The essential guide of Detection

Telemecanique
Sensors

Telemecanique Sensors

Simply easy!™

Telemecanique brand has a 9 decades history manufacturing factory automation and safety sensors. Telemecanique wide ranges are most reliable and robust hence second to none on the market.

Our aim is to **simplify the life of our customers**, allowing them to concentrate on their core added value and machine performance.
This is why Telemecanique Sensors design and manufacture their products based on the following values:

- **Simplicity and modularity**
- **Easy to choose and select**
- **Easy to install and maintain**
- **Expert services to share our know-how**

Connect with the experts

> A dedicated Sales team: trained and experienced sales professionals are available to help you with any sensing application.

> Telemecanique Sensors team: are available for pre and post sales support. We become an extension of your team and we share our expertise with you.

www.tesensors.com

Detection

WARNING
This document is a selection of the top selling products.

Telemecanique Sensors
Simply easy!™

New

• Safety and limit switches

Preventa™ XCSLF and **XCSLE**, the new safety interlock switches, for protecting operators of potentially dangerous machines with inertia.

Osisense™ XCKVR, the new economic cross limit switches for hoisting applications.

• Pressure control sensors

OsiSense™ XMLP, a new range of compact pressure transmitters for industrial operations.

• Inductive proximity sensors

OsiSense™ XS7/8 C2/4, the new range of cubic and rectangular inductive sensors for all your material handling application.

• Ultrasonic sensors

OsiSense™ XXV18, long-distance ultrasonic proximity sensors for industrial detection operations.

OsiSense™XX, thru-beam mode, this sensing technology is well suited to the detection of small objects, accuracy and high switching frequencies such as in conveying applications.

• Rotary encoders

OsiSense™ XCC stainless steel, a range of absolute and incremental rotary encoders IP69K, and hygienic design specialy design for Food and Beverage environments.

• Radio frequency identification

OsiSense™ XGSZ the new EtherNet/IP network connection box for connecting smart antennas on industrial networks.

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Other versions: **please consult our Customer Care Centre.**

• Photo-electric sensors

OsiSense™ XUY Roller Sensors, the new photo-electric sensors for simple integration into your rollers conveyors system.

OsiSense™ XUKS, stainless steel a new range of photo-electric sensors for the food and beverage industry.

OsiSense™ XUK8, compact photo-electric sensors with efficient detection in diffuse with back ground suppression mode, time management embedded for AC/DC applications.

OsiSense™ XUE, a reliable photo-electric sensor for distance measurement and long distance detection in diffuse with back ground suppression mode.

OsiSense™ XUVE, the smallest and fastest integrating fork for labelling applications.

OsiSense™ XUM8, the miniature photo-electric sensors with efficient detection in diffuse with back ground suppression mode.

OsiSense™ XUMT, the transparent materials photo-electric miniature specialist.

OsiSense™ XUK Laser, a new range of long sensing distance photo-electric Laser sensors that provide accurate beam for a very precise detection, even on small objects, and also in high resistance for harsh environment (IP69K, Ecolab).
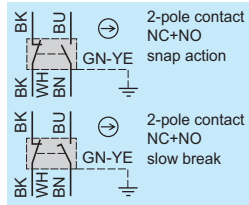
OsiSense™ XUVF optical frames with dynamic and static functions.
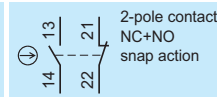
• Cabling system

OsiSense™ XZ PVC, a new economic offer of pre-wired connectors and jumpers with PVC cable for environment with low mechanical constraints complete the offer with PUR cable for severe environment and reinforced PVC for Food & Beverage environment.
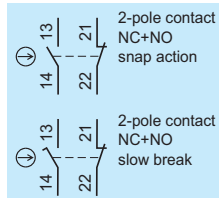
OsiSense XC

Limit switches
Compact and miniature, complete switches
(variable composition, see pages 6-7)

XCMD

BK | BU → 2-pole contact NC+NO snap action
GN-YE
BK | WH | BN

BK | BU → 2-pole contact NC+NO slow break
GN-YE
BK | WH | BN

XCKT

13 | 21 → 2-pole contact NC+NO snap action
14 | 22

Miniature XCMD metal, pre-cabled; fixing by the body or by the head

Type of operator	Metal end plunger	Steel roller plunger	Thermoplastic roller lever	Steel roller lever	Variable length thermoplastic roller lever	M12 head metal end plunger
Mechanical durability (millions of operating cycles)	10	10	10	10	10	10
Actuation speed (in m/s)	0.5	0.5	1.5	1.5	1.5	0.5
Switches conforming to standard IEC 947-5-1 section 3	→	→	→	→	→	→
Product certification	CE - UL - CSA - CCC					
Degree of protection conforming to IEC 60529	IP 66 and IP 67					
Rated operational characteristics (conforming to EN IEC 60947-5-1)	AC-15; B300 (Ue = 240 V, Ie = 1.5 A) / DC-13; R300 (Ue = 250 V, Ie = 0.1 A)					
Fixing centres (mm)	20					M12 x 1
Body dimensions (mm) W x D x H	30 x 16 x 50					
Connection Cable	Pre-cabled, adjustable direction, length = 1 m (other lengths available on request)					
Complete switch 2-pole NC+NO snap action	XCMD2110L1	XCMD2102L1	XCMD2115L1	XCMD2116L1	XCMD2145L1	XCMD21F0L1
2-pole NC+NO break before make, slow break	XCMD2510L1	XCMD2502L1	XCMD2515L1	XCMD2516L1	XCMD2545L1	XCMD25F0L1
Connector	M12					
Complete switch NC+NO snap action (M12-5 pins)	XCMD2110C12	XCMD2102C12	XCMD2115C12	XCMD2116C12	XCMD2145C12	XCMD21F0C12
1C/O snap action (M12-4 pins) (1)	XCMD2110M12	XCMD2102M12	XCMD2115M12	XCMD2116M12	XCMD2145M12	XCMD21F0M12

(1) Although their design is identical to the pre-cabled switches, the switches incorporating an M12 4-pin connector cannot be marked with the symbol because they are single-pole C/O.
→ Positive opening operation.

ISO entry (to EN 50262)

XCKP/XCKD

13 | 21 → 2-pole contact NC+NO snap action
14 | 22

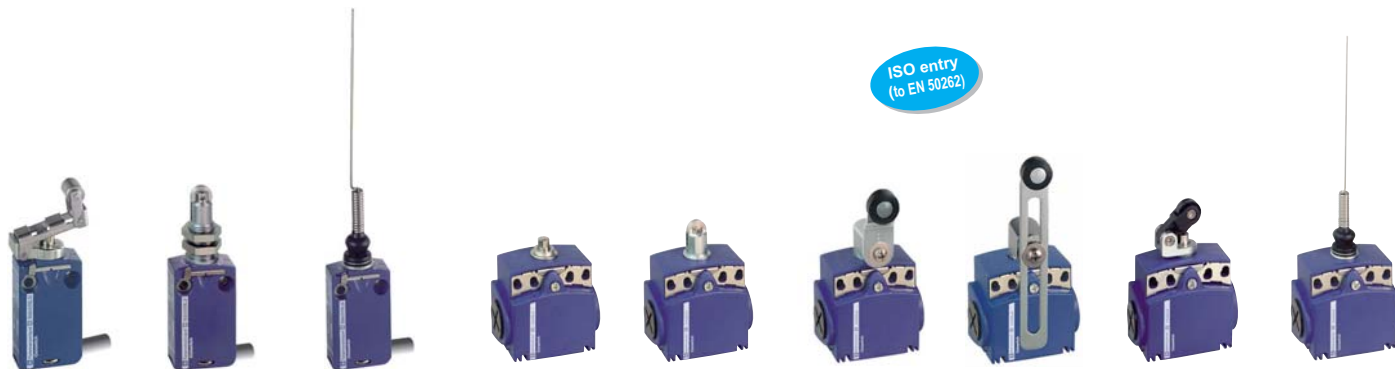13 | 21 → 2-pole contact NC+NO slow break
14 | 22

→ Positive opening operation.

Compact XCKD metal and XCKP plastic conforming to standard EN 50047

Type of operator	Metal end plunger	Steel roller plunger	Thermoplastic roller lever plunger, horizontal actuation in 1 direction	M18 head metal end plunger	M18 head steel roller plunger
Mechanical durability (millions of operating cycles)	15	10	15	10	10
Actuation speed (in m/s)	0.5	0.5	1	0.5	0.5
Switches conforming to standard IEC 947-5-1 section 3	→	→	→	→	→
Product certification	CE - CSA - CCC - GOST				
Degree of protection conforming to IEC 60529	IP 66 and IP 67				
Rated operational characteristics (conforming to EN IEC 60947-5-1)	AC-15; A300 (Ue = 240 V, Ie = 3 A) / DC-13; Q300 (Ue = 250 V, Ie = 0.27 A)				
Cable entry	1 tapped entry for ISO M16 x 1.5 cable gland (3) or M12 connector				
Fixing centres (mm)	20	20	20	M18 x 1	M18 x 1
Body dimensions (mm) W x D x H	31 x 30 x 65				
Metal switches					
Complete switch 2-pole NC+NO snap action	XCKD2110P16	XCKD2102P16	XCKD2121P16	XCKD21H0P16	XCKD21H2P16
2-pole NC+NO break before make, slow break	XCKD2510P16	XCKD2502P16	XCKD2521P16	XCKD25H0P16	XCKD25H2P16
2-pole NC+NO snap action (M12-5 pins)	XCKD2110M12	XCKD2102M12	XCKD2121M12	XCKD21H0M12	XCKD21H2M12
Plastic, double insulated switches					
Complete switch 2-pole NC+NO snap action	XCKP2110P16	XCKP2102P16	XCKP2121P16	XCKP21H0P16	XCKP21H2P16
2-pole NC+NO break before make, slow break	XCKP2510P16	XCKP2502P16	XCKP2521P16	XCKP25H0P16	XCKP25H2P16
2-pole NC+NO snap action (M12-4 pins)	XCKP2110M12	XCKP2102M12	XCKP2121M12	XCKP21H0M12	XCKP21H2M12

(3) For Pg 11 cable entries, replace P16 by G11. Example: XCKD2110**P16** becomes XCKD2110**G11**.
For other cable entries, see customised assembly on page 7.

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Other versions: **please consult our Customer Care Centre.**

ISO entry (to EN 50262)

Compact XCKT plastic, 2 cable entries

	Retractable steel roller lever plunger	M12 head steel roller plunger	"Cat's whisker"	Metal end plunger	Steel roller plunger	Thermoplastic roller lever	Variable length thermoplastic roller lever	Thermoplastic roller lever plunger, horizontal actuation in 1 direction	"Cat's whisker"
	10	10	5	15	10	10	15	5	5
	0,5	0.1	1	0.5	0.5	1.5	1	1	1
	⊖	⊖	–	⊖	⊖	⊖	⊖	–	–
				CE - CSA - CCC - GOST					
				IP 66 and IP 67					
				AC-15; A300 (Ue = 240 V, Ie = 3 A) / DC-13; Q300 (Ue = 250 V, Ie = 0.27 A)					
	20	M12 x 1	20	20 or 40					
				58 x 30 x 51					
				2 tapped entries for ISO M16 x 1.5 cable gland (2)					
	XCMD2124L1	XCMD21F2L1	XCMD2106L1	XCKT2110P16	XCKT2102P16	XCKT2118P16	XCKT2145P16	XCKT2121P16	XCKT2106P16
	XCMD2524L1	XCMD25F2L1	XCMD2506L1	–	–	–	–	–	–
	XCMD2124C12	XCMD21F2C12	XCMD2106C12	–	–	–	–	–	–
	XCMD2124M12	XCMD21F2M12	XCMD2106M12	–	–	–	–	–	–

(2) For Pg 11 cable entries, replace P16 by G11. Example: XCKT2110**P16** becomes XCKT2110**G11**.

ISO entry (to EN 50262)

Application - XCPR and XCDR with manual reset

	Thermoplastic roller lever	Variable length Thermoplastic roller lever	Thermoplastic roller lever Ø 50 mm	"Cat's whisker"	Metal end plunger	Steel roller plunger	Thermoplastic roller lever plunger, horizontal actuation in 1 direction	Thermoplastic roller lever plunger, vertical actuation in 1 direction	Thermoplastic roller lever
	10	10	10	5	1	1	1	1	1
	1.5	1.5	1.5	1	0.5	0.5	1	1	1.5
	⊖	⊖	⊖	–	⊖	⊖	⊖	⊖	⊖
					CE - CSA - CCC - GOST				
					IP 66 and IP 67				
					AC-15; A300 (Ue = 240 V, Ie = 3 A) / DC-13; Q300 (Ue = 250 V, Ie = 0.27 A)				
					1 tapped entry for ISO M20 x 1.5 cable gland (4)				
	20	20	20	20	20	20	20	20	20
					31 x 30 x 95				
	XCKD2118P16	XCKD2145P16	XCKD2139P16	XCKD2106P16	XCDR2110P20	XCDR2102P20	XCDR2121P20	XCDR2127P20	XCDR2118P20
	XCKD2518P16	XCKD2545P16	XCKD2539P16	XCKD2506P16	XCDR2510P20	XCDR2502P20	XCDR2521P20	XCDR2527P20	XCDR2518P20
	XCKD2118M12	XCKD2145M12	XCKD2139M12	XCKD2106M12	–	–	–	–	–
	XCKP2118P16	XCKP2145P16	XCKP2139P16	XCKP2106P16	XCPR2110P20	XCPR2102P20	XCPR2121P20	XCPR2127P20	XCPR2118P20
	XCKP2518P16	XCKP2545P16	XCKP2539P16	XCKP2506P16	XCPR2510P20	XCPR2502P20	XCPR2521P20	XCPR2527P20	XCPR2518P20
	XCKP2118M12	XCKP2145M12	XCKP2139M12	XCKP2106M12	–	–	–	–	–

(4) For Pg 13.5 cable entries, replace P20 by G13. Example: XCDR2110**P20** becomes XCDR2110**G13**.
For other cable entries, see customised assembly on page 7.

Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors

Heads - common to miniature and compact bodies

Metal plunger and multi-directional heads

Description	Metal end plunger	Metal end plunger with protective elastomer boot	Steel roller plunger	Retractable steel roller lever plunger	Thermoplastic roller lever plunger, horizontal actuation
Reference	⊖ ZCE10	⊖ ZCE11	⊖ ZCE02	⊖ ZCE24 (2)	⊖ ZCE21

Metal rotary heads and levers

Description	Rotary head without lever, spring return, for actuation from LH and RH side	Thermoplastic roller lever, track: 24/31 mm (ZCMD) 29/36 mm (ZCD/P/T)	Steel roller lever, track: 24/31 mm (ZCMD) 29/36 mm (ZCD/P/T)	Thermoplastic roller lever, track: 16/39 mm (ZCMD) 21/44 mm (ZCD/P/T)	Steel roller lever, track: 16/39 mm (ZCMD) 21/44 mm (ZCD/P/T)
Reference	⊖ ZCE01	⊖ ZCY15 (2)	⊖ ZCY16 (2)	⊖ ZCY25 (2)	⊖ ZCY25 (2)

(1) Recommended for use with bodies: **ZCD... / ZCP... / ZCT...** (2) Recommended for use with bodies: **ZCMD...**

Bodies

Miniature

Type of contact	2-pole NO+NC Snap action	3-pole 2NC+1NO Snap action	2-pole NC+NO Slow break	3-pole 2NC+1NO Slow break	2-pole NO+NC Snap action	2-pole NC+NO Snap action Connector 5 pin	1-pole 1C/O Snap action Connector 4 pin	4-pole 2NC+2NO Snap action
Reference of metal body	**ZCMD21**	**ZCMD39**	**ZCMD25**	**ZCMD37**	–	**ZCMD21C12**	**ZCMD21M12**	–
Cable L = 1 m	–	–	–	–	**ZCMD21L1** (3)	–	–	**ZCMD41L1**
L = 2 m	–	–	–	–	**ZCMD21L2** (3)	–	–	**ZCMD41L2**
L = 5 m	–	–	–	–	**ZCMD21L5** (3)	–	–	**ZCMD41L5**

(3) For contact 2-pole NC+NO slow break, replace 21 by 25. Example: ZCMD**21**L1 becomes ZCMD**25**L1

Connection of miniature bodies

Specific pre-cabled connection components	for ZCMD21	for ZCMD39	for ZCMD25	for ZCMD37	**Option:** PUR pre-wired M12 connector, L = 2 m (1)	
					5-pin	4-pin
L = 1 m	**ZCMC21L1**	**ZCMC39L1**	**ZCMC25L1**	**ZCMC37L1**		
L = 2 m	**ZCMC21L2**	**ZCMC39L2**	**ZCMC25L2**	**ZCMC37L2**		
L = 5 m	**ZCMC21L5**	**ZCMC39L5**	**ZCMC25L5**	**ZCMC37L5**	**XZCP1164L2**	**XZCP1141L2**

⊖ Positive opening operation.

