Inductive proximity sensors
XS range

Catalogue

YAGEO GROUP Brings you | Telemecanique Sensors

Contents

Inductive proximity sensors
XS range

Inductive proximity sensors
XS range
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 22			
	2-wire ⎓	Page 26			
Long case	Supply				
	3-wire ⎓ (PNP/NPN)	Page 23			
	2-wire ⎓	Page 27			
	2-wire ≂	–	Page 30		
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 *(2)*			
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		**XS506**	**XS508**	**XS512**	**XS518**	**XS530**
Pages		22 to 31				

(1) Also available in lengths of 5 and 10 m, depending on model
(2) For M12 connector version
(3) Product availability depending on model: please consult our Customer Care Centre.

Increased range

Flush mountable

Non-flush mountable

2.5	**4**	**8**	**15**	**4**	**7**	**8**	**12**	**16**	**22**	**30**
Ø 6.5 plain and M8	M12	M18	M30	M8	M12		M18		M30	
Pages 32 and 33				–	–	Page 42	–	Page 42	–	–
Page 36				–	–	–	–	–	–	–
Page 34				Page 40	Page 40	–	Page 40	–	–	Page 40
Page 36				–	–	–	–	–	–	–
–	Page 38			–	–	–	Page 44	–	Page 44	–
●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●	●
●	–	–	–	●	–	–	–	–	–	–
●	●	●	●	–	●	●	●	●	●	●
–	●	●	●	–	–	–	●	–	●	–
Remote connectors available: M8, M12, M18, screw terminal, 7/8", DIN: please consult our Customer Care Centre										
IP 65 and IP 67, IP 68 for pre-cabled version, IP 69K for diameters 12 to 30 *(2)*				IP 65 and IP 67, IP 68 for pre-cabled version, IP 69K for diameters 12 to 30 *(2)*						
Add the suffix TF to the end of the reference *(3)*										
Add the suffix TT to the end of the reference *(3)*										
XS106 **XS606** **XS108** **XS608**	**XS112** **XS612**	**XS118** **XS618**	**XS130** **XS630**	**XS608**	**XS612**	**XS212**	**XS618**	**XS218**	**XS630**	
32 to 39				40 to 45						

Inductive proximity sensors
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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 46	Page 46	Page 48	Page 48	Page 48
	2-wire ⎓	Page 46	Page 46	Page 48	Page 48	Page 48
	∿	–	–	–	–	–
Function	NO	●	●	●	●	●
	NC	●	●	●	●	●
	NO + NC	–	–	–	–	–
	NO/NC	–	–	–	–	–
Connection	Pre-cabled (L = 2 m) *(1)*	●	●	●	●	●
	M8 connector, 3-pin (3-wire ⎓)	–	–	●	●	–
	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 or IP 68, 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		46		48		

(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 50 and 52		
Pages 50 and 52		
Pages 50 and 52		
●	●	●
●	●	●
–	●	●
●	●	●
–	–	–
–	–	–
●	●	●
●	●	●
●	●	●
●	●	●
–	–	–
–	–	–
–	–	–
–		
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		
50 and 52		

Inductive proximity sensors
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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		54	56 and 60	62

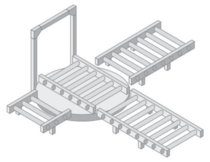
(1) Also available in lengths of 5 and 10 m, depending on model.
(2) Product availability depending on model: please consult our Customer Care Centre.

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	Threaded: M8, M12, M18, M30		Plain: Ø 4 Threaded: M5
Plastic	Nickel plated brass	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 65 or IP 67	IP 67 or IP 68 IP 69K depending on model	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●●BH●**	**XS1N●●349**	**XS1L XS2L XS1N**
64	Please refer to our catalogue Inductive proximity sensors XS range. Basics line		66	68

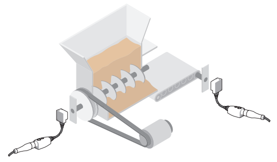
Inductive proximity sensors

XS range
Applications

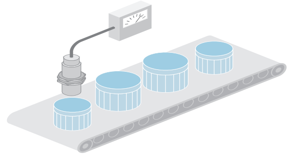
Applications



Conveying



Detection of underspeed, shaft overload



Position, displacement and deformation control/monitoring

Machine with stainless steel housing

Sensor type: flush and non-flush mountable

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.

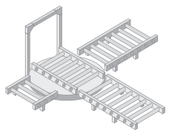
Sensor type: flush and non-flush mountable		Adjustable range sensors			
Sensing dist. Sn (mm)	Flush mountable	**3...11** *(1)*	**15**	**25**	**60**
	Non-flush mountable	**5...18** *(1)*	–	–	–
Form	**Cylindrical**	M12 x 54 M18 x 67 M30 x 71	–	–	–
	Block (W x H x D) dimensions in mm	–	26 x 26 x 13	40 x 40 x15	80 x 80 x 26
Case material		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 67	IP 67 or IP 68, depending on model.		
Special temperatures	- 40 °C, + 70 °C	Add the suffix TF to the end of the reference *(4)*			
	- 25 °C, + 85 °C	Add the suffix TT to the end of the reference *(4)*			
Type reference		**XS612B2** **XS618 B2** **XS630 B2**	**XS8E**	**XS8C**	**XS8D**
Pages		72	74		

		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
Sensing dist. Sn (mm)	Flush mountable	**10**	**10…15** *(1)*	**0.2…10** *(1)*	**5…40** *(1)*	–	–	**6,10 or 20** *(1)*	–	–
	Non-flush mountable	**10**	**10…15** *(1)*	**0.4…15** *(1)*	**5…40** *(1)*	**2…25**	**2…25**	**10, 20 or 40** *(1)*	**7...22** *(1)*	**7...22** *(1)*
Form	**Cylindrical**	M30 x 81	–	Threaded: M12, M18, M30	–	–	–	Threaded: M12, M18, M30	Plain: Ø 18 Threaded: M12, M18, M30	Threaded: M12, M18, M30
	Block (W x H x D) dimensions in mm	–	26 x 26 x 13 40 x 40 x 15	–	32 x 15 x 8 26 x 26 x 13 40 x 40 x 15 80 x 80 x 26	40 x 40 x 70	40 x 40 x 117	–	–	–
Case material		Metal	PBT	Metal or plastic	PBT	PBT	PBT	Stainless steel, 316 L	Stainless steel, 316 L	Plastic, PPS
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	IP 67	IP 67	IP 67 or IP 68 (pre-cabled version)	IP 65, IP 67 IP 69K	IP 65, IP 67 IP 69K	IP 68, IP 69K	IP 68 (pre-cabled version), IP 69K conforming to DIN 40050 *(3)*	
Special temperatures	- 40 °C, + 70 °C	Add the suffix TF to the end of the reference *(4)*								
	- 25 °C, + 85 °C	Add the suffix TT to the end of the reference *(4)*								
Type reference		**XSAV**	**XS9●11R**	**XS1M●●●AB1** **XS4P●●AB1**	**XS9●●●●A**	**XS9C2**	**XS9C4**	**XS9●●S●**	**XS2●●SA**	**XS2●●AA**
Pages		77	79	81	85 and 87	88	88	90	92 and 94	96 and 98

(1) Depending on model.
(2) Also available in lengths of 5 and 10 m, depending on model.
(3) For M12 connector version
(4) Product availability depending on model: please consult our Customer Care Centre.

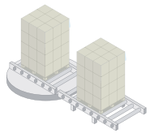
Inductive proximity sensors
XS range
Applications

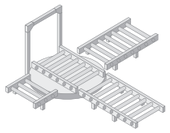
Applications



Conveying

Robotics





Assembly machines, conveyor systems, material handling

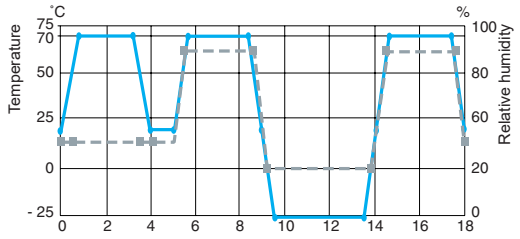
Sensor type: flush and non-flush mountable		Sensors for conveying and material handling applications		Sensors for welding machine applications
		Cylindrical, stainless steel 303	80 x 80 x 40 format, increased range	Cylindrical, stainless steel 303
Developed in accordance with the needs expressed by our 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)*	**50**	**6 or 10** *(1)*
	Non-flush mountable	**6, 10, 20 or 40** *(1)*	**42**	**–**
Form	**Cylindrical**	Threaded: M8, M12, M18, M30	–	Threaded: M12, M18
	Block (W x H x D) dimensions in mm	–	80 x 80 x 40	–
Case material		Stainless steel 303	PBT	Stainless steel 303
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 68 and IP 69K
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)*		
	- 40 °C, + 85 °C (storage)	–		
Type reference		**XS9●●R●**	**XS7D**	**XS9●●RW**
Pages		100	102	104

(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.

Factor 1 (Fe/Nfe) sensors for ferrous and non ferrous materials			Selective detection sensors for ferrous materials only or non ferrous materials only	Fail Safe			
Cylindrical	Cubic	Rectangular	Cylindrical	Cylindrical	Cylindrical, increased range	Cubic	Rectangular
							
5, 10 or 15 *(1)*	**20**	**20**	**5**	**2, 5 or 10** *(1)*	**4, 8 or 15** *(1)*	**20**	**20**
–	**–**	**–**	**–**	**–**	**–**	**40**	**40**
Threaded: M18, M30	–	–	Threaded: M18	Threaded: M12, M18, M30	Threaded: M12, M18, M30	–	–
–	40 x 40 x 70	40 x 40 x 117	–	–	–	40 x 40 x 70	40 x 40 x 117
Metal	PBT	PBT	Metal	Nickel plated brass/PPS	Nickel plated brass	PBT	PBT
●	●	●	●	●	●	●	●
–	–	–	–	–	–	–	–
–	–	–	–	–	–	–	–
–	–	–	●	–	–	–	–
–	–	–	–	–	–	–	–
–	●	●	–	●	●	●	●
●	–	–	–	–	–	–	–
●	–	–	●	●	●	–	–
–	–	–	–	–	–	–	–
●	●	–	–	●	●	●	–
–	–	–	–	–	–	–	–
●	–	–	–	–	–	–	–
–	–	●	–	–	–	–	●
IP 68	IP 65, IP 67 and IP 69K		IP 68	IP 65, IP 67, and IP 69K for M12 IP 65 and IP 68 for pre-cabled		IP 65, IP 67, and IP 69K	
Add the suffix TT to the end of the reference *(3)*				●	●	●	●
Add the suffix TT to the end of the reference *(3)*							
–				●	●	●	●
XS1M●●●KP	**XS9C2**	**XS9C4**	**XS1M18PA**	**XS5●●BSPD**	**XS1●●BSPD**	**XS8C2A●PD**	**XS8C4A●PD**
62	106	106	108	110	112	114	116

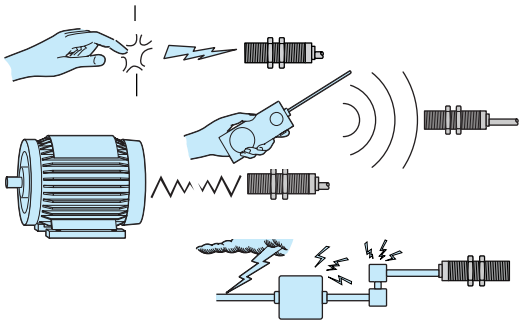
Inductive proximity sensors
XS range

Standards and certifications
Parameters related to the environment



- 25° + 70 °C cycle, 95 % RH

Temperature °C
Humidity as %



Insulation

Recommendations

The sensors detailed in this catalogue are designed for use in standard industrial applications relating to presence detection.
These sensors do not incorporate the required redundant electrical circuit enabling their usage in safety applications.
For safety applications, please consult our website: www.telemecaniquesensors.com

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: 4 kV CD/8 kV AD immunity. **IEC 61000-4-2**
■ Radiated electromagnetic fields (electromagnetic waves)	⎓, ∿ and ⎓ versions: 3 V/m or 10 V/m immunity. **IEC 61000-4-3**
■ Fast transients (motor start/stop interference)	⎓ version: > 1 kV immunity ∿ and ⎓ versions: 2 kV immunity except Ø 8 mm model. **IEC 61000-4-4**
■ Conducted electromagnetic fields	⎓, ∿, and ⎓ versions: > 3 kV immunity. **IEC 61000-4-6**
■ Emission ⎓, ∿, and ⎓	class B

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.).

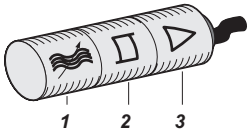
In all cases, the materials selected (see product characteristics) provide satisfactory compatibility in most industrial environments (for further information, please consult our Customer Care Centre).

Class 2 devices ⧈

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

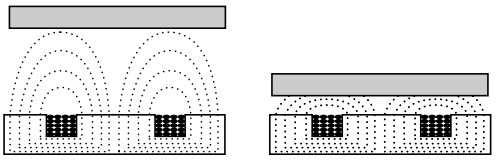
Inductive proximity sensors
XS range

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.

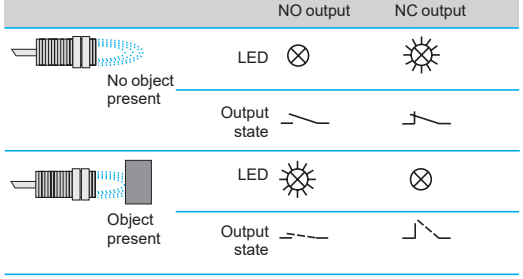
Advantages of inductive detection

■ 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 70.

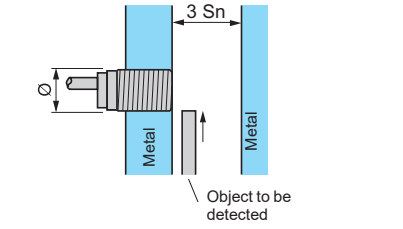
LED indicator

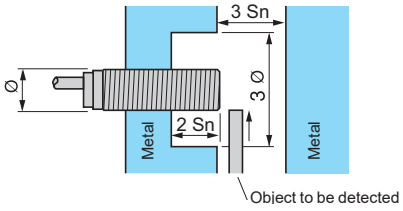


Output LED

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





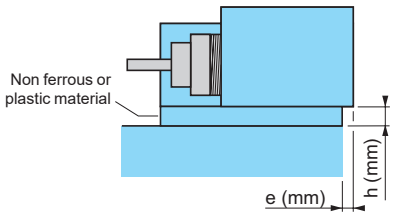
Flush mountable in metal

■ 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 70 and 71.

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 70 and 71.

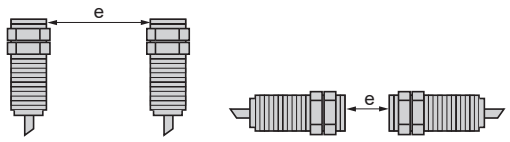
Mounting sensors on a metal support



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

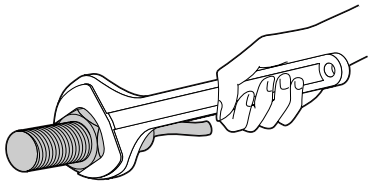
Standard sensors

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.

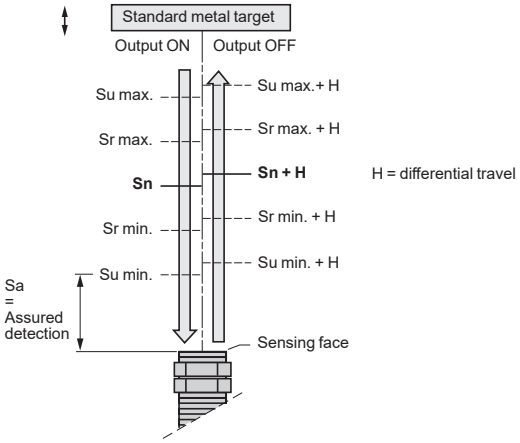
Tightening torque for cylindrical type sensors

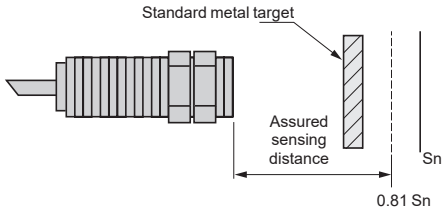


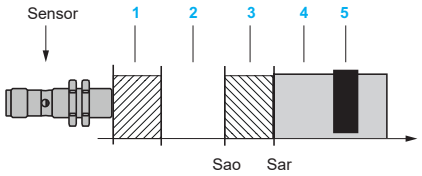
Maximum tightening torque for the various sensor case materials

	Metal		Stainless steel		Plastic	
	XS1●●B● **XS2●●B●** **XS5●●B●** **XS6●●B●** **XSAV●** **XS1N●** **XS1M●** **XS2M●**		**XS1●●S●** **XS2●●S●** **XS9●●R●** **XS9●●S●**		**XS2●●AA●** **XS4P●**	
Diameter of sensor	**Maximum tightening torque**					
mm	**N.m**	**lb-in**	**N.m**	**lb-in**	**N.m**	**lb-in**
Ø 5	1.6	14.16	–	–	–	–
Ø 8	5	44.25	9	79.65	1	8.85
Ø 12	6	53.10	30	265.52	2	17.70
Ø 18	15	132.76	50	442.54	5	44.25
Ø 30	40	354.03	100	885.07	20	177.01

Sensing distance

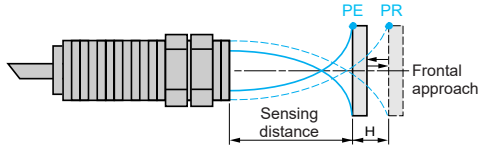




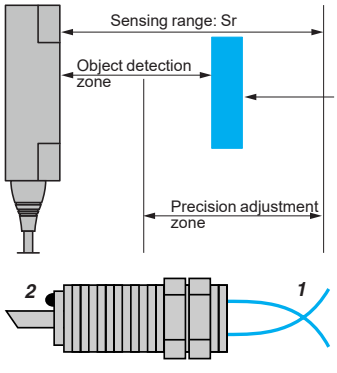


1 Forbidden zone
2 Enable zone
3 Transition zone
4 Disable zone
5 Standard metal target plate according to IEC 947-5-2 at an ambient temperature of 20°C

Terminology



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



1 Detection threshold curves
2 "Object detected" LED

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): $0.9\ Sn \leqslant Sr \leqslant 1.1\ Sn$.
- **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: $0.9\ Sr \leqslant Su \leqslant 1.1\ Sr$.
- **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): $0 \leqslant Sa \leqslant 0.9 \times 0.9 \times Sn$.

Standard metal target

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

Fail Safe

- **Forbidden zone** (1)
  This zone ensures that it will not be possible to defeat the solution with simple elements or standard tools (ie: glue a coin on the front face). It is a minimum distance maintaining safe condition in all aspects. In this zone, both sensor outputs are opened.
- **Assured operating distance (Sao)**
  When the target approaches the sensor, the contacts will change state no later than Sao max and remain in the same state as the target continues to approach the switch. At distances beyond the Sao min, the contacts enter in the forbidden zone, not maintaining a closed condition in all aspects.
- **Assured release distance (Sar)**
  Minimum distance from the sensor that the target must move to assure the reset of the sensor.
- **Standard metal target plate** (5)
  According to IEC 947-5-2 at an ambient temperature of 20°C.

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 XS sensors, the repeat accuracy is 3 %.

Detection zone and precision adjustment zone

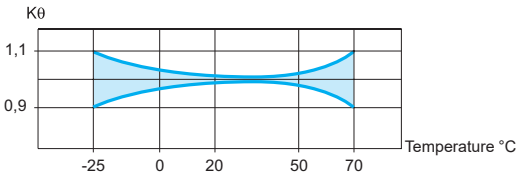
- Flush mountable sensors using teach mode, due to adjustment of sensitivity whilst teaching, enable the position of an object to be detected as it approaches from the front or side.
  The teach mode can be used when the object is located in the zone known as the "precision adjustment zone". When the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

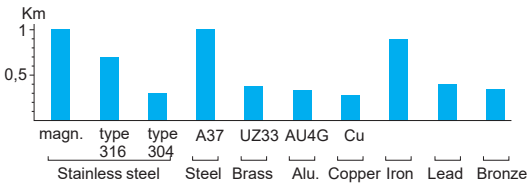
Operating zone

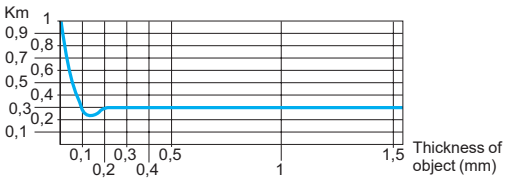
- The operating zone relates to the area in front of the sensing face in which the detection of a metal object is certain.
  The values stated in the characteristics relating to the various types of sensor are for steel objects of a size equal to the sensing face of the sensor.
  For objects of a different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

Inductive proximity sensors
XS range

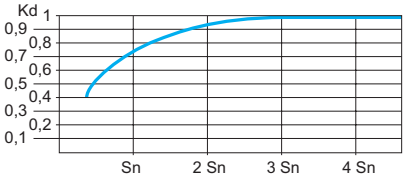
Correction coefficients to apply to the assured operating distance







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



*Typical curve for a **steel** object used with a cylindrical sensor*

Calculation examples

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.

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

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.

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

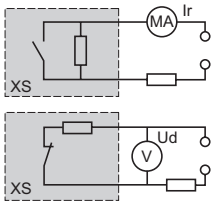
Application characteristics:
- object material and size: iron (Km = 0.9), 30 x 30 mm,
- temperature: 0 to 20 °C (Kθ = 0.98),
- object detection distance: 3 mm ± 1.5 mm, i.e. Sa max. = 4.5 mm,
- assume Kd = 1.

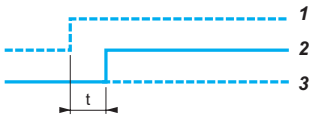
A sensor must be selected for which $\mathbf{Sn \geq \frac{Sa}{Kq \times Km \times Kd \times Kt} = \frac{4.5}{0.98 \times 0.9 \times 1 \times 0.9}}$

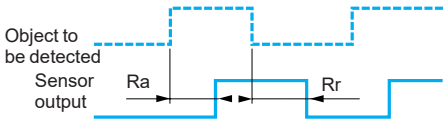
i.e. **Sn ≥ 5.7 mm**

Inductive proximity sensors
XS range

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

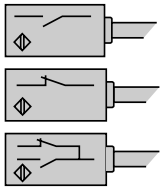
■ **DC source:** check that the voltage limits of the sensor and the acceptable level of ripple are compatible with the supply used.

■ **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)

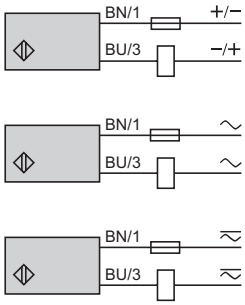
■ Normally open (NO)
Corresponds to a sensor whose output changes to the closed state when an object is present in the operating zone.

■ 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
XS range

Outputs (continued)



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

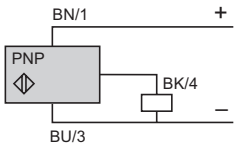
■ **Specific aspects**

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).

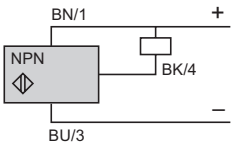
■ **Advantages**
- Only 2 leads to be wired: these sensors can be wired in series in the same way as mechanical limit switches,
- They can be connected to either positive (PNP) or negative (NPN) logic PLC inputs,
- No risk of incorrect connections.

■ **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



NO output

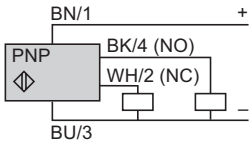


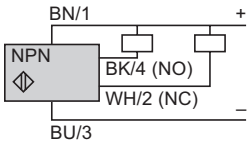
NO output

■ **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.

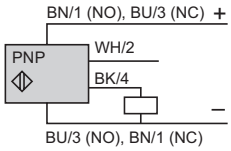
4-wire ⎓ type, complementary NO and NC outputs, PNP or NPN

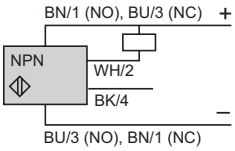




■ **Advantages**
- Protection against supply reverse polarity (+/-).
- Protection against overload and short-circuit.

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



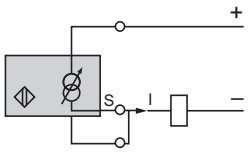


■ **Advantages**
- Protection against supply reverse polarity (+/-).
- Protection against overload and short-circuit.

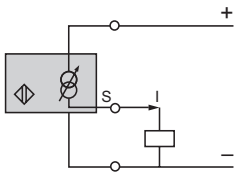
Specific output signals, analogue type

■ 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.



2-wire connection

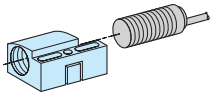


3-wire connection

Inductive proximity sensors
XS range

Features of the various models



XS7J

XS7F

XS●E

XS●C
XS●D



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 70).

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.

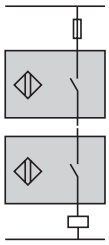
■ **Separation of control and power circuit wiring**
- The sensors are immune to electrical interference encountered in normal industrial conditions.
- Where extreme conditions of electrical “noise” could occur (large motors, spot welders, etc.), it is advisable to protect against transients in the normal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

Inductive proximity sensors
XS range

Setting-up precautions



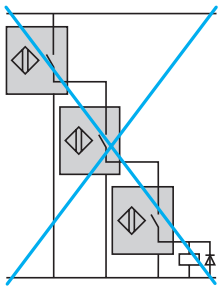
Connection in series

2-wire type sensors

- The following points should be taken into account:
  - Series wiring is only possible using sensors with wide voltage limits.
    Based on the assumption that each sensor has the same residual current value, each sensor, in the open state, will share the supply voltage, i.e.

