 15°.
3		Protected against rain at an angle of up to 60°.
4		Protected against splashing water in all directions.
5		Protected against water jets in all directions.
6		Protected against powerful jets of water and waves.
7		Protected against the effects of temporary immersion.
8		Protected against the effects of prolonged immersion under specified conditions.

Additional letter:
corresponds to protection of personnel against direct contact with live parts.

A	With the back of the hand.
B	With the finger.
C	With a Ø 2.5 mm tool.
D	With a Ø 1 mm wire.

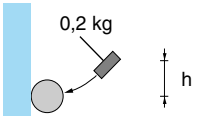
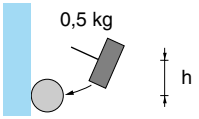
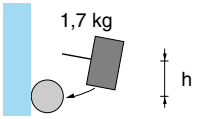
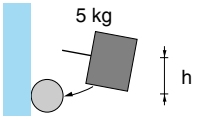
Degrees of protection against mechanical impact

The European standard EN 50102 dated March 1995 defines a coding system (IK code) for indicating the degree of protection provided by electrical equipment enclosures against external mechanical impact.
Standard NF C 15-100 (May 1991 edition), section 512, table 51 A, provides a cross-reference between the various degrees of protection and the environmental conditions classification, relating to the selection of equipment according to external factors.
Practical guide UTE C 15-103 shows, in the form of tables, the characteristics required for electrical equipment (including minimum degrees of protection), according to the locations in which they are installed.

IK ●● code

The IK code comprises **2 characteristic numerals** (e.g. **IK 05**).

2 characteristic numerals:
corresponding to a value of impact energy.

		h (cm)	Energy (J)
00	Non-protected		
01		7.5	0.15
02		10	0.2
03		17.5	0.35
04		25	0.5
05		35	0.7
06		20	1
07		40	2
08		30	5
09		20	10
10		40	20

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A

AB1FU10135U 122

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DIA4ED2150801EN

March 2016 - V2.0