(1) For PVC cable see page 47

switches

Thermoplastic roller lever plunger, vertical actuation	M12 head metal end plunger	M18 head metal end plunger	M12 head steel roller plunger	M18 head steel roller plunger	Spring rod	Spring rod with plastic end	"Cat's whisker"
➜ **ZCE27**	➜ **ZCEF0**(2)	➜ **ZCEH0**(1)	➜ **ZCEF2**(2)	➜ **ZCEH2**(1)	**ZCE08**	**ZCE07**	**ZCE06**

Thermoplastic roller lever, track: 20/36 mm (ZCMD) 24/40 mm (ZCD/P/T)	Steel roller lever, track: 20/36 mm (ZCMD) 24/40 mm (ZCD/P/T)	Ceramic roller lever	Variable length thermoplastic roller lever	Round, glass fibre rod lever Ø 3 mm L = 125 mm	Metal spring-rod lever	Thermoplastic roller lever Ø 50 mm	Adjustable thermoplastic roller lever Ø 50 mm
➜ **ZCY18**(1)	➜ **ZCY19**(1)	➜ **ZCY22**	➜ **ZCY45**	**ZCY55**	**ZCY91**	➜ **ZCY39**	➜ **ZCY49**

Compact

Type of contact	➜ 2-pole NC+NO Snap action	➜ 3-pole 2NC+1NO Snap action	➜ 2-pole NC+NO Slow break	➜ 2-pole NC+NC Slow break	➜ 2-pole NO+NO Slow break	➜ 2-pole NC+NC Snap action	➜ 3-pole 2NC+1NO Slow break	➜ 2-pole NC+NO - Snap action Connector 5-pin	➜ Connector 4-pin	➜ 2-pole NC+NO Snap action	➜ 2-pole NC+NO Slow break
Ref. metal body	**ZCD21**	**ZCD39**	**ZCD25**	**ZCD27**	**ZCD28**	**ZCD29**	**ZCD37**	**ZCD21M12**	–	–	–
Ref. plastic body	**ZCP21**	**ZCP39**	**ZCP25**	**ZCP27**	**ZCP28**	**ZCP29**	**ZCP37**	–	**ZCP21M12**	**ZCT21P16** (2)	**ZCT25P16** (2)

(2)

Connection of compact bodies

Interchangeable outlet for cable gland						Option: PUR pre-wired M12 connector, L = 2 m (1)	
Description	For ISO M16 cable gland	For ISO M20 cable gland	For Pg 11 cable gland	For Pg 13.5 cable gland	For 1/2" NPT cable gland	For PF 1/2 (G12) cable gland	5-pin / 4-pin
Metal	**ZCDEP16**	**ZCDEP20**	**ZCDEG11**	**ZCDEG13**	**ZCDEN12**	**ZCDEF12**	
Plastic	**ZCPEP16**	**ZCPEP20**	**ZCPEG11**	**ZCPEG13**	**ZCPEN12**	**ZCPEF12**	**XZCP1164L2** / **XZCP1141L2**

(1) For PVC cable see page 47

ZCT Pg 11 cable gland versions: replace the suffix P16 by G11. Example: ZCT21**P16** becomes ZCT21**G11**

ZCT 1/2" NPT versions: replace the suffix P16 by N12 (adaptor). Example: ZCT21**P16** becomes ZCT21**N12**

1 Cable entry 1/2" NPT
1 Cable entry Pg11

⊞ **Telemecanique** Sensors

Other versions: **please consult our Customer Care Centre.**

OsiSense XC

Limit switches

Classic - XCKM, XCKL, complete switches

ISO entry (to EN 50262)

XCKM

13 21	2-pole contact NC+NO snap action	31 21 13	
14 22		32 22 14	

13 21	2-pole contact NC+NO slow break	3-pole contact 2NC+1NO snap action
14 22		
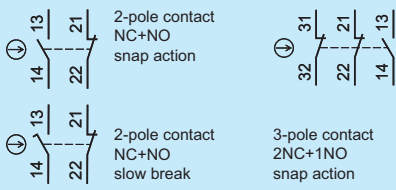
Type XCKM metal, 3 cable entries, XCKL metal, 1 cable entry

Type of operator		Metal end plunger	Steel roller plunger	Roller lever plunger, horizontal actuation in 1 direction	Thermoplastic roller lever	"Cat's whisker"
Mechanical durability (millions of operating cycles)		20	20	20	15	10
Actuation speed (in m/s)		0.5	0.5	1.5	1.5	0.5
Product certification		CE - UL - CSA - CCC - GOST - C-TICK - BV				
Degree of protection conforming to IEC 60529		IP 665				
Rated operational characteristics (conforming to EN IEC 60947-5-1)		AC-15; A300 (Ue = 240 V, Ie = 3 A) / DC-13; Q300 (Ue = 250 V, Ie = 0.27 A)				
Cable entry (1)	XCKM	3 tapped entries for ISO M20 x 1.5 cable gland (2 entries fitted with blanking plugs)				
	XCKL	1 cable entry with cable gland				
Fixing centres (mm)		41				
Body dimensions (mm) W x D x H	XCKM / XCKL	64 x 30 x 64 / 52 x 30 x 72				

Complete switch	XCKM					
	2-pole NC+NO snap action	XCKM110H29	XCKM102H29	XCKM121H29	XCKM115H29	XCKM106H29
	2-pole NC+NO, break before make, slow break	XCKM510H29	XCKM502H29	XCKM521H29	XCKM515H29	–
Complete switch	XCKL					
	2-pole NC+NO snap action	XCKL110	XCKL102	XCKL121	XCKL115	XCKL106

(1) For Pg 11 cable entries delete the reference suffix H29. Example: XCKM110**H29** becomes XCKM110.
⊖ Positive opening operation.

Classic - XCKM, XCKL, Customised assembly - Body/contact sub-assemblies

Type XCKM metal, 3 cable entries

Type of contact

		13 21	13 21	31 21 13	31 21 13
		14 22	14 22	32 22 14	32 22 14
		2-pole NC+NO snap action	2-pole NC+NO slow break	3-pole 2NC+1NO snap action	3-pole 2NC+1NO slow break
Reference of body with contact block		⊖ ZCKM1H29	⊖ ZCKM5H29	⊖ ZCKMD39H29	⊖ ZCKMD37H29
XCKL reference of body with contact block (2)		⊖ ZCKL1	⊖ ZCKL5	–	–
Reference of contact block only		⊖ XE2SP2151	⊖ XE2NP2151	⊖ XE3SP2141	⊖ XE3NP2141

(2) For cable entry 1/2" NPT, add H7. Example: XCKL1 becomes XCKL1**H7**

Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors

Operating heads, complete or for customer assembly

| Complete switch | = | Body/contact assembly | + | Head | + | Lever |

Rotary or multi-directional heads

	metal head with thermoplastic roller lever	metal head with steel roller lever	with variable length thermoplastic roller lever (2)	with Ø 6 mm thermoplastic rod L = 200 mm (3)	with thermoplastic roller lever (3) for actuation from left **AND** right or left **OR** right	with "Cat's whisker"	with spring rod
Reference	⊕ ZCKD15	⊕ ZCKD16	ZCKD41	ZCKD59	⊕ ZCKD31	ZCKD06	ZCKD08

Plunger heads

	with metal end plunger	with metal end plunger and protective boot	with steel roller plunger	with steel roller plunger and protective boot	with thermoplastic roller lever plunger, horizontal actuation in 1 direction	with steel roller lever plunger, horizontal actuation in 1 direction
Reference	⊕ ZCKD10	⊕ ZCKD109	⊕ ZCKD02	⊕ ZCKD029	⊕ ZCKD21	⊕ ZCKD23

Rotary heads and separate levers

	spring return, for actuation from left **AND** right or left **OR** right	lever with thermoplastic roller (2)	lever with steel roller (2)	variable length lever with thermoplastic roller (2)	variable length lever with steel roller (2)	rod, Ø 6 mm thermoplastic L = 200 mm (3)
Reference	⊕ ZCKD05	⊕ ZCKY31	⊕ ZCKY33	ZCKY41	ZCKY43	ZCKY59

(2) Adjustable throughout 360° in 5° steps, or in 90° steps by reversing the notched washer.
(3) Adjustable throughout 360° in 5° steps, or in 45° steps by reversing the lever mounting.

Telemecanique Sensors

Other versions: **please consult our Customer Care Centre.**

OsiSense XC — Limit switches

Industrial - XCKJ, complete switches

ISO entry (to EN 50262)

XCKJ

2-pole contact NC+NO snap action

3-pole contact 2NC+1NO snap action

2-pole contact NC+NO slow break

Type XCKJ metal, fixed body, conforming to standard EN 50041

Type of operator	Metal end plunger	Steel roller plunger	Thermoplastic roller lever	Steel roller lever	Variable length thermoplastic roller lever	Polyamide Ø 6 mm rod lever L = 200 mm
Mechanical durability (millions of operating cycles)	30	25	30	30	30	30
Actuation speed (in m/s)	0.5	1	1.5	1,5	1.5	1.5
Product certification	CE - UL - CSA - CCC - GOST - C-TICK - BV					
Degree of protection conforming to IEC 60529	IP 667					
Rated operational characteristics (conforming to EN IEC 60947-5-1)	AC-15; A300 (Ue = 240 V, Ie = 3 A) / DC-13; Q300 (Ue = 250 V, Ie = 0.27 A)					
Cable entry (1)	1 tapped entry for ISO M20 x 1.5 cable gland					
Fixing centres (mm)	30 x 60					
Body dimensions (mm) W x D x H	40 x 44 x 77					

Complete switch								
M20	2-pole NC+NO snap action	XCKJ161H29	XCKJ167H29	XCKJ10511H29	XCKJ10513H29	XCKJ10541H29	XCKJ10559H29
	2-pole NC+NO break before make, slow break	XCKJ561H29	XCKJ567H29	XCKJ50511H29	XCKJ50513H29	XCKJ50541H29	XCKJ50559H29
1/2" NPT	2-pole NC+NO snap action	XCKJ161H7	XCKJ167H7	XCKJ10511H7	XCKJ10513H7	XCKJ10541H7	XCKJ10559H7
M12 5P	2-pole NC+NO snap action	XCKJ161D	XCKJ167D	XCKJ10511D	XCKJ10513D	XCKJ10541D	XCKJ10559D

(1) For Pg 13.5 cable entry delete the reference suffix H29. Example: XCKJ161**H29** becomes XCKJ161.
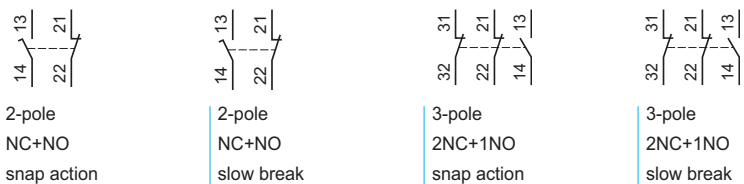
⊖ Positive opening operation.

Industrial - XCKJ, Customised assembly - Body/contact sub-assemblies

Type XCKJ metal, 1 cable entry
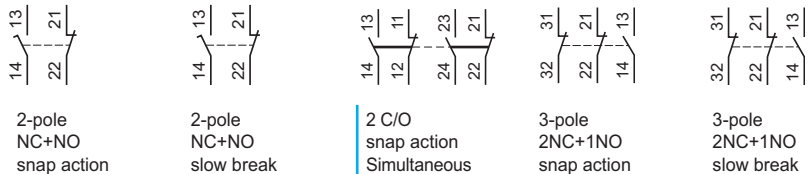
Type of contact		2-pole NC+NO snap action	2-pole NC+NO slow break	2 C/O snap action Simultaneous	3-pole 2NC+1NO snap action	3-pole 2NC+1NO slow break
Cable entry (1)		1 tapped entry for ISO M20 x 1.5 cable gland				
Reference of body with contact block	M20	ZCKJ1H29	ZCKJ5H29	ZCKJ2H29	ZCKJD39H29	ZCKJD37H29
	Pg13	ZCKJ1	ZCKJ5	ZCKJ2	–	–
	1/2" NPT	ZCKJ1H7	ZCKJ5H7	ZCKJ2H7	–	–
	M12 (5 pin)	ZCKJ1D	ZCKJ5D	–	–	–
Reference of contact block only		XE2SP2151	XE2NP2151	–	XE3SP2141	XE3NP2141

Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors

Operating heads,
complete or for customer assembly

Complete switch	=	Body/contact assembly	+	Head	+	Lever

	with reinforced steel roller end plunger	with metal end plunger	with thermoplastic roller lever plunger, 1 direct. of actuation	with steel roller lever plunger, 1 direct. of actuation	with steel roller end plunger	with steel ball bearing end plunger	End steel roller plunger with protective boot
Reference	⊕ ZCKE67	⊕ ZCKE61	⊕ ZCKE21	⊕ ZCKE23	⊕ ZCKE62	⊕ ZCKE66	⊕ ZCKE629

	with metal side plunger	Side steel roller plunger, horizontal	Side steel roller plunger, vertical	with spring rod	with "Cat's whisker"
Reference	⊕ ZCKE63	⊕ ZCKE64	ZCKE65	ZCKE08	ZCKE06
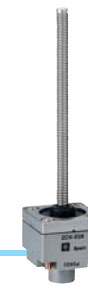
Separate rotary heads and levers

	spring return for actuation from left **AND** right or left **OR** right	lever with thermoplastic roller (2)	lever with steel roller (2)	variable length lever with thermoplastic roller (2)	variable length lever with steel roller (2)	rod, Ø 6 mm thermoplastic L = 200 mm (2)	square rod lever, steel, ⊠ 3 mm L = 125 mm (2)	round rod lever, steel, Ø 3 mm L = 125 mm (2)	spring lever with thermoplastic end (3)	spring-metal rod lever (3)
Reference	⊕ ZCKE05	⊕ ZCKY11	⊕ ZCKY13	ZCKY41	ZCKY43	ZCKY59	ZCKY51	ZCKY53	ZCKY81	ZCKY91
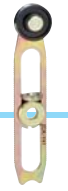
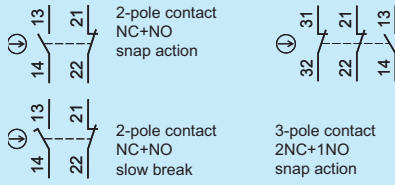|	stay put for actuation from left **AND** right	forked arm lever with thermoplastic rollers, 1 track (2)	forked arm lever with thermoplastic rollers, 2 track (2)
Reference	ZCKE09	ZCKY71	ZCKY61

(2) Adjustable throughout 360° in 5° steps, or in 45° steps by reversing the lever mounting.
(3) Adjustable throughout 360° in 5° steps, or in 90° steps by reversing the notched washer.

Limit switches
Classic - XCKS, complete switches

ISO entry (to EN 50262)
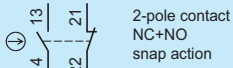
XCKS

2-pole contact NC+NO snap action
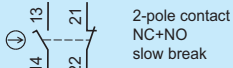
2-pole contact NC+NO slow break
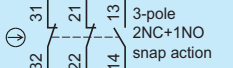
3-pole 2NC+1NO snap action

XCKMR
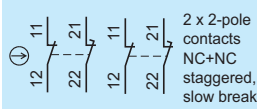
2 x 2-pole contacts NC+NC staggered, slow break

XCR
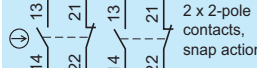
2 x 2-pole contacts, snap action

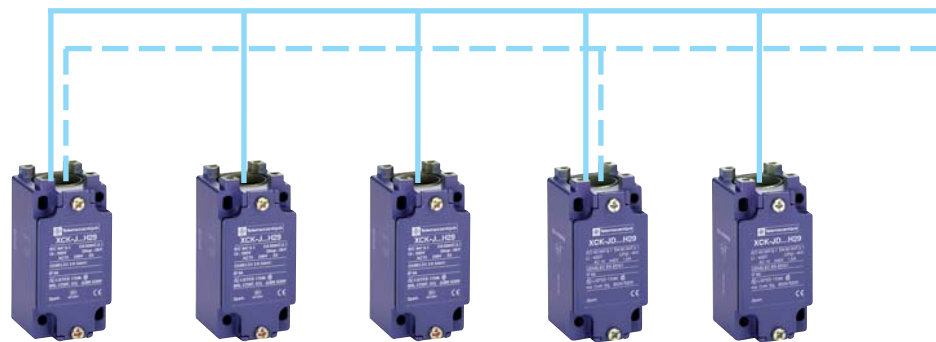### Type XCKS plastic, double insulated, conforming to standard EN 50041

Type of operator	Metal end plunger	Steel roller plunger	Thermoplastic roller lever	Variable length thermoplastic roller lever	Rubber roller lever Ø 50 mm	Polyamide Ø 6 mm rod lever L = 200 mm
Mechanical durability (millions of operating cycles)	25	15	20	20	20	20
Actuation speed (in m/s)	0.5	0.5	1.5	1.5	1	1
Product certification	CE - UL - CSA - CCC - GOST - C-TICK					
Degree of protection conforming to IEC 60529	IP 653					
Rated operational characteristics (conforming to EN IEC 60947-5-1)	AC-15; A300 (Ue = 240 V, Ie = 3 A) / DC-13; Q300 (Ue = 250 V, Ie = 0.27 A)					
Cable entry	1 tapped entry for ISO M20 x 1.5 cable gland (1)					
Fixing centres (mm)	30 x 60					
Body dimensions (mm) W x D x H	40 x 36 x 72.5					

Complete switch	2-pole NC+NO snap action	XCKS101H29	XCKS102H29	XCKS131H29	XCKS141H29	XCKS139H29	XCKS159H29
	2-pole NC+NO break before make, slow break	XCKS501H29	XCKS502H29	XCKS531H29	XCKS541H29	XCKS539H29	XCKS559H29
Body	2-pole NC+NO snap action	ZCKS1H29	ZCKS1H29	ZCKS1H29	ZCKS1H29	ZCKS1H29	ZCKS1H29
	2-pole NC+NO break before make, slow break	ZCKS5H29	ZCKS5H29	ZCKS5H29	ZCKS5H29	ZCKS5H29	ZCKS5H29
	3-pole 2NC+1NO snap action	ZCKSD39H29	ZCKSD39H29	ZCKSD39H29	ZCKSD39H29	ZCKSD39H29	ZCKSD39H29
Associated head (including operator)		ZCKD01	ZCKD02	ZCKD31	ZCKD41	ZCKD39	ZCKD59
Operating lever for rotary head		–	–	ZCKY31	ZCKY41	ZCKY39	ZCKY59
Complete switch	Snap-action 2-pole 2X (1 NC + 1 NO) contact						
	Both contacts act in each direction of actuation	–	–	–	–	–	–
	1 contact operates in each direction	–	–	–	–	–	–
Complete switch	2 C/O staggered snap action contacts	–	–	–	–	–	–
	2 x 2 pole NC+NC staggered, slow break contacts	–	–	–	–	–	–

↪ Positive opening operation.