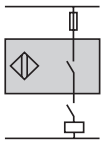
$$U\ sensor = \frac{U\ (supply)}{n\ sensors}$$

U sensor and U supply must remain within the sensor's voltage limits.
  - If only one sensor in the circuit is in the open state, it will be supplied at a voltage almost equal to the supply voltage.
  - When in the closed state, a small voltage drop is present across each sensor. The resultant loss of voltage at the load will be the sum of the individual voltage drops and therefore, the load voltage should be selected accordingly.



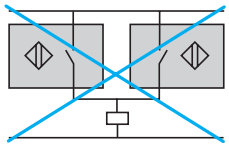
3-wire type sensors

This connection method is not recommended.
- Correct operation of the sensors cannot be assured and, if this method is used, tests should be made before installation.
  The following points should be taken into account:
  - Sensor 1 carries the load current in addition to the no-load current consumption values of the other sensors connected in series. For certain models, this connection method is not possible unless a current limiting resistor is used.
  - When in the closed state, a small voltage drop is present across each sensor. The load should therefore be selected accordingly.
  - As sensor 1 closes, sensor 2 does not operate until a certain time (t) has elapsed (corresponding to the first-up delay) and likewise for the following sensors in the sequence.
  - The use of "flywheel" diodes is recommended when an inductive load is being switched.



Sensors and devices in series with an external mechanical contact

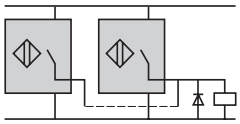
2 and 3-wire type sensors
- The following points should be taken into account:
  - When the mechanical contact is open, the sensor is not supplied.
  - When the contact closes, the sensor does not operate until a certain time (t) has elapsed (corresponding to the first-up delay).



Connection in parallel

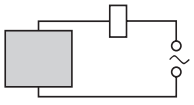
2-wire type sensors

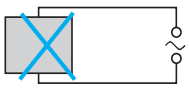
This connection method is not recommended.
- Should one of the sensors be in the closed state, the sensor in parallel will be "shorted-out" and no longer supplied.
  As the first sensor passes into the open state, the second sensor will become energised and will be subject to its first-up delay.
- This configuration is only permissible where the sensors will be working alternately.
- This method of connection can lead to irreversible damage of the units.



3-wire type sensors

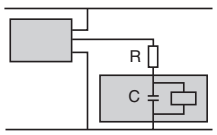
- No specific restrictions. The use of "flywheel" diodes is recommended when an inductive load (relay) is being switched.





AC supply

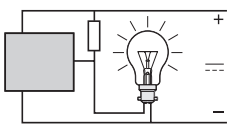
- **2-wire type sensors cannot be connected directly to an AC supply.**
  - This would result in immediate destruction of the sensor and considerable danger to the user.
  - An appropriate load (refer to the instruction sheet supplied with the sensor) must always be connected in series with the sensor.

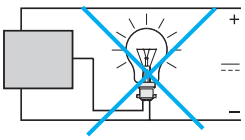


Capacitive load (C > 0.1 µF)

- 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

XS range, general purpose

Cylindrical, standard range, flush mountable

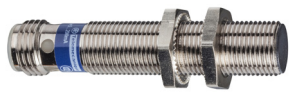
Three-wire DC, solid-state output


103165

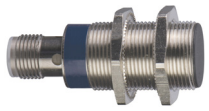
XS506B1●●L2


103947

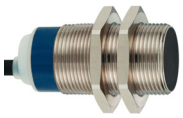
XS508B1●●L2


XS-XT_515_CPODA2016034

XS512B1●●M12


XS-XT_515_CPODA2016103

XS518B1●●M12


MD3016

XS518B1●●●L2


103190

XS530B1●●L2


XS-XT_515_CPODA2016030

XS530B1●●L2


XS_515_CPFJR16004

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**. Please consult our Customer Care Center for availability.*
*Example: **XS508B1PAL2** becomes **XS508B1PAL5** with a 5 m cable.*

(2) For more information, see page 118.

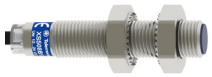
Inductive proximity sensors

XS range, general purpose

Cylindrical, standard range, flush mountable

Three-wire DC, solid-state output

XS508B1DBL2



XS5●●BL●●L2

Sensors, 3-wire ⎓ 12…24 V, long case model

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
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

103185

XS5●●BL●●M12

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

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
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

103190

XS530BL●●L2

XS_515_CPF_JR16004

XSZB1●●

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**. Please consult our Customer Care Center for availability.*
*Example: **XS508BLPAL2** becomes **XS508BLPAL5** with a 5 m cable.*

(2) For more information, see page 118.

Inductive proximity sensors

XS range, 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			cULus, CE, UKCA, 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 (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 XS508: stainless steel, grade 303)	
	Sensing face		PPS	
	Cable		–	PVC 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 (Ø 12, 18, and 30) ⎓ 12…24 for XS5●●B1, XS508BL with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10…58 for XS5●●BL (Ø 12, 18, and 30) ⎓ 10…36 for XS5●●B1, XS508BL	
Insulation class			M12: ⧈ M8: III	⧈
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**	

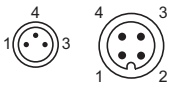
Inductive proximity sensors

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

Wiring schemes

Connector

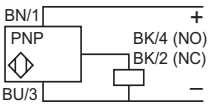
M8 **M12**



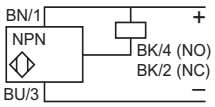
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP



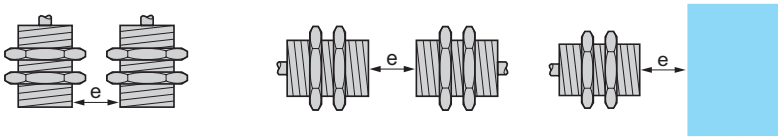
NPN



For M8 connector, NO and NC outputs on terminal 4

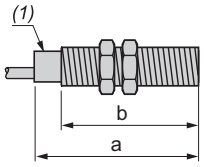
Setting-up

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**	34	–	42	–	45	–
	Ø 8	**XS508B1**	34	25	42	27	45	23
	Ø 12	**XS512B1**	37	25	–	–	50	30
	Ø 18	**XS518B1**	39	28	–	–	50	28
	Ø 30	**XS530B1**	43	32	–	–	54	32
Sensors			**Pre-cabled** (mm)		**M12 connector** (mm)			
Long case model			**a**	**b**	**a**	**b**		
	Ø 8	**XS508BL**	51	42	61	40		
	Ø 12	**XS512BL**	53	42	61	42		
	Ø 18	**XS518BL**	62	52	74	52		
	Ø 30	**XS530BL**	62	52	74	52		

Inductive proximity sensors
XS range, general purpose
Cylindrical, standard range, flush mountable
Two-wire DC

XS-XT_515_CPODA2016161

XS512B1●●L2

XS-XT_515_CPODA2016034

XS512B1●●M12

XS_515_CPFJR16004

XSZB1●●

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

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
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

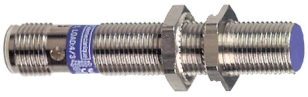
*(1) For a 5 m cable replace L2 by **L5**; for a 10 m cable replace L2 by **L10**. Please consult our Customer Care Center for availability.*
*Example: XS508BSCAL2 becomes **XS508BSCAL5** with a 5 m cable.*
(2) The NO output is connected to terminals 1 and 4 of the M12 connector.
(3) For more information, see page 118.

Inductive proximity sensors
XS range, general purpose
Cylindrical, standard range, flush mountable
Two-wire DC

103947

XS512BS●●L2

103993



XS5●●BS●●M12

PF100297

XS5●●B1●●L01C

XS_515_CPFJR16004

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 *(2)*	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
		M12 connector	**XS512B1DAM12**	0.035
	NO terminals 1 & 4 *(2)*	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
		Remote EN 175301-803-A connector	**XS518B1DAL01C**	0.085
		M12 connector	**XS518B1DAM12**	0.060
	NO terminals 1 & 4 *(2)*	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
Ø 30, threaded M30 x 1.5				
10	NO	Pre-cabled (L = 2 m) *(1)*	**XS530B1DAL2**	0.205
		M12 connector	**XS530B1DAM12**	0.145
		Remote EN 175301-803-A connector	**XS530B1DAL01C**	0.205
	NO terminals 1 & 4 *(2)*	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

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 cable replace L2 by **L5**; for a 10 m cable replace L2 by **L10**. Please consult our Customer Care Center for availability.*
*Example: XS508B1DAL2 becomes **XS508B1DAL5** 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 118.

Inductive proximity sensors
XS range, 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			cULus, CE, UKCA	
Connection	Connector		M12	–
	Pre-cabled		–	Length: 2 m
	Remote connector		M12 (L01M12), EN 175301-803-A (L01C) and M12 (L08M12) 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 (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		–	PVC 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	
Insulation class			⧈	⧈
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

XS range, general purpose

Cylindrical, standard range, flush mountable

Two-wire DC

Wiring schemes

Connector

M12

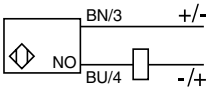
Pre-cabled

BU: Blue
BN: Brown

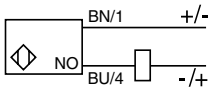
2-wire ⎓ non polarised

NO output

XS5●●B●DA●●●

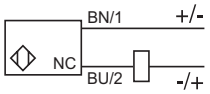


XS5●●B1CA●●●



NC output

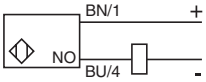
XS5●●B●DB●●●



2-wire ⎓ polarised

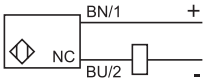
NO output

XS5●●BSCA●●●



NC output

XS5●●BSCB●●●

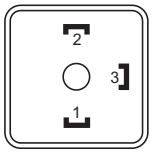


Remote connectors L01B, L01C, L01G, U78

Screw terminal (L01B)

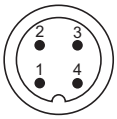
The terminal numbering differs according to the version (2-wire ⎓, 3-wire ⎓, 2-wire ∿).

EN 175301-803-A (L01C)

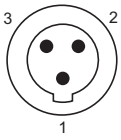


The NO or NC outputs are connected to terminal 2.

M18 (L01G)



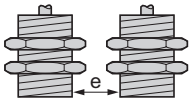
7/8" (U78)

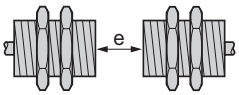


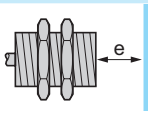
Terminal 1: not connected
Terminal 2: +/–
Terminal 3: +/–

Setting-up

Minimum mounting distances (mm)

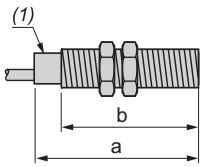






	Side by side	Face to face	Facing a metal object
Ø 6.5	e ≥ 3	e ≥ 18	e ≥ 4.5
Ø 8	e ≥ 3	e ≥ 18	e ≥ 4.5
Ø 12	e ≥ 4	e ≥ 24	e ≥ 6
Ø 18	e ≥ 10	e ≥ 60	e ≥ 15
Ø 30	e ≥ 20	e ≥ 120	e ≥ 30

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**	40	28	–	–	50	28
Ø 30	**XS530BS**	44	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	42	72	41		

Inductive proximity sensors

XS range, general purpose

Cylindrical, standard range, flush mountable

Two-wire AC or DC *(1)*

801277

XS5●●B1M●L2

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

MD3017

XS5●●B1M●U20

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

103190

XS530B1●●L2

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

XS_515_CPF_JR16004

XSZB1●●

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 64).

*(2) For a 5 m cable replace L2 by **L5**; for a 10 m cable replace L2 by **L10**. Please consult our Customer Care Center for availability.*
*Example: **XS512B1MAL2** becomes **XS512B1MAL5** with a 5 m cable.*

(3) For more information, see page 118.

Inductive proximity sensors

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

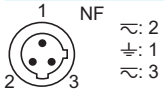
Characteristics

Sensor type			XS5●●B1M●U20	XS5●●B1M●L2
Product certifications			cULus, CE, UKCA	
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
	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		–	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	
Insulation class			I	I
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

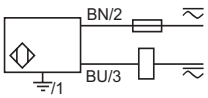
Connector



Pre-cabled

BU: Blue
BN: Brown

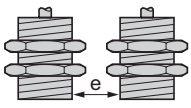
2-wire ∼ or ⎓
NO or NC output

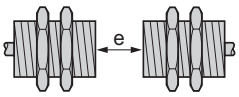


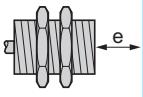
⏚: *on connector models only*

Setting-up

Minimum mounting distances (mm)

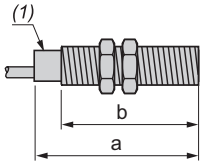






Sensor	Side by side	Face to face	Facing a metal object
Ø 12	e ≥ 8	e ≥ 48	e ≥ 12
Ø 18	e ≥ 16	e ≥ 100	e ≥ 25
Ø 30	e ≥ 30	e ≥ 180	e ≥ 45

Dimensions



(1) LED

XS6

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

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

103165

XS106B1●●L2

PF143812

XS108B3●●M8

PF150201

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
		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
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS108B3NAL2**	0.070
			M8 connector	1	**XS108B3NAM8**	0.030
			M12 connector	1	**XS108B3NAM12**	0.060
	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
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS112B3NAL2**	0.090
			M12 connector	1	**XS112B3NAM12**	0.030
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	1	**XS112B3PBL2**	0.090
			M12 connector	1	**XS112B3PBM12**	0.030
		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**. Please consult our Customer Care Center for availability.*
*Example: XS106B3PAL2 becomes **XS106B3PAL5** with a 5 m cable.*

Characteristics: page 35 | Dimensions: page 35 | Connections: page 35 | Setting-up: page 35

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

105660

XS118B3●●M12

MD3016

XS118B1●●●L2

105253

XS130B3●●L2

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
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS118B3NAL2**	0.110
			M12 connector	1	**XS118B3NAM12**	0.060
	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
		NPN	Pre-cabled (L = 2 m) *(1)*	1	**XS130B3NAL2**	0.180
			M12 connector	1	**XS130B3NAM12**	0.130
	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

XS_515_CPF/JR16004

XSZB1●●

Accessories *(2)*

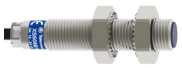
Description	For use with sensors	Reference	Weight kg
Fixing clamps	Ø 6.5 (plain)	**XSZB165**	0.005
	Ø 8 (M8 x1)	**XSZB108**	0.006
	Ø 12 (M12 x1)	**XSZB112**	0.006
	Ø 18 (M18 x1)	**XSZB118**	0.010
	Ø 30 (M30 x 1.5)	**XSZB130**	0.020

*(1) For a 5 m cable, replace L2 by **L5**. Please consult our Customer Care Center for availability.*
*Example: XS118B3PAL2 becomes **XS118B3PAL5** with a 5 m cable.*
(2) For more information, see page 118.

Characteristics: page 35 | Dimensions: page 35 | Connections: page 35 | Setting-up: page 35

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

103184



XS608B1●●L2

103185

XS6●●B1●●M12

PF100297

XS6●●B1●●L01C

Sensors, 3-wire ⎓ 12…24 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
			M8 connector	**XS608B1PAM8**	0.015
			M12 connector	**XS608B1PAM12**	0.015
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS608B1NAL2**	0.035
			M8 connector	**XS608B1NAM8**	0.015
			M12 connector	**XS608B1NAM12**	0.015
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS608B1PBL2**	0.035
			M8 connector	**XS608B1PBM8**	0.015
			M12 connector	**XS608B1PBM12**	0.015
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS608B1NBL2**	0.035
			M8 connector	**XS608B1NBM8**	0.015
			M12 connector	**XS608B1NBM12**	0.015

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

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
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 EN 175301-803-A connector	**XS618B1PAL01C**	0.100
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS618B1NAL2**	0.100
			M12 connector	**XS618B1NAM12**	0.040
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS618B1PBL2**	0.100
			M12 connector	**XS618B1PBM12**	0.040
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS618B1NBL2**	0.100
			M12 connector	**XS618B1NBM12**	0.040
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 EN 175301-803-A connector	**XS630B1PAL01C**	0.205
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS630B1NAL2**	0.205
			M12 connector	**XS630B1NAM12**	0.145
	NC	PNP	Pre-cabled (L = 2 m) *(1)*	**XS630B1PBL2**	0.205
			M12 connector	**XS630B1PBM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS630B1NBL2**	0.205
			M12 connector	**XS630B1NBM12**	0.145

Accessories *(2)*

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**. Please consult our Customer Care Center for availability.*
*Example: XS608B1PAL2 becomes **XS608B1PAL5** with a 5 m cable.*
(2) For more information, see page 118.

Inductive proximity sensors

XS range, 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	Ø 6.5 and Ø 8		cULus, CE, UKCA		
	Ø 12, 18 and 30		cULus, CE, UKCA, 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 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 Ø 6.5 and Ø 8: stainless steel, grade 303)		
	Sensing face		PPS		
	Cable		–		PVC 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, XS608**: ⎓ 12…24 with protection against reverse polarity **XS6**: ⎓ 12…48 with protection against reverse polarity (Ø 12, 18, 30)		
Voltage limits (including ripple)		V	**XS1, XS608:** ⎓ 10…36; **XS6:** ⎓ 10…58 (Ø 12, 18, 30)		
Insulation class			III	⧈	⧈
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 120.

Wiring schemes

Connector *(1)*

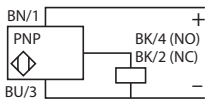
M8

M12

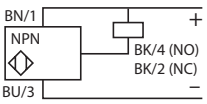
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP



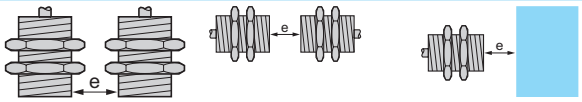
NPN



For M8 connector, NO and NC outputs on terminal 4

Setting-up

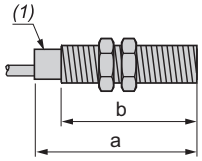
Minimum mounting distances (mm)



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 ⩾ 48	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 29.

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**		34	–	42	–	45	–
Ø 8	**XS108B3**		34	25	42	27	45	23
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)		M8 connector (mm)		M12 connector (mm)	
Long case model			**a**	**b**	**a**	**b**	**a**	**b**
Ø 8	**XS608B1**		51	42	58	43	61	40
Ø 12	**XS612B1**		53	42	–	–	61	42
Ø 18	**XS618B1**		62	52	–	–	74	52
Ø 30	**XS630B1**		62	52	–	–	74	52

Inductive proximity sensors

XS range, general purpose

Cylindrical, increased range, flush mountable

Two-wire DC, solid-state output

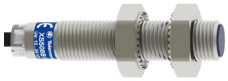
103165

XS608B3●●L2

103947

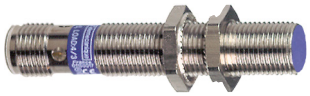
XS608B3●●L2

XS508B1DBL2_front



XS6●●B1●●L2

103993



XS6●●B1●●M12

XS_515_CPF_JR16004

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
	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
	NC	Pre-cabled (L = 2 m) *(1)*	**XS608B3CBL2**	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**. Please consult our Customer Care Center for availability.*
*Example: XS606B3CAL2 becomes **XS606B3CAL5** with a 5 m cable.*

(2) For more information, see page 118.

Inductive proximity sensors

XS range, 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			cULus, CE, UKCA,	
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 (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		PVC 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●	
Insulation class			⧈	⧈
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 120.

Wiring schemes

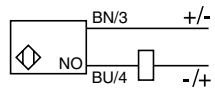
M12 connector

Pre-cabled

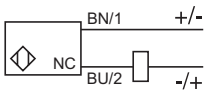
BU: Blue
BN: Brown

2-wire ⎓ non polarised

NO output

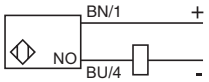


NC output

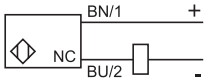


2-wire ⎓ polarised

XS6●●B3CA

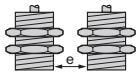


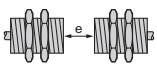
XS6●●B3CB



Setting-up

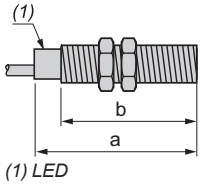
Minimum mounting distances (mm)





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 ⩾ 48	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**	50	–	–	–
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

XS range, general purpose

Cylindrical, increased range, flush mountable

Two-wire AC or DC *(1)*

XS6●●B1M●L2

XS6●●B1●●U20

XS6●●B1●●L01B *(3)*

XS6●●B1●●L01C

XS6●●B1●●L01U78

XSZB1●●

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
Sensors, 2-wire ≂ 24-240 V, long case model				
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 7/8" connector	**XS618B1MAL01U78**	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
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 7/8" connector	**XS630B1MAL01U78**	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

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 64).

*(2) For a 5 m cable replace L2 by **L5**; for a 10 m cable replace L2 by **L10**. Please consult our Customer Care Center for availability.*
*Example: XS612B1MAL2 becomes **XS612B1MAL5** with a 5 m cable.*

(3) Protective cable gland included with sensor.

(4) For more information, see page 118.

Inductive proximity sensors

XS range, general purpose

Cylindrical, increased range, flush mountable

Two-wire AC or DC

Characteristics

Sensor type			XS6●●B1M●U20	XS6●●B1M●L●
Product certifications			cULus, CE, UKCA	
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
	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		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: 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	
Insulation class			I	I
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	

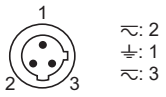
(1) Detection curves, see page 120.

(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

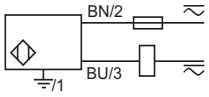


Pre-cabled

BU: Blue
BN: Brown

2-wire ∿ or ⎓

NO or NC output

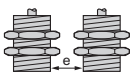


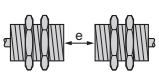
⏚: *on 1/2"-20UNF connector models only*

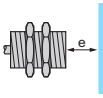
(1) For pin arrangement of remote connectors L01B, L01C and L01G, see page 29.

Setting-up

Minimum mounting distances (mm)

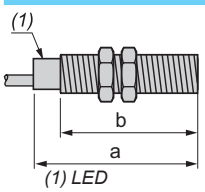






Sensors	Side by side	Face to face	Facing a metal object
Ø 12	e ≥ 8	e ≥ 48	e ≥ 12
Ø 18	e ≥ 16	e ≥ 100	e ≥ 25
Ø 30	e ≥ 30	e ≥ 180	e ≥ 45

Dimensions



Sensors		Pre-cabled (mm)		Connector (mm)	
		a	b	a	b
Ø 12	**XS612B1M●**	53	42	61	42
Ø 18	**XS618B1M●**	62	52	73	52
Ø 30	**XS630B1M●**	62	52	73	52

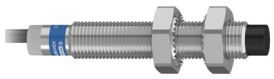
Inductive proximity sensors

XS range, general purpose

Cylindrical, increased range, non-flush mountable

Three-wire DC, solid-state output

XS-XT_515_CPMFS17013



XS612B4●●L2

XS-XT_515_CPODA2016166

XS618B4●●M12

PF154217B

XS630B5●●M12

XS_515_CPF.JR16004

XSZB1●●

Sensors, 3-wire ⎓ 12...24 V, long case model

Ø 8, threaded M8 x 1

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
4	NO	PNP	Pre-cabled (L = 2 m)	**XS608B4PAL2**	0.035
			M8 connector	**XS608B4PAM8**	0.015
			M12 connector	**XS608B4PAM12**	0.015
		NPN	Pre-cabled (L = 2 m)	**XS608B4NAL2**	0.035
			M8 connector	**XS608B4NAM8**	0.015
			M12 connector	**XS608B4NAM12**	0.015
	NC	PNP	Pre-cabled (L = 2 m)	**XS608B4PBL2**	0.035
			M8 connector	**XS608B4PBM8**	0.015
			M12 connector	**XS608B4PBM12**	0.015
		NPN	Pre-cabled (L = 2 m)	**XS608B4NBL2**	0.035
			M8 connector	**XS608B4NBM8**	0.015
			M12 connector	**XS608B4NBM12**	0.015

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 8	**XSZB108**	0.004
	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**. Please consult our Customer Care Center for availability.*
*Example: XS612B4PAL2 becomes **XS612B4PAL5** with a 5 m cable.*

(2) For more information, see page 118.

Inductive proximity sensors

XS range, general purpose

Cylindrical, increased range, non-flush mountable

Three-wire DC, solid-state output

Characteristics

Sensor type			XS6●●B4●●●M8	XS6●●B4●●●M12	XS6●●B4●●●L2
Product certifications	Ø 8		cULus, CE, UKCA		
	Ø 12, 18 and 30		cULus, CE, UKCA, E2		
Connection	Connector		M8	M12	–
	Pre-cabled		–		Length: 2 m
Operating zone	Ø 8	**mm**	**0…3.2**		
	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
	Conforming to DIN 40050		–	IP 69K	–
Storage temperature		**°C**	-40…+85		
Operating temperature		**°C**	-25…+70		
Materials	Case		Nickel plated brass (except Ø 8: stainless steel, grade 303)		
	Sensing face		PPS		
	Cable		–		PVC 3 x 0.34 mm² except for Ø 8: 3 x 0.11 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)		
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms		
Output state indication			Yellow LED: 4 viewing ports at 90°		Yellow LED: annular
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity (Ø 8) ⎓ 12…48 with protection against reverse polarity (Ø 12, 18, 30)		
Voltage limits (including ripple)		**V**	⎓ 10…36 (Ø 8) ⎓ 10…58 (Ø 12, 18, 30)		
Insulation class			III	⧈	⧈
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	**XS608B4●●●●** and **XS612B4●●●●**	**Hz**	2500		
	XS618B4●●●●	**Hz**	1000		
	XS630B5●●●●	**Hz**	500		
Delays	First-up	**ms**	≤ 10 for Ø 8, Ø 12 and Ø 18; ≤ 15 for Ø 30		
	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 Ø12; ≤ 0.7 for Ø 18; ≤ 1.4 for Ø 30		

Wiring schemes

Connector

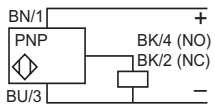
M8

M12

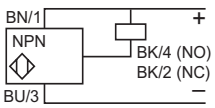
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP

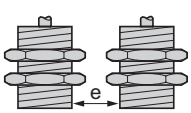


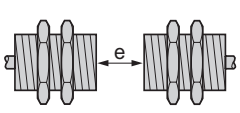
NPN

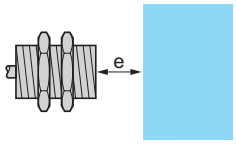


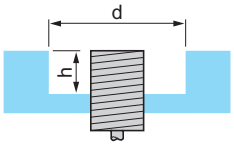
Setting-up

Minimum mounting distances (mm)



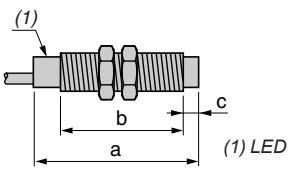






	Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 8	e ≥ 24	e ≥ 40	e ≥ 12	d ≥ 24, h ≥ 8
Ø 12	e ≥ 48	e ≥ 84	e ≥ 21	d ≥ 36, h ≥ 12
Ø 18	e ≥ 72	e ≥ 144	e ≥ 36	d ≥ 54, h ≥ 18
Ø 30	e ≥ 300	e ≥ 300	e ≥ 90	d ≥ 90, h ≥ 35

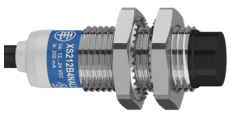
Dimensions



XS6	Pre-cabled (mm) a	b	c	M8 Connector (mm) a	b	c	M12 Connector (mm) a	b	c
Ø 8	51	38	4	58	39	4	61	36	4
Ø 12	54	42	5	–	–	–	66	42	5
Ø 18	60	44	8	–	–	–	72	44	8
Ø 30	66	41	13	–	–	–	74	41	13

Inductive proximity sensors
XS range, general purpose
Cylindrical, increased range, non-flush mountable
Three-wire DC, solid-state output

PF154200



XS212B4●●L●

PF154208

XS218B4●●M12

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

XS_515_CPFJR16004

XSZB1●●

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 118.

Characteristics, schemes, setting-up, dimensions

Inductive proximity sensors

XS range, 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			cULus, e, UKCA, 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	
Insulation class			⧈	⧈
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

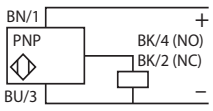
Connector

M12

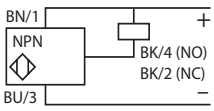
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP

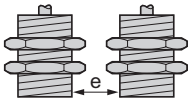


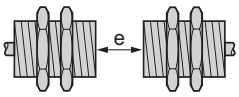
NPN

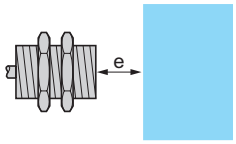


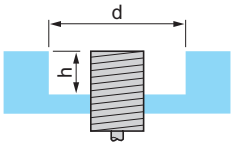
Setting-up

Minimum mounting distances (mm)



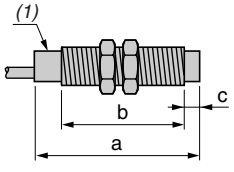






	Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 12	e ⩾ 100	e ⩾ 120	e ⩾ 24	d ⩾ 36, h ⩾ 15
Ø 18	e ⩾ 120	e ⩾ 200	e ⩾ 48	d ⩾ 54, h ⩾ 18

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

103189

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

PF154217B

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

XS_515_CPF_JR16004

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 118.

Inductive proximity sensors

XS range, general purpose

Cylindrical, increased range, non flush mountable

Two-wire AC or DC

Characteristics

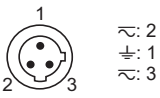
Sensor type			XS6●●B4M●U20	XS6●●B4M●L2
Product certifications			cULus, CE,UKCA	
Connection	Connector		1/2"-20 UNF	–
	1/2"-20 UNFPre-cabled		–	Length: 2 m
Operating zone	Ø 18	**mm**	**0…9.6**	
	Ø 30	**mm**	**0...17.6**	
Differential travel		**%**	1...15 of effective sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 65 and IP 67	IP 65 and IP 68
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	
Insulation class			I	I
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

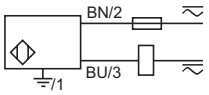


Pre-cabled

BU: Blue
BN: Brown

2-wire ∼ or ⎓

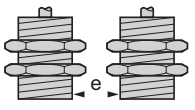
NO or NC output

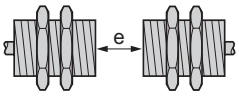


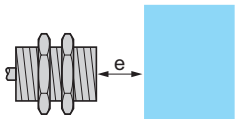
⏚: *on connector models only*

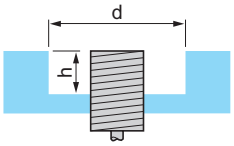
Setting-up

Minimum mounting distances (mm)



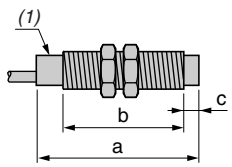






	Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 18	e ⩾ 72	e ⩾ 144	e ⩾ 36	d ⩾ 54, h ⩾ 18
Ø 30	e ⩾ 120	e ⩾ 264	e ⩾ 66	d ⩾ 90, h ⩾ 30

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

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

103792

XS7J1A1●●L2

103791

XS7F1A1●●L2

521030

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
	NC		Pre-cabled (L = 2 m) *(3)*	**XS7J1A1DBL2**	0.050

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 118.
*(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

XS range, 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	cULus, CE, UKCA	
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		
Insulation class			III	III	⧈
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

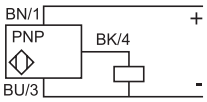
M8

See connection on page 30210/3.

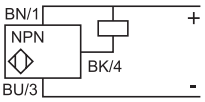
Pre-cabled

BU: Blue
BN: Brown
BK: Black

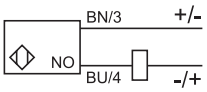
PNP NO or NC



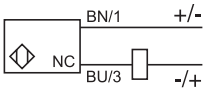
NPN NO or NC



2-wire NO

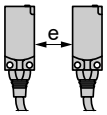


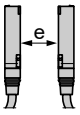
2-wire NC

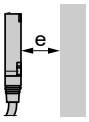


Setting-up

Minimum mounting distances (mm)



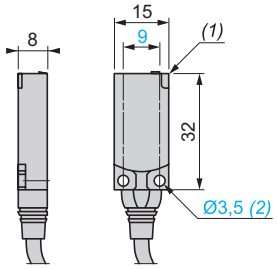




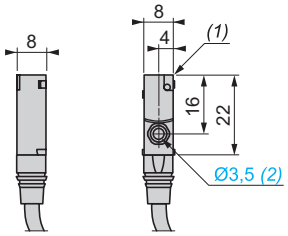
	Side by side	Face to face	Facing a metal object
XS7J	e ≥ 7.5	e ≥ 20	e ≥ 7.5
XS7F	e ≥ 15	e ≥ 40	e ≥ 15

Dimensions

XS7F



XS7J



(1) LED
(2) For CHC type screws

ECOLAB certified

Inductive proximity sensors

XS range, general purpose, standard range

Flat format, flush mountable

Two-wire DC

Three-wire DC, solid-state output

103791

XS7E1A1●●L2

103788

XS7E1A1●●M8

103874

XS7●1A1●L0●M12

103780

XS7C1A1●●L2

103789

XS7C1A1●●M8

103779

XS7D1A1●●L2

103782

XS7D1A1●●M12

XS7D1A1DAL2_DIN

XS7D1A1●●L2DIN

XS7D1A1DAM12_DIN

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) *(3)*	**XS7E1A1PAL2**	0.075
			M8 connector	**XS7E1A1PAM8**	0.040
			Remote M12 connector	**XS7E1A1PAL01M12**	0.040
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS7E1A1NAL2**	0.075
			M8 connector	**XS7E1A1NAM8**	0.075
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS7E1A1PBL2**	0.075
			M8 connector	**XS7E1A1PBM8**	0.040
			Remote M12 connector	**XS7E1A1PBL01M12**	0.040
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS7E1A1NBL2**	0.075
			M8 connector	**XS7E1A1NBM8**	0.040
Two-wire ⎓					
10	NO		Pre-cabled (L = 2 m) *(3)*	**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
Flat, 40 x 40 x 15 mm format *(1)*					
Three-wire ⎓					
15	NO	PNP	Pre-cabled (L = 2 m) *(3)*	**XS7C1A1PAL2**	0.095
			M8 connector	**XS7C1A1PAM8**	0.060
			Remote M12 connector	**XS7C1A1PAL01M12**	0.060
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS7C1A1NAL2**	0.095
			M8 connector	**XS7C1A1NAM8**	0.060
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS7C1A1PBL2**	0.095
			M8 connector	**XS7C1A1PBM8**	0.060
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS7C1A1NBL2**	0.095
			M8 connector	**XS7C1A1NBM8**	0.060
Two-wire ⎓					
15	NO		Pre-cabled (L = 2 m) *(3)*	**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
	NC		Pre-cabled (L = 2 m) *(3)*	**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) *(3)*	**XS7D1A1PAL2** *(4)*	0.340
			M12 connector	**XS7D1A1PAM12** *(4)*	0.290
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS7D1A1NAL2** *(4)*	0.340
			M12 connector	**XS7D1A1NAM12** *(4)*	0.290
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS7D1A1PBL2** *(4)*	0.340
			M12 connector	**XS7D1A1PBM12** *(4)*	0.290
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS7D1A1NBL2** *(4)*	0.340
			M12 connector	**XS7D1A1NBM12** *(4)*	0.290
Two-wire ⎓					
40	NO		Pre-cabled (L = 2 m) *(3)*	**XS7D1A1DAL2** *(4)*	0.340
			M12 connector	**XS7D1A1DAM12** *(4)*	0.290
	NO terminals 1 and 4 *(2)*		M12 connector	**XS7D1A1CAM12** *(4)*	0.290
	NC		Pre-cabled (L = 2 m) *(3)*	**XS7D1A1DBL2** *(4)*	0.340
			M12 connector	**XS7D1A1DBM12** *(4)*	0.290

(1) For accessories, see page 118.
(2) The NO output is connected to terminals 1 and 4 of the M12 connector.
*(3) 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.*
*(4) 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

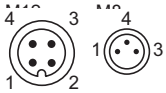
XS range, general purpose, standard range
Flat format, flush mountable
Two-wire DC
Three-wire DC, solid-state output

Characteristics

Sensor type				XS7E●●●●●M8, XS7C●●●●●M8, XS7D●●●●●M12	XS7E●●●●●L01M12, XS7C●●●●●L01M12	XS7E●●●●●L2, XS7C●●●●●L2, XS7D●●●●●L2
Product certifications				cULus, CE, UKCA, 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		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		
Insulation class				M8 connector: III M12 connector: ⧈	⧈	⧈
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

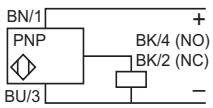
Connector



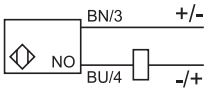
Pre-cabled

BU: Blue
BN: Brown
BK: Black

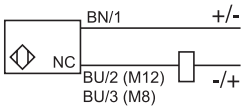
PNP *(1)*



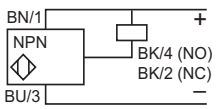
2-wire NO/M12 or M8



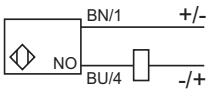
2-wire NC/M12 or M8



NPN *(1)*



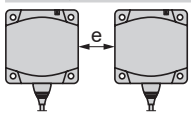
2-wire NO/M12 XS7●●●●CA●●●

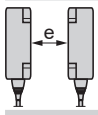


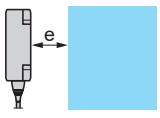
(1) For M8 connector, NO and NC outputs on terminal 4

Setting-up

Minimum mounting distances (mm)

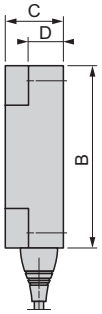
Side by side	e ≥	XS7E	XS7C	XS7D
		30	45	120

Face to face	e ≥	XS7E	XS7C	XS7D
		72	110	300

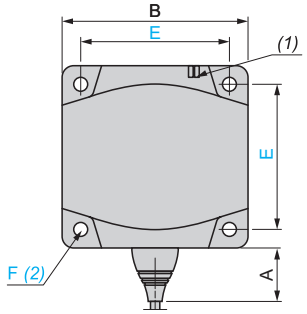
Facing a metal object	e ≥	XS7E	XS7C	XS7D
		30	45	120

Dimensions

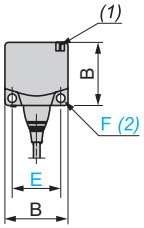
XS7C/D/E



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

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

Sensor type				Flush mountable in metal		Non-flush mountable in metal	
							
Nominal sensing distance (Sn)			**mm**	15	20	40	
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**	**XS8C2A4CAM12** *(3)*
	NC			**XS7C2A1DBM12**	**XS8C2A1DBM12**	**XS8C2A4DBM12**	
2-wire (∿/⎓) unprotected *(1)*	NO			–	**XS8C2A1MAU20**	**XS8C2A4MAU20**	
	NC			–	**XS8C2A1MBU20**	**XS8C2A4MBU20**	
Weight			**kg**	0.149	0.149	0.149	0.149
Characteristics							
Operating zone			**mm**	0…12	0…16	0…32	
Product certifications				cULus, CE, UKCA, E2 (3-wire and 4-wire)			
Conformity to standards				IEC 60947-5-2			
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		**°C**	- 40….+ 85			
	Operation *(2)*		**°C**	- 25….+ 70			
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 ⎓		**V**	12…48 with protection against reverse polarity			
	3-wire ⎓		**V**	12…24 with protection against reverse polarity			
	2-wire ⎓		**V**	12…48 with protection against reverse polarity			
	2-wire ∿/⎓		**V**	24…240 (∿ 50/60 Hz)			
Voltage limits (including ripple)	4-wire ⎓		**V**	10…58			
	3-wire ⎓		**V**	10…36			
	2-wire ⎓		**V**	10…58			
	2-wire ∿/⎓		**V**	20…264			
Insulation class				⎓: ⧈ ∿/⎓: I			
Current consumption, no-load	3-wire and 4-wire ⎓		**mA**	< 15			
Residual current, open state	2-wire ⎓		**mA**	< 0.6			
	2-wire ∿/⎓		**mA**	1.5			
Switching capacity	3-wire and 4-wire ⎓		**mA**	< 200 with overload and short-circuit protection			
	2-wire ⎓		**mA**	< 100 with overload and short-circuit protection			
	2-wire ∿/⎓		**mA**	∿: 5…300 *(1)* ⎓: 5…200 mA *(1)*			
Voltage drop, closed state	3-wire and 4-wire ⎓		**V**	< 2			
	2-wire ⎓		**V**	< 4.2			
	2-wire ⎓/∿		**V**	< 5.5			
Maximum switching frequency			**kHz**	Flush mountable: ⎓ 300, ∿ 25 Non-flush mountable: ⎓ 150, ∿ 25			
Delays	First-up		**ms**	7 (3-wire and 4-wire ⎓), 20 (2-wire ⎓ and 2-wire ⎓/∿)			
	Response		**ms**	Flush mountable: ⩽ 1.2. Non-flush mountable: ⩽ 1.4			
	Recovery		**ms**	Flush mountable: ⩽ 1.8. Non-flush mountable: ⩽ 3.5			

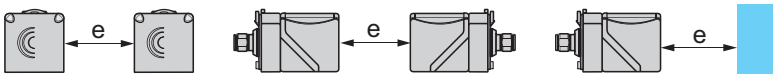
(1) Sensor must be protected by a 0.4 A quick-blow fuse connected in series with the load.
*(2) Sensors are available for very low temperatures (suffix **TF**: - 40°C, + 70°C) or very high temperatures (suffix **TT**: - 25°C, + 85°C). Please consult our Customer Care Centre.*
(3) NO terminal 1 & 4 - the NO output is connected to terminal 1 and 4 of M12 connectors.

Inductive proximity sensors

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

Setting-up precautions

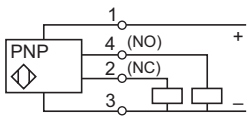
Minimum mounting distances (mm)

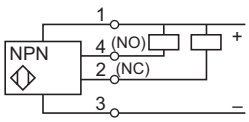


		Side by side	Face to face	Facing a metal object
Sensors flush mountable in metal	**XS7C2A1●●**	e ⩾ 60	e ⩾ 120	e ⩾ 45
	XS8C2A1●●	e ⩾ 80	e ⩾ 160	e ⩾ 60
Sensors non-flush mountable in metal	**XS8C2A4●●**	e ⩾ 160	e ⩾ 320	e ⩾ 120

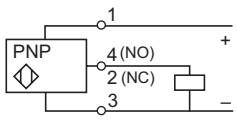
Wiring schemes

4-wire ⎓, NO + NC outputs

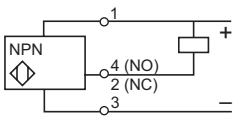




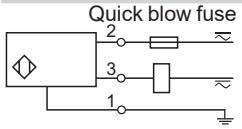
3-wire, PNP



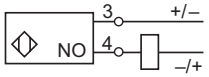
3-wire, NPN



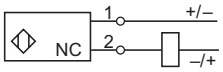
2-wire, 1/2”- 20UNF



2-wire ⎓, NO output
(M12 connector)



2-wire ⎓, NC output
(M12 connector)



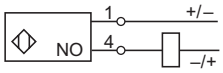
M12 connector

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

1/2”-20UNF connector

⎓: 2
⏚: 1
⎓: 3

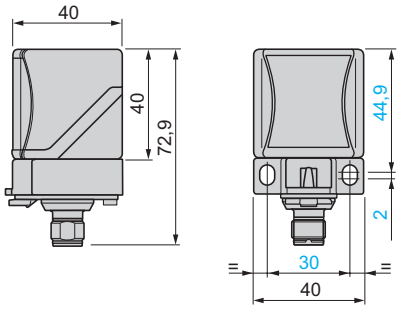
2-wire ⎓, NO output



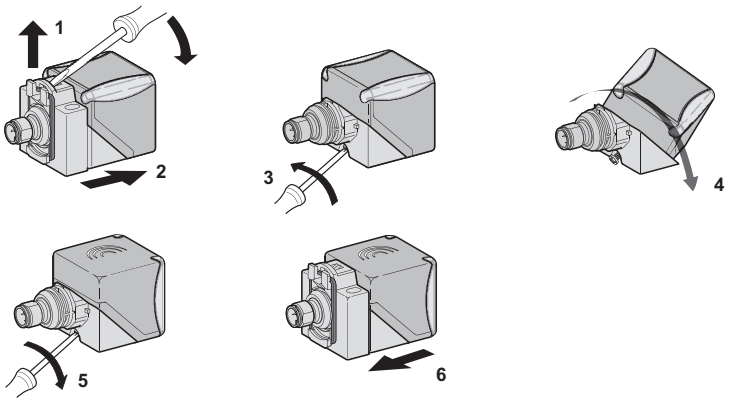
Accessory references

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



Inductive proximity sensors
XS range, general purpose
Plastic case, 40 x 40 x 117 mm, plug-in
5-position turret head

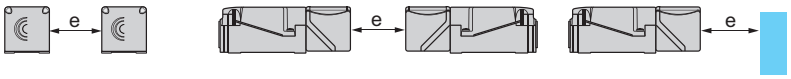
Sensor type				Flush mountable in metal		Non-flush mountable in metal	
							
Nominal sensing distance (Sn)			**mm**	15	20	40	
Connection type				–	–	Cable entry	M12 connector
References							
4-wire ⎓	PNP	NO+NC		–	**XS8C4A1PCP20**	**XS8C4A4PCP20**	**XS8C4A4PCM12**
	NPN	NO+NC		–	**XS8C4A1NCP20**	**XS8C4A4NCP20**	
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	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			**mm**	0…12	0…16	0…32	
Product certifications				cULus, CЄ, UKCA, E2 (4-wire)			
Conformity to standards				IEC 60947-5-2			
Connection				Screw terminals, clamping capacity: 2 or 4 x 1.5 mm2 / 2 or 4 x 16 AWG *(2)*			
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		**°C**	- 40….+ 85			
	Operation *(3)*		**°C**	- 25….+ 70			
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 ⎓		**V**	12…48 with protection against reverse polarity			
	2-wire ⎓		**V**	12…48 with protection against reverse polarity			
	2-wire ∿/⎓		**V**	24…240 (∿ 50/60 Hz)			
Voltage limits (including ripple)	4-wire ⎓		**V**	10…58			
	2-wire ⎓		**V**	10…58			
	2-wire ∿/⎓		**V**	20…264			
Insulation class				⎓: ⧈ ⎓/ ∿: I			
Current consumption, no-load	4-wire ⎓		**mA**	< 15			
Residual current, open state	2-wire ⎓		**mA**	< 0.6			
	2-wire ∿/⎓		**mA**	1.5			
Switching capacity	4-wire ⎓		**mA**	< 200 with overload and short-circuit protection			
	2-wire ⎓		**mA**	< 100 with overload and short-circuit protection			
	2-wire ∿/⎓		**mA**	∿: 5…300 *(1)* ⎓: 5…200 *(1)*			
Voltage drop, closed state	4-wire ⎓		**V**	< 2			
	2-wire ⎓		**V**	< 4.2			
	2-wire ⎓/∿		**V**	< 5.5			
Maximum switching frequency			**Hz**	Flush mountable: ⎓ 300, ∿ 25 Non-flush mountable: ⎓ 150, ∿ 25			
Delays	First-up		**Hz**	7 ms (3-wire and 4-wire ⎓), 20 ms (2-wire ⎓ and 2-wire ⎓/∿)			
	Response		**ms**	Flush mountable: ⩽ 1.2. Non-flush mountable: ⩽ 1.4			
	Recovery		**ms**	Flush mountable: ⩽ 1.8 ms. Non-flush mountable: ⩽ 3.5			

(1) Sensor must be protected by a 0.4 A quick-blow fuse connected in series with the load.
*(2) 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.*
*(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
XS range, general purpose
Plastic case, 40 x 40 x 117 mm, plug-in
5-position turret head

Setting-up precautions

Minimum mounting distances (mm)

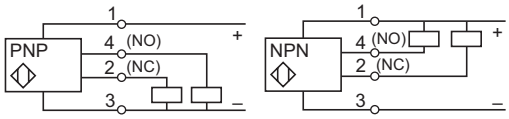


		Side by side	Face to face	Facing a metal object
Sensors flush mountable in metal	XS7C4A1●●	e ⩾ 60	e ⩾ 120	e ⩾ 45
	XS8C4A1●●	e ⩾ 80	e ⩾ 160	e ⩾ 60
Sensors non-flush mountable in metal	XS8C4A4●●	e ⩾ 160	e ⩾ 320	e ⩾ 120

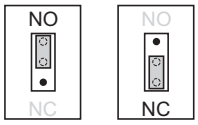
Wiring schemes

NO + NC outputs

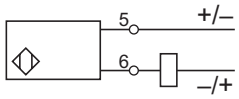
4-wire ⎓



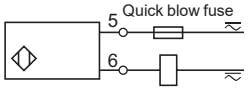
NO or NC outputs, depending on position of link



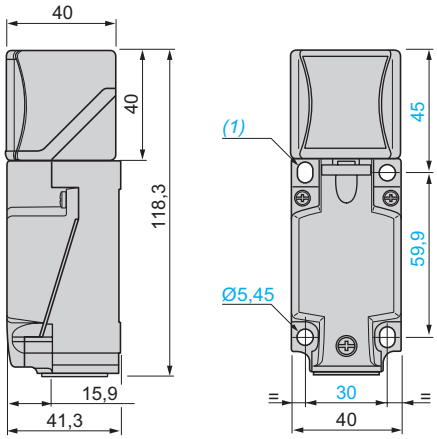
2-wire ⎓ (non polarised)



2-wire ∿ or ⎓ (programmable)

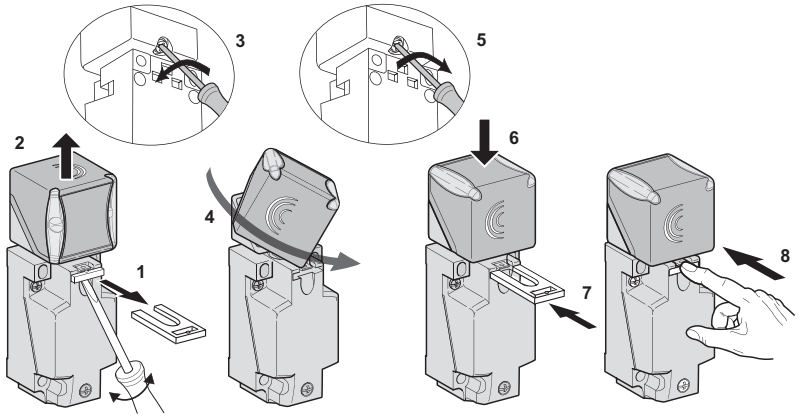


Dimensions



(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



Inductive proximity sensors

XS range, general purpose

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

103187

XS1M●●●●250

103189

XS2M●●●●250

103191

XS1M●●●●250K

103214

XS2M●●●●250K

Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
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

XS_515_CPF_JR16004

XSZB1●●

Accessories *(2)*

Description mm		Reference	Weight kg
	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 118.