(1) For Pg 13.5 cable entry delete the reference suffix H29. Example: XCKJ161**H29** becomes XCKJ161.

For severe applications - XC2J, Customised assembly - Body/contact sub-assemblies
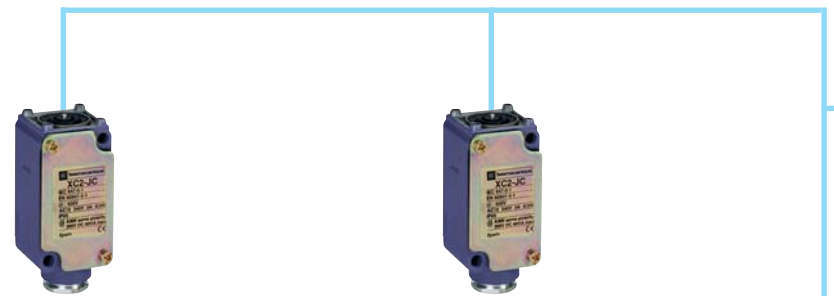
Type XC2J metal, fixed body, 1 cable entry incorporating cable gland

Type of contact		
	Single-pole 1 C/O contact snap action	Double-pole 2 C/O simultaneous contacts snap action
Reference of body with contact block	ZC2JC1	ZC2JC2
Reference of contact block only	XCKZ01	XESP1021
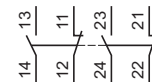
Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors

ISO entry (to EN 50262)

Types XCKMR and XCR "Application - hoisting, materials handling, conveying"

Square rod levers ⌀ 6 mm, "crossed"	Square rod levers ⌀ 6 mm, "crossed"	Square rod lever ⌀ 6 mm	Large roller rod lever Ø 50 mm	Square rod levers ⌀ 6 mm, "crossed" or "T"	Conveyor belt shift monitoring switches Galvanised steel operating lever	Stainless steel operating lever
2	1	10	10	10	0.3	0.3
1.5	1.5	1.5	1.5	1.5	1.5	1.5
CE - CSA - CCC - GOST						
IP 66	IP 65	IP 54			IP 66	
AC-15; A300 (Ue = 240 V, Ie = 3 A) / DC-13; Q300 (Ue = 250 V, Ie = 0.27 A)						
3 x ISO M20 x 1.5 entries	1x ISO M20x1.5 entry & 2 holes for ISO M20 cable gland	1 tapped entry for n° 13 cable gland (for ISO M20 x 1.5, adaptor DE9RA1620 must be ordered separately)				
61.5		85 x 75				105 x 70
118 x 59 x 77	116 x 66 x 77	85 x 75 x 95				85 x 87 x 146
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	XCRA11(2)	XCRA15	XCRE18(2)	–	–
–	–	XCRB11(2)	–	XCRF17(3)	–	–
–	–				XCRT115	XCRT315 (4)
XCKMR54D1H29 (2)	XCKVR54D1H29 (2)(5)	–	–	–	–	–

(2) Steel rods, L = 200 mm   (3) Steel "T" rods, L = 200 mm, W = 300 mm.   (4) Polyester enclosure²   (5) Plastic enclosure

Operating heads, complete or for customer assembly

Plunger heads

	with metal end plunger	with steel roller end plunger
Reference	ZC2JE61	ZC2JE62

Rotary heads and separate levers

	spring return for actuation from left **AND** right	spring return for actuation from left **OR** right	variable length lever with thermoplastic roller (1)	rigid rod 3 mm, steel L = 125 mm (1)	lever with thermoplastic roller (1)	lever with steel roller (1)	spring lever (1)	spring-rod lever
Reference	ZC2JE01	ZC2JE05	ZC2JY31	ZC2JY51	ZC2JY11	ZC2JY13	ZC2JY81	ZC2JY91

(1) Adjustable throughout 360°.

Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors

13

Sensors for pressure control

Electronic sensors XMLK

Electrical connection by EN 175301-803-A connector, M12 connector

For pumping applications

Pressure range (bar) (1)		0…6	0…10	0…16	0…25	0…6	0…10	0…16	0…25
Fluids controlled		**air, fresh water**							
Ambient air temperature		0…+ 80°C							
Degree of protection (conforming to IEC 60529)		IP 65							
Product certification		CE - UL - CSA							
Voltage limits		8…33 V DC for 4…20 mA, 16.2…33V DC for 0…10 V							
Dimensions (mm) Ø x L		36 x 67.5 (not including connector)							
Fluid connection (2)		G 1/4" A (male)							
Electrical connection (3)		EN 175301-803-A				M12 3 pin male			
Type of output (4)		4…20 mA, 2-wire technique, 0…10V, 3-wire technique							
Analogue output	4…20 mA	**XMLK006B2C21**	**XMLK010B2C21**	**XMLK016B2C21**	**XMLK025B2C21**	**XMLK006B2D21**	**XMLK010B2D21**	**XMLK016B2D21**	**XMLK025B2D21**
	0…10 V	**XMLK006B2C71**	**XMLK010B2C71**	**XMLK016B2C71**	**XMLK025B2C71**	**XMLK006B2D71**	**XMLK010B2D71**	**XMLK016B2D71**	**XMLK025B2D71**

(1) Also available with psi range.
(2) Also available with ¼"-18NPT male fluid entry.
(3) Also available with 3 pin packard connector.
(4) Other types of output; 0…5 V, 0…10 V, etc.

Available in bulk packs for selling in lots. Add **TQ** suffix to the reference, ex: XMLK006B2C21 becomes XMLK006B2C21**TQ**.

Electronic sensors XMLP

Electrical connection by EN 175301-803-A connector, M12 connector

For industrial applications (hydraulic circuits, HVAC)

Pressure range (bar) (1)			0…10	0…16	0…25	0…40	0…100	0…160	0…250	0…400
Fluids controlled			**Hydraulic oils, air, fresh water, gas, refrigeration fluids from -30…+120°C**							
Ambient air temperature			- 30…+ 100°C							
Degree of protection (conforming to IEC 60529)			IP 65 (EN175301-803-A), IP 65, IP 67 and IP 69K (M12 connector)							
Product certification			CE (UL - CSA Pending)							
Voltage limits			8…30 V DC for 4…20 mA, 14…30V DC for 0…10 V							
Dimensions (mm) Ø x L			30 x 26 (not including connector)							
Fluid connection (2)			G 1/4" A (male)							
Electrical connection (3)			EN 175301-803-A, M12 4 pin connector							
Type of output (4)			4…20 mA, 2-wire technique, 0…10V, 3-wire technique							
Analogue output 4…20 mA	EN 175301-803-A		**XMLP010BC21V**	**XMLP016BC21V**	**XMLP025BC21V**	**XMLP040BC21V**	**XMLP100BC22**	**XMLP160BC22**	**XMLP250BC22**	**XMLP400BC22**
	M12 connector		**XMLP010BD21V**	**XMLP016BD21V**	**XMLP025BD21V**	**XMLP040BD21V**	**XMLP100BD22**	**XMLP160BD22**	**XMLP250BD22**	**XMLP400BD22**
Analogue output 0…10 V	EN 175301-803-A		**XMLP010BC71V**	**XMLP016BC71V**	**XMLP025BC71V**	**XMLP040BC71V**	**XMLP100BC72**	**XMLP160BC72**	**XMLP250BC72**	**XMLP400BC72**
	M12 connector		**XMLP010BD71V**	**XMLP016BD71V**	**XMLP025BD71V**	**XMLP040BD71V**	**XMLP100BD72**	**XMLP160BD72**	**XMLP250BD72**	**XMLP400BD72**

(1) Also available with psi range.
(2) Also available with 7/16-20UNF male or female, ¼"-18NPT male fluid entry.
(3) Also available with 3 pin packard connector.
(4) Also available with 0,5...4,5V ratiometric output.

Available in bulk packs for selling in lots. Add **Q** suffix to the reference, ex: XMLP010BC21V becomes XMLP010BC21V**Q**.

Electronic sensors XMLG
Electrical connection by M12 connector

For industrial and vacuum applications

Pressure range (bar) (1)	-1…0	0…1	0…6	0…10	0…16	0…25	0…100	0…250	0…400
Fluids controlled	Hydraulic oils, air, fresh water, corrosive fluids from -15…+125°C								
Ambient air temperature	- 15…+ 85°C								
Degree of protection (conforming to IEC 60529)	IP 66 and IP 67								
Product certification	CE - UL - CSA - GOST								
Voltage limits	12…24 V DC, 8…33 V DC for 4…20 mA, 11.4…33V DC for 0…10 V								
Dimensions (mm) Ø x L	Ø 22.8 x 58 (not including connector)								
Fluid connection (2)	G 1/4" A (male)								
Electrical connection (3)	M12 connector								
Type of output (4)	4…20 mA, 2-wire technique, 0…10V, 3-wire technique								
Analogue output 4…20 mA	XMLGM01D21	XMLG001D21	XMLG006D21	XMLG010D21	XMLG016D21	XMLG025D21	XMLG100D21	XMLG250D21	XMLG400D21
0…10 V	XMLGM01D71	XMLG001D71	XMLG006D71	XMLG010D71	XMLG016D71	XMLG025D71	XMLG100D71	XMLG250D71	XMLG400D71

(1) For other pressure ranges consult our web site.
(2) Also available with ¼"-18NPT male fluid entry.
(3) Also available with an integrated quick connection.
(4) Also available with pressure switch function (digital output).

Available in bulk packs for selling in lots. Add **TQ** suffix to the reference, ex: XMLGM01D21 becomes XMLGM01D21**TQ**.

Electronic sensors XMLF
Electrical connection by M12 connector

Adjustable pressure range (bar) (1)		-0.08…-1	0.2…2.5	0.8…10	3.2…40	20...250	32...400
Fluids controlled		Hydraulic oils, air, fresh water, corrosive fluids from -15…+80°C					
Ambient air temperature		- 25…+ 80°C					
Degree of protection (conforming to IEC 60529)		IP 67					
Product certification		CE - UL - CSA - VIT-SEPRO - GOST					
Voltage limits (V)		24 V DC (17…33 V DC)					
Dimensions (mm) H x W x D		103 x 46 x 58 (not including connector)					
Fluid connection		G 1/4" (female) (2)					
Electrical connection		M12 connector					
Configurable with digital display							
Universal sensors,	4...20 mA	XMLFM01D2025	XMLF002D2025	XMLF010D2025	XMLF040D2025	XMLF250D2025	XMLF400D2025
solid-state output, 200 mA (3)	0...10 V	XMLFM01D2125	XMLF002D2125	XMLF010D2125	XMLF040D2125	XMLF250D2125	XMLF400D2125
Dual stage pressure switches, solid-state output, 200 mA		XMLFM01D2035	XMLF002D2035	XMLF010D2035	XMLF040D2035	XMLF250D2035	XMLF400D2035
Analogue sensors	4...20 mA	XMLFM01D2015	XMLF002D2015	XMLF010D2015	XMLF040D2015	XMLF250D2015	XMLF400D2015
	0...10 V	XMLFM01D2115	XMLF002D2115	XMLF010D2115	XMLF040D2115	XMLF250D2115	XMLF400D2115
Possible differential (bar)	Min. at low setting	0.03	0.08	0.3	1.2	7.5	12
(pressure switches)	Min. at high setting	0.03	0.08	0.3	1.2	7.5	12
	Max. at high setting	0.95	2.38	9.5	38	237.5	380

(1) For other pressure ranges consult our web site.
(2) Also available with ¼"-18NPT female and 7/16-20UNF female fluid entry.
(3) Programmable NPN or PNP and NO or NC.

Suitable female plug-in connectors

PUR Pre-wired connectors, L = 5 m (without LED) (5)
(5) For PVC cable see page 47

Other connectors

elbowed	straight	Screw terminal	EN 175301-803-A
XZCP1241L5	**XZCP1141L5**	**XZCC12FCM40B**	**XZCC43FCP40B**

Other versions: **please consult our Customer Care Centre.**
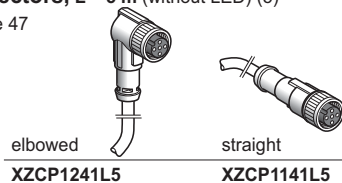
Sensors for pressure control
Electromechanical pressure and vacuum switches
XMLA and B

ISO entry
(to EN 50262)

| 13 | 11 | 1 C/O single-pole contact, snap action |
| 14 | 12 | |
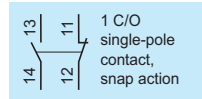
Size (bar)	-1	5	1	2.5
Environmental characteristics	Ambient air temperature (°C): - 25…+ 70 Degree of protection (conforming to IEC 60529): IP 66			
Rated operational characteristics (conforming to EN IEC 60947-5-1)	AC-15; B300 (Ue = 240 V, Ie = 1.5 A - Ue = 120 V, Ie = 3 A) / DC-13; R300 (Ue = 250 V, Ie = 0.1 A)			
Product certification	CE - UL - CSA - CCC - BV - LROS - RINA - GL - DNV - VIT-SEPRO - GOST			
Fluid connection	G 1/4" (female) (other connections possible, please consult us)			
Electrical connection	Screw terminals (1), tapped entry for ISO M20 x 1.5 cable gland - **For n° 13 (DIN Pg 13.5) cable gland**			

Fluids controlled	Hydraulic oils, fresh water, sea water, air up to 70°C		Hydraulic oils, air up to 160°C	Hydraulic oils, fresh water, sea water, air up to 70°C

Type XMLA - fixed differential, single threshold detection

Setting range (bar) of upper limit (PH): pressure switches		-0.28…-1 (4)	–	0.03…1	0.15…2.5
Dimensions (mm) H x W x D		113 x 35 x 75	113 x 35 x 75	162 x 110 x 110	158 x 55 x 77.5
With setting scale	1 C/O single-pole, snap action contact	**XMLAM01V2S12**	**–**	**XMLA001R2S12**	**XMLA002A2S12**
Natural differential (bar)	at low setting	0.24 (2)	–	0.02	0.13
subtract from PH to give PB	at high setting	0.24 (2)	–	0.04	0.13

Type XMLB - adjustable differential, regulation between 2 thresholds

Setting range (bar) of upper limit (PH): pressure switches		-0.14...-1 (4)	-0.5...5	0.05...1	0.3...2.5
With setting scale	1 C/O single-pole, snap action contact	**XMLBM02V2S12**	**XMLBM05A2S12**	**XMLB001R2S12**	**XMLB002A2S12**
Possible differential (bar)	Min. at low setting	0.13 (3)	0.5	0.04	0.16
subtract from PH to give PB	Min. at high setting	0.13 (3)	0.5	0.06	0.21
	Max. at high setting	0.8 (3)	6	0.75	1.75

XMLC and D

XMLC
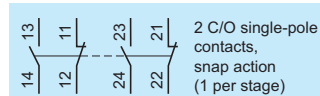
| 13 | 11 | 23 | 21 | 2 C/O single-pole contacts, simultaneous snap action |
| 14 | 12 | 24 | 22 | |

ISO entry
(to EN 50262)

XMLD

| 13 | 11 | 23 | 21 | 2 C/O single-pole contacts, snap action (1 per stage) |
| 14 | 12 | 24 | 22 | |

Fluids controlled	Hydraulic oils, fresh water, sea water, air up to 70°C	Hydraulic oils, air up to 160°C	Hydraulic oils, fresh water, sea water, air up to 160°C

Type XMLC - adjustable differential, regulation between 2 thresholds

Setting range (bar) of upper limit (PH): pressure switches		-0.14...-1 (4)	0.05...1	0.3...2.5
Dimensions (mm) H x W x D		113 x 46 x 85	175 x 110 x 110	158 x 55 x 90
With setting scale	2 C/O single-pole, snap action contacts	**XMLCM02V2S12**	**XMLC001R2S12**	**XMLC002B2S12**
Possible differential (bar)	Min. at low setting	0.13 (4)	0.03	0.13
subtract from PH to give PB	Min. at high setting	0.14 (4)	0.04	0.17
	Max. at high setting	0.8 (4)	0.8	2

Type XMLD - fixed differential, dual stage, for detection at each threshold
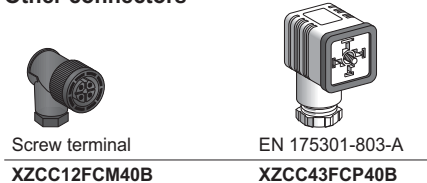
Setting range	2nd stage switching point (PB2)	-0.12...-1 (4)	0.12...1	0.34...2.5
(bar)	1st stage switching point (PB1)	-0.10...-0.98	0.04...0.92	0.2...2.36
	Spread between 2 stages (PB2 – PB1)	-0.02...-0.88	0.08...0.73	0.14...1.5
Without setting scale	2 C/O single-pole, snap action contacts (1 per stage)	**XMLDM02V1S12**	**XMLD001R1S12**	**XMLD002B1S12**
Natural differential (bar)	at low setting	0.1 (2)	0.03	0.14
subtract from PH 1/2 to give PB 1/2	at high setting	0.1 (2)	0.07	0.19

Other versions: **please consult our Customer Care Centre.**

Telemecanique
Sensors

4	10	20	35	70	160	300	500

conforming to IEC 947-5-1 Appendix A, EN 60 947-5-1

tapped entry, replace the last number of the reference (2) **by 1** (example: XMLA010A2S1**2** becomes XMLA010A2S1**1**)

Hydraulic oils, fresh water, sea water, air up to 70°C				Hydraulic oils up to 160°C			
0.4…4	0.6…10	1…20	1.5…35	5…70	10…160	20…300	30…500
113 x 35 x 75	113 x 35 x 75	113 x 35 x 75	113 x 35 x 75	113 x 35 x 75	113 x 35 x 75	113 x 35 x 75	113 x 35 x 75
XMLA004A2S12	**XMLA010A2S12**	**XMLA020A2S12**	**XMLA035A2S12**	**XMLA070D2S12**	**XMLA160D2S12**	**XMLA300D2S12**	**XMLA500D2S12**
0.35	0.5	0.4	1.25	3	5.5	16.5	20
0.35	0.5	1	1.25	7.5	18	35	45

0.25...4	0.7...10	1.3...20	3.5...35	7...70	10...160	22...300	30...500
XMLB004A2S12	**XMLB010A2S12**	**XMLB020A2S12**	**XMLB035A2S12**	**XMLB070D2S12**	**XMLB160D2S12**	**XMLB300D2S12**	**XMLB500D2S12**
0.02	0.57	1	1.7	4.7	9.3	19.4	23
0.25	0.85	1.6	2.55	8.8	20.8	37	52.6
2.4	7.5	11	20	50	100	200	300

(1) For electrical connection by DIN 43650A connector (IP 65), replace the suffix "**S12**" in the reference by "**C11**". Example: XMLB010A2**S12** becomes XMLB010A2**C11**.
(2) For vacuum switch: natural differential to be added to PB to give PH.
(3) For vacuum switch: possible differential to be added to PB to give PH.
(4) Setting range (bar) of lower limit (PB): vacuum switch.