Inductive proximity sensors

XS range, 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			cULus, CE, UKCA	
Connection			1/2"-20UNF connector	Pre-cabled, length: 2 m
Operating zone	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
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
Rated supply voltage		**V**	∼ 24…240 (50/60 Hz) or ⎓ 24…210	
Voltage limits (including ripple)		**V**	∼ or ⎓ 20…264	
Insulation class			I	
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 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**	≤ 2 for Ø 18 and Ø 30	
	Recovery	**ms**	≤ 4 for Ø 18, ≤ 5 for Ø 30 flush mountable, ≤ 10 for Ø 30 non-flush mountable	

Wiring schemes

1/2»-20UNF connector

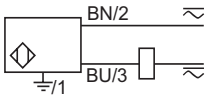
+/- : 2
⏚ : 1
+/- : 3

Pre-cabled

BU: Blue
BN: Brown

2-wire ∼ or ⎓

NO or NC output

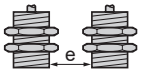
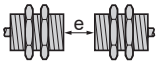
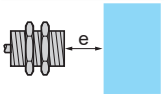
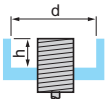


See connection on page 30210/3

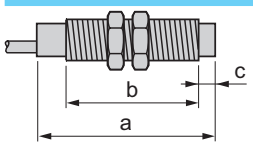
⏚: on connector model only

Setting-up

Minimum mounting distance (mm)

Sensor	Side by side		Face to face		Facing a metal object		Mounted in a metal support	
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 ≥ 0
Ø 30 non-flush mountable		e ≥ 60		e ≥ 180		e ≥ 45		d ≥ 18 ≥ 0

Dimensions



Sensor	Flush mountable in metal				XS1M	Non-flush mountable in metal				XS2M
	Pre-cabled		Connector			Pre-cabled		Connector		
	a	b	a	b	c	a	b	a	b	c
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

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

103165

XS1L06●C410

103171

XS1N12●●●C410

103173

XS2●●●●C410

103816

XS4P●●●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 *(3)*	Pre-cabled (L = 2 m)	**XS1M08PC410**	0.035
			M12 connector	**XS1M08PC410D**	0.025
Stainless steel case, non-flush mountable					
2.5	NO + NC	PNP *(3)*	Pre-cabled (L = 2 m)	**XS2M08PC410**	0.035
			M12 connector	**XS2M08PC410D**	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
Brass case, non-flush mountable					
4	NO + NC	PNP *(3)*	Pre-cabled (L = 2 m) *(1)*	**XS2N12PC140**	0.070
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

XS range, general purpose

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

XS4P1_

XS4P●●●C410

PF142939

XS2N●●●C410D

103177

XS1N●●●C410

XS_515_CPF_IR16004

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
Brass case, non-flush mountable					
8	NO + NC	PNP *(3)*	Pre-cabled (L = 2 m) *(1)*	**XS2N18PC410**	0.100
			M12 connector	**XS2N18PC410D**	0.040
Plastic case, non-flush mountable					
8	NO + NC	PNP *(3)*	Pre-cabled (L = 2 m)	**XS4P18PC410**	0.100
			M12 connector	**XS2N18PC410D**	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
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 118.

Inductive proximity sensors

XS range, 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			cULus, CE, UKCA, E2 *(1)*	cULus, CE, UKCA	cULus, CE, UKCA, E2	cULus, CE, UKCA
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 (Ø 6.5 and Ø 8) IP 68 (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 *(2)*			
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
Insulation class			⧈	⧈	⧈	⧈
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) 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

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

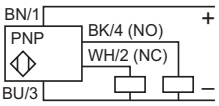
Wiring schemes

M12 connector

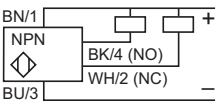
Pre-cabled

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

PNP 4-wire



NPN 4-wire

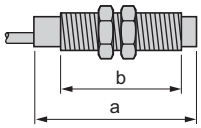


Setting-up

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

XS range, general purpose

Cylindrical, metal, increased range, flush mountable

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

PF150204

XS1●●B3PCL2

Sensors, 4-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 + NC	PNP	Pre-cabled (L = 2 m)	**XS608B1PCL2**	0.035
			M12 connector	**XS608B1PCM12**	0.025

PF150201

XS112B3PCM12

Sensors, 4-wire ⎓ 12...24 V, long case model

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

XS_515_CPFJR16004

XSZB1●●

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

(1) For further information, see page 118.

Inductive proximity sensors

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

Characteristics

Sensor type			XS1●●B3PCM12 / XS608B1PCM12	XS1●●B3PCL2 / XS608B1PCL2
Product certifications	Ø 8		cULus, CE, UKCA	
	Ø 12, 18 and 30		cULus, CE, UKCA, E2	
Connection	Connector		M12	–
	Pre-cabled		–	Length 2 m
Operating zone *(1)*	Ø 8	mm	**0…2**	
	Ø 12	mm	**0…3.2**	
	Ø 18	mm	**0…6.4**	
	Ø 30	mm	**0…12**	
Differential travel		%	1...15 of effective sensing distance (Sr)	
Degree of protection	Conforming to IEC 60529		IP 65 and IP 67	IP 65 and IP 68
	Conforming to DIN 40050		IP 69K	–
Storage temperature		°C	- 40…+ 85	
Operating temperature		°C	- 25…+ 70 *(2)*	
Materials	Case		Nickel plated brass for Ø 12 to Ø 30, stainless steel grade 303 for Ø 8	
	Sensing face		PPS	
	Cable		–	PvR 4 x 0.22 mm² except Ø 8: 4 x 0.08 mm²
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication			Yellow LED, 4 viewing ports at 90°	Yellow LED, annular
Rated supply voltage		V	⎓ 12…24 (**XS1, XS608**), ⎓ 12…48 (**XS6** Ø 12, 18, 30), with protection against reverse polarity	
Voltage limits (including ripple)		V	⎓ 9…36	(**XS1, XS608**) ⎓ 10…58 (**XS6** Ø 12, 18, 30)
Insulation class			⧈	⧈
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 8 and Ø 12	Hz	2500	
	Ø 18	Hz	1000	
	Ø 30	Hz	500	
Delays	First-up	ms	⩽ 10	
	Response	ms	⩽ 0.2 for Ø 8 and Ø 12, ⩽ 0.3 for Ø 18, ⩽ 0.6 for Ø 30	
	Recovery	ms	⩽ 0.2 for Ø 8 and Ø 12, ⩽ 0.7 for Ø 18, ⩽ 1.4 for Ø 30	

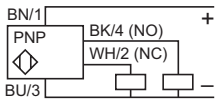
Wiring schemes

M12 connector

Pre-cabled

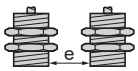
BU: Blue
BN: Brown
BK: Black
WH: White

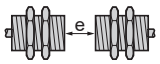
PNP 4-wire

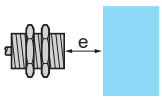


Setting-up

Minimum mounting distances (mm)

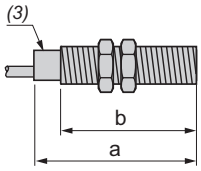






Sensors	Side by side	Face to face	Facing a metal object
Ø 8	e ⩾ 5	e ⩾ 30	e ⩾ 8
Ø 12	e ⩾ 8	e ⩾ 50	e ⩾ 12
Ø 18	e ⩾ 16	e ⩾ 100	e ⩾ 25
Ø 30	e ⩾ 30	e ⩾ 180	e ⩾ 45

Dimensions



	Pre-cabled (mm)		**M12 connector** (mm)	
Sensors	**a**	**b**	**a**	**b**
Ø 8	51	42	61	40
Ø 12	37	25	50	31
Ø 18	41	29	51	28
Ø 30	45	33	54	33

(1) Detection curves, see page 120.

*(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

XS range, general purpose

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

103184

XS1M●●KP340

103812

XS4P●●KP340

103189

XS2M●●KP340

103816

XS4P●●KP340D

XS-XT_515_CPODA2016112

XS1M●●KP340D

PF143827

XS2M●●KP340D

XS_515_CPF_JR16004

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 118.

Inductive proximity sensors

XS range, 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			cULus, CE, UKCA	
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
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	
Insulation class			⧈	⧈
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

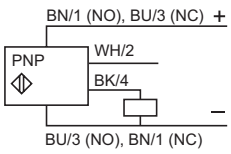
Pre-cabled

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

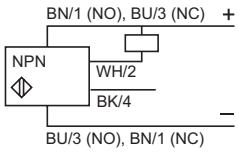
PNP + NPN

4-wire programmable, NO or NC output

PNP



NPN

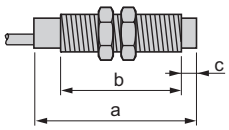


Setting-up

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

XS range, general purpose

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

ECOLAB certified

103202

XS4P●●●●340
XS4P●●●●370
XS4P●●●●230

XS-XT_515_CPODA2016033

XS4P08●●340S

PF143830

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

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
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

XS range, 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			cULus, CE, UKCA, 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 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 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 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
Insulation class			⧈	⧈	I
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 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

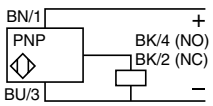
1/2"-20UNF

≂: 2
≂: 3

Pre-cabled

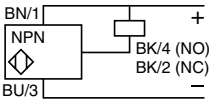
BU: Blue
BN: Brown
BK: Black

PNP

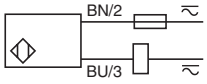


For M8 connector, NO and NC outputs on terminal 4

NPN



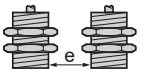
2-wire ∿ or ⎓

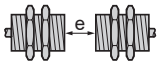


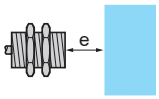
Setting-up

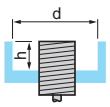
Minimum mounting distances (mm)

	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

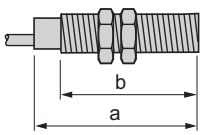








Dimensions



XS4P	3-wire ⎓ 12-24 V				3-wire ⎓ 12-48 V or 2-wire ∿/⎓ 24-240 V			
	Pre-cabled (mm)		Connector (mm)		Pre-cabled (mm)		Connector (mm)	
	a	b	a	b	a	b	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

XS range, general purpose

Cylindrical, almost flush mountable, increased range

Three-wire DC, solid-state output

103171

XS1N●●●●349

References

Sensing distance (Sn) (mm)	Function	Output	Connection	Reference	Weight kg
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

103178

XS1N●●●●349D

XS_515_CPFJR16004

XSZB1●●

Accessories *(1)*

Description mm		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 118.

Characteristics, schemes, setting-up, dimensions

Inductive proximity sensors

XS range, general purpose

Cylindrical, almost flush mountable, increased range

Three-wire DC, solid-state output

Characteristics

Sensor type			XS1●●●●●349D	XS1●●●●●349
Product certifications			cULus, CE, UKCA	
Connection			M12 connector	Pre-cabled, length: 2 m
Operating zone	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 (except 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 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	
Insulation class			⧈	⧈
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 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

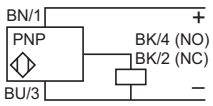
M8

M12

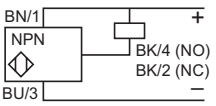
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP 3-wire



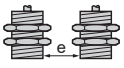
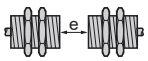
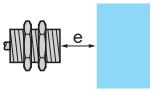
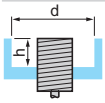
NPN 3-wire



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 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		M8 connector		M12 connector	
	a	b	a	b	a	b
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

XS range, general purpose
Miniature, cylindrical, flush mountable
Three-wire DC, solid-state output

103821

XS1L04●●310

801316

XS1N05●●310

103822

XS1N05●●311S

103818

XS1L04●●310S

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

(1) For accessories, see page 118.
*(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

XS range, general purpose
Miniature, cylindrical, flush mountable
Three-wire DC, solid-state output

Characteristics

Sensor type			XS1●●●●●●●●S	XS1●●●●●●●
Product certifications			cULus, CE, UKCA	
Connection *(1)*	Connector		M8 on **XS1●●●●●●●●S**	–
	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)**	
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	
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●●●●●●**	
Voltage limits (including ripple)		**V**	⎓ 5…30 for **XS1L04●●●●●●** and **XS1N05●●●●●●**	
Insulation class			⧈	
Current consumption, no-load		**mA**	⩽ 10	
Switching capacity	3-wire PNP/NPN	**mA**	⩽ 100 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 120

Wiring schemes

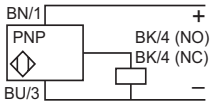
Connector

M8

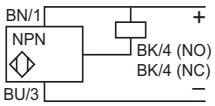
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP 3-wire



NPN 3-wire



Setting-up

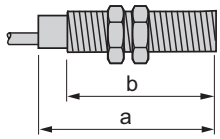
Minimum mounting distances (mm)

Sensor	Side by side		Face to face		Facing a metal object			
Ø 4	e ⩾ 2		e ⩾ 12		e ⩾ 3	d1		d1 ⩾ 4, h ⩾ 0
Ø 5	e ⩾ 2	e	e ⩾ 12	e	e ⩾ 3	h		d1 ⩾ 5, h ⩾ 0

Tightening torque

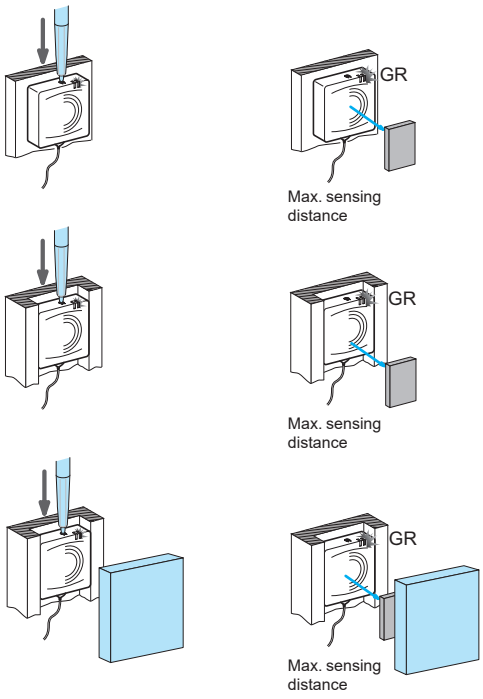
Stainless steel: 2.2 N.m. Brass: 1.6 N.m (values obtained with washers mounted)

Dimensions



Sensor	Pre-cabled		M8 connector	
	a	b	a	b
Ø 4	28	–	43	–
Ø 5	28	24	43	24

Inductive proximity sensors
XS range
Flush mountability using teach mode: simplicity through innovation



Operating principle

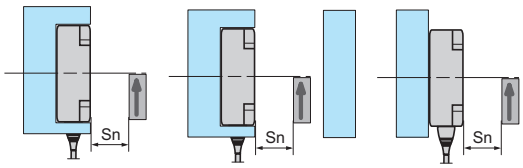
In proposing flush mountable sensors using teach mode, Telemecanique Sensors offers simplicity through innovation.

■ 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.

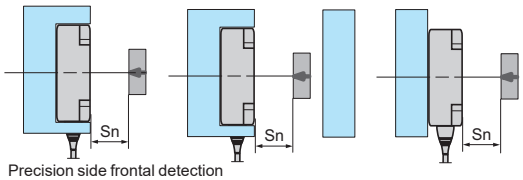
■ Other advantages of flush mountable sensors using teach mode
□ Increased performance:
- sensing distance guaranteed and optimised irrespective of the mounting method, object, environment or background,
- suitable for all metal environments.

□ 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



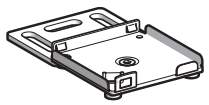
Precision side frontal detection

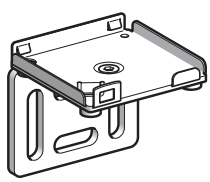
Precision position detection

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

XS range

Flush mountability using teach mode: simplicity through innovation

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		72		

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		74		

Inductive proximity sensors

XS range application

Adjustable range sensors

Cylindrical, flush mountable using teach mode *(1)*

Three-wire DC, solid-state output

103854

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		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
	NC	PNP	Remote M12 connector on 0.15 m flying lead	**XS618B2PBL01M12**	0.140

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
	NC	PNP	Remote M12 connector on 0.15 m flying lead	**XS630B2PBL01M12**	0.220

XS_515_CPFJR16004

XSZB1●●

Accessories *(2)*

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

(1) For further information on flush or non-flush mountable sensors using teach mode, see page 70.

(2) For further information, see page 118.

Inductive proximity sensors

XS range application

Adjustable range sensors

Cylindrical, flush mountable using teach mode

Three-wire DC, solid-state output

Characteristics

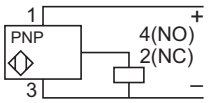
Sensor type				XS6●●B2●●L01M12
Product certifications				cULus, CE, UKCA
Connection	Connector			Remote M12 connector on 0.15 m flying lead
Sensing distance and adjustment zone	Ø 12	Nominal sensing distance (Sn)	mm	**0…5** non-flush mounted / **0…3.4** flush mounted
		Precision adjustment zone	mm	**1.7…5** 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
Insulation class				⧈
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

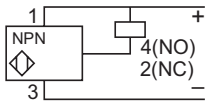
Connector

M12

PNP

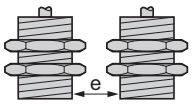


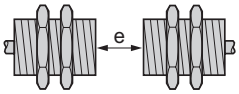
NPN

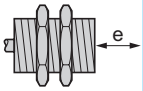


Setting-up

Minimum mounting distances (mm)



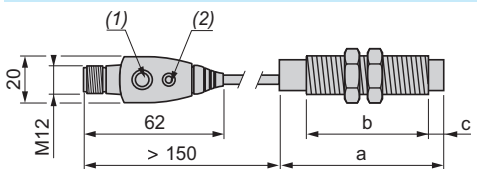




	Side by side		Face to face		Facing a metal object
	flush mounted	not flush mounted	flush mounted	not flush mounted	
Ø 12	e ⩾ 14	50	e ⩾ 50	100	e ⩾ 3.4
Ø 18	e ⩾ 28	100	e ⩾ 100	200	e ⩾ 6
Ø 30	e ⩾ 48	180	e ⩾ 180	360	e ⩾ 11

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

ECOLAB certified

Inductive proximity sensors

XS range, general purpose with increased range

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

103781

XS8E1A1●●L2

103782

XS8E1A1●●M8

XS-XT_515_CPODA2016048

XS8●1A1●●L01M12
XS8●1A1●●L01U20

103780

XS8C1A1●●L2

103783

XS8C1A1●●M8

103779

XS8D1A1●●L2

103784

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
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS8E1A1PBL2**	0.075
			M8 connector	**XS8E1A1PBM8**	0.040
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS8E1A1NBL2**	0.075
			M8 connector	**XS8E1A1NBM8**	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
	NC	PNP	Pre-cabled (L = 2 m) *(3)*	**XS8C1A1PBL2**	0.095
			M8 connector	**XS8C1A1PBM8**	0.060
		NPN	Pre-cabled (L = 2 m) *(3)*	**XS8C1A1NBL2**	0.095
			M8 connector	**XS8C1A1NBM8**	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 70.
(2) For accessories, see page 118.
*(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

XS range, general purpose with increased range
Flat, flush mountable using teach mode *(1)*
Two-wire AC or DC
Three-wire DC, solid-state output

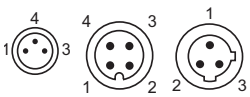
Characteristics

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				cULus, CE, UKCA, 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		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		
Insulation class				⧈, except M8 connector: III		
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

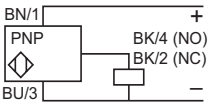
M8 M12 1/2"-20UNF



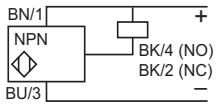
Pre-cabled

BU: Blue
BN: Brown
BK: Black

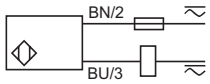
PNP/M12 or M8



NPN/M12 or M8



2-wire 1/2"-20UNF

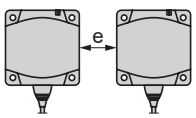


For M8 connector, NO and NC outputs on terminal 4

Setting-up

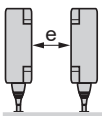
Minimum mounting distances (mm)

Side by side



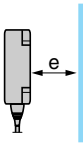
e ⩾	XS8E	XS8C	XS8D
Flush mounted	40	60	200
Not flush mounted	150	125	600

Face to face



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

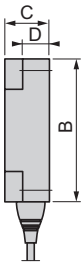
Facing a metal object



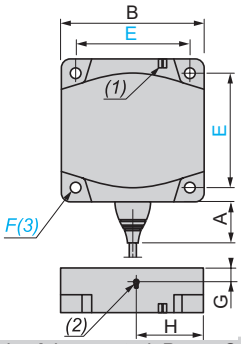
e ⩾	XS8E	XS8C	XS8D
	10	15	40

Dimensions

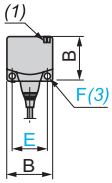
XS8C/D/E



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

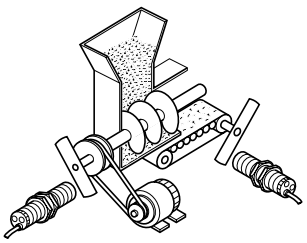
XS range application

Sensors for rotation monitoring, slip detection, shaft overload detection

Cylindrical form

Example:
Coupling breakage monitoring

822138



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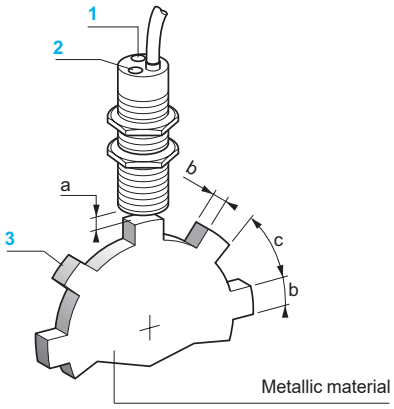


Functions

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.*

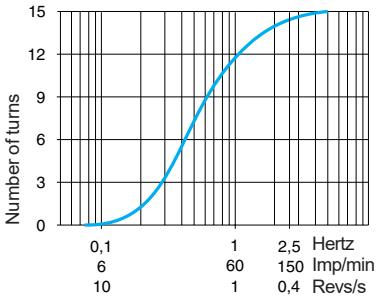
Adjustment of frequency threshold

- 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 (–).

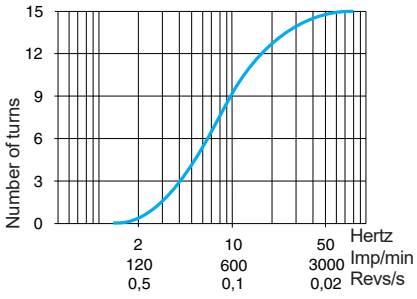
	Diameter of sensor		
	a	b	c
1: Potentiometer			
2: LED			
3: Metal target	M30	4…6 mm	30 mm	60 mm

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

Low speed version (6…150 impulses/minute)



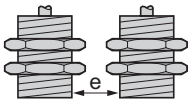
High speed version (120…3000 impulses/minute)



Setting-up

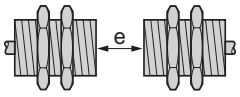
Minimum distances (mm)

Side by side



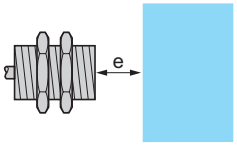
e ≥ 20

Face to face



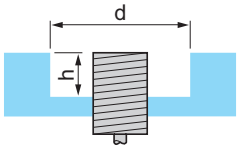
e ≥ 120

Facing a metal object



e ≥ 30

Mounted in a metal support

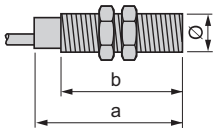


d ≥ 30, h ≥ 0

Fixing nut tightening torque: < 50 N.m/*442.53 lb-in*

Inductive proximity sensors
XS range application
Sensors for rotation monitoring, slip detection, shaft overload detection
Cylindrical form

Flush mountable in metal



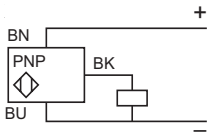
Lengths (mm):
a = Overall
b = Threaded section

a = 81
b = 67
Ø = M30

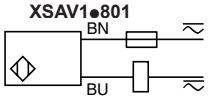
		DC	DC	AC/DC	AC/DC
Nominal sensing distance (Sn)		10 mm	10 mm	10 mm	10 mm
Adjustable frequency range		6…150 impulses/min	120…3000 impulses/min	6…150 impulses/min	120…3000 impulses/min
References					
3-wire ⎓ **PNP / NC**		**XSAV11373**	**XSAV12373**	–	–
2-wire ⎓ **or** ∿ **/ NC**		–	–	**XSAV11801**	**XSAV12801**
Weight (kg)		0.300			
Characteristics					
Product certifications		cULus, CCC, CE, UKCA			
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	**mm**	0…8			
Repeat accuracy	**%**	3 of Sr			
Differential travel	**%**	3…15 of Fr			
Operating temperature	**°C**	- 25…+ 70			
Output state indication		Red LED			
Rated supply voltage	**V**	⎓ 12…48 with protection against reverse polarity		∿ 24…240 (50/60 Hz) or ⎓ 24…210	
Voltage limits (including ripple)	**V**	⎓ 10…58		∿ or ⎓ 20…264	
Insulation class		⧈			
Switching capacity	**mA**	**⩽ 200 with overload and short-circuit protection**		**∿ 5…350 or ⎓ 5…200** *(2)*	
Voltage drop, closed state	**V**	⩽ 1.8		⩽ 5.7	
Residual current, open state	**mA**	–		⩽ 1.5	
Current consumption, no-load	**mA**	⩽ 15		–	
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 ⎓



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 118.
*(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.*

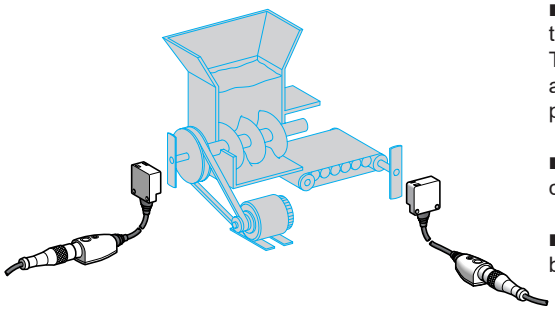
Accessories:
page 118

Inductive proximity sensors

XS range application

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

Operating principle and applications

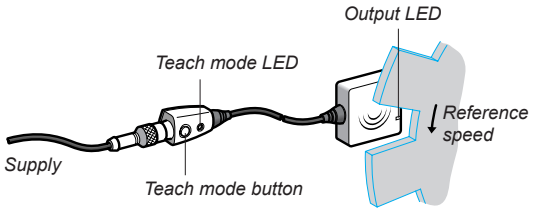


■ These inductive proximity sensors are designed for monitoring rotational speed or the speed of the flow of objects to be protected or monitored.
They operate on the principle of comparing a speed threshold preset by the operator against the instantaneous measurement of the speed of the moving object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

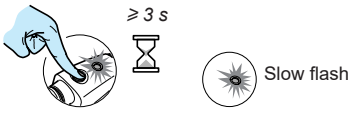
Installation and setting-up

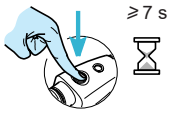


Setting-up and positioning the sensor

■ 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.



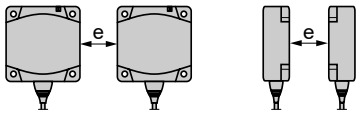


Speed adjustment in teach mode

■ 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

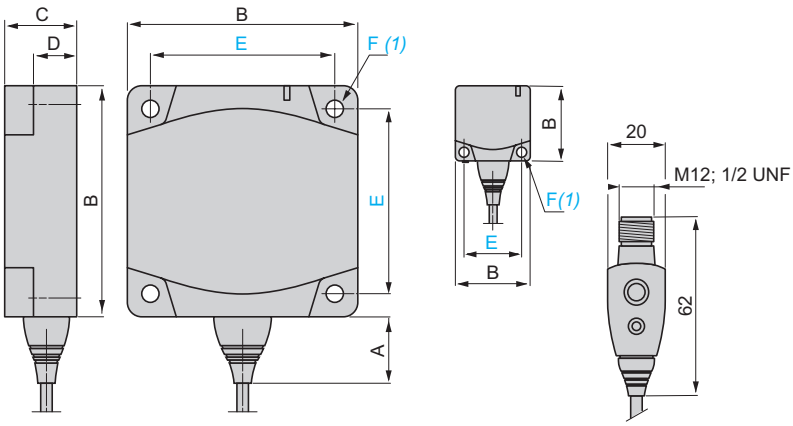
Minimum mounting distances (mm)



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

XS range application

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

Sensor type			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			cULus, CE, UKCA			
Connection			Remote M12 connector on 0.15 m flying lead		Remote 1/2"-20UNF connector on 0.15 m flying lead	
Operating zone		**mm**	**0…8**	**0…12**	**0…8**	**0…12**
Degree of protection	Conforming to IEC 60529		IP 67			
Storage temperature		**°C**	- 40…+ 85			
Operating temperature		**°C**	- 25…+ 70			
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		**V**	⎓ 12…24		∿ or ⎓ 24…240 (50/60 Hz)	
Voltage limits (including ripple)		**V**	⎓ 10…36		∿ or ⎓ 20…264	
Insulation class			⎓: ⧈, ∿:I			
Switching capacity		**mA**	⩽ 100 *(1)*	⩽ 200 *(1)*	∿ or ⎓ 5…100 *(2)*	⎓ 5…200, ∿ 5…300*(2)*
Voltage drop, closed state		**V**	⩽ 2		⩽ 5.5	
Residual current, open state		**mA**	⩽ 100		⩽ 1.5	
Current consumption, no-load		**mA**	⩽ 10		–	
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

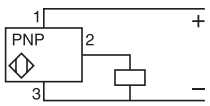
M12

1/2"-20UNF

See connection on page 30210/3.

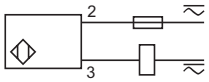
3-wire ⎓

XS9●11RPBL01M12

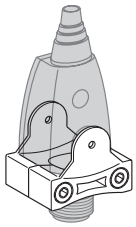


2-wire ∿ or ⎓

XS9●11RMBL01U20



Accessory *(1)*



XSZBPM12

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

(1) For accessories, see page 118.

Inductive proximity sensors

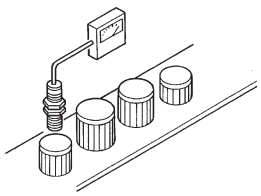
XS range application

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:

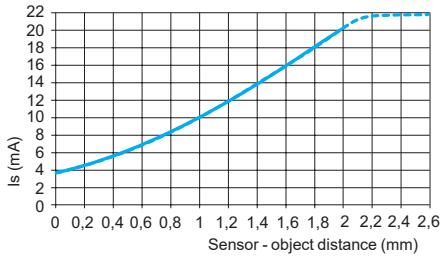
- deformation and displacement monitoring,
- vibration amplitude and frequency monitoring,
- control of dimensional tolerances,
- position control,
- concentricity or eccentricity monitoring.

Operating principle

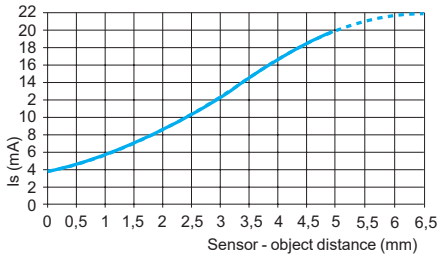
The operating principle of the sensor is that of a damped oscillator. The degree of damping will depend on the distance of an object from the sensing face. The sensor will sense the distance and produce an output current with a value directly proportional to this distance.

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

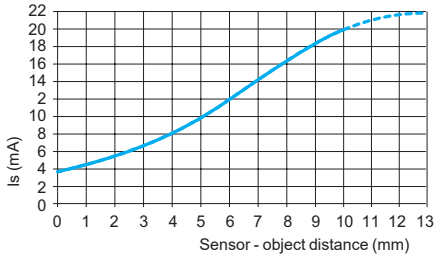
XS1M12AB120
Sn = 0.2…2 mm **Ø 12 mm**



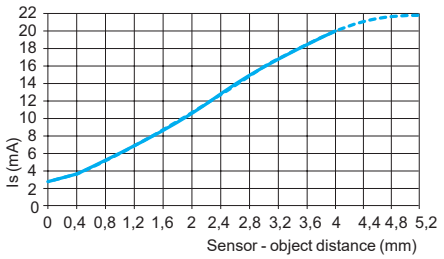
XS1M18AB120
Sn = 0.5…5 mm **Ø 18 mm**



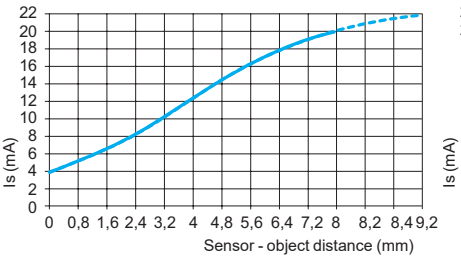
XS1M30AB120
Sn = 1…10 mm **Ø 30 mm**



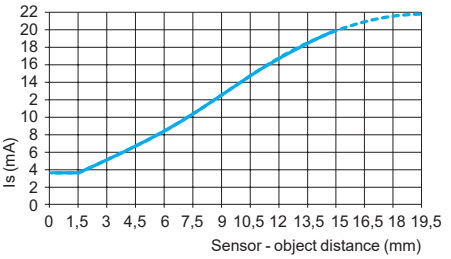
XS4P12AB120
Sn = 0.4…4 mm **Ø 12 mm**



XS4P18AB120
Sn = 0.8…8 mm **Ø 18 mm**

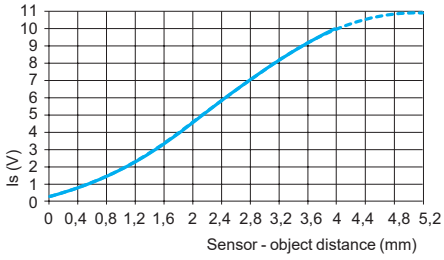


XS4P30AB120
Sn = 1.5…15 mm **Ø 30 mm**

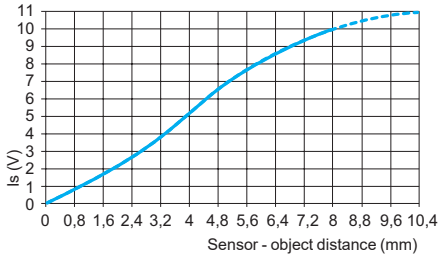


Output curves 0...10 V, 3-wire connection

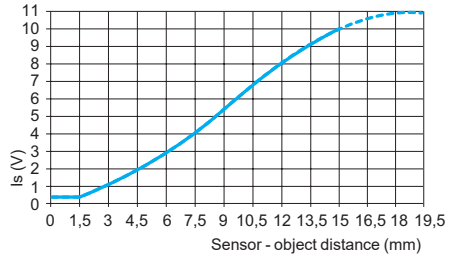
XS4P12AB110
Sn = 0.4…4 mm **Ø 12 mm**



XS4P18AB110
Sn = 0.8…8 mm **Ø 18 mm**

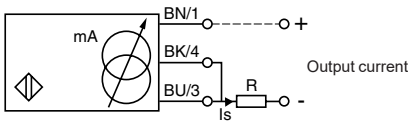


XS4P30AB110
Sn = 1.5…15 mm **Ø 30 mm**



Wiring schemes

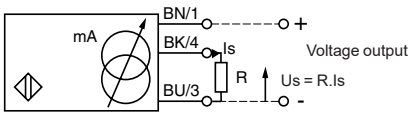
2-wire connection



	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 81 to 83

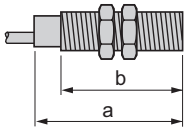
Characteristics:
pages 81 to 83

Inductive proximity sensors

XS range application

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

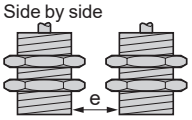
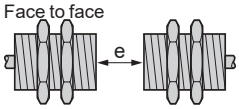
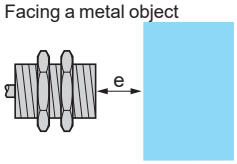
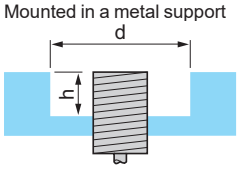
For position, displacement and deformation control/monitoring

Sensor type		Flush mountable in metal	Non-flush mountable in metal	
				
Lengths: a = Overall b = Threaded section	mm	a = 50 b = 42	a = 50 b = 42	a = 54 b = 42
		Metal case	**Plastic case**	**Plastic case**
Nominal sensing distance (Sn)	mm	2	4	4
References				
3-wire ⎓ Output 0…10 V *(2)*		–	–	**XS4P12AB110** *(4)*
2-wire ⎓ Output 4…20 mA *(2)*		**XS1M12AB120** *(3) (4)*	**XS4P12AB120** *(4)*	–
Weight	kg	0.075	0.065	0.065
Characteristics				
Product certifications		cULus, CE, UKCA		
Connection		**Pre-cabled, PvR 3 x 0.34 mm², length 2 m**		
Degree of protection Conforming to IEC 60529		IP 67		
Operating zone	mm	**0.2…2**	**0.4…4**	**0.4…4**
Repeat accuracy	%	± 3		
Linearity error	mA	± 2		± 1 V
Ambient air temperature	°C	For operation: - 25…+ 70		
Rated supply voltage	V	⎓ **12...24**	⎓ **12...24**	⎓ **24…48**
Voltage limits (including ripple)	V	⎓ 10…36	⎓ 10…36	⎓ 15…58
Insulation class		⧈	⧈	⧈
Output current drift	%	⩽ 10 (ambient temperature: - 25…+ 70 °C)		
Current consumption, no-load	mA	4		
Maximum operating rate	Hz	1500		

(1) Voltage range only obtained with a load impedance of 1000 Ω.
(2) Output current range Is, see page 80.
(3) Add D at the end of reference for M12 connector version
(4) For 5 m cable, add L1 at the end of the reference

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

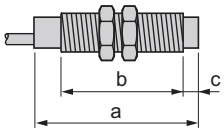
Fixing nut tightening torque	< 6 N.m (metal case), < 2 N.m (plastic case)
Other versions	Please consult our Customer Care Centre.

Accessories: page 118
Functions: page 80

Inductive proximity sensors

XS range application

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

Sensor type		Flush mountable in metal	Non-flush mountable in metal	
				 
Lengths (mm): a = Overall b = Threaded section c = For non-flush mountable sensors	mm	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)	mm	5	8	8

References

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

Characteristics

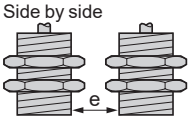
Product certifications		cULus, CE, UKCA		
Connection		**Pre-cabled, PvR 3 x 0.34 mm², length 2 m**		
Degree of protection Conforming to IEC 60529		IP 67		
Operating zone	mm	**0.5…5**	**0.8…8**	**0.8…8**
Repeat accuracy	%	± 3		
Linearity error	mA	± 2		± 1 V
Ambient air temperature	°C	For operation: - 25…+ 70		
Rated supply voltage	V	⎓ **12...24**	⎓ **12...24**	⎓ **24…48**
Voltage limits (including ripple)	V	⎓ 10…36	⎓ 10…36	⎓ 15…58
Insulation class		⧈	⧈	⧈
Output current drift	%	⩽ 10 (ambient temperature: - 25…+ 70 °C)		
Current consumption, no-load	mA	4		
Maximum operating rate	Hz	500		

(1) Voltage range only obtained with a load impedance of 1000 Ω.
(2) Output current range Is, see page 80.
(3) Add D at the end of reference for M12 connector version
(4) For 5 m cable, add L1 at the end of the reference

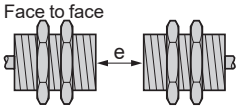
Setting-up

Minimum mounting distances (mm)

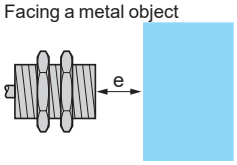
Side by side



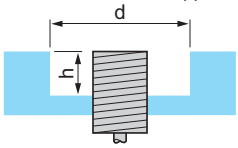
Face to face



Facing a metal object



Mounted in a metal support

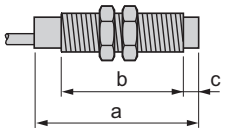


XS1M18AB120 flush mountable	e ⩾ 10	e ⩾ 60	e ⩾ 15	d ⩾ 18, h ⩾ 0
XS4P18AB110 non-flush mountable	e ⩾ 32	e ⩾ 96	e ⩾ 24	d ⩾ 54, h ⩾ 16
XS4P18AB120 non-flush mountable	e ⩾ 32	e ⩾ 96	e ⩾ 24	d ⩾ 54, h ⩾ 16

Fixing nut tightening torque	< 15 N.m (metal case), < 5 N.m (plastic case)
Other versions	Please consult our Customer Care Centre.

Accessories: page 118
Schemes: page 80

Inductive proximity sensors
XS range application
Sensors with analogue output signal 0...10 V *(1)* or 4…20 mA

Sensor type		Flush mountable in metal	Non-flush mountable in metal	
				
Lengths: a = Overall b = Threaded section c = For non-flush mountable sensors	mm	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)	mm	10	15	15

References

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

Characteristics

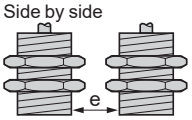
Product certifications		cULus, CE, UKCA		
Connection		**Pre-cabled, PvR 3 x 0.34 mm², length 2 m**		
Degree of protection Conforming to IEC 60529		IP 67		
Operating zone	**mm**	**1…10**	**1.5…15**	**1.5…15**
Repeat accuracy	**%**	± 3		
Linearity error	**mA**	± 2		± 1 V
Ambient air temperature	**°C**	For operation: - 25…+ 70		
Rated supply voltage	**V**	⎓ **12...24**	⎓ **12...24**	⎓ **24…48**
Voltage limits (including ripple)	**V**	⎓ 10…36	⎓ 10…36	⎓ 15…58
Insulation class		⧈	⧈	⧈
Output current drift Ambient temperature: - 25…+ 70 °C	**%**	⩽ 10		
Current consumption, no-load	**mA**	4		
Maximum operating rate	**Hz**	300		

(1) Voltage range only obtained with a load impedance of 1000 Ω.
(2) Output current range Is, see page 80.
(3) Add D at the end of reference for M12 connector version

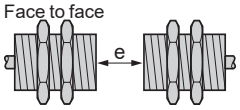
Setting-up

Minimum mounting distances (mm)

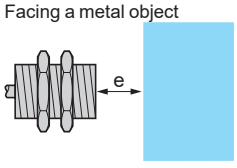
Side by side



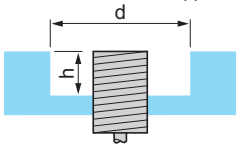
Face to face



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 118
Schemes: page 80

Inductive proximity sensors

XS range 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.

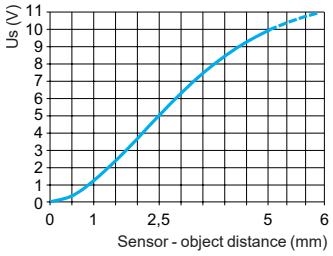
Operating principle

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

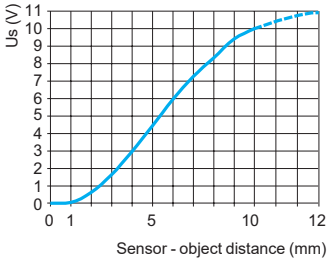
XS9F

Sn = 1…5 mm



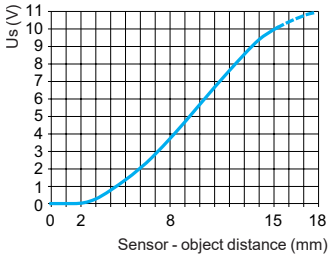
XS9E

Sn = 1…10 mm



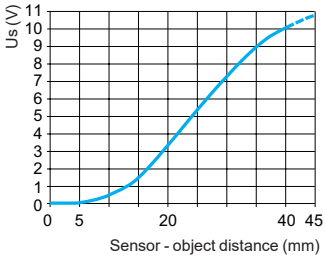
XS9C

Sn = 2…15 mm



XS9D

Sn = 5…40 mm

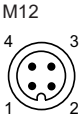


Wiring schemes

Connector

M8

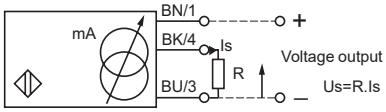
M12



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

XS range application

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

Flush mountable in metal

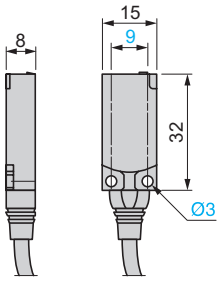
ECOLAB certified

PBT case

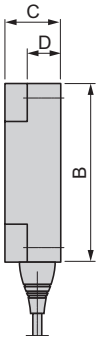
Nominal sensing distance (Sn)		mm	5	10	15	40
References						
3-wire ⎓ 0…10 V	Pre-cabled (L = 2 m) *(2)*		**XS9F111A1L2**	**XS9E111A1L2**	**XS9C111A1L2**	**XS9D111A1L2**
Weight		kg	0.060	0.075	0.095	0.340
Characteristics						
Product certifications			cULus, CE, UKCA	cULus, CE, UKCA, ECOLAB		
Connection	Pre-cabled		PvR 3 x 0.34 mm², length 2 m for **XS9●111A●L2**			
Operating zone		mm	**1…5**	**1…10**	**2…15**	**5…40**
Degree of protection Conforming to IEC 60529	Pre-cabled		IP 68			
Storage temperature		°C	- 40…+ 85			
Operating temperature		°C	- 25…+ 70			
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		V	⎓ 24			
Voltage limits (including ripple)			⎓ 15…36			
Insulation class			⧈			
Repeat accuracy		%	± 3			
Linearity error		V	± 1			
Current consumption, no-load		mA	⩽ 4 with overload and short-circuit protection			
Maximum operating frequency		Hz	2000	1000		100
Output current drift		%	⩽ 10 (throughout the operating temperature range)			

Dimensions

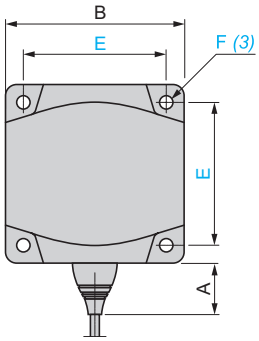
XS9F



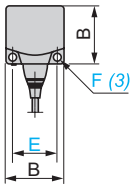
XS9E/C/D



XS9C/D



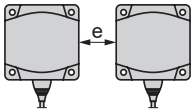
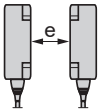
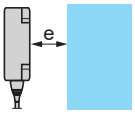
XS9E



(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 118

Inductive proximity sensors

XS range 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.

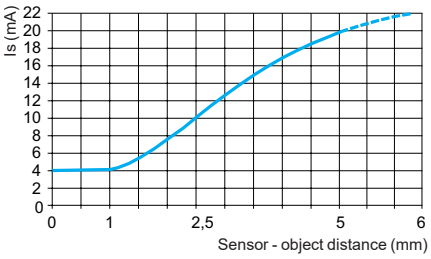
Operating principle

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

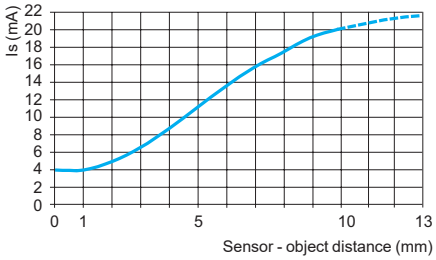
XS9F

Sn = 1…5 mm



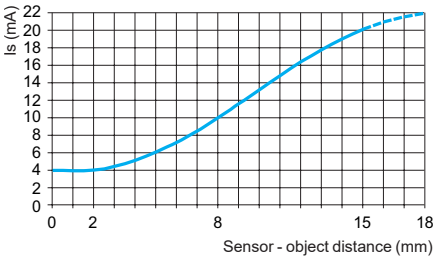
XS9E

Sn = 1…10 mm



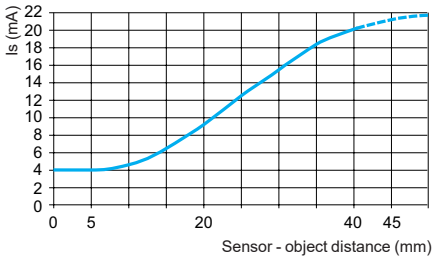
XS9C

Sn = 2…15 mm



XS9D

Sn = 5…40 mm



Wiring schemes

Connector

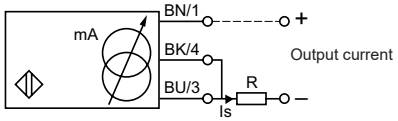
M8

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.*

Accessories:
page 118

Inductive proximity sensors

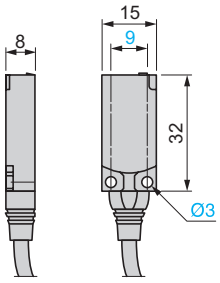
XS range application

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

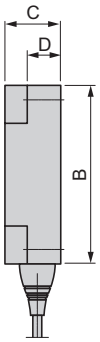
Sensor type			Flush mountable in metal			
			PBT case			
ECOLAB certified						
Nominal sensing distance (Sn)		**mm**	**5**	**10**	**15**	**40**
References						
2-wire ⎓ 4…20 mA	Pre-cabled (L = 2 m) *(1)*		**XS9F111A2L2**	**XS9E111A2L2**	**XS9C111A2L2**	**XS9D111A2L2**
	Connector		**–**	**–**	**–**	**XS9D111A2M12**
Weight	Pre-cabled (L = 2 m)	**kg**	0.060	0.075	0.095	0.340
	Connector	**kg**	**–**	**–**	**–**	0.320
Characteristics						
Product certifications			cULus, CЄ, UKCA	cULus, CЄ, UKCA, ECOLAB		
Connection	Pre-cabled		PvR 3 x 0.34 mm², length 2 m			
	Connector		**–**			M12
Operating zone		**mm**	**1…5**	**1…10**	**2…15**	**5…40**
Degree of protection Conforming to IEC 60529	Pre-cabled		IP 68	IP 68		
	Connector		**–**	IP 67		
Storage temperature		°C	- 40…+ 85			
Operating temperature			- 25…+ 60	- 25…+ 70		
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		**V**	⎓ 12…24			
Voltage limits (including ripple)		**V**	⎓ 10…36			
Insulation class			⧈	⧈	⧈	⧈
Repeat accuracy		**%**	± 3			
Linearity error		**mA**	± 2			
Current consumption, no-load		**mA**	≤ 4 with overload and short-circuit protection			
Maximum operating frequency		**Hz**	2000	1000		100
Output current drift		%	≤ 10 (throughout the operating temperature range)			