Hydraulic oils, fresh water, sea water, air up to 160°C				Hydraulic oils up to 160°C			
0.3...4	0.7...10	1.3...20	3.5...35	7...70	12...160	22...300	30...500
113 x 46 x 85	113 x 46 x 85	113 x 46 x 85	113 x 46 x 85	113 x 46 x 85	113 x 46 x 85	113 x 46 x 85	113 x 46 x 85
XMLC004B2S12	**XMLC010B2S12**	**XMLC020B2S12**	**XMLC035B2S12**	**XMLC070D2S12**	**XMLC160D2S12**	**XMLC300D2S12**	**XMLC500D2S12**
0.15	0.45	0.7	1	4.5	9	16	19
0.17	0.7	1	1.5	8.9	21	35	52
2.5	8	11	22	60	110	240	340

0.40...4	1.2...10	2.14...20	4.4...35	9.4...70	16.5...160	36...300	41...500
0.19...3.79	0.52...9.32	0.9...18.76	1.9...32.5	6.6...67.2	10.5...154	25...289	25...484
0.21...2.18	0.68...5.8	1.24...9.55	2.5...20.4	2.8...46	6...83	11...189	16...244
XMLD004B1S12	**XMLD010B1S12**	**XMLD020B1S12**	**XMLD035B1S12**	**XMLD070D1S12**	**XMLD160D1S12**	**XMLD300D1S12**	**XMLD500D1S12**
0.15	0.45	0.7	1.5	5	8.8	17	21
0.19	0.6	1.3	2.6	9.5	20	42	65

Telemecanique
Sensors

Other versions: **please consult our Customer Care Centre.**

| 13 21 | 1 C/O |
| 14 22 | single-pole contact, snap action |

Setting range of upper limit (PH) (bar)		1…6	1.3…12	3.5…25
Fluids controlled		**Air, water** (fresh water, sea water) from 0…+70°C		
Ambient air temperature		- 25…+ 70°C		
Degree of protection (conforming to IEC 60529)		IP 54		
Rated operational characteristics (conforming to EN IEC 60947-5-1)		AC-15; B300 (Ue = 240 V, Ie = 1.5 A - Ue = 120 V, Ie = 3 A) / DC-13; R300 (Ue = 250 V, Ie = 0.1 A)		
Product certification		CE - UL - CSA - CCC		
Dimensions (mm) H x W x D		106 x 57 x 98		126 x 57 x 98
Fluid connection		1/4" BSP female		
Electrical connection		Screw terminals, 2 tapped entries for n° 13 (DIN Pg 13.5) cable gland		

Type XMX with internal setting screw

Without setting scale, screw terminal connections				
1 C/O single-pole, snap action contact		**XMXA06L2135**	**XMXA12L2135**	**XMXA25L2135**
Possible differential (bar)	Min. at low setting	0.8	1	3.4
subtract from PH to give PB	Min. at high setting	1.2	1.7	4.5
	Max. at high setting	4.2	8.4	20

| 13 21 | 1 C/O |
| 14 22 | single-pole contact, snap action |

Setting range of upper limit (PH) (bar)		1…6	1.3…12	3.5…25
Fluids controlled		**Air, water** (fresh water, sea water) from 0…+70°C		
Ambient air temperature		- 25…+ 70°C		
Degree of protection (conforming to IEC 60529)		IP 54		
Rated operational characteristics (conforming to EN IEC 60947-5-1)		AC-15; B300 (Ue = 240 V, Ie = 1.5 A - Ue = 120 V, Ie = 3 A) / DC-13; R300 (Ue = 250 V, Ie = 0.1 A)		
Product certification		CE - UL - CSA - CCC		
Dimensions (mm) H x W x D		113 x 57 x 98		133 x 57 x 98
Fluid connection		1/4" BSP female		
Electrical connection		Screw terminals, tapped entry for n° 13 (DIN Pg 13.5) cable gland		

Type XMA with external setting screw (transparent cover)

Without setting scale, screw terminal connections				
1 C/O single-pole, snap action contact		**XMAV06L2135**	**XMAV12L2135**	**XMAV25L2135**
Possible differential (bar)	Min. at low setting	0.8	1	3.4
subtract from PH to give PB	Min. at high setting	1.2	1.7	4.5
	Max. at high setting	4.2	8.4	20

Telemecanique
Sensors

Other versions: **please consult our Customer Care Centre.**

Electromechanical pressure switches for power circuits, adjustable differential for regulation between 2 thresholds

2 NC 2-pole contact, snap action
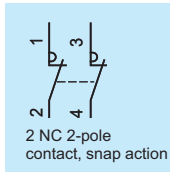
Degree of protection			IP 20			IP 65		
Size (bar)			**4.6**	**7**	**10.5**	**4.6**	**7**	**10.5**
Setting range of upper limit (PH) (bar)			**1.4…4.6**	**2.8…7**	**5.6…10.5**	**1.4…4.6**	**2.8…7**	**5.6…10.5**
Fluids controlled			**Water** (fresh water, sea water) from 0…+55°C					
Electrical connection			Screw terminals, 2 cable entries with grommet			Screw terminals, 2 tapped entries for n° 13 (DIN Pg 13.5) cable gland		
Product certification			CE					
Ambient air temperature			For operation: 0…+ 50°C. For storage: - 30…+ 80°C					
Rated operational characteristics (conforming to EN IEC 60947-5-1)			Ie = 10 A, Ue = 250 V AC					
Power rating	110 V	AC 2-pole, single-phase	0.75 kW (1 HP)			0.75 kW (1 HP)		
of controlled		AC 2-pole, 3-phase	1.1 kW (1.5 HP)			1.1 kW (1.5 HP)		
motors	230 / 400 V	AC 2-pole, single-phase	1.5 kW (2 HP)			1.5 kW (2 HP)		
		AC 2-pole, 3-phase	2.2 kW (3 HP)			2.2 kW (3 HP)		
Dimensions (mm) H x W x D			96/105 x 72 x 102	94 x 72 x 102		115 x 72 x 106	115 x 72 x 106	
Fluid connection	G 1/4 (BSP female)		**FSG2**	**FYG22**	**FYG32**	**FSG2NE**	**FYG22NE**	**FYG32NE**
	R 1/4 (BSP male)		**FSG9**	**FYG29**	**FYG39**	**–**	**–**	**–**
	G 3/8 (BSP female) rotating nut		**–**	**–**	**–**	**FSG2NEG**	**–**	**–**
Possible differential (bar)		At low setting	1 min. - 2.1 max.	1.2 min. - 2.3 max.	1.9 min. - 3 max.	1 min. - 2.1 max.	1.2 min. - 2.3 max.	1.9 min. - 3 max.
subtract from PH to give PB		At middle setting	1.1 min. - 2.2 max.	1.4 min. - 2.5 max.	2.1 min. - 3.2 max.	1.1 min. - 2.2 max.	1.4 min. - 2.5 max.	2.1 min. - 3.2 max.
		At high setting	1.2 min. - 2.3 max.	1.6 min. - 2.7 max.	2.3 min. - 3.4 max.	1.2 min. - 2.3 max.	1.6 min. - 2.7 max.	2.3 min. - 3.4 max.

2 NC 2-pole contact, snap action   3 NC 3-pole contact, snap action
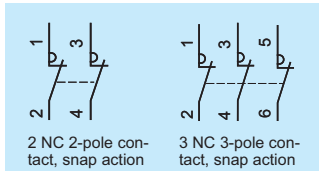
Size (bar)			6		12		25
Setting range of upper limit (PH) (bar)			**1…6**		**1.3….12**		**3.5…25**
Fluids controlled			**Air, water** (fresh water, sea water) from 0…+70°C				
Ambient air temperature			For operation: - 25…+ 70°C. For storage: - 40…+ 70°C				
Decompression valve / ONOff knob			without	with	without	with	without
Fluid connection			G 1/4 (BSP female)	4 x G 1/4 (BSP female)	G 1/4 (BSP female)	4 x G 1/4 (BSP female)	G 1/4 (BSP female)
Electrical connection			Screw terminals, 2 tapped entries for n° 13 (DIN Pg 13.5) cable gland				
Degree of protection			IP 54		IP 54		IP 54
Product certification			CE - CCC				
Rated insulation voltage			Ui = 500 V				
Electrical	Power	1.5 kW	400 V AC 3-phase: 1 000 000 operating cycles				
durability			230 V AC 3-phase: 600 000 operating cycles				
		2.2 kW	400 V AC 3-phase: 700 000 operating cycles				
		3 kW	400 V AC 3-phase: 500 000 operating cycles				
Dimensions (mm) H x W x D			106 x 57 x 97.5	138 x 57 x 97.5	106 x 57 x 97.5	138 x 57 x 97.5	126 x 57 x 97.5
Type of contacts	2 NC 2-pole, snap action contact		**XMPA06B2131**	**–**	**XMPA12B2131**	**XMPE12B2431**	**XMPA25B2131**
	3 NC 3-pole, snap action contact		**XMPA06C2131**	**XMPE06C2431**	**XMPA12C2131**	**XMPE12C2431**	**XMPA25C2131**
Possible differential (bar)		Min. at low setting	0.8	0.8	1	1	3.4
subtract from PH to give PB		Min. at high setting	1.2	1.2	1.7	1.7	4.5
		Max. at high setting	4.2	4.2	8.4	8.4	20

Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors

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OsiSense XS ——— Inductive proximity sensors
Cylindrical metal

	Non flush mountable
	Flush mountable

	Flush standard and increased range			
	M8		**M12**	
Nominal sensing distance Sn	**1.5** mm	**2.5** mm	**2** mm	**4** mm
Usable sensing distance S (mm) flush mountable / non flush mountable	0…1.2	0…2	0…1.6	0…3.2
Temperature range (°C)	- 25…+ 70			
Product certification	CE - UL - CSA - CCC (in progress) - C-TICK			
Degree of protection (conforming to IEC 60529)	IP 67		pre-cabled: IP 69K conforming to DIN 40050, IP 68	

Sensors for DC applications

Output function		NO		**A**	**A**	**A**	**A**
		NC		**B**	**B**	**B**	**B**
Dimensions (mm) Ø x L Cable / Connector				M8 x 33 / M8 x 42		M12 x 35 / M12 x 50	
3-wire	PNP		Cable (2 m)	**XS508B1PAL2**	**XS108B3PAL2**	**XS512B1PAL2**	**XS112B3PAL2**
			Connector M8 / M12	**XS508B1PAM8**	**XS108B3PAM8**	**XS512B1PAM12**	**XS112B3PAM12**
	NPN		Cable (2m)	**XS508B1NAL2**	**XS108B3NAL2**	**XS512B1NAL2**	**XS112B3NAL2**
			Connector M8 / M12	**XS508B1NAM8**	**XS108B3NAM8**	**XS512B1NAM12**	**XS112B3NAM12**
2-wire	non		Cable (2 m)	**XS508BSCAL2**	**XS608B3CAL2**	**XS512BSDAL2**	**XS612B3DAL2**
	polarised (1)		Connecteur M12	**XS508BSCAL01M12**	**XS608B3CAL01M12**	**XS512BSDAM12**	**XS612B3DAM12**
Supply voltage limits, min./max. (V) including ripple				10…36	10…36	10…36	10…36
Switching capacity, max. (mA) 3-wire / 2-wire				200 / 100	200 / 100	200 / 100	200 / 100
Overload and short-circuit protection (★) / LED output state indicator (⊗)				★ / ⊗	★ / ⊗	★ / ⊗	★ / ⊗
Residual current, open state (mA)				≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Voltage drop, closed state (V) at I nominal 3-wire / 2-wire				≤ 2 / ≤ 4	≤ 2 / ≤ 4	≤ 2 / ≤ 4	≤ 2 / ≤ 4
Switching frequency (Hz) 3-wire / 2-wire				5000 / 4000	2500 / 3000	5000 / 4000	2500 / 2000

Dimensions (mm) Ø x L Cable / connector				M8 x 51 / M8 x 62		M12 x 53 / M12 x 62	
3-wire	PNP		Cable (2 m)	**XS508BLPAL2**	**XS608B1PAL2**	**XS512BLPAL2**	**XS612B1PAL2**
			Connector M12	**XS508BLPAM12**	**XS608B1PAM12**	**XS512BLPAM12**	**XS612B1PAM12**
	NPN		Cable (2 m)	**XS508BLNAL2**	**XS608B1NAL2**	**XS512BLNAL2**	**XS612B1NAL2**
			Connector M12	**XS508BLNAM12**	**XS608B1NAM12**	**XS512BLNAM12**	**XS612B1NAM12**
2-wire	non		Cable (2 m)	**XS508B1DAL2**	**XS608B1DAL2**	**XS512B1DAL2**	**XS612B1DAL2**
	polarised		Connector M12	**XS508B1DAM12**	**XS608B1DAM12**	**XS512B1DAM12**	**XS612B1DAM12**
Supply voltage limits, min./max. (V) including ripple				10…58	10…58	10…58	10…58
Switching capacity, max. (mA) 3-wire / 2-wire				200 / 100	200 / 100	200 / 100	200 / 100
Overload and short-circuit protection (★) / LED output state indicator (⊗)				★ / ⊗	★ / ⊗	★ / ⊗	★ / ⊗
Residual current, open state (mA) 2-wire				≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5
Voltage drop, closed state (V) at I nominal 3-wire / 2-wire				≤ 2 / ≤ 4	≤ 2 / ≤ 4	≤ 2 / ≤ 4	≤ 2 / ≤ 4
Switching frequency (Hz) 3-wire / 2-wire				5000 / 4000	2500 / 3000	5000 / 4000	2500 / 2000

Multi-current/multi-voltage sensors for AC/DC applications

Dimensions (mm) Ø x L Cable / connector			–	–	M12 x 53 / M12 x 62	
2-wire		Cable (2 m)	–	–	**XS512B1MAL2**	**XS612B1MAL2**
		Connector 1/2"-20 UNF	–	–	**XS512B1MAU20**	**XS612B1MAU20**
Supply voltage limits, min./max. (V) including ripple			–	–	20…264	20…264
Switching capacity, max. (mA)			–	–	200	200
LED output state indicator (⊗)			–	–	⊗	⊗
Residual current, open state (mA)			–	–	≤ 0,8	≤ 0,8
Voltage drop, closed state (V) at I nominal			–	–	≤ 5.5	≤ 5.5
Switching frequency (Hz)			–	–	25 AC / 1000 DC	25 AC / 1000 DC

(1) polarised for M8 short

Accessories

Fixing for cylindrical sensors

Fixing clamp with indexing pin for cylindrical sensors

M8	**XSZB108**
M12	**XSZB112**
M18	**XSZB118**
M30	**XSZB130**

Suitable female plug-in connectors

M8	Straight	Elbowed
Metal ring	**XZCC8FDM30S**	**XZCC8FCM30S**
M12 (4 pin)		
Metal ring	**XZCC12FDM40B**	**XZCC12FCM40B**
Plastic ring	**XZCC12FDP40B**	**XZCC12FCP40B**

Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors
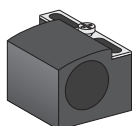
M18		M30		Non flush increased range		
				M12	M18	M30
5 mm	8 mm	10 mm	15 mm	7 mm	12 mm	22 mm
0…4	0…6.4	0…8	0…12	0…5.6	0…9.6	0…17.6
- 25…+ 70				- 25…+ 70		
CE - UL - CSA - CCC (in progress) - C-TICK				CE - UL - CSA - CCC (in progress) - C-TICK		
(with connector: IP 67)				pre-cabled: IP 69K conforming to DIN 40050, IP 68 (with connector: IP 67)		

A	A	A	A	A	A	A
B	B	B	B	B	B	B
M18 x 39 / M18 x 50		M30 x 43 / M30 x 55		–		
XS518B1P A L2	**XS118B3P A L2**	**XS530B1P A L2**	**XS130B3P A L2**	–		
XS518B1P A M12	**XS118B3P A M12**	**XS530B1P A M12**	**XS130B3P A M12**	–		
XS518B1N A L2	**XS118B3N A L2**	**XS530B1N A L2**	**XS130B3N A L2**	–		
XS518B1N A M12	**XS118B3N A M12**	**XS530B1N A M12**	**XS130B3N A M12**	–		
XS518BSD A L2	**XS618B3D A L2**	**XS530BSD A L2**	**XS630B3D A L2**	–		
XS518BSD A M12	**XS618B3D A M12**	**XS530BSD A M12**	**XS630B3D A M12**	–		
10…36	10…36	10…36	10…36	–		
200 / 100	200 / 100	200 / 100	200 / 100	–		
★ / ⊗	★ / ⊗	★ / ⊗	★ / ⊗	–		
≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5	–		
≤ 2 / ≤ 4	≤ 2 / ≤ 4	≤ 2 / ≤ 4	≤ 2 / ≤ 4	–		
2000 / 3000	1000 / 1000	1000 / 2000	500 / 500	–		

M18 x 62 / M18 x 74		M30 x 62		M12 x 55 / M12 x 65	M18 x 62 / M18 x 74	M30 x 62 / M30 x 74
XS518BLP A L2	**XS618B1P A L2**	**XS530BLP A L2**	**XS630B1P A L2**	**XS612B4P A L2**	**XS618B4P A L2**	**XS630B4P A L2**
XS518BLP A M12	**XS618B1P A M12**	**XS530BLP A M12**	**XS630B1P A M12**	**XS612B4P A M12**	**XS618B4P A M12**	**XS630B4P A M12**
XS518BLN A L2	XS618B1N A L2	XS530BLN A L2	XS630B1N A L2	**XS612B4N A L2**	**XS618B4N A L2**	**XS630B4N A L2**
XS518BLN A M12	XS618B1N A M12	XS530BLN A M12	XS630B1N A M12	**XS612B4N A M12**	**XS618B4N A M12**	**XS630B4N A M12**
XS518B1D A L2	XS618B1D A L2	XS530B1D A L2	XS630B1D A L2	–	–	–
XS518B1D A M12	XS618B1D A M12	XS530B1D A M12	XS630B1D A M12	–	–	–
10…58	10…58	10…58	10…58	10…58	10…58	10…58
200 / 100	200 / 100	200 / 100	200 / 100	200 / –	200 / –	200 / –
★ / ⊗	★ / ⊗	★ / ⊗	★ / ⊗	★ / ⊗	★ / ⊗	★ / ⊗
≤ 0.5	≤ 0.5	≤ 0.5	≤ 0.5	–	–	–
≤ 2 / ≤ 4	≤ 2 / ≤ 4	≤ 2 / ≤ 4	≤ 2 / ≤ 4	≤ 2 / –	≤ 2 / –	≤ 2 / –
2000 / 3000	1000 / 1000	1000 / 2000	500 / 500	2500 / –	1000 / –	500 / –

M18 x 62 / M18 x 73		M30 x 62 / M30 x 73		–	M18 x 60 / M18 x 72	M30 x 63 / M30 x 74
XS518B1M A L2	**XS618B1M A L2**	**XS530B1M A L2**	**XS630B1M A L2**	–	**XS618B4M A L2**	**XS630B4M A L2**
XS518B1M A U20	**XS618B1M A U20**	**XS530B1M A U20**	**XS630B1M A U20**	–	**XS618B4M A U20**	**XS630B4M A U20**
20…264	20…264	20…264	20…264	–	20…264	20…264
300 AC / 200 DC	300 AC / 200 DC	300 AC / 200 DC	300 AC / 200 DC	–	300 AC / 200 DC	300 AC / 200 DC
⊗	⊗	⊗	⊗	–	⊗	⊗
≤ 0.8	≤ 0.8	≤ 0.8	≤ 0.8	–	≤ 0.8	≤ 0.8
≤ 5.5	≤ 5.5	≤ 5.5	≤ 5.5	–	≤ 5.5	≤ 5.5
25 AC / 1000 DC	25 AC / 1000 DC	25 AC / 500 DC	25 AC / 500 DC	–	25 AC / 1000 DC	25 AC / 300 DC

PUR pre-wired connectors (1)

	M8 (3 pin)		1/2"		M12 (4 pin)		
	Straight	Elbowed		Straight	Elbowed	Straight	Elbowed	Elbowed PNP LED
2 m	**XZCP0566L2**	**XZCP0666L2**	2 m	**XZCP1865L2**	**XZCP1965L2**	**XZCP1141L2**	**XZCP1241L2**	**XZCP1340L2**
5 m	**XZCP0566L5**	**XZCP0666L5**	5 m	**XZCP1865L5**	**XZCP1965L5**	**XZCP1141L5**	**XZCP1241L5**	**XZCP1340L5**
10 m	**XZCP0566L10**	**XZCP0666L10**	10 m	**XZCP1865L10**	**XZCP1965L10**	**XZCP1141L10**	**XZCP1241L10**	**XZCP1340L10**

Straight   Elbowed
(1) For PVC cable see page 47

Telemecanique Sensors

Other versions: **please consult our Customer Care Centre.**

Inductive proximity sensors
Rectangular plastic

	Non flush mountable
	Flush mountable

	Ø 8 x 22 x 8	Ø 15 x 32 x 8	Ø 26 x 26 x 13	Ø 40 x 40 x 15	Ø 80 x 80 x 26
Nominal sensing distance Sn	2.5 mm	5 mm	10 mm	15 mm	40 mm
Usable sensing distance S (mm) flush mountable / non flush mountable	0...2	0...4	0...8	0...12	0...32
Fine adjustment zone (mm) flush mountable / non flush mountable	–	–	–	–	–
Suitability for flush mounting (metal environment)	flush mountable	flush mountable	flush mountable	flush mountable	flush mountable
Temperature range (°C)	- 25...+ 70	- 25...+ 70	- 25...+ 70	- 25...+ 70	- 25...+ 70
Product certification	CE	CE - UL - CSA - C-TICK			
Degree of protection (conforming to IEC 60529)	pre-cabled: IP 68 (with connector: IP 67)				

Sensors for DC applications

Connection			Pre-cabled, PvR (2 m)				
2-wire (non polarised)	NO or NC	programmable	–	–	–	–	–
2-wire	non polarised	NO function	XS7J1A1DAL2	XS7F1A1DAL2	XS7E1A1DAL2	XS7C1A1DAL2	XS7D1A1DAL2
		NC function	XS7J1A1DBL2	XS7F1A1DBL2	XS7E1A1DBL2	XS7C1A1DBL2	XS7D1A1DBL2
4-wire	PNP	NO + NC complementary outputs	–	–	–	–	–
	NPN	NO + NC complementary outputs	–	–	–	–	–
3-wire	PNP	NO function	XS7J1A1PAL2	XS7F1A1PAL2	XS7E1A1PAL2	XS7C1A1PAL2	XS7D1A1PAL2
		NC function	XS7J1A1PBL2	XS7F1A1PBL2	XS7E1A1PBL2	XS7C1A1PBL2	XS7D1A1PBL2
	NPN	NO function	XS7J1A1NAL2	XS7F1A1NAL2	XS7E1A1NAL2	XS7C1A1NAL2	XS7D1A1NAL2
		NC function	XS7J1A1NBL2	XS7F1A1NBL2	XS7E1A1NBL2	XS7C1A1NBL2	XS7D1A1NBL2
Connection			M8 connector				M12 connector
2-wire	non polarised	NO function	XS7J1A1DAL01M8 (1)	XS7F1A1DAL01M8 (1)	XS7E1A1DAM8	XS7C1A1DAM8	XS7D1A1DAM12
		NC function	XS7J1A1DBL01M8 (1)	XS7F1A1DBL01M8 (1)	XS7E1A1DBM8	XS7C1A1DBM8	XS7D1A1DBM12
3-wire	PNP	NO function	XS7J1A1PAL01M8 (1)	XS7F1A1PAL01M8 (1)	XS7E1A1PAM8	XS7C1A1PAM8	XS7D1A1PAM12
		NC function	XS7J1A1PBL01M8 (1)	XS7F1A1PBL01M8 (1)	XS7E1A1PBM8	XS7C1A1PBM8	XS7D1A1PBM12
	NPN	NO function	XS7J1A1NAL01M8 (1)	XS7F1A1NAL01M8 (1)	XS7E1A1NAM8	XS7C1A1NAM8	XS7D1A1NAM12
		NC function	XS7J1A1NBL01M8 (1)	XS7F1A1NBL01M8 (1)	XS7E1A1NBM8	XS7C1A1NBM8	XS7D1A1NBM12
Supply voltage limits, min./max. (V) including ripple			10...36	10...36	10...36	10...36	10...36
Switching capacity, max. (mA)			100	100	100	100	100
Short-circuit protect. (★) / LED output state indicator (⊗) / Power on LED (⊗)			★ / ⊗ / –	★ / ⊗ / –	★ / ⊗ / –	★ / ⊗ / –	★ / ⊗ / –
Voltage drop, closed state (V) at I nominal cable / Connector			≤ 4 / ≤ 2	≤ 4 / ≤ 2	≤ 2	≤ 2	≤ 2
Switching frequency (Hz) cable / Connector			4000 / 2000	5000 / 2000	1000	1000	100

Multi-current/multi-voltage sensors for AC/DC applications

Connection							
2-wire	AC/DC	NO function	–	–	–	–	–
		NC function	–	–	–	–	–
	AC	NO or NC programmable	–	–	–	–	–
	AC/DC	NO or NC programmable	–	–	–	–	–
Connection							
2-wire	AC/DC	NO function	–	–	–	–	–
		NC function	–	–	–	–	–
Supply voltage limits, min./max. (V) including ripple			–	–	–	–	–
Switching capacity, max. (mA)			–	–	–	–	–
Short-circuit protect. (★) / LED output state indicator (⊗) / Power on LED (⊗)			–	–	–	–	–
Residual current, open state (mA)			–	–	–	–	–
Voltage drop, closed state (V) at I nominal			–	–	–	–	–
Switching frequency (Hz)			–	–	–	–	–

(1) M8 connector on flying lead (L = 0.15 m).

Accessories

Fixing for flat sensors
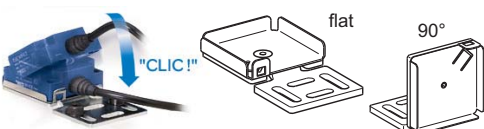
"CLIC !"

flat   90°

	flat	90°
8x22x8	XSZBJ00	XSZBJ90
15x32x8	XSZBF00	XSZBF90
26x26x13	XSZBE00	XSZBE90
40x40x15	XSZBC00	XSZBC90

Suitable female plug-in connectors

M8	Straight	Elbowed
Metal ring	XZCC8FDM30S	XZCC8FCM30S
M12 (4 pin)		
Metal ring	XZCC12FDM40B	XZCC12FCM40B
Plastic ring	XZCC12FDP40B	XZCC12FCP40B

Other versions: **please consult our Customer Care Centre.**

⌀ 40 x 40 x 70		⌀ 40 x 40 x 117		⌀ 26 x 26 x 13	⌀ 40 x 40 x 15	⌀ 80 x 80 x 26
20 mm	**40** mm	**20** mm	**40** mm	**15** mm	**25** mm	**60** mm
0…16	0…32	0…16	0…32	0…8 / 0…12	0…12 / 0…20	0…32 / 0…48
				5…10 / 5…15	8…15 / 8…25	20…40 / 20...60
flush mountable	non flush mountable	flush mountable	non flush mountable	flush mountable or non flush mountable via teach mode		
- 25…+ 70				- 25…+ 70		
CE - UL - CSA - CCC - C-TICK				CE - UL - CSA - CCC - C-TICK		
IP67 and IP69K				pre-cabled: IP 68 (with connector: IP 67)		

M12 connector		Screw terminals (2)		Pre-cabled (2 m)		
–	–	XS8C4A1DPP20	XS8C4A4DPP20	–	–	–
XS8C2A1DAM12	XS8C2A4DAM12	–	–	–	–	–
XS8C2A1DBM12	XS8C2A4DBM12	–	–	–	–	v
XS8C2A1PCM12	XS8C2A4PCM12	XS8C4A1PCP20	XS8C4A4PCP20	–	–	–
XS8C2A1NCM12	XS8C2A4NCM12	XS8C4A1NCP20	XS8C4A4NCP20	–	–	–
–	–	–	–	XS8E1A1PAL2	XS8C1A1PAL2	XS8D1A1PAL2
–	–	–	–	XS8E1A1PBL2	XS8C1A1PBL2	XS8D1A1PBL2
–	–	–	–	XS8E1A1NAL2	XS8C1A1NAL2	XS8D1A1NAL2
–	–	–	–	XS8E1A1NBL2	XS8C1A1NBL2	XS8D1A1NBL2
				M8 connector		**M12 connector**
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	XS8E1A1PAM8	XS8C1A1PAM8	XS8D1A1PAM12
–	–	–	–	XS8E1A1PBM8	XS8C1A1PBM8	XS8D1A1PBM12
–	–	–	–	XS8E1A1NAM8	XS8C1A1NAM8	XS8D1A1NAM12
–	–	–	–	XS8E1A1NBM8	XS8C1A1NBM8	XS8D1A1NBM12
12…48				10…36	10…36	10…36
4-wire version = 200 – 2-wire version = 1.5…100				100	200	200
4-wire version = ★ / ⊗ / ⊗ – 2-wire version = ★ / ⊗ / –				★ / ⊗ / ⊗	★ / ⊗ / ⊗	★ / ⊗ / ⊗
4-wire version = ≤ 2 – 2-wire version = ≤ 4				≤ 2	≤ 2	≤ 2
flush version : 300 - Non flush version : 200				2000	1000	150

1/2"- 20 UNF connector		Screw terminals (2)		Pre-cabled (2 m)		
XS8C2A1MAU20	XS8C2A4MAU20	–	–	XS8E1A1MAL2	XS8C1A1MAL2	XS8D1A1MAL2
XS8C2A1MBU20	XS8C2A4MBU20	–	–	XS8E1A1MBL2	XS8C1A1MBL2	XS8D1A1MBL2
–	–	–	–	–	–	–
–	–	XS8C4A1MPP20	XS8C4A4MPP20	–	–	–
				1/2"-20 UNF connector		
–	–	–	–	XS8E1A1MAL01U20	XS8C1A1MAL01U20	XS8D1A1MAU20
–	–	–	–	XS8E1A1MBL01U20	XS8C1A1MBL01U20	XS8D1A1MBU20
20…264				20…264	20…264	20…264
AC/DC version = 300 / 200				200 AC or DC	300 AC / 200 DC	300 AC / 200 DC
– / ⊗ / –				– / ⊗ / ⊗	– / ⊗ / ⊗	– / ⊗ / ⊗
AC/DC version = ≤ 1.5				≤ 1.5	≤ 1.5	≤ 1.5
≤ 5.5				≤ 5.5	≤ 5.5	≤ 5.5
25 AC / 50 DC				2000	1000	150

(2) Sensors supplied without cable gland. Suitable cable gland: M20. Also available in13P, 1/2" NPT output and M12, 7/8" connectors.

PUR pre-wired connectors (1)		**M8 (3 pin)**	Straight	Elbowed	**1/2"**	Straight	Elbowed	**M12 (4 pin)**	Straight	Elbowed	Elbowed PNP LED
		2 m	XZCP0566L2	XZCP0666L2	2 m	XZCP1865L2	XZCP1965L2	2 m	XZCP1141L2	XZCP1241L2	XZCP1340L2
		5 m	XZCP0566L5	XZCP0666L5	5 m	XZCP1865L5	XZCP1965L5	5 m	XZCP1141L5	XZCP1241L5	XZCP1340L5
Straight Elbowed		10 m	XZCP0566L10	XZCP0666L10	10 m	XZCP1865L10	XZCP1965L10	10 m	XZCP1141L10	XZCP1241L10	XZCP1340L10

(1) For PVC cable see page 47

Other versions: **please consult our Customer Care Centre.**

OsiSense XS ———— Inductive proximity sensors
Cylindrical Plastic

	Non flush mountable
	Flush mountable

	M8	**M12**	**M18**	**M30**
Nominal sensing distance Sn	**2.5** mm	**4** mm	**8** mm	**15** mm
Operating zone (mm)	0…2	0…3.2	0…6.4	0…12
Suitability for flush mounting (metal environment)	non flush mountable			
Temperature range (°C)	- 25…+ 70			
Product certification	CE - UL - CSA - CCC - C-TICK			
Degree of protection (conforming to IEC 60529)	IP 67	pre-cabled: IP 68 (with connector: IP 67)		

Sensors for DC applications

Connection			Pre-cabled, PvR (2 m)			
Dimensions (mm) Ø x L or W x H x D			M8 x 33	M12 x 33	M18 x 33.5	M30 x 40.5
3-wire	**PNP**	**NO** function	**XS4P08PA340**	**XS4P12PA340**	**XS4P18PA340**	**XS4P30PA340**
		NC function	**XS4P08PB340**	**XS4P12PB340**	**XS4P18PB340**	**XS4P30PB340**
	NPN	**NO** function	**XS4P08NA340**	**XS4P12NA340**	**XS4P18NA340**	**XS4P30NA340**
		NC function	**XS4P08NB340**	**XS4P12NB340**	**XS4P18NB340**	**XS4P30NB340**
Connection			M8 connector	M12 connector		
Dimensions (mm) Ø x L or W x H x D			M8 x 42	M12 x 48	M18 x 48	M30 x 50
3-wire	**PNP**	**NO** function	**XS4P08PA340S**	**XS4P12PA340D**	**XS4P18PA340D**	**XS4P30PA340D**
		NC function	**XS4P08PB340S**	**XS4P12PB340D**	**XS4P18PB340D**	**XS4P30PB340D**
	NPN	**NO** function	**XS4P08NA340S**	**XS4P12NA340D**	**XS4P18NA340D**	**XS4P30NA340D**
		NC function	**XS4P08NB340S**	**XS4P12NB340D**	**XS4P18NB340D**	–
Supply voltage limits, min./max. (V) including ripple			10…38	10…38	10…38	10…38
Switching capacity, max. (mA)			200	200	200	200
Short-circuit protect. (★) / LED output state indicator (⊗)			★ / ⊗	★ / ⊗	★ / ⊗	★ / ⊗
Voltage drop, closed state (V) at I nominal			≤ 2	≤ 2	≤ 2	≤ 2
Switching frequency (Hz)			5000	5000	2000	1000

Multi-current/multi-voltage sensors for AC/DC applications

Connection			Pre-cabled, PvR (2 m)			
Dimensions (mm) Ø x L or W x D x H			M8 x 50	M12 x 50	M18 x 60	M30 x 60
2-wire	AC/DC	**NO** function	**XS4P08MA230**	**XS4P12MA230**	**XS4P18MA230**	**XS4P30MA230**
not short-circuit protected (1)		**NC** function	**XS4P08MB230**	**XS4P12MB230**	**XS4P18MB230**	**XS4P30MB230**
Connection			1/2" connector			
Dimensions (mm) Ø x L or W x H x D			M8 x 61	M12 x 61	M18 x 70	M30 x 70
2-wire	AC/DC	**NO** function	**XS4P08MA230K**	**XS4P12MA230K**	**XS4P18MA230K**	**XS4P30MA230K**
not short-circuit protected (1)		**NC** function	**XS4P08MB230K**	**XS4P12MB230K**	**XS4P18MB230K**	**XS4P30MB230K**
Supply voltage limits, min./max. (V) including ripple			20…264	20…264	20…264	20…264
Switching capacity, max. (mA)			100	200	300 AC / 200 DC	300 AC / 200 DC
LED output state indicator (⊗)			⊗	⊗	⊗	⊗
Residual current, open state (mA)			≤ 0.6	≤ 0.6	≤ 0.6	≤ 0.6
Voltage drop, closed state (V) at I nominal			≤ 5.5	≤ 5.5	≤ 5.5	≤ 5.5
Switching frequency (Hz)			25 AC / 3000 DC	25 AC / 3000 DC	25 AC / 2000 DC	25 AC / 1000 DC

(1) For these sensors without short-circuit protection, it is essential to connect a 0.4 A quick-blow fuse in series with the load.