Dimensions

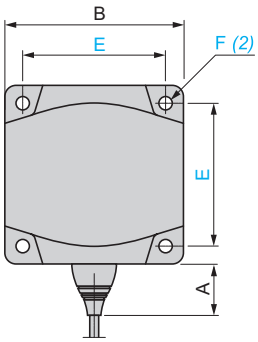
XS9F



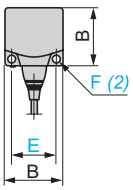
XS9E/C/D



XS9C/D



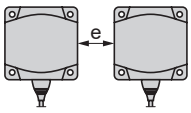
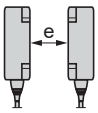
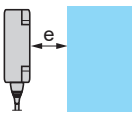
XS9E



(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.*

Inductive proximity sensors

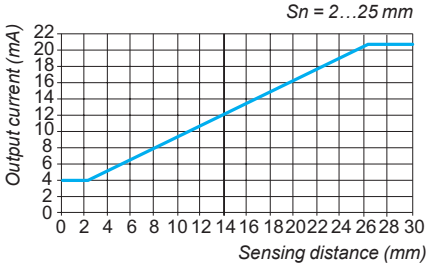
XS range application

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

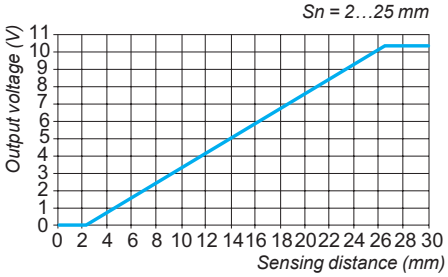
Sensor type			**Non-flush mountable in metal**	
Dimensions		**mm**	**40 x 40 x 70**	**40 x 40 x 117**
				
Nominal sensing distance (Sn)		**mm**	25	
References				
3-wire ⎓	0…10 V output *(1)*		**XS9C2A2A1M12**	**XS9C4A2A1P20** *(2)*
2-wire ⎓	4…20 mA output		**XS9C2A2A2M12**	**XS9C4A2A2P20** *(2)*
			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			cULus, CE, UKCA	
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		**mm**	2…27	
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	**°C**	- 40….+ 85	
	Operation *(3)*		- 25….+ 70	
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	**V**	⎓ 12…24 with protection against reverse polarity	
	0...10 V	**V**	⎓ 24 with protection against reverse polarity	
Voltage limits (including ripple)	4...20 mA	**V**	⎓ 12…36	
	0...10 V	**V**	⎓ 15…36	
Insulation class			⧈	
Current consumption, no-load	3-wire ⎓	**mA**	< 4	
Delays	First-up	**ms**	< 7	
	Response	**ms**	< 6	
	Recovery	**ms**	< 6	

Analogue outputs 4-20 mA and 0-10 V

XS9C2A2A2M12 and **XS9C4A2A2P20**



XS9C2A2A1M12 and **XS9C4A2A1P20**



(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

XS range 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

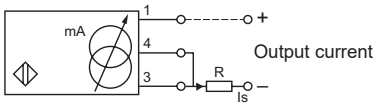
Setting-up precautions

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

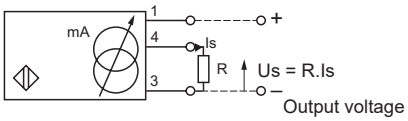
2-wire



	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

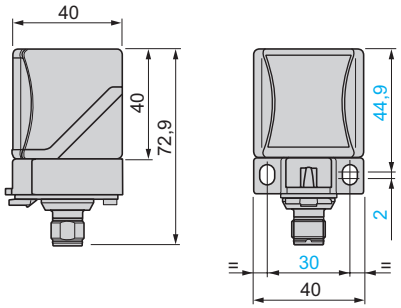


	Output current	Load impedance value	Output voltage	Load impedance value
12 V	0...10 mA	R ≤ 630 Ω	–	–
24 V	0...10 mA	R ≤ 1500 Ω	0...10 V	R = 1000 Ω

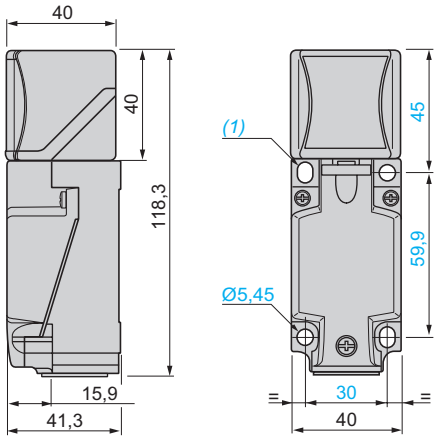
Ensure a minimum of 5 V between the + and the sensor output (terminal 4).

Dimensions

XS9C2A2A1M12 and **XS9C2A2A2M12**



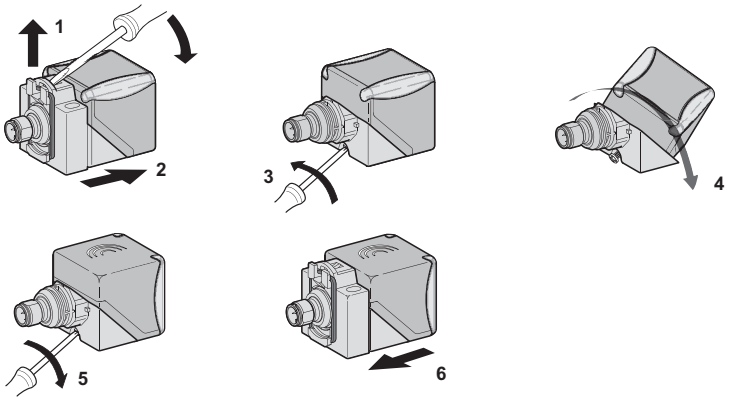
XS9C4A2A1P20 and **XS9C4A2A2P20**



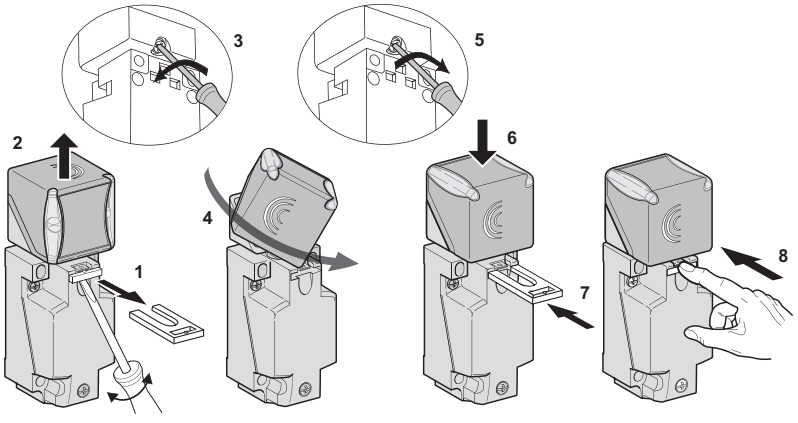
(1) 2 elongated holes Ø 5.3 x 7 mm.
Tightening torque of cover fixing screws and clamp screws: < 1.2 N.m / < 10.62 lb-in

Head positions

XS9C2A2A1M12 and **XS9C2A2A2M12**



XS9C4A2A1P20 and **XS9C4A2A2P20**



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

Inductive proximity sensors

XS range application

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

ECOLAB certified

PF120910

XS912●1PAM12

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

PF120909

XS918●1PAM12

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

PF120803

XS930●1PAM12

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

XS-XT_515_CPODA2016059

XSZBS30

XX_CP19001

XUZA118

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

XZCPA1241L_MAIN

XZCPA1241L●

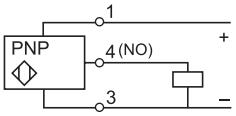
XZCP1151L_MAIN

XZCP1141L●

Wiring schemes

M12 connector

PNP



(1) For further information, please consult our site www.telemecanisquesensors.com.

Inductive proximity sensors

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

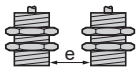
Characteristics

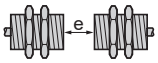
Sensor type	Flush		XS912S1PAM12	XS918S1PAM12	XS930S1PAM12
	Non-flush		XS912S4PAM12	XS918S4PAM12	XS930S4PAM12
Product certifications			cULus, CE, UKCA, ECOLAB		
Connection	Connector		M12		
Operating zone	Flush	mm	0…4.8	0…8	0…16
	Non-flush	mm	0…8	0…16	0…32
Differential travel		%	1…15 (real sensing distance 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 IEC 62262		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		
Insulation class			⧈		
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		

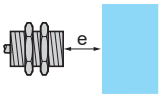
Setting-up

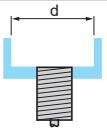
Minimum mounting distances in mm, flush version

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



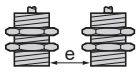


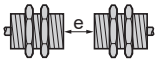


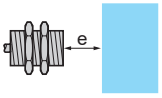


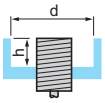
Minimum mounting distances in mm, non-flush version

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

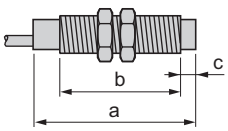








Dimensions



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

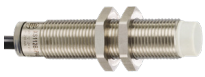
Flush mounted

	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

(1) No detection.

Inductive proximity sensors
XS range application
Food and beverage processing series
Cylindrical, stainless steel, non-flush mountable
Three-wire DC, solid-state output

105647

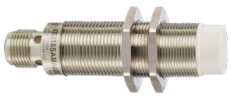


XS2●●SA●●L2

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)*	**XS212SAPAL2**	0.075
			M12 connector	**XS212SAPAM12**	0.035
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS212SANAL2**	0.075
			M12 connector	**XS212SANAM12**	0.035

105650

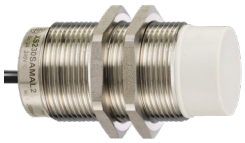


XS2●●SA●●M12

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)*	**XS218SAPAL2**	0.120
			M12 connector	**XS218SAPAM12**	0.060
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS218SANAL2**	0.120
			M12 connector	**XS218SANAM12**	0.060

DF523365



XS230SA●●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)*	**XS230SAPAL2**	0.205
			M12 connector	**XS230SAPAM12**	0.145
		NPN	Pre-cabled (L = 2 m) *(1)*	**XS230SANAL2**	0.205
			M12 connector	**XS230SANAM12**	0.145

XS-XT_515_CPODA2016059

XSZBS●●

XX_CP19001

XUZA118

Accessories *(2)*

Description	For use with	Reference	Weight kg
Stainless steel fixing bracket	Ø 12 sensor	**XSZBS12**	0.060
	Ø 18 sensor	**XUZA118**	0.045
	Ø 30 sensor	**XSZBS30**	0.080

XZCPA1241L_MAIN

XZCPA1241L●

XZCP1151L_MAIN

XZCP1141L●

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 118.

Inductive proximity sensors

XS range application
Food and beverage processing series
Cylindrical, stainless steel, non-flush mountable
Three-wire DC, solid-state output

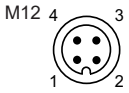
Characteristics

Sensor type			XS2●●SA●●M12	XS2●●SA●●L2
Product certifications/approvals			cULus, CE, UKCA	
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
	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	
Insulation class			⧈	⧈
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

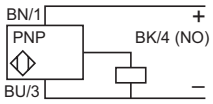
Connector



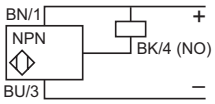
Pre-cabled

BU: Blue
BN: Brown
BK: Black

PNP

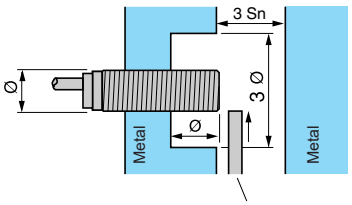


NPN

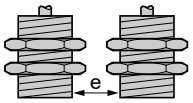


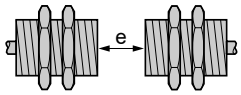
See connection on page 30210/3

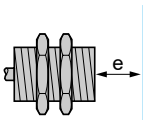
Setting-up



Minimum mounting distances (mm)



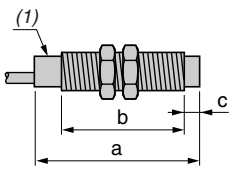




	Side by side	Face to face	Facing a metal object
Ø 12	e ≥ 48	e ≥ 84	e ≥ 21
Ø 18	e ≥ 72	e ≥ 144	e ≥ 36
Ø 30	e ≥ 120	e ≥ 264	e ≥ 66

Dimensions

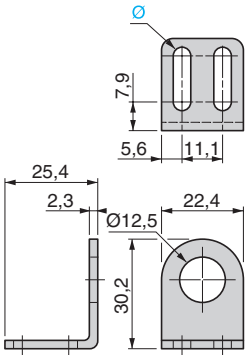
XS2



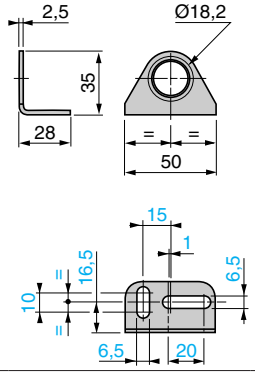
(1) LED

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

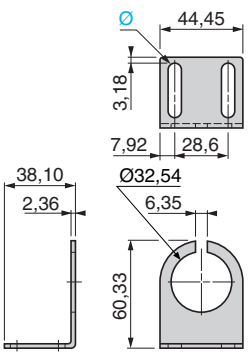
XSZBS12



XUZA118



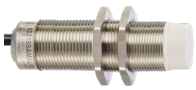
XSZBS30



Ø: 2 elongated holes Ø 4.8 x 12.7

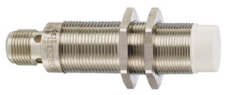
Inductive proximity sensors
XS range application
Food and beverage processing series
Cylindrical, stainless steel, non-flush mountable
Two-wire AC or DC

105649



XS218SAM●L2

105650

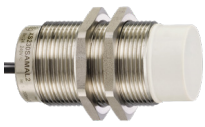


XS218SAMAU20

Ø 18, threaded M18 x 1

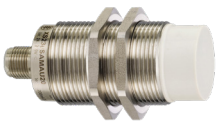
Sensing distance (Sn) mm	Function	Connection	Reference	Weight kg
12	NO	Pre-cabled (L = 2 m) *(1)*	**XS218SAMAL2**	0.120
		1/2"-20UNF connector	**XS218SAMAU20**	0.060

105653



XS230SAM●L2

105654



XS230SAM●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)*	**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

XS-XT_515_CPODA2016059

XSZBS30

XX_CP19001

XUZA118

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

XS range 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			cULus, CE, UKCA	
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
	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	
Insulation class			I	I
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

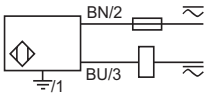
AC/DC: 2
⏚ : 1
AC/DC: 3

Pre-cabled

BU: Blue
BN: Brown

2-wire ∼ or ⎓

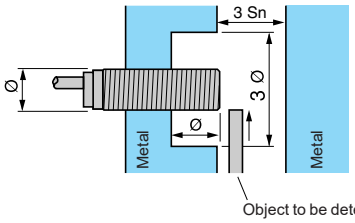
NO output

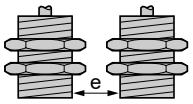


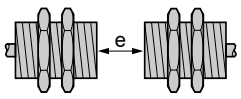
⏚: on connector models only

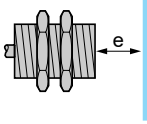
Setting-up

Minimum mounting distances (mm)





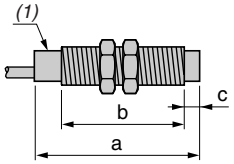




	Side by side	Face to face	Facing a metal object
Ø 18	e ⩾ 72	e ⩾ 144	e ⩾ 36
Ø 30	e ⩾ 120	e ⩾ 264	e ⩾ 66

Dimensions

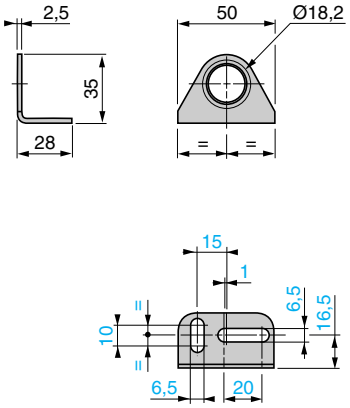
XS2



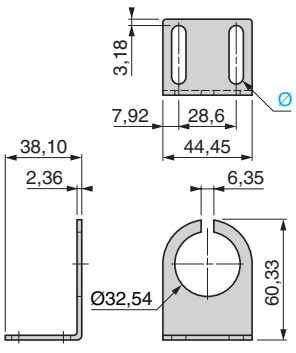
(1) LED

XS2	Pre-cabled (mm) a	Pre-cabled (mm) b	Connector (mm) a	Connector (mm) b	Connector (mm) 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
XS range application
Food and beverage processing series
Cylindrical, plastic, non-flush mountable
Three-wire DC, solid-state output

105966

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

103201

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

105968

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

XS_515_CPFJR16004

XSZB1●●

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

XZCPA1241L_MAIN

XZCPA1241L●

XZCP1151L_MAIN

XZCP1141L●

*(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 118.

Inductive proximity sensors
XS range 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			cULus, CE, UKCA	
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
	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	
Insulation class			⧈	⧈
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

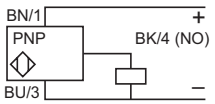
M12

See connection on page 30210/3.

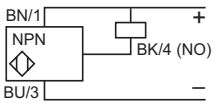
Pre-cabled

BU: Blue
BN: Brown
BK: Black

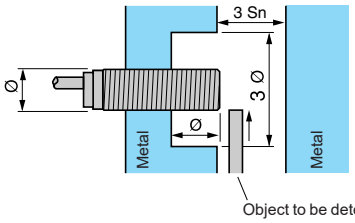
PNP



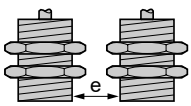
NPN

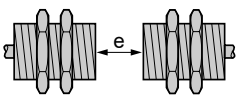


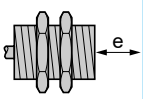
Setting-up



Minimum mounting distances (mm)

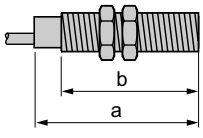






	Side by side	Face to face	Facing a metal object
Ø 12	e ⩾ 48	e ⩾ 84	e ⩾ 21
Ø 18	e ⩾ 72	e ⩾ 144	e ⩾ 36
Ø 30	e ⩾ 120	e ⩾ 264	e ⩾ 66

Dimensions



XS2

XS2	Pre-cabled (mm)		Connector (mm)	
	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
XS range application
Food and beverage processing series
Cylindrical, plastic, non-flush mountable
Two-wire AC or DC

105956

XS2●●AAM●L2

Ø 18, threaded M18 x 1

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

103201

XS2●●AAM●U20

Ø 30, threaded M30 x 1.5

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

105958

XS230AAM●L2

XS_515_CPFJR16004

XSZB1●●

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 118.

Inductive proximity sensors
XS range 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			cULus, CE, UKCA	
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
	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	
Insulation class			I	I
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: 2
3: 3

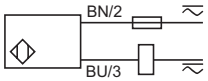
See connection on page 30210/3.

Pre-cabled

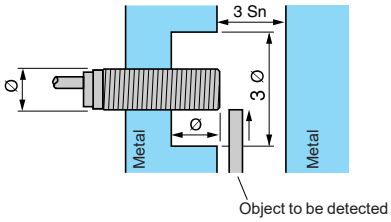
BU: Blue
BN: Brown

2-wire ∼ or ⎓

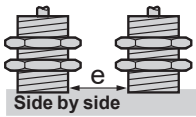
NO output

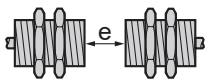


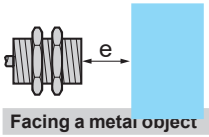
Setting-up



Minimum mounting distances (mm)





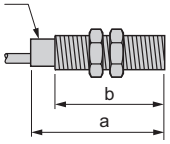


	Side by side	Face to face	Facing a metal object
Ø 18	e ≥ 72	e ≥ 144	e ≥ 36
Ø 30	e ≥ 120	e ≥ 264	e ≥ 66

Dimensions

XS2

(1)



(1) LED

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

Inductive proximity sensors

XS range application

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

PF120800C

XS908●1PAM12

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

PF120808

XS912●1PAM12

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

PF120809

XS918●1PAM12

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

PF120803

XS930●1PAM12

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

XZCPA1241L_MAIN

XZCPA1241L●

XZCP1151L_MAIN

XZCP1141L●

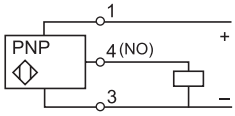
Connecting cables (PUR) *(1)*

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 our site www.telemecanisquesensors.com.

Inductive proximity sensors

XS range application

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

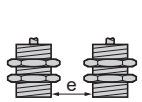
Characteristics

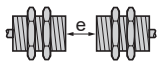
Sensor type	Flush		XS908R1PAM12	XS912R1PAM12	XS918R1PAM12	XS930R1PAM12
	Non-flush		XS908R4PAM12	XS912R4PAM12	XS918R4PAM12	XS930R4PAM12
Product certifications			cULus, CE, UKCA			
Connection	Connector		M12			
Operating zone	Flush	mm	0…2.4	0…4.8	0…8	0…16
	Non-flush	mm	0…4.8	0…8	0…16	0…32
Differential travel		%	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 IEC 62262		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			
Insulation class			⧈	⧈	⧈	⧈
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		

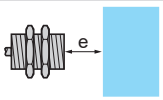
Setting-up

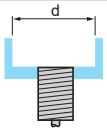
Minimum mounting distances in mm, flush version

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	



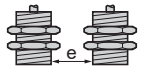


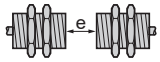


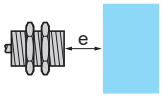


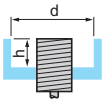
Minimum mounting distances in mm, non-flush version

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

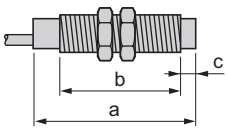








Dimensions



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

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

(1) No detection.

Inductive proximity sensors

XS range application

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

Sensor type	**Flush mountable in metal**

Dimensions		**mm**	80 x 80 x 40
Nominal sensing distance (Sn)		**mm**	50 (not flush mounted: 42)
Reference			
2-wire ⎓ (non polarised)	NO		**XS7D1A3CAM12DIN**
Weight		**kg**	0.374
Characteristics			
Product certifications			CE, UKCA
Degree of protection	Conforming to IEC 60529		IP 67
Temperature	Operating	**°C**	- 25…+ 70
	Storage	**°C**	- 40…+ 85
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		**mm**	**0…40 (not flush mounted: 0…35)**
Repeat accuracy		**%**	3 of Sr
Differential travel		**%**	1…15 of Sr
Output state indication			Yellow LED
Rated supply voltage		**V**	⎓ **12…48 with protection against reverse polarity**
Voltage limits (including ripple)		**V**	⎓ 10…58
Insulation class			⧈
Residual current, open state		**mA**	≤ 0.5
Switching capacity		**mA**	**1.5…300 with overload and short-circuit protection**
Voltage drop, closed state		**V**	≤ 4.5
Maximum switching frequency		**Hz**	100
Delays	First-up	**ms**	≤ 10
	Response	**ms**	≤ 2
	Recovery	**ms**	≤ 5

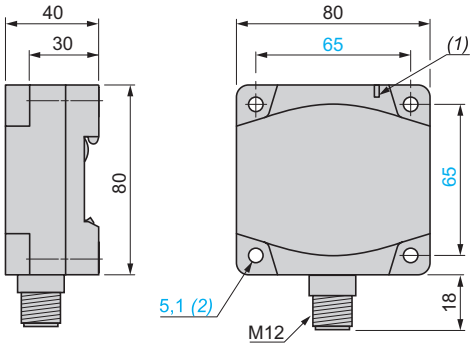
Inductive proximity sensors

XS range application

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

Dimensions

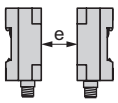
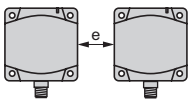
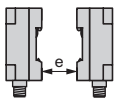
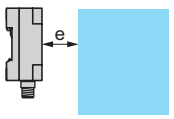
XS7D1A3CAM12DIN



(1) Output LED
(2) For CHC type screws

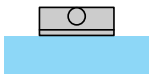
Setting-up

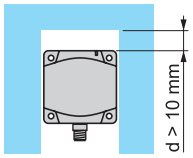
Minimum mounting distances (mm)

	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

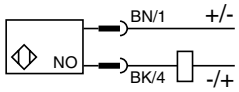




Sn	Su	Sn	Su
42 mm	35 mm	50 mm	40 mm

Wiring schemes

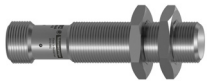
2-wire NO/M12 XS7D1A3CAM12DIN



Inductive proximity sensors

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

PF120808



XS912RWPAM12

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

PF120809

XS918RWPAM12

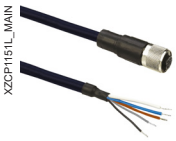
Ø 18 mm, threaded M18 x 1

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

XZCPA1241L_MAIN

XZCPA1241L●

XZCP1151L_MAIN



XZCP1141L●

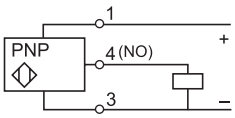
Connecting cables (PUR) *(1)*

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 our site www.telemecanisquesensors.com.