Accessories

Fixing for cylindrical sensors

Fixing clamp with indexing pin for cylindrical sensors
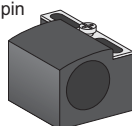
M4	**XSZB104**	M12	**XSZB112**
M5	**XSZB105**	M18	**XSZB118**
M6.5	**XSZB165**	M30	**XSZB130**
M8	**XSZB108**		

Suitable female plug-in connectors

M8	Straight	Elbowed
Metal ring	**XZCC8FDM30S**	**XZCC8FCM30S**
M12 (4 pin)		
Metal ring	**XZCC12FDM40B**	**XZCC12FCM40B**
Plastic ring	**XZCC12FDP40B**	**XZCC12FCP40B**

Telemecanique
Sensors

Other versions: **please consult our Customer Care Centre.**

Miniature cylindrical metal (assembly)

	Ø 4	M5	Ø 6.5	
Nominal sensing distance Sn	1 mm	1 mm	1.5 mm	2.5 mm
Operating zone (mm)	0…0.8	0…0.8	0…1.2	0…2
Suitability for flush mounting (metal environment)	flush mountable			
Temperature range (°C)	- 25…+ 70			
Product certification	CE - UL - CSA - CCC - C-TICK			
Degree of protection (conforming to IEC 60529)	IP 67			

Sensors for DC applications

			Ø 4	M5	Ø 6.5	
Dimensions (mm) Ø x L			Ø 4 x 29	M5 x 29	Ø 6.5 x 33	
Connection			Pre-cabled, PvR (2 m)			
3-wire	PNP	NO function	XS1L04PA310	XS1N05PA310	XS506B1PAL2	XS106B3PAL2
		NC function	–	–	XS506B1PBL2	XS106B3PBL2
	NPN	NO function	XS1L04NA310	XS1N05NA310	XS506B1NAL2	XS106B3NAL2
		NC function	–	–	XS506B1NBL2	XS106B3NBL2
2-wire (polarised)		NO function	–	–	XS506BSCAL2	XS606B3CAL2
		NC function	–	–	XS506BSCBL2	XS606B3CBL2
Dimensions (mm) Ø x L			Ø 4 x 41	M5 x 41	Ø 6.5 x 42	
Connection			M8			
3-wire	PNP	NO function	XS1L04PA310S	XS1N05PA311S (1)	XS506B1PAM8	XS106B3PAM8
		NC function	–	–	XS506B1PBM8	XS106B3PBM8
	NPN	NO function	XS1L04NA310S	XS1N05NA311S (1)	XS506B1NAM8	XS106B3NAM8
		NC function	–	–	XS506B1NBM8	XS106B3NBM8
Connection			M12			
2-wire (polarised)		fonction NO	–	–	XS506BSCAL01M12	XS506B3CAL01M12
Supply voltage limits, min./max. (V) including ripple			5…30	5…30	10…36	
Switching capacity, max. (mA) 3-wire / 2-wire			100 / –	100 / –	200 / 100	
Short-circuit protect. (★) / LED output state indicator (⊗)			★ / ⊗	★ / ⊗	★ / ⊗	
Voltage drop, closed state (V) at I nominal 3-wire / 2-wire			≤ 2 / –	≤ 2 / –	≤ 2 / ≤ 4	
Switching frequency (Hz) 3-wire / 2-wire			5000 / –	5000 / –	5000 / 4000	2500 / 3000

(1) Stainless steel sensors, Sn = 0.8 mm

PUR pre-wired connectors (1)		M8 (3 pin)			1/2"			M12 (4 pin)			
			Straight	Elbowed		Straight	Elbowed		Straight	Elbowed	Elbowed PNP LED
Straight	Elbowed	2 m	XZCP0566L2	XZCP0666L2	2 m	XZCP1865L2	XZCP1965L2	2 m	XZCP1141L2	XZCP1241L2	XZCP1340L2
		5 m	XZCP0566L5	XZCP0666L5	5 m	XZCP1865L5	XZCP1965L5	5 m	XZCP1141L5	XZCP1241L5	XZCP1340L5
		10 m	XZCP0566L10	XZCP0666L10	10 m	XZCP1865L10	XZCP1965L10	10 m	XZCP1141L10	XZCP1241L10	XZCP1340L10

(1) For PVC cable see page 47

Other versions: **please consult our Customer Care Centre.**

OsiSense XS ————— Inductive proximity sensors
Multi-voltage with short-circuit protection

		Non flush mountable
		Flush mountable

			M12	**M18**	**M30**
Sensing distance Sn		flush mountable	**2** mm	**5** mm	**10** mm
		non flush mountable	**4** mm	**8** mm	**15** mm
Operating zone (mm)		flush mountable	0…1.6	0…4	0…8
		non flush mountable	0…3.2	0…6.4	0…12
Suitability for flush mounting (metal environment)			flush mountable or non flush mountable depending on model		
Case M (metal) P (plastic)			M		
Temperature range (°C)			- 25…+ 70		
Degree of protection (conforming to IEC 60529)			IP 68 (with connector: IP 67)		
Product certification			CE - UL - CSA - CCC - C-TICK		
Dimensions (mm) Ø x L Cable (Connector)			M12 x 55 (M12 x 66)	M18 x 60 (M18 x 72)	M30 x 60 (M30 x 72)

Sensors for DC applications

Connection						
4-wire	**PNP**	**NO + NC**	flush mountable	–	–	–
			non flush mountable	–	–	–
	NPN	**NO + NC**	flush mountable	–	–	–
			non flush mountable	–	–	–
	PNP+NPN	**NO/NC**	flush mountable (metal)	–	–	–
	programmable		non flush mntbl. (metal)	–	–	–
			non flush mntbl. (plastic)	–	–	–
Connection						
4-wire	**PNP**	**NO + NC**	flush mountable	–	–	–
			non flush mountable	–	–	–
	NPN	**NO + NC**	flush mountable	–	–	–
			non flush mountable	–	–	–
	PNP+NPN	**NO/NC**	flush mountable (metal)	–	–	–
	programmable		non flush mntbl. (metal)	–	–	–
			non flush mntbl. (plastic)	–	–	–
Supply voltage limits, min./max. (V) including ripple				–	–	–
Switching capacity, max. (mA)				–	–	–
Short-circuit protection (★) / LED output state indicator (⊗)				–	–	–
Voltage drop, closed state (V) at I nominal				–	–	–
Switching frequency (Hz)				–	–	–

Multi-current/multi-voltage sensors for AC/DC applications

Connection			**Pre-cabled, PvR (2 m)**		
2-wire AC/DC	**NO** function	flush mountable	**XS1M12MA250**	**XS1M18MA250**	**XS1M30MA250**
		non flush mountable	**XS2M12MA250**	**XS2M18MA250**	**XS2M30MA250**
	NC function	flush mountable	**XS1M12MB250**	**XS1M18MB250**	**XS1M30MB250**
		non flush mountable	**XS2M12MB250**	**XS2M18MB250**	**XS2M30MB250**
Connection			**1/2"-20 UNF connector**		
2-wire AC/DC	**NO** function	flush mountable	**XS1M12MA250K**	**XS1M18MA250K**	**XS1M30MA250K**
		non flush mountable	**XS2M12MA250K**	**XS2M18MA250K**	**XS2M30MA250K**
	NC function	flush mountable	**XS1M12MB250K**	**XS1M18MB250K**	**XS1M30MB250K**
		non flush mountable	–	**XS2M18MB250K**	**XS2M30MB250K**
Supply voltage limits, min./max. (V) 50-60 Hz			20…264		
Switching capacity, max. (mA)			5…200	5…200 AC, 5…300 DC	
LED output state indicator (⊗) / Power on LED (⊗)			⊗ / ⊗		
Residual current, open state (mA)			≤ 1.5		
Voltage drop, closed state (V) at I nominal			≤ 5.5		
Switching frequency (Hz)			25 AC, 4000 DC	25 AC, 2000 DC	25 AC, 2000 DC (1)

(1) 25 AC, 1000 DC for non flush mountable Ø 30 mm.

Telemecanique Sensors

Other versions: **please consult our Customer Care Centre.**

PNP or NPN NO + NC Complementary outputs   PNP + NPN outputs, NO or NC programmable

M8	M12	M18	M30	M12	M18	M30
1.5 mm	2 mm	5 mm	10 mm	2 mm	5 mm	10 mm
2.5 mm	4 mm	8 mm	15 mm	4 mm	8 mm	15 mm
0…1.2	0…1.6	0…4	0…8	0…1.6	0…4	0…8
0…2	0…3.2	0…6.4	0…12	0…3.2	0…6.4	0…12
flush mountable or non flush mountable depending on model				flush mountable or non flush mountable depending on model		
M				M or P depending on model		
- 25…+ 70				- 25…+ 70		
IP 67	IP 68 (with connector: IP 67)			IP 68 (with connector: IP 67)		
CE - UL - CSA - CCC - C-TICK				CE - UL - CSA - CCC - C-TICK		
M8 x 50 (M8 x 61)	M12 x 33 (M12 x 48)	M18 x 36.5 (M18 x 49)	M30 x 40.5 (M30 x 53)	M12 x 50 (M12 x 61)	M18 x 60 (M18 x 72)	M30 x 60 (M30 x 72)

Pre-cabled, PvR (2 m)				Pre-cabled, PvR (2 m)		
XS1M08PC410	XS1N12PC410	XS1N18PC410	XS1N30PC410	–	–	–
XS2M08PC410	XS2N12PC410	XS2N18PC410	XS2N30PC410	–	–	–
XS1M08NC410	XS1N12NC410	XS1N18NC410	XS1N30NC410	–	–	–
XS2M08NC410	XS2N12NC410	XS2N18NC410	XS2N30NC410	–		
–	–	–	–	XS1M12KP340	XS1M18KP340	XS1M30KP340
–	–	–	–	XS2M12KP340	XS2M18KP340	XS2M30KP340
–	–	–	–	XS4P12KP340	XS4P18KP340	XS4P30KP340
M12 connector				**M12 connector**		
XS1M08PC410D	XS1N12PC410D	XS1N18PC410D	XS1N30PC410D	–	–	–
XS2M08PC410D	XS2N12PC410D	XS2N18PC410D	XS2N30PC410D	–	–	–
XS1M08NC410D	XS1N12NC410D	XS1N18NC410D	XS1N30NC410D	–	–	–
XS2M08NC410D	XS2N12NC410D	XS2N18NC410D	XS2N30NC410D	–	–	–
–	–	–	–	XS1M12KP340D	XS1M18KP340D	XS1M30KP340D
–	–	–	–	XS2M12KP340D	XS2M18KP340D	XS2M30KP340D
–	–	–	–	XS4P12KP340D	XS4P18KP340D	XS4P30KP340D
10…36				10…36		
200				200		
★ / ⊗				★ / –		
≤ 2				≤ 2.6		
5000	5000	2000	1000	5000	2000	1000
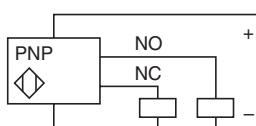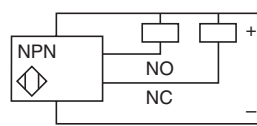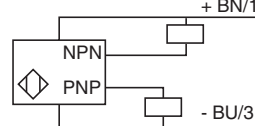
PNP   **NPN**   **NO**   **NC**
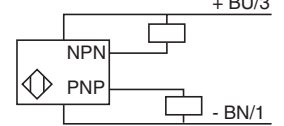
Accessories

Fixing clamps
With indexing pin for cylindrical sensors
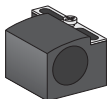
M8	XSZB108
M12	XSZB112
M18	XSZB118
M30	XSZB130

Suitable female plug-in connectors, including PUR pre-wired versions (1)

	length 5 m without LED	pre-wired, elbowed	pre-wired, straight	screw terminal
M8 (or S)		XZCP0666L5	XZCP0566L5	XZCC8FCM30S
M12 (or D)		XZCP1241L5	XZCP1141L5	XZCC12FCM40B
1/2" (or K)		XZCP1965L5	XZCP1865L5	XZCC20FCM30B

(1) For PVC cable see page 47

Rotation control

Fixed sensing distance
(for ferrous or non ferrous materials)

Non flush mountable
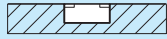
Flush mountable

	26 x 26 x 13	40 x 40 x 15	M30	M18	M30
Nominal sensing distance Sn	**10** mm	**15** mm	**10** mm	**5** mm	**10** mm
Operating zone (mm)	0...8	0...12	0...8	0...4	0...8
Suitability for flush mounting (metal environment)	flush mountable			flush mountable	
Case M (metal) P (plastic)	P	P	M	M	M
Temperature range (°C)	- 25…+ 70			0…+ 50	
Degree of protection (conforming to IEC 60529)	IP 67			pre-cabled: IP 68 (with connector: IP 67)	
Product certification	CE - UL - CSA - CCC - C-TICK			CE - UL - CSA - CCC - C-TICK	
Dimensions (mm) Ø x L or W x H x D Cable (Connector)	26 x 26 x 13	40 x 40 x 15	M30 x 81	M18 x 60 (M18 x 70)	M30 x 60
Maximum speed of passing object (impulses/min)	48000	48000	6000...48000 (1)	–	–
Adjustable frequency range (impulses/min)	6...6000	6...6000	6...150 / 120...3000 (1)	–	–

Sensors for DC applications

Connection			Pre-cabled, PvR (2 m)				
4-wire	PNP/NPN NO/NC	programmable	–	–	–	XS1M18KPM40	XS1M30KPM40
3-wire	PNP NC function	slow version	–	–	XSAV11373	–	–
		fast version	–	–	XSAV12373	–	–
	0…10 V output	plastic	–	–	–	–	–
	4…20 mA output	metal, flush mountable	–	–	–	–	–
		plastic, flush mountable	–	–	–	–	–
		plastic, non flush mountable	–	–	–	–	–
Connection			M8 or M12 connector				M12 on 0.8 m flying lead
4-wire	PNP/NPN NO/NC	programmable	–	–	–	XS1M18KPM40D	XS1M30KPM40LD
3-wire	PNP NC function		XS9E11RPBL01M12 (3)	XS9C11RPBL01M12 (3)	–	–	–
	0…10 V output		–	–	–	–	–
	4…20 mA output		–	–	–	–	–
Supply voltage limits, min./max. (V) including ripple			10...36	10...36	10...58	10...38	
Switching capacity, max. (mA)			100	200	200	200	
Short-circuit protect. (★) / LED output state indicator (⊗) / Power on LED (⊗)			(⊗)	★ / ⊗ / ⊗	★ / ⊗ / ⊗	★ / ⊗ / –	★ / ⊗ / –
Linearity error			–	–	–	–	
Voltage drop, closed state (V) at I nominal			≤ 2	≤ 2	≤ 2	≤ 2.6	
Switching frequency (Hz)			–	–	–	1000	
Operating frequency (Hz)			–	–	–	–	