Inductive proximity sensors

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

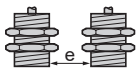
Characteristics

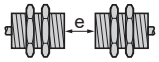
Sensor type	Flush		XS912RWPAM12	XS918RWPAM12
Product certifications			cULus, CE, UKCA	
Connection	Connector		M12	
Operating zone		**mm**	0…4.8	0…8
Differential travel		**%**	1…15 (real sensing distance Sr)	
Degree of protection	Conforming to IEC 60529		IP 68 (5 meters underwater for 1 month)	
	Conforming 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 IEC 62262		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	
Insultation class			⧈	
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	

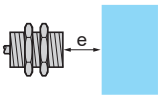
Setting-up

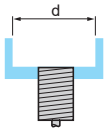
Minimum mounting distances in mm, flush version

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

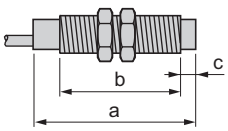








Dimensions



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

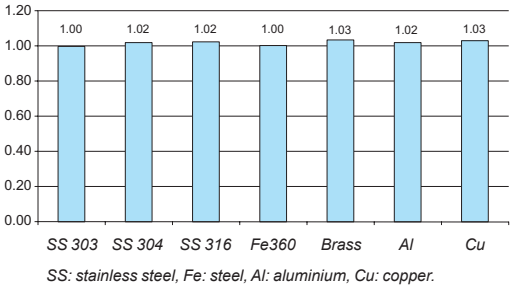
XS range application

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 type			**Flush mountable in metal**	
Dimensions		**mm**	**40 x 40 x 70**	**40 x 40 x 117**
				
Nominal sensing distance (Sn)		**mm**	20	
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			cULus, CE, UKCA	
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		**mm**	0…16	
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	**°C**	- 40….+ 85	
	Operation *(2)*	**°C**	- 25….+ 70	
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 ⎓	**V**	⎓ 12…24 with protection against reverse polarity	
Voltage limits (including ripple)	4-wire ⎓	**V**	⎓ 10…36	
Insulation class			⧈	⧈
Current consumption, no-load	4-wire ⎓	**mA**	< 30	
Switching capacity	4-wire ⎓	**mA**	< 200 with protection against overload and short-circuit	
Voltage drop, closed state	4-wire ⎓	**V**	< 2	
Maximum switching frequency	4-wire ⎓	**Hz**	250	
Delays	First-up	**ms**	< 15	
	Response	**ms**	< 2.5	
	Recovery	**ms**	< 2.5	

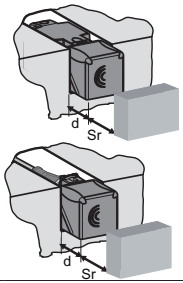
Setting-up

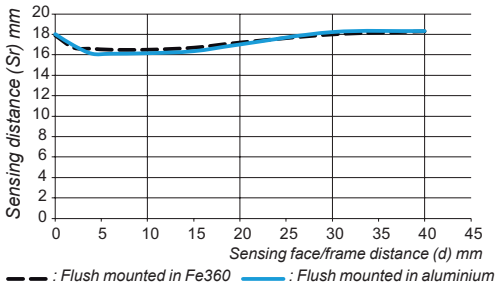
Sensing distance correction factor



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

XS range 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)

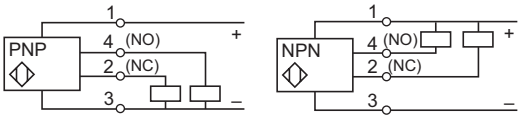
	Side by side	Face to face	Facing a metal object
Sensors flush mountable in metal	e ⩾ 80	e ⩾ 200	e ⩾ 60

Wiring schemes

M12 connector

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

4-wire ⎓, NO + NC outputs



Accessories

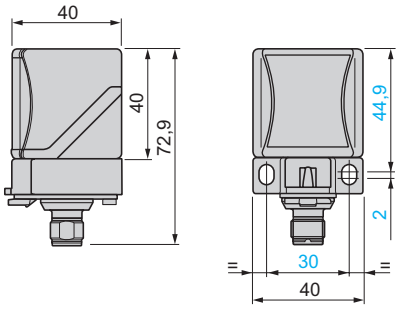
XSZPSC2

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

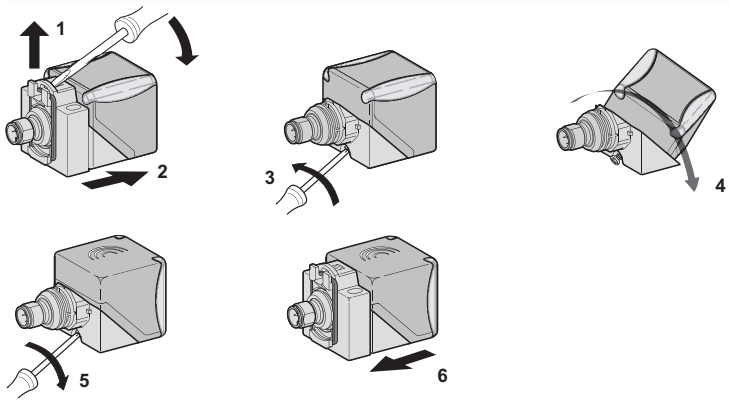
Dimensions

XS9C2A1PCM12 and **XS9C2A1NCM12**

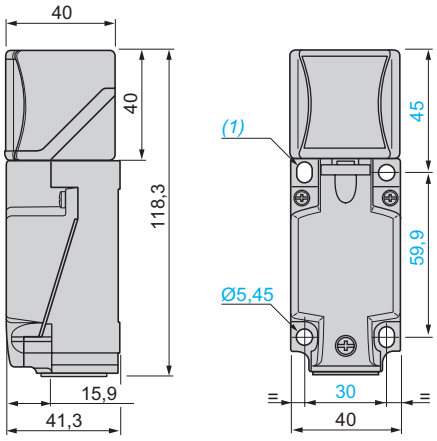


Head positions

XS9C2A1PCM12 and **XS9C2A1NCM12**

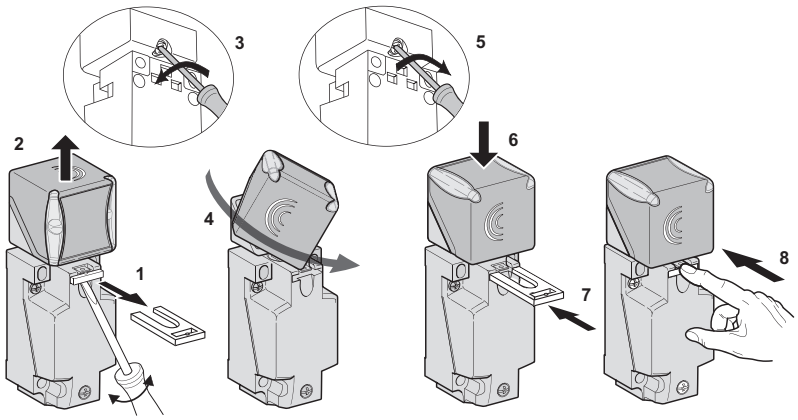


XS9C4A1PCP20 and **XS9C4A1NCP20**



(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.

XS9C4A1PCP20 and **XS9C4A1NCP20**



Inductive proximity sensors
XS range application
Selective detection of ferrous and non-ferrous materials
Cylindrical type, solid-state output

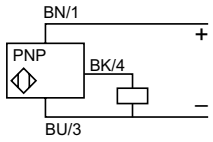
Sensor type	**Flush mountable**
	Stainless steel case

Nominal sensing distance (Sn)			**mm**	5
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				cULus, CE, UKCA
Connection				M12 connector
Degree of protection conforming to IEC 60529				IP 67
Operating zone			**mm**	**0…4**
Operating temperature			**°C**	- 25…+ 70
Output state indication				Yellow LED, 4 viewing ports at 90°
Rated supply voltage			**V**	⎓ 12…24 with protection against reverse polarity
Voltage limits (including ripple)			**V**	⎓ 10…38
Insulation class				⧈
Switching capacity				0…200 mA with overload and short-circuit protection
Voltage drop, closed state			**V**	≤ 2.6
Residual current, open state				–
Current consumption, no-load			**mA**	≤ 15
Maximum switching frequency			**Hz**	1000
Delays	First-up		**ms**	≤ 10
	Response		**ms**	≤ 0.3
	Recovery		**ms**	≤ 0.7

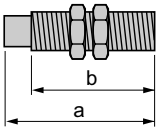
Accessories:
page 118

Inductive proximity sensors
XS range application
Selective detection of ferrous and non-ferrous materials
Cylindrical type, solid-state output

Wiring schemes
M12 connector | **3-wire ⎓ PNP**

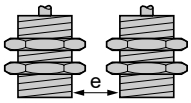


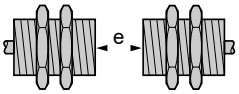
Dimensions
XS1M

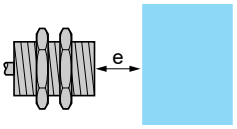


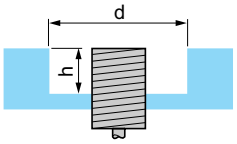
a (mm)	b (mm)
70	51.5

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:
page 118

Inductive proximity sensors

XS range, Fail Safe

Cylindrical, metal, flush mountable

Standard sensing distance

Four-wire DC, solid-state NO + NC output, SIL2, PLd, cat 2

103172

XS512BSPD●●

103174

XS518BSPD●●

103177

XS530BSPD●●

XS_515_CPFJR16004

XSZB1●●

Sensors, 4-wire, brass case, flush mountable

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight kg
Ø 12, threaded M12 x 1					
2	NO + NC	PNP	Pre-cabled (L = 2 m)	**XS512BSPDL2**	0.070
			M12 connector	**XS512BSPDM12**	0.020
Ø 18, threaded M18 x 1					
5	NO + NC	PNP	Pre-cabled (L = 2 m)	**XS518BSPDL2**	0.100
			M12 connector	**XS518BSPDM12**	0.040
Ø 30, threaded M30 x 1.5					
10	NO + NC	PNP	Pre-cabled (L = 2 m)	**XS530BSPDL2**	0.160
			M12 connector	**XS530BSPDM12**	0.100

Accessories

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

Inductive proximity sensors

XS range, Fail Safe
Cylindrical, metal, flush mountable
Standard sensing distance
Four-wire DC, solid-state NO + NC output, SIL2, PLd, cat 2

Characteristics

Sensor type			XS5●●BSPDM12	XS5●●BSPDL2
Product certifications			cULus, CE, UKCA, E2	cULus, CE, UKCA, E2
Conformity to safety standards	Ø 12, Ø 18 and Ø 30		IEC 60947-5-2 IEC 60947-5-3 EN/IEC 61508: SIL 2 EN/ISO 13849-1: PL =d IEC 62061: SILcl2	
Reliability data	Ø 12, Ø 18 and Ø 30		MTTFd = 2422 years, PFHd = 47.1 10^{-9} 1/h, SFF > 98.9 %, DC > 96 % (with a safety controller)	
Connection			M12 connector	Pre-cabled, length: 2m
Operating zone (Sao/Sar)	Ø 12 flush mountable	**mm**	**0.4...1.6/2.8**	
	Ø 18 flush mountable	**mm**	**1.5...4/7**	
	Ø 30 flush mountable	**mm**	**4.9...8.1/13.9**	
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
	Conforming to DIN 40050		IP 69K	
Storage temperature		**°C**	- 40…+ 85	
Operating temperature		**°C**	- 40…+ 70	
Materials	Case/Sensing face		Nickel plated brass/PPS	
	Cable			PVC 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°	
Rated supply voltage		**V**	⎓ 12…24 with protection against reverse polarity	
Voltage limits (including ripple)		**V**	⎓ 10…36	⎓ 10…36
Insulation class			⧈	⧈
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**	85	
	Ø 18	**Hz**	85	
	Ø 30	**Hz**	85	
Delays	First-up	**ms**	⩽ 10	
	Response	**ms**	⩽ 5.7	
	Recovery	**ms**	⩽ 5.7	

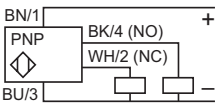
Wiring schemes

M12 connector

Pre-cabled

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

PNP 4-wire

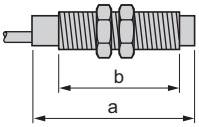


Setting-up

Minimum mounting distances (mm)

Sensor		Side by side	Face to face	Facing a metal object	Mounted in a metal support
Ø 12 flush mountable	**XS512**	e ⩾ 4 e ⩾ 10 e ⩾ 20	e ⩾ 24 e ⩾ 60 e ⩾ 120	e ⩾ 6 e ⩾ 15 e ⩾ 30	d ⩾ 12 h ⩾ 0 d ⩾ 18 h ⩾ 0 d ⩾ 30 h ⩾ 0
Ø 18 flush mountable	**XS518**				
Ø 30 flush mountable	**XS530**				

Dimensions



Flush mountable in metal

Sensor		Pre-cabled (mm)		M12 connector (mm)	
		a	b	a	b
Ø 12 brass	**XS512**	37	25	50	31
Ø 18 brass	**XS518**	41	29	51	28
Ø 30 brass	**XS530**	45	33	54	33

Inductive proximity sensors
XS range, Fail Safe
Cylindrical, metal, flush mountable
Increased range
Four-wire DC, solid-state NO + NC output, SIL2, PLd, cat 2

103947

XS112B3PD●●

PF150203

XS118B3PD●●

XS_515_CPF_JR16004

XSZB1●●

Sensors, 4-wire ⎓ 12...24 V, short case model

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)	**XS112B3PDL2**	0.070
			M12 connector	**XS112B3PDM12**	0.020
Ø 18, threaded M18 x 1					
8	NO + NC	PNP	Pre-cabled (L = 2 m)	**XS118B3PDL2**	0.100
			M12 connector	**XS118B3PDM12**	0.040
Ø 30, threaded M30 x 1.5					
15	NO + NC	PNP	Pre-cabled (L = 2 m)	**XS130B3PDL2**	0.160
			M12 connector	**XS130B3PDM12**	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 118.

Inductive proximity sensors

XS range, Fail Safe

Cylindrical, metal, flush mountable

Increased range

Four-wire DC, solid-state NO + NC output, SIL2, PLd, cat 2

Characteristics

Sensor type			XS1●●B3PDM12	XS1●●B3PDL2
Product certifications	Ø 12, 18 and 30		cULus, CE, UKCA, E2	
Conformity to safety standards	Ø 12, Ø 18 and Ø 30		IEC 60947-5-2 IEC 60947-5-3 EN/IEC 61508: SIL 2 EN/ISO 13849-1: PL =d IEC 62061: SILcl2	
Reliability data	Ø 12, Ø 18 and Ø 30		MTTFd = 2422 years, PFHd = 47.1 10^{-9} 1/h, SFF > 98.9 %, DC > 96 % (with a safety controller)	
Connection			M12 connector	Pre-cabled, length 2 m
Operating zone (Sao/Sar)	Ø 12	**mm**	**1.2…3.2/5.6**	
	Ø 18	**mm**	**3…6.5/11.1**	
	Ø 30	**mm**	**5.8…12.2/20.9**	
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
	Conforming to DIN 40050		IP 69K	–
Storage temperature		**°C**	- 40…+ 85	
Operating temperature		**°C**	- 40…+ 70	
Materials	Case		Nickel plated brass	
	Sensing face		PPS	
	Cable		–	PVC 4 x 0.22 mm^2
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	
Insulation class			III	⧈
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**	85	
	Ø 18	**Hz**	85	
	Ø 30	**Hz**	85	
Delays	First-up	**ms**	⩽ 10	
	Response	**ms**	⩽ 5.7	
	Recovery	**ms**	⩽ 5.7	

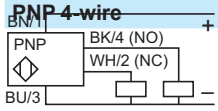
Wiring schemes

M12 connector

Pre-cabled

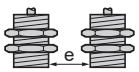
BU: Blue
BN: Brown
BK: Black
WH: White

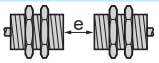
PNP 4-wire

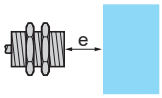


Setting-up

Minimum mounting distances (mm)

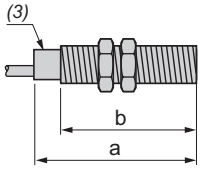






Sensors	Side by side	Face to face	Facing a metal object
Ø 12	e ⩾ 8	e ⩾ 50	e ⩾ 12
Ø 18	e ⩾ 16	e ⩾ 100	e ⩾ 25
Ø 30	e ⩾ 30	e ⩾ 180	e ⩾ 45

Dimensions



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

(3) LED.

Inductive proximity sensors

XS range, Fail Safe

Cubic case, 40 x 40 x 70 mm, M12 connector
5-position turret head
Four-wire DC, solid-state NO + NC output, SIL2, PLd, cat 2

Sensor type				Flush mountable in metal	Non-flush mountable in metal
					
Nominal sensing distance (Sn)			**mm**	20	40
References					
4-wire ⎓	PNP	NO+NC		**XS8C2A1PCM12**	**XS8C2A4PCM12**
Weight			**kg**	0.149	0.149
Characteristics					
Operating zone (Sao/Sar)			**mm**	8.3…16.2/27.8	18.4…32.4/55.7
Product certifications				cULus, CE, UKCA, TÜV (4-wire), E2 (3-wire and 4-wire)	
Conformity to standards				IEC 60947-5-2 IEC 60947-5-3	
Conformity to safety standards *(1)*				EN 62061 (2005): SILcl2 EN 61508 (2010): SIL 2, EN ISO 13849 (2008): PL d	
Reliability data *(1)*				MTTFd = 2422 years, PFHd = 7.4 10^{-8} 1/h, SFF > 98.9 %, DC > 96 % (with a safety controller)	
Connection				M12 connector	
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		**°C**	- 40….+ 85	
	Operation *(3)*		**°C**	- 40….+ 70	
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	
Rated supply voltage	4-wire ⎓		**V**	12…48 with protection against reverse polarity	
Voltage limits (including ripple)	4-wire ⎓		**V**	10…58	
Insulation class				⧈	
Current consumption, no-load	4-wire ⎓		**mA**	< 15	
Switching capacity	4-wire ⎓		**mA**	< 200 with overload and short-circuit protection	
Voltage drop, closed state	4-wire ⎓		**V**	< 2	
Maximum switching frequency			**Hz**	Flush mountable: ⎓ 40 Non-flush mountable: ⎓ 30	
Delays	First-up		**ms**	Flush mountable: ≤ 12. Non-flush mountable: ≤ 14	
	Response		**ms**	Flush mountable: ≤ 10. Non-flush mountable: ≤ 12.5	
	Recovery		**ms**	Flush mountable: ≤ 10. Non-flush mountable: ≤ 12.5	

(1) SIL 2 protection can only be obtained by connecting both outputs to a safety PLC. Please consult our website: www.telemecaniquesensors.com .

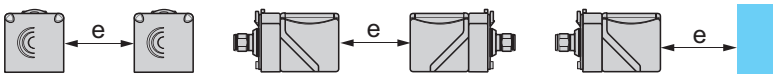
Inductive proximity sensors

XS range, Fail Safe

Cubic case, 40 x 40 x 70 mm, M12 connector
5-position turret head
Four-wire DC, solid-state NO + NC output, SIL2, PLd, cat 2

Setting-up precautions

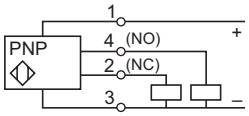
Minimum mounting distances (mm)



		Side by side	Face to face	Facing a metal object
Sensors flush mountable in metal	**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



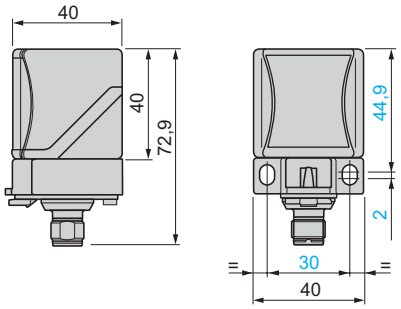
M12 connector

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

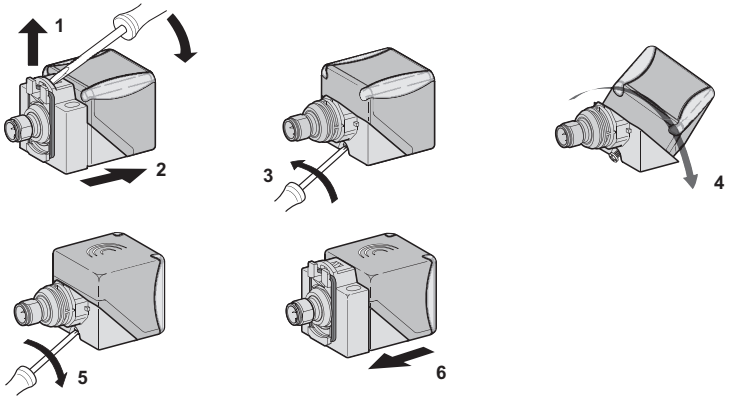
Accessory references

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

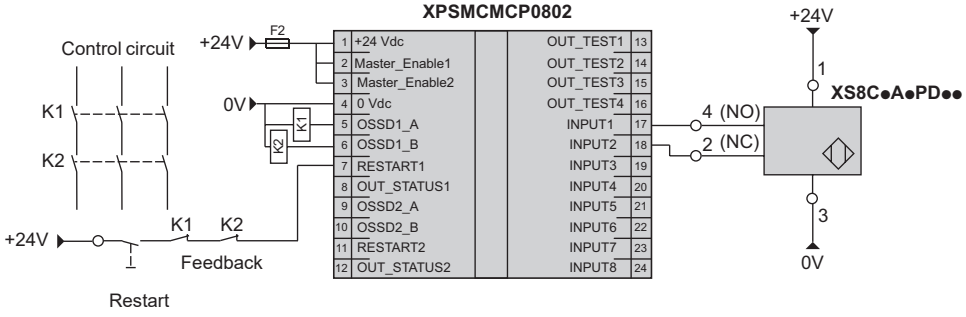
Dimensions



Head positions



Example SIL 2 wiring scheme (with XPSMC safety PLC)



SFF (Safe Failure Fraction): 98,9 %
DC (Diagnosis Coverage): 96 %

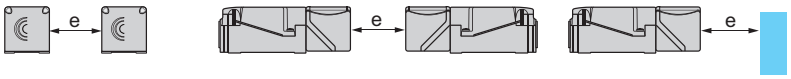
Inductive proximity sensors
XS range, Fail Safe
Plastic case, 40 x 40 x 117 mm, plug-in

Sensor type				Flush mountable in metal	Non-flush mountable in metal
					
Nominal sensing distance (Sn)			**mm**	20	40
References					
4-wire ⎓	PNP	NO+NC		**XS8C4A1PCP20**	**XS8C4A4PCP20**
Weight			**kg**	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 (Sao/Sar)			**mm**	8.3…16.2/27.8	18.4…32.4/55.7
Product certifications				cULus, CE, UKCA, TÜV, E2	
Conformity to standards				IEC 60947-5-2 IEC 60947-5-3	
Conformity to safety standards *(1)*				EN 62061 (2005): SILcl2, EN 61508 (2010): SIL 2, EN ISO 13849 (2008): PL d	
Reliability data *(1)*				MTTFd = 2422 years, PFHd = 7.4 10^{-8} 1/h, SFF > 98.9 %, DC > 96 % (with a safety controller)	
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		**°C**	- 40….+ 85	
	Operation		**°C**	- 40….+ 70	
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	
Rated supply voltage	4-wire ⎓		**V**	12…48 with protection against reverse polarity	
Voltage limits (including ripple)	4-wire ⎓		**V**	10…58	
Insulation class				⧈	⧈
Current consumption, no-load	4-wire ⎓		**mA**	< 15	
Switching capacity	4-wire ⎓		**mA**	< 200 mA with overload and short-circuit protection	
Voltage drop, closed state	4-wire ⎓		**V**	< 2	
Maximum switching frequency			**Hz**	Flush mountable: ⎓ 40 Non-flush mountable: ⎓ 30	
Delays	First-up		**ms**	Flush mountable: ⩽ 12. Non-flush mountable: ⩽ 14.	
	Response		**ms**	Flush mountable: ⩽ 10. Non-flush mountable: ⩽ 12.5.	
	Recovery		**ms**	Flush mountable: ⩽ 10. Non-flush mountable: ⩽ 12.5.	

(1) SIL 2 protection can only be obtained by connecting both outputs to a safety PLC. Please consult our website www.telemecaniquesensors.com.