Multi-current/multi-voltage sensors for AC/DC applications

Connection			Pre-cabled, PvR (2 m)				
2-wire	AC/DC	NC function	XS9E11RMBL01U20 (5)	XS9C11RMBL01U20 (5)	–	–	–
not short-circuit protected (2) NC function		slow version	–	–	XSAV11801	–	–
		fast version	–	–	XSAV12801	–	–
Supply voltage limits, min./max. (V) 50-60 Hz			20...264	20...264	20...264	–	–
Switching capacity, max. (mA)			100	300 AC / 200 DC	300 AC / 200 DC	–	–
LED output state indicator (⊗) / Power on LED (⊗)			⊗ / ⊗	⊗ / ⊗	⊗ / –	–	–
Residual current, open state (mA)			≤ 1.5	≤ 1.5	≤ 1.5	–	–
Voltage drop, closed state (V) at I nominal			≤ 5.5	≤ 5.5	≤ 5.7	–	–
Switching frequency (Hz)			–	–	–	–	–

Accessories

Fixing

for flat sensors

"CLIC !"

flat

90°

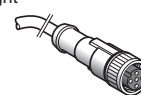|	flat	90°	substitution of block type sensors XSE / XSC / XSD
8x22x8	XSZBJ00	XSZBJ90	–
15x32x8	XSZBF00	XSZBF90	XSZBE10
26x26x13	XSZBE00	XSZBE90	XSZBC10
40x40x15	XSZBC00	XSZBC90	XSZBD10

Fixing clamp with indexing pin for cylindrical sensors

M12	XSZB112
M18	XSZB118
M30	XSZB130

Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors

Analogue (Position control)

8 x 32 x 8	26 x 26 x 13	40 x 40 x 15	80 x 80 x 26	M12	M18	M30
5 mm	**10** mm	**15** mm	**40** mm	M: **2** mm / P: **4** mm	M: **5** mm / P: **8** mm	M: **10** mm / P: **15** mm
1...4	1...10	2...15	5...40	M: 0.2...2 / P: 0.4...4	M: 0.5...5 / P: 0.8...8	M: 1...10 / P: 1.5...15
flush mountable	flush mountable	flush mountable	flush mountable	flush / non flush mountable	flush / non flush mountable	flush / non flush mountable
P	P	P	P	M or P	M or P	M or P
- 25…+ 60	- 25…+ 70	- 25…+ 70	- 25…+ 70	- 25…+ 70	- 25…+ 70	- 25…+ 70
pre-cabled: IP 68 (with connector: IP 67)				IP 67		
CE - UL - CSA - CCC - C-TICK						
15 x 32 x 8	26 x 26 x 13	40 x 40 x 15	80 x 80 x 26	Ø 12 x 50	Ø 18 x 50	Ø 30 x 52.5
–	–	–	–	–	–	–
–	–	–	–	–	–	–

8 x 32 x 8	26 x 26 x 13	40 x 40 x 15	80 x 80 x 26	M12	M18	M30
–	–	–	–	–	–	–
–	–	–	–	–	–	–
–	–	–	–	–	–	–
XS9F111A1L2	XS9E111A1L2	XS9C111A1L2	XS9D111A1L2	XS4P12AB110	XS4P18AB110	XS4P30AB110
–	–	–	–	XS1M12AB120	XS1M18AB120	XS1M30AB120
XS9F111A2L2	XS9E111A2L2	XS9C111A2L2	XS9D111A2L2	–	–	–
–	–	–	–	XS4P12AB120	XS4P18AB120	XS4P30AB120
M8 or M12 connector						
–	–	–	–	–	–	–
–	–	–	–	–	–	–
XS9F111A1L01M8 (4)	XS9E111A1L01M12 (4)	XS9C111A1L01M12 (4)	XS9D111A1M12	–	–	–
XS9F111A2L01M8 (4)	XS9E111A2L01M12 (4)	XS9C111A2L01M12 (4)	XS9D111A2M12	–	–	–
10...36	10...36	10...36	10...36	10…38	10…38	10…38
–	–	–	–	–	–	–
–	–	–	–	–	–	–
± 1 V for 0…10 V version / ± 2 mA for 4…20 mA version						
–	–	–	–	–	–	–
–	–	–	–	–	–	–
2000	1000	1000	100	1500	500	300

(1) 6...150 and 6000 impulses/min for XSAV11373 and XSAV11801 (slow version); 120...3000 and 48000 impulses/min for XSAV12373 and XSAV12801 (fast version).

(2) For these sensors without short-circuit protection, it is essential to connect a 0.4 A quick-blow fuse in series with the load.

(3) Flying lead (L = 0.15 m) with end mounted remote control incorporating M12 connector.

(4) Flying lead (L = 0.15 m) with end connector.

(5) Flying lead (L = 0.15 m) with end mounted remote control incorporating 1/2"-20 UNF connector.

Accessories

PUR pre-wired connectors (1)	M8 (3 pin)	Straight	Elbowed	1/2"	Straight	Elbowed	M12 (4 pin)	Straight	Elbowed	Elbowed PNP LED
	2 m	XZCP0566L2	XZCP0666L2	2 m	XZCP1865L2	XZCP1965L2	2 m	XZCP1141L2	XZCP1241L2	XZCP1340L2
	5 m	XZCP0566L5	XZCP0666L5	5 m	XZCP1865L5	XZCP1965L5	5 m	XZCP1141L5	XZCP1241L5	XZCP1340L5
	10 m	XZCP0566L10	XZCP0666L10	10 m	XZCP1865L10	XZCP1965L10	10 m	XZCP1141L10	XZCP1241L10	XZCP1340L10

(1) For PVC cable see page 47

Suitable female plug-in connectors

M8	Straight		Elbowed
Steel ring	XZCC8FDM30S		XZCC8FCM30S
M12 (4 pin)			
Steel ring	XZCC12FDM40B		XZCC12FCM40B
Plastic ring	XZCC12FDP40B		XZCC12FCP40B

Telemecanique Sensors

Other versions: **please consult our Customer Care Centre.**

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Type	M12	M18	Ø 18 plain	M30
Nominal sensing distance Sn	**7** mm	**12** mm	**12** mm	**22** mm
Operating zone (mm)	0 …5.6	0 … 9.6	0 … 9.6	0 … 17.6
Suitability for flush mounting (metal environment)	non flush mountable			
Case M (metal) (1)	M stainless steel 316 L			
Product certification	CE - UL - CSA - CCC - C-TICK			
Temperature range (°C)	- 25…+ 85			
Degree of protection (conforming to IEC 60529)	pre-cabled: IP 68 (with connector: IP 67) and IP 69K conforming to DIN 40050			

Sensors for DC applications (solid-state output: transistor)

Connection			Pre-cabled, non poisonous PVC (2 m)			
Dimensions (mm)			M12 x 55	M18 x 60	Ø 18 x 60	M30 x 62
3-wire	**PNP**	**NO** function	**XS212SAPAL2**	**XS218SAPAL2**	**XS2L2SAPAL2**	**XS230SAPAL2**
	NPN	**NO** function	**XS212SANAL2**	**XS218SANAL2**	**XS2L2SANAL2**	**XS230SANAL2**
Connection			M12 connector			
Dimensions (mm)			M12 x 61	M18 x 70	Ø 18 x 70	M30 x 70
3-wire	**PNP**	**NO** function	**XS212SAPAM12**	**XS218SAPAM12**	**XS2L2SAPAM12**	**XS230SAPAM12**
	NPN	**NO** function	**XS212SANAM12**	**XS218SANAM12**	**XS2L2SANAM12**	**XS230SANAM12**
Supply voltage limits, min./max. (V) including ripple			10…36			
Switching capacity, max. (mA)			≤ 200			
Switching frequency (Hz)			2500	1000	1000	500
Short-circuit protection (★) / LED output state indicator (⊗)			★ / ⊗	★ / ⊗	★ / ⊗	★ / ⊗
Voltage drop, closed state (V) at I nominal			≤ 2			

Multi-current/multi-voltage sensors for AC/DC applications
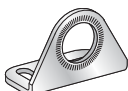
Connection			Pre-cabled, non poisonous PVC (2 m)			
Dimensions (mm)			–	M18 x 60	–	M30 x 62
2-wire (2)	**AC/DC**	**NO** function	–	**XS218SAMAL2**	–	**XS230SAMAL2**
Connection			1/2"-20 UNF connector			
Dimensions (mm)			–	M18 x 72	–	M30 x 74
2-wire (2)	**AC/DC**	**NO** function	–	**XS218SAMAU20**	–	**XS230SAMAU20**
Supply voltage limits, min./max. (V) 50-60 HZ			–	20 … 264	–	20 … 264
Switching capacity, max. (mA)			–	300 AC / 200 DC	–	300 AC / 200 DC
Switching frequency (Hz)			–	25 AC / 1000 DC	–	25 AC / 300 DC
LED output state indicator (⊗)			–	⊗	–	⊗
Voltage drop, closed state (V) at I nominal			–	≤ 5.5	–	≤ 5.5
Residual current, open state (mA)			–	≤ 0.8	–	≤ 0.8

(1) Plastic range available. M12, M18, M30:
To order, replace the second letter **S** in the reference by **A**
(example: XS212**S**APAL2 becomes XS212**A**APAL2).

(2) For these sensors without short-circuit protection, it is essential to connect a 0.4 A quick-blow fuse in series with the load.

Accessories

Fixing clamps		M12 pre-wired connector		M12 jumper cable	
Plastic fixing centres 24.1 mm, with locking screw		female, 4-pin, stainless steel clamping ring		male, 3-pin, stainless steel clamping ring	
for sensor		Straight connector		Straight connector	
Ø 18 plain	**XUZB2005**	5 m cable **XZCPA1141L5**		5 m **XZCRA151140A5**	
Stainless steel		Elbowed connector		**1/2" pre-wired connector**	
for sensor		5 m cable **XZCPA1241L5**		Straight	5 m **XZCP1865L5**
Ø 12	**XSZBS12**			Elbowed	5 m **XZCP1965L5**
Ø 18	**XUZA118**				
Ø 30	**XSZBS30**				

Capacitive proximity sensors
Detection of insulating materials or conductive materials

Non flush mountable (plastic)

Flush mountable (metal)

Suitability for flush mtg.		M12	M18	M30	Ø 32	40 x 40 x 117
Nominal sensing distance Sn	flush mountable	**2** mm	**5** mm	**10** mm	**15** mm	**15** mm
	non flush mountable	–	**8** mm	**15** mm	**20** mm	–
Operating zone Sa (mm) (2)	flush mountable	0…1.44	0…3.6	0…7.2	0…10	0…11
	non flush mountable	–	0…5.8	0…11	0…15	–
Case M (metal) P (plastic)	flush mountable	M	M	M	M	P
	non flush mountable	–	P	P	P	–
Product certification		CE				CE - UL - CSA
Temperature range (°C)		- 25…+ 70				
Degree of protection (conforming to IEC 60529)		IP 67				
Dimensions (mm) Ø x L or H x W x D		M12 x 70	M18 x 80	M30 x 80	M32 x 80	117 x 40 x 40

Sensors for DC applications

Connection				Pre-cabled, PVC (2 m)				
3-wire	**PNP**	**NO** function	flush mountable	**XT112S1PAL2**	**XT118B1PAL2**	**XT130B1PAL2**	–	–
			non flush mountable	–	**XT218A1PAL2**	**XT230A1PAL2**	–	–
		NO + NC functions	flush mountable	**XT112S1PCL2**	**XT118B1PCL2**	**XT130B1PCL2**	–	–
			non flush mountable	–	–	–	–	–
	NPN	**NO** function	flush mountable	**XT112S1NAL2**	**XT118B1NAL2**	**XT130B1NAL2**	–	–
			non flush mountable	–	**XT218A1NAL2**	**XT230A1NAL2**	–	–
Connection				M12 connector				Screw terminals
3-wire	**PNP**	**NO + NC** functions	flush mountable	**XT112S1PCM12**	**XT118B1PCM12**	**XT130B1PCM12**	–	**XT7C40PC440** (3)
			non flush mountable	–	**XT218A1PCM12**	**XT230A1PCM12**	–	–
	NPN	**NO + NC** functions	flush mountable	–	–	–	–	**XT7C40NC440** (3)
Supply voltage limits, min./max. (V) including ripple				10...38				10...58
Switching capacity, max. (mA)				200				200
Short circuit-protection (★) / LED output state indicator (⊗)				★ / ⊗				★ / ⊗
Voltage drop, closed state (V) at I nominal				≤ 2				≤ 2
Switching frequency (Hz)				300	100 (XT2) / 200 (XT1)	100 (XT2) / 150 (XT1)	–	100

Multi-current/multi-voltage sensors for AC applications

Connection				Pre-cabled, PVC (2 m)				
2-wire AC (1)	**NO** function		flush mountable	–	**XT118B1FAL2**	**XT130B1FAL2**	**XT132B1FAL2**	–
			non flush mountable	–	**XT218A1FAL2**	**XT230A1FAL2**	**XT232A1FAL2**	–
	NC function		flush mountable	–	**XT118B1FBL2**	**XT130B1FBL2**	**XT132B1FBL2**	–
			non flush mountable	–	–	XT230A1FBL2	XT232A1FBL2	–
Connection				Screw terminals				
2-wire AC (1)	**NO or NC** programmable		flush mountable	–	–	**XT230A2MDB** (4)	–	**XT7C40FP262**
Supply voltage limits, min./max. (V) 50-60 Hz				–	20…264	20…264	20…264	20…264
Switching capacity, max. (mA)				–	300			350
LED output state indicator (⊗) / Power on LED (⊗)				⊗ / –				
Voltage drop, closed state (V) at I nominal				–	≤ 5.5	≤ 5.5	≤ 9	≤ 5.5
Switching frequency (Hz)				–	25	25	25	25

(1) For these sensors without short-circuit protection, it is essential to connect a 0.4 A quick-blow fuse in series with the load.
(2) The operating distance depends on the objet material.
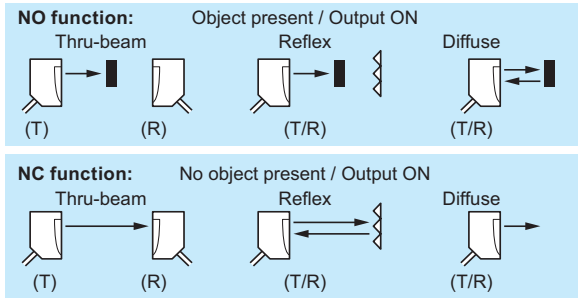(3) Only for detecting insulating materials.   (4) 24…240 VAC or 24 VDC supply (non flush mountable)

Accessories

Suitable female plug-in connectors, including PUR pre-wired versions (1)			
length 5 m without LED	pre-wired, elbowed	pre-wired, straight	screw terminal
M12	**XZCP1241L5**	**XZCP1141L5**	**XZCC12FCM40B**

(1) For PVC cable see page 47

Telemecanique Sensors

Photo-electric sensors
General Purpose

NO function: Object present / Output ON

Thru-beam	Reflex	Diffuse
(T) (R)	(T/R)	(T/R)

NC function: No object present / Output ON

Thru-beam	Reflex	Diffuse
(T) (R)	(T/R)	(T/R)

|				**M18 Metal** (1)		**M18 Plastic**	
				Cable	M12 connector	Cable	M12 connector
Diffuse		Sensing distance		**0.6 m** (2) (3)		**0.6 m** (2) (3)	
	Output type DC3 NO		PNP	XUB5BPANL2	XUB5BPANM12	XUB5APA NL2	XUB5APANM12
			NPN	XUB5BNANL2	XUB5BNANM12	XUB5ANANL2	XUB5ANANM12
		AC/DC 1C/O relay		–	–	–	–
Reflex Polarised		Sensing distance (4)		**2 m**		**2 m**	
	Output type DC3 NO		PNP	XUB9BPANL2	XUB9BPANM12	XUB9APANL2	XUB9APANM12
			NPN	XUB9BNANL2	XUB9BNANM12	XUB9ANANL2	XUB9ANANM12
		AC/DC 1C/O relay		–	–	–	–
Reflex		Sensing distance (4)		**4 m**		**4 m**	
	Output type DC3 NO		PNP	XUB1BPANL2	XUB1BPANM12	XUB1APANL2	XUB1APANM12
			NPN	XUB1BNANL2	XUB1BNANM12	XUB1ANANL2	XUB1ANANM12
		AC/DC 1C/O relay		–	–	–	–
Thru beam		Sensing distance		**15 m**		**15 m**	
	Output type DC3 NO		PNP	XUB2BPANL2R	XUB2BPANM12R	XUB2APANL2R	XUB2APANM12R
			NPN	XUB2BNANL2R	XUB2BNANM12R	XUB2ANANL2R	XUB2ANANM12R
		AC/DC 1C/O relay		–	–	–	–
Output function	NO			A	A	A	A
	NC			B	B	B	B
Thru beam Transmitter		DC		XUB2BKSNL2T	XUB2BKSNM12T	XUB2AKSNL2T	XUB2AKSNM12T
		AC/DC		–	–	–	–
Multimode		Sensing distance		Background suppression: **0.12 m** - Diffuse: **0.3 m**			
				Reflex polarised: **3 m** - Thru beam: **20 m**			
	Output type DC3 NO/NC		PNP	XUB0BPSNL2	XUB0BPSNM12	XUB0APSNL2	XUB0APSNM12
			NPN	XUB0BNSNL2	XUB0BNSNM12	XUB0ANSNL2	XUB0ANSNM12
			PNP/NPN	–	–	–	–
		AC/DC 1C/O relay		–	–	–	–
Thru beam Transmitter		DC		XUB0BKSNL2T	XUB0BKSNM12T	XUB0AKSNL2T	XUB0AKSNM12T
		AC/DC		–	–	–	–

(1) Brass metal, aivailable also in stainless steel, see page food/beverage processing series

(2) For a sensing distance 0,1 m without sensitivity adjustment, change digit 5 by 4 into the reference (ex: XUB**5**BPANL2 becomes XUB**4**BPANL2)