Inductive proximity sensors
XS range, Fail Safe
Plastic case, 40 x 40 x 117 mm, plug-in

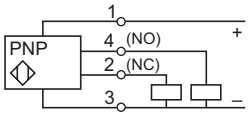
Setting-up precautions
Minimum mounting distances (mm)



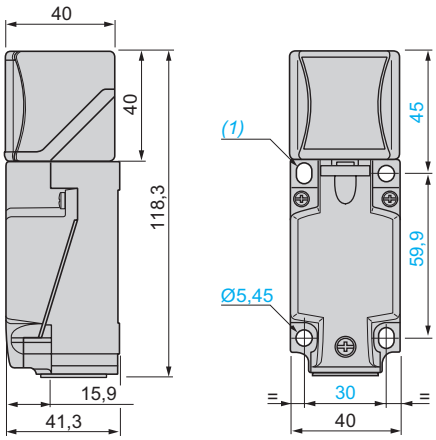
		Side by side	Face to face	Facing a metal object
Sensors flush mountable in metal	**XS8C4A1●●**	e ⩾ 80	e ⩾ 160	e ⩾ 60
Sensors non-flush mountable in metal	**XS8C4A4●●**	e ⩾ 160	e ⩾ 320	e ⩾ 120

Wiring schemes
NO + NC outputs

4-wire ⎓

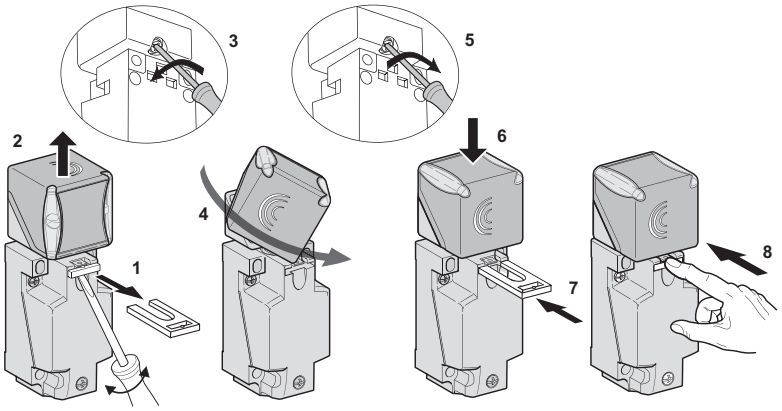


Dimensions

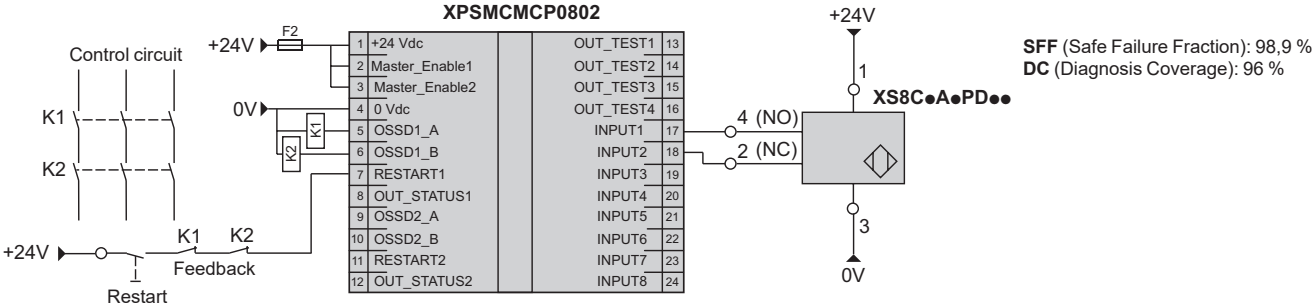


(1) 2 elongated holes Ø 5.3 x 7 cm.
Tightening torque of cover fixing screws and clamp screws: < 1.2 N.m / < 10.62 lb-in

Head positions



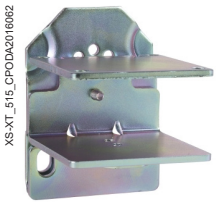
Example SIL 2 wiring scheme (with XPSMC safety PLC)



SFF (Safe Failure Fraction): 98,9 %
DC (Diagnosis Coverage): 96 %

Inductive proximity sensors
XS range
Accessories

XSZBE10



XSZBC10

XSZBD10

XSZB1●●

Mounting and fixing accessories

Description	For use with sensor		Unit reference	Weight kg
	Type	Diameter (mm)		
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 clamps	XS1, XS2, XS4, XS5, XS6	8 (M8 x 1)	**XSZB108**	0.006
	XS1, XS2, XS4, XS5, XS6	12 (M12 x 1)	**XSZB112**	0.006
		18 (M18 x 1)	**XSZB118**	0.010
		30 (M30 x 1.5)	**XSZB130**	0.020
Set of 2 metal fixing nuts, nickel plated	XS1, XS2, XS5, XS6	12 (M12 x 1)	**XSZE112**	0.015
		18 (M18 x 1)	**XSZE118**	0.020
		30 (M30 x 1.5)	**XSZE130**	0.050

XSCZ01

XSZP1●●

Protection accessories

Description	For use with sensor		Unit reference	Weight kg
	Type	Diameter (mm)		
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

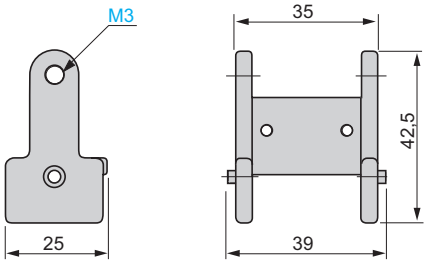
Fuses (for unprotected 2-wire ⎓/∿ sensors)

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

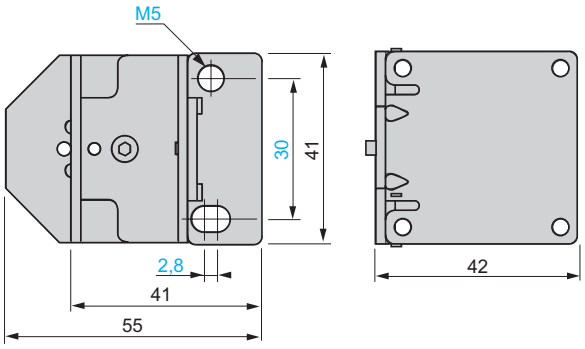
(1) Depth adjustment shim for converting 80 x 80 x 26 mm format to 80 x 80 x 40 mm format. Also enables clipping onto 35 mm omega rail.

Inductive proximity sensors
XS range
Accessories

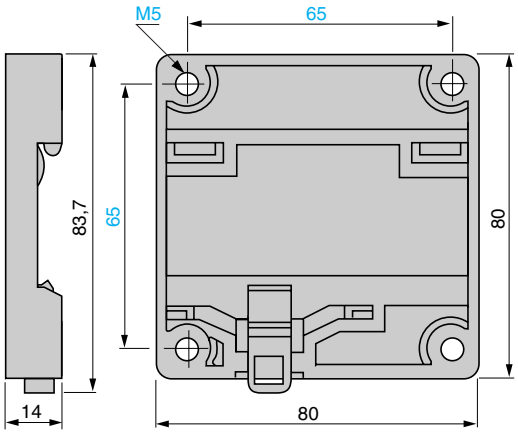
XSZBE10



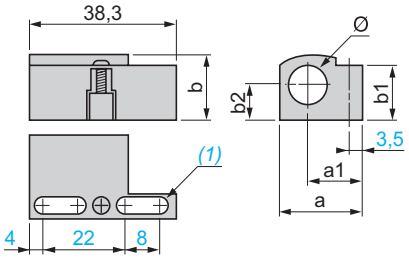
XSZBC10



XSZBD10 (for mounting on XS●D●●●●)



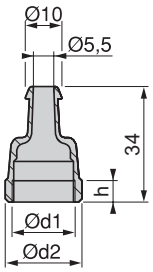
XSZB108, XSZB112, XSZB118, XSZB130, XSZB165



XSZ	a	a1	b	b1	b2	Ø
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

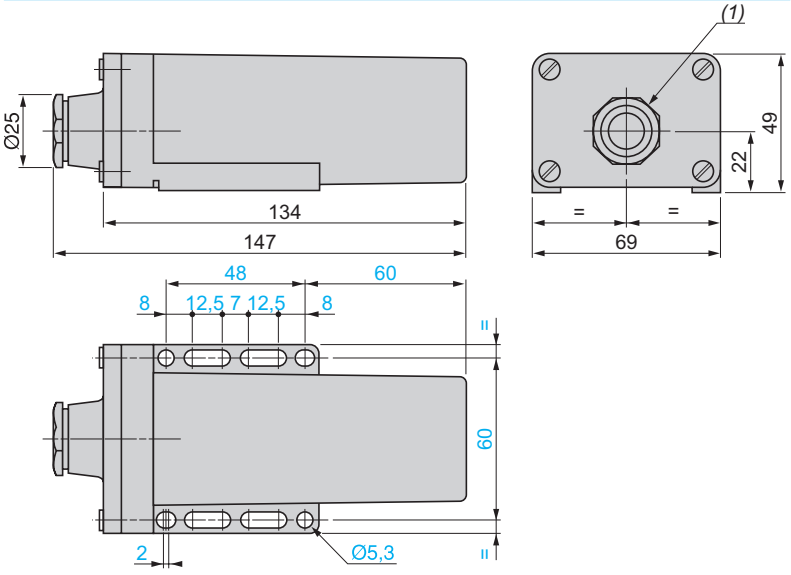
(1) 2 elongated holes 4 x 8 mm.

XSZP112, XSZP118, XSZP130



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

XSCZ01

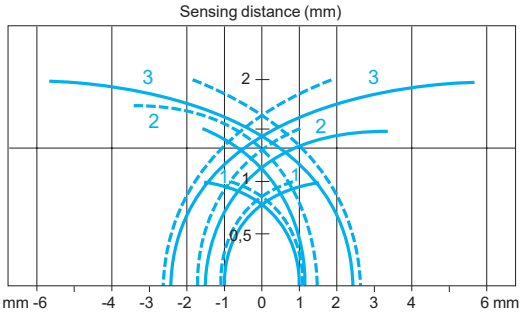


(1) 13P cable gland

Inductive proximity sensors
XS range

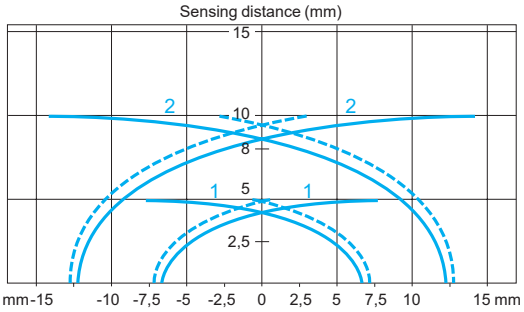
Cylindrical type sensors

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

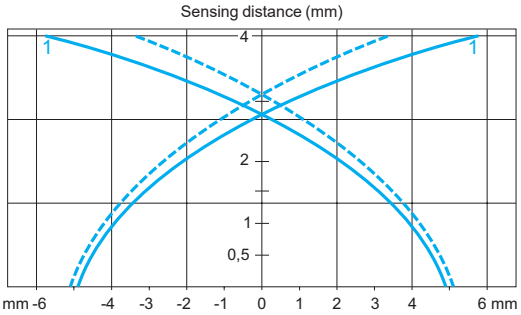
pick-up points
drop-out points (object approaching from the side)
1 Ø 4 (plain) XS1 and Ø 5 (M5 x 0.5) XS1
2 Ø 6.5 (plain) XS1 and Ø 8 (M8 x 1) XS5
3 Ø 12 (M12 x 1) XS5



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

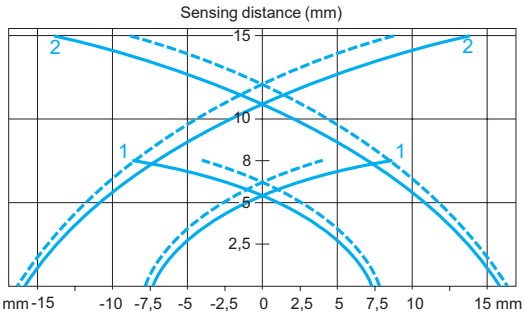
pick-up points
drop-out points (object approaching from the side)
1 Ø 18 (M18 x 1) XS5
2 Ø 30 (M30 x 1.5) XS5

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

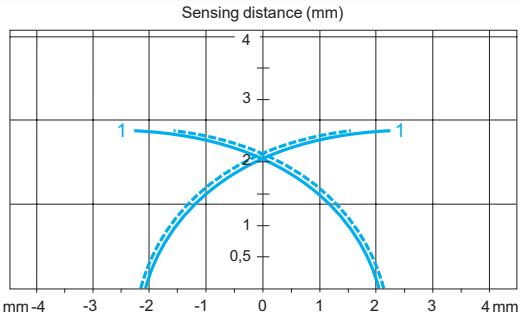


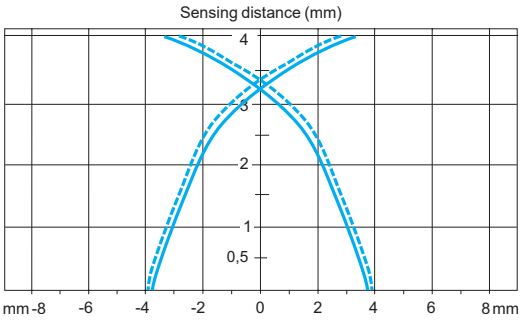
Sensor (mm)	Standard steel target (mm)	Operating zone (mm)
Ø 18	24 x 24 x 1	0…6.4
Ø 30	45 x 45 x 1	0…12

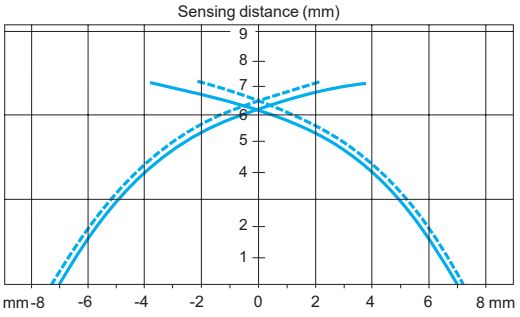
pick-up points
drop-out points (object approaching from the side)
1 Ø 18 (M18 x 1) XS4
2 Ø 30 (M30 x 1.5) XS4

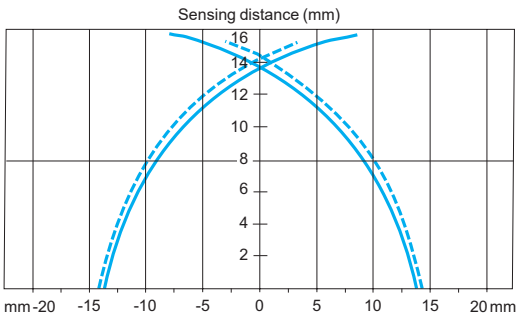
Cylindrical type sensors, increased range

Flush mountable in metal

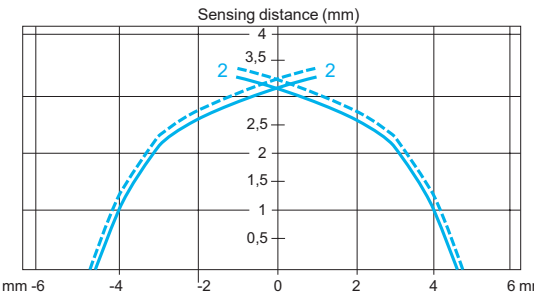


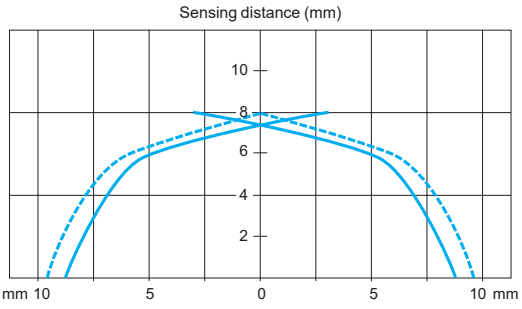


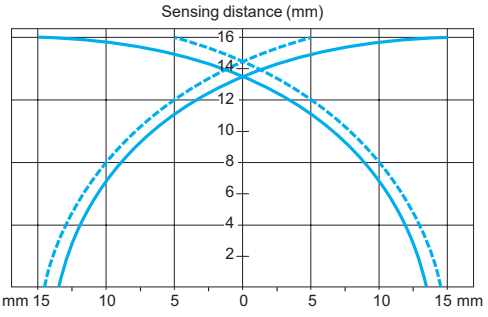


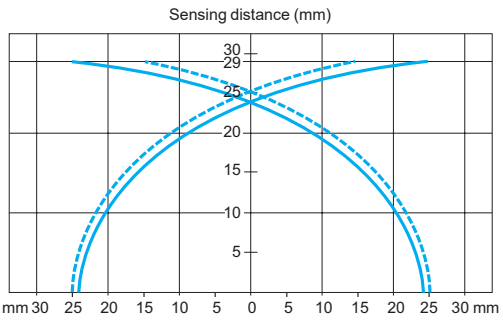


Non flush mountable in metal









Sensor (mm)
Ø 6,5 and Ø 8
Standard steel target (mm)
8 x 8 x 1
Operating zone (mm)
0…2 (flush mounted)
0…3.2 (not flush mounted)

1 Ø 6.5 (plain) XS106B3●● and Ø 8 (M8 x 1) XS108B3 and XS608B1
2 XS608B4

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)

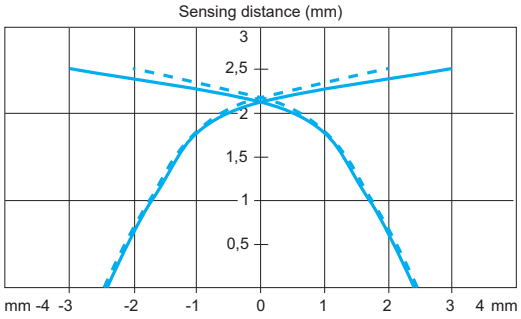
Sensor (mm)
Ø 18
Standard steel target (mm)
24 x 24 x1
Operating zone (mm)
0…6.4 (flush mounted)
0…12.8 (not flush mounted)

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)

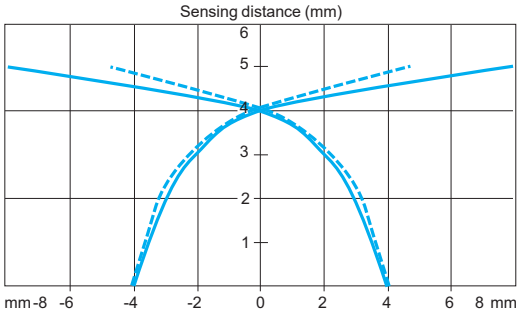
Cubic, flat or rectangular type sensors

Flush mountable in metal



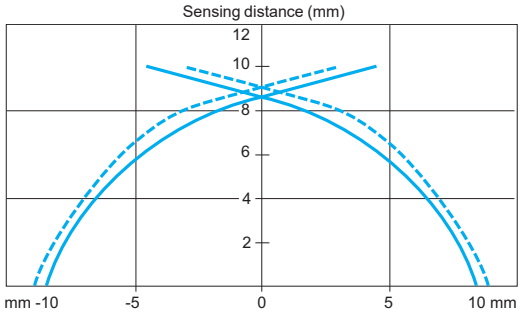
Sensor	Standard steel target (mm)	Operating zone (mm)
XS7J1A1	5 x 5 x 1	0...2

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



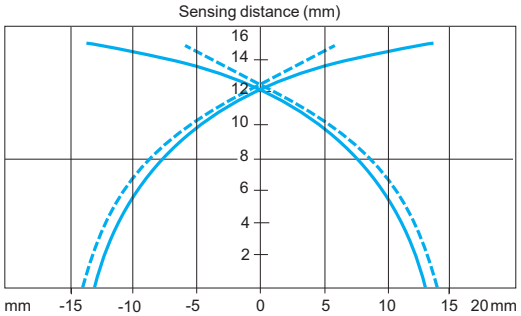
Sensor	Standard steel target (mm)	Operating zone (mm)
XS7F1A1	5 x 5 x 1	0...4

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



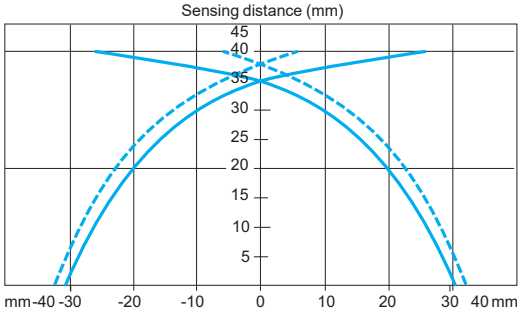
Sensor	Standard steel target (mm)	Operating zone (mm)
XS7E1A1	8 x 8 x 1	0...8

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)

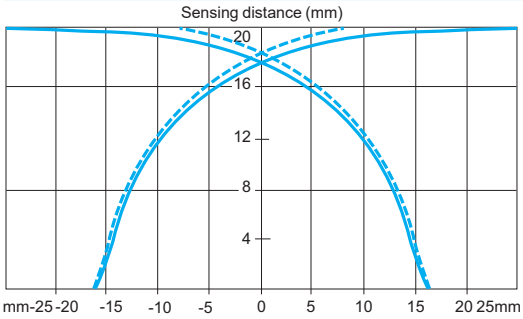


Sensor	Standard steel target (mm)	Operating zone (mm)
XS7D1A1	30 x 30 x 1	0...32

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

Cubic or rectangular type sensors, increased range

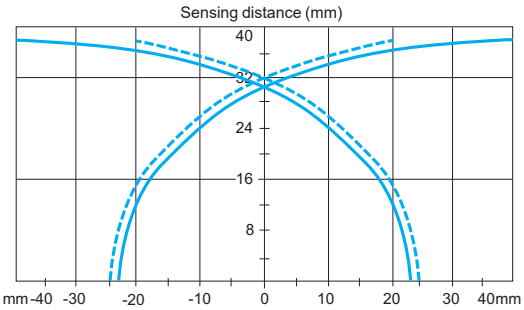
Flush mountable in metal



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

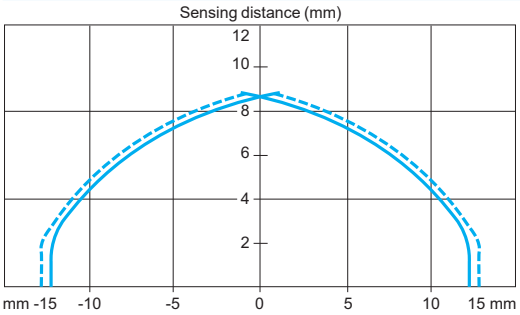


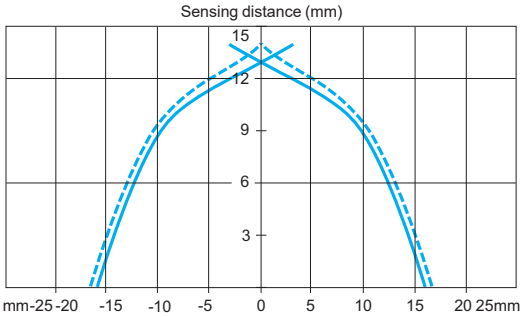
Sensor	Standard steel target (mm)	Operating zone (mm)
XS8C●A4●	45 x 45 x 1	0…32

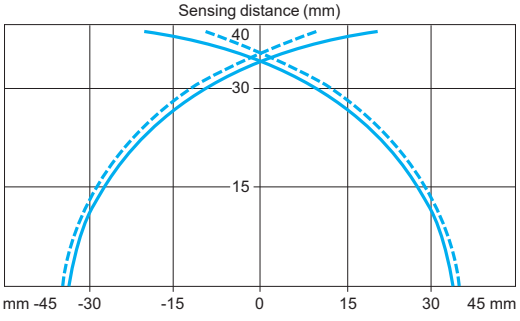
pick-up points
drop-out points (object approaching from the side)

Flat type sensors, increased range

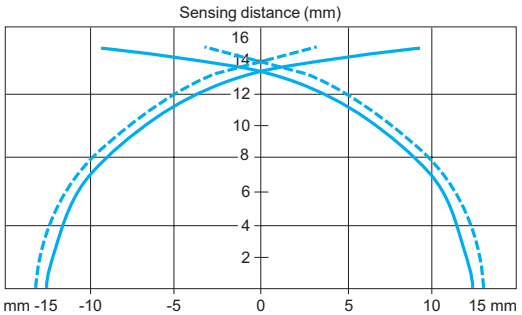
Flush mountable in metal

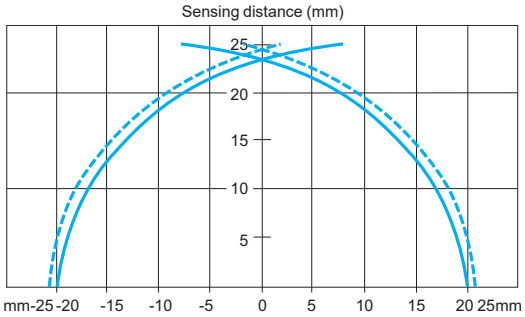


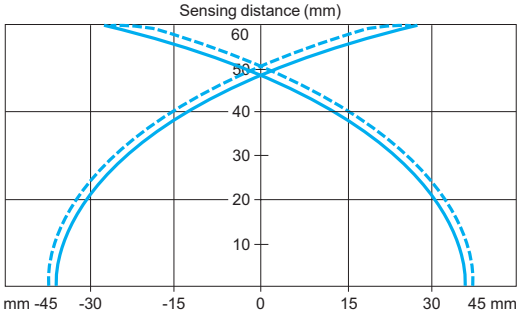




Non flush mountable in metal







Sensor	Standard steel target (mm)	Operating zone (mm)
XS8E	18 x 18 x 1	5…10 (flush mounted) 5…15 (not flush mounted)
XS8C	30 x 30 x 1	8…15 (flush mounted) 8…25 (not flush mounted)
XS8D	45 x 45 x 1	20…40 (flush mounted) 0…60 (not flush mounted)

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

Substitution table

Sensors with the closest functionalities

Cylindrical type, DC

Diameter 6.5 mm

XS1

Old sensor	**New XS sensor**
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

Old sensor	**New XS sensor**
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**
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**
XS1N08PB349L1	**XS108B3PBL5**
XS1N08PB349D	**XS108B3PBM12**
XS1N08PB349S	**XS108B3PBM8**

XS2

Old sensor	**New XS sensor**
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

Old sensor	**New XS sensor**
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 sensor, the metal case replaces the plastic case.

Old sensor	**New 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 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 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 sensor, the metal case replaces the plastic case.

Old sensor	**New 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)*
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**
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 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 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 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 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 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 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 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 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 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 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 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**

Inductive proximity sensors
XS range
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