Fixing	M18 x1	M18 x1
Dimensions	M18 x 64 mm / M18 x 78 mm	
Product certifications	CE, UL, CSA, C-Tick	CE, UL, CSA, C-Tick
DC common characteristics		
Supply voltage limits, min./max. (V) including ripple	10…36	10…36
Switching frequency (Hz)	500	500
Common characteristics for DC versions	Switching capacity, max. (mA): 100 / Overload and short-circuit protection (★) / LED output state	
AC/DC common characteristics		
Supply voltage limits, min./max. (V) including ripple	–	–
Switching frequency (Hz)	–	–
LED output state indicator (⊗) / power on LED (⊗)	–	–

Accessories

Reflectors
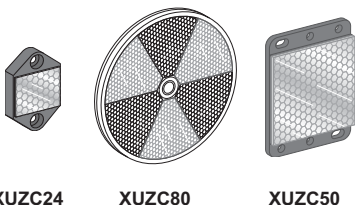
Reflectors (mm)	
Ø 21	XUZC21
24 x 21	XUZC24
11 x 33	XUZC08
Ø 39	XUZC39
Ø 80	XUZC80
50 x 50	XUZC50
100 x 100	XUZC100

XUZC24 XUZC80 XUZC50

3D fixings with ball joint

Bracket with ball joint for sensors and reflector XUZC50

for

XUB…	XUZB2003
XUM0…	XUZM2003
XUK…	XUZK2003
XUX…	XUZX2003

Protective housing with ball joint

for

XUK…	XUZK2004
XUX…	XUZX2004

M12 rod for ball joint

XUZ2001

Telemecanique Sensors

Other versions: **please consult our Customer Care Centre.**
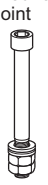
Miniature		Compact 50 x 50 mm		Compact 92 x 71 mm	
Cable	M8 connector	Cable	M12 connector	Screw terminal	M12 connector
1 m (3)		**1 m** (3)		**2.1 m** (3)	
XUM5APCNL2	XUM5APCNM8	XUK5AP ANL2	XUK5AP ANM12	XUX5AP ANT16	XUX5AP ANM12
XUM5ANCNL2	XUM5ANCNM8	XUK5AN ANL2	XUK5AN ANM12	XUX5AN ANT16	XUX5AN ANM12
–	–	XUK5ARCNL2	–	XUX5ARCNT16	–
5 m (3)		**5 m**		**11 m** (3)	
XUM9APCNL2	XUM9APCNM8	XUK9AP ANL2	XUK9AP ANM12	XUX9AP ANT16	XUX9AP ANM12
XUM9ANCNL2	XUM9ANCNM8	XUK9AN ANL2	XUK9AN ANM12	XUX9AN ANT16	XUX9AN ANM12
–	–	XUK9ARCNL2	–	XUX9ARCNT16	–
–		**7 m**		**14 m** (3)	
–	–	XUK1AP ANL2	XUK1AP ANM12	XUX1AP ANT16	XUX1AP ANM12
–	–	XUK1AN ANL2	XUK1AN ANM12	XUX1AN ANT16	XUX1AN ANM12
–	–	XUK1ARCNL2	–	XUX1ARCNT16	–
15 m (3)		**30 m**		**40 m** (3)	
XUM2APCNL2R	XUM2APCNM8R	XUK2AP ANL2R	XUK2AP ANM12R	XUX2AP ANT16R	XUX2AP ANM12R
XUM2ANCNL2R	XUM2ANCNM8R	XUK2AN ANL2R	XUK2AN ANM12R	XUX2AN ANT16R	XUX2AN ANM12R
–	–	XUK2ARCNL2R	–	XUX2ARCNT16R	–
NO or NC	**NO or NC**	A	A	A	A
		B	B	B	B
XUM2AKCNL2T	XUM2AKCNM8T	XUK2AKSNL2T	XUK2AKSNM12T	XUX0AKSAT16T	XUX0AKSAM12T
–	–	XUK2ARCNL2T	–	XUX0ARCTT16T	–
Background suppression: **0.1 m** - Diffuse: **0.4 m**		Background suppression: **0.28 m** - Diffuse: **0.8 m**		Background suppression: **1.3 m** - Diffuse: **2 m**	
Reflex polarised: **3 m** - Thru beam: **10 m**		Reflex polarised: **4 m** - Thru beam: **30 m**		Reflex polarised: **11 m** - Thru beam: **40 m**	
XUM0APSAL2	XUM0APSAM8	–	–	–	–
XUM0ANSAL2	XUM0ANSAM8	–	–	–	–
–	–	XUK0AKSAL2	XUK0AKSAM12	XUX0AKSAT16	XUX0AKSAM12
–	–	XUK0ARCTL2	–	XUX0ARCTT16	–
XUM0AKSAL2T	XUM0AKSAM8T	XUK0AKSAL2T	XUK0AKSAM12T	XUX0AKSAT16T	XUX0AKSAM12T
–	–	XUK0ARCTL2T	–	XUX0ARCTT16T	–

(3) With sensitivity adjustment

(4) With reflector XUZC50 to be ordered separately

Direct fixing centres 25.5, M3 screws	Direct fixing centres 40 x 40, M4 screws	Direct fixing centres 30/38 to 40/50/74, M5 screws
12 x 34 x 20	18 x 50 x 50	30 x 92 x 71
CE, UL, CSA, C-Tick	CE, UL, CSA, CCC, C-Tick	CE, UL, CSA, CCC, C-Tick
10…30	10…30	10…36
1000	500	500
indicator (⊗): yes / power on LED (⊗): yes		
–	20…264	20…264
–	20	20
–	⊗ / ⊗	⊗ / ⊗

	Simple fixings			Suitable female plug-in connectors, including PUR pre-wired versions (1)		
Fixing support for M12 rod	Single bracket					
		standard	with ball joint	length 5 m without LED	pre-wired, elbowed	pre-wired, straight	screw terminal
	for					
	XUB…	**XUZA118** (stnls. steel)	**XUZA218** (plastic)	M8	**XZCP1041L5**	**XZCP0941L5**	**XZCC8FCM40S**
	XUM…	**XUZAM02**	–	M12	**XZCP1241L5**	**XZCP1141L5**	**XZCC12FCM40B**
	XUK…	**XUZA51**	–				
XUZ2003	XUX…	**XUZX2000**	–				

(1) For PVC cable see page 47

Other versions: **please consult our Customer Care Centre.**

Photo-electric sensors
Optical forks without setting and frames
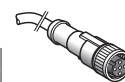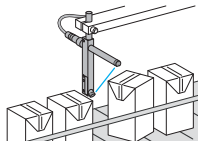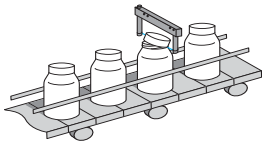
System	Thru-beam with modular red LED light source
Sensing distance	**30…150** mm
Minimum size of objet detected	0,8 mm
Case M (metal)	M
Temperature range (°C) / Degree of protection (conforming to IEC 60529)	- 10…+ 60 / IP65 & IP67
Product certification	CE - cULus

Sensors for DC applications (solid-state output: transistor)

Connection					M8 connector 3-pin	A	B	C	D	Pre-cabled L = 2 m.	A	B	C	D
Dimensions (mm)						A	B	C	D		A	B	C	D
Transmitter / Receiver	3 wire	NO function	PNP		**XUVR0605P ANM8**	50	60	74	77.5	**XUVR0303PANL2**	30	40	54	57,5
			NPN		**XUVR0605N ANM8**									
		NO function	PNP		**XUVR0608P ANM8**	80	60	104	77.5					
			NPN		**XUVR0608N ANM8**									
		NO function	PNP		**XUVR1212P ANM8**	120	120	144	142					
			NPN		**XUVR1212N ANM8**									
		NO function	PNP		**XUVR1218P ANM8**	180	120	204	142					
			NPN		**XUVR1218N ANM8**									
		NO function	PNP		**XUVA0505P ANM8**	44	44	71	71					
		NO function	PNP		**XUVA0808P ANM8**	74	74	101	101					
		NO function	PNP		**XUVA1212P ANM8**	112	112	142	142					
		NO function	PNP		**XUVA1515P ANM8**	142	142	172	172					
Output function	**NO**	⌇			**A**									
	NC	⌇			**B**									
Supply voltage limits, min./max. (V) including ripple					10…30									
Switching capacity, max. (mA) / Switching frequency (Hz)					100/4kHz									
Overload and short-circuit protection (★) / LED output state indicator (⊗)					★ / ⊗									

System	Thru-beam with infrared emission				
Passageway dimensions	30 x 30 mm	60 x 60 mm	200 x 120 mm	200 x 180 mm	200 x 250 mm
Connection	M8 (4 pin)		M12 (4 pin)		
Minimum size of object to be detected Ø 2 mm	**XUVF30M8**	**XUVF60M8**	–	–	–
Ø 4 mm	–	–	**XUVF120M12**	**XUVF180M12**	**XUVF250M12**
Ø 10 mm	–	–	**XUYFRS120S**	**XUYFRS180S**	**XUYFRS250S**
Type and output function	4-wire, PNP and NPN Output function ON or OFF on passage of object, programmable				
Function type	Dynamic (XUVF30M8, XUVF60M8), Dynamic or static (XUVF120M12, XUVF180M12, XUVF250M12)				
Supply voltage limits, min./max. (V) including ripple	18…30				
Switching capacity, max. (mA) / Switching frequency (Hz)	≤ 100 mA / 500 Hz				
Overload and short-circuit protection (★) / LED output state indicator (⊗)	★ / ⊗				

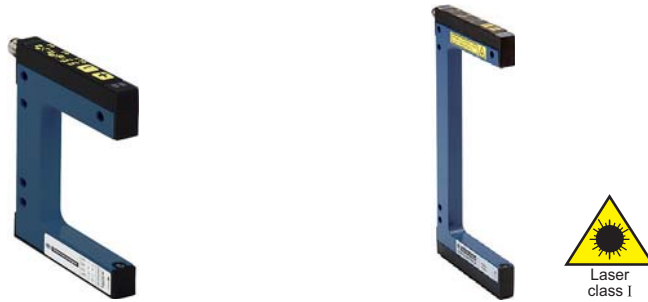## Accessories

Suitable female PUR pre-wired plug-in connectors (1)									
	M8 (3 pin)			**M8** (4 pin)			**M12** (4 pin)		
	For optical forks without setting			For optical forks and frame with setting			For frame with setting		
		Straight	Elbowed		Straight	Elbowed		Straight	Elbowed
	2 m	**XZCP0566L2**	**XZCP0666L2**	2 m	**XZCP0941L2**	**XZCP1041L2**	2 m	**XZCP1141L2**	**XZCP1241L2**
	5 m	**XZCP0566L5**	**XZCP0666L5**	5 m	**XZCP0941L5**	**XZCP1041L5**	5 m	**XZCP1141L5**	**XZCP1241L5**

Straight   Elbowed

(1) For PVC cable see page 47

Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors

Forks with teach mode (1)

Laser
class I

System, with teach mode	Thru-beam	Thru-beam laser
Sensing distance	**2…120** mm	**2…120** mm
Fixing (mm)	(see column E below)	
Minimum size of objet detected	0,2 mm	0,05 mm
Case M (metal) / Setting-up assistance LEDs ⊗	M / ⊗	
Temperature range (°C) / Degree of protection (conforming to IEC 60529)	- 25…+ 60 / IP 65	
Product certification	CE - cULus	

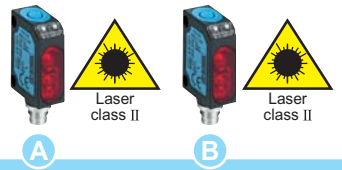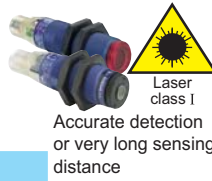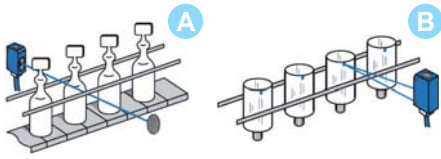## Sensors for DC applications (solid-state output: transistor)

Connection	**M8 connector** - 4 Pin										
Type of output	3-wire PNP/NPN programmable NO/NC										
Dimensions (mm)		A	B	C	D	E		A	B	C	D	E
Transmitter / Receiver	XUYFANEP40002	2	42	32	57	14	XUYFALNEP40002	2	42	41	57	14
	XUYFANEP60002	2	59		77		XUYFALNEP60002	2	59		77	
	XUYFANEP100002	2	95		110		XUYFALNEP100002	2	95		110	
	XUYFANEP40005	5	42	35	57	14	XUYFALNEP40005	5	42	44	57	14
	XUYFANEP60005	5	59		77		XUYFALNEP60005	5	59		77	
	XUYFANEP100005	5	95		110		XUYFALNEP100005	5	95		110	
	XUYFANEP40015	15	42	45	57	27	XUYFALNEP40015	15	42	54	57	27
	XUYFANEP60015	15	59		77		XUYFALNEP60015	15	59		77	
	XUYFANEP100015	15	95		110		XUYFALNEP100015	15	95		110	
	XUYFANEP40030	30	42	60	57	42	XUYFALNEP40030	30	42	69	57	42
	XUYFANEP60030	30	59		77		XUYFALNEP60030	30	59		77	
	XUYFANEP100030	30	95		110		XUYFALNEP100030	30	95		110	
	XUYFANEP40050	50	42	80	57	40	XUYFALNEP40050	50	42	89	57	40
	XUYFANEP60050	50	59		77		XUYFALNEP60050	50	59		77	
	XUYFANEP100050	50	95		110		XUYFALNEP100050	50	95		110	
	XUYFANEP40080	80	42	110	57	70	XUYFALNEP40080	80	42	119	57	70
	XUYFANEP60080	80	59		77		XUYFALNEP60080	80	59		77	
	XUYFANEP100080	80	95		110		XUYFALNEP100080	80	95		110	
	XUYFANEP40120	120	42	150	57	110	XUYFALNEP40120	120	42	159	57	110
	XUYFANEP60120	120	59		77		XUYFALNEP60120	120	59		77	
	XUYFANEP100120	120	95		110		XUYFALNEP100120	120	95		110	
Supply voltage limits, min./max. (V) including ripple	10…30						10…30					
Switching capacity, max. (mA) / Switching frequency (Hz)	100/10 kHz						100/10 kHz					
Overload and short-circuit protection (★) / LED output state indicator (⊗)	★ / ⊗						★ / ⊗					

(1) To order a fork without teach mode, delete **A** of the reference. Ex: XUYF**A**NEP40002 becomes XUYFNEP40002

System		Ultrasonic thru-beam	Thru-beam
		Special transparent labels	For all other opaque labels
Sensing distance	3 mm version	**XUVU06M3PSNM8**	**XUVE04M3PSNM8**
Switching frequency (Hz)		1500	10 000
Sensitivity adjustment		numeric potentiometer (1)	numeric potentiometer (1)
Connection		M8 (4 pin)	
Case M (metal) / Setting-up assistance LEDs ⊗		M / ⊗	
Temperature range (°C) / Degree of protection (conforming to IEC 60529)		+5…+ 55 / IP 65	- 20…+ 60 / IP 65
Product certification		CE	CE - cULus

(1) : remote adjustment available.

Telemecanique
Sensors

Accurate detection or very long sensing distance — Laser class I

Robustness and compactness

Laser class II / Laser class II

A / B

Application

System		Thru-beam	Diffuse	Diffuse (1)	Reflex	Diffuse contrast
Sensing distance		**100** m (2)	**0.07** m	**0.77** m	**10…1000** mm (3)	**40…150** mm
Fixing (mm)		M18 x 1	M8 x 1	Direct, 2 M3 holes, fxg. ctrs. 20 mm	Direct, 2 M3 holes, fixing centres 24 mm	
Sensitivity adjustment		Teach mode	–	Potentiometer	Teach mode	
Case M (metal) P (plastic) / Setting-up assistance LEDs ⊗		P / ⊗	M / –	M / ⊗	P	
Temperature range (°C) / Degree of protection (conforming to IEC 60529)		- 10…+ 45°C	- 25…+ 55	- 25…+ 60	- 20…+ 60°C	
Degree of protection (conforming to IEC 60529)		IP 67	IP 67	IP 67, IP 69K	IP 67	
Product certification		CE - UL - CSA	CE - cULus	CE - cULus - C-TICK	CE - cULus	
Dimensions (mm) Ø x L or H x W x D		Ø 18 x 64	Ø 8 x 40	40.8 x 16.2 x 29.5	35.8 x 12 x 20	

Sensors for DC applications (solid-state output: transistor)

Connection			**Pre-cabled**		PVR (2 m)	PVC (2 m)		
Transmitter / Receiver	3-wire PNP	NO function	–		XUAH0515	XUM5BPANL2	–	–
Connection			**Connector**	M12	M8 4-pin			
Transmitter / Receiver	3-wire PNP	NO function	–		XUAH0515S	–	–	–
	3-wire PNP	programmable NO / NC	XUBLAPCNM12		–	–	XUYBCO929LSP	XUYPCCO929LSP
	3-wire NPN	programmable NO / NC	XUBLANCNM12		–	–	–	–
Supply voltage limits, min./max. (V) including ripple			10…30		10…30	10…30	10…30	10…30
Switching capacity, max. (mA) / Switching frequency (Hz)			100 / 1500		100 / 700	100 / 1000	100 / 1000	100 / 1000
Overload and short-circuit protection (★) / LED output state indicator (⊗)			★ / ⊗		★ / ⊗	★ / ⊗	★ / ⊗	★ / ⊗

(1) Reflex and thru-beam systems also available.
(2) or min. size of object: 0.2 mm
(3) With specific reflector XUY1111, format 50 x 50 mm. To be ordered separately.

Miniature series sensors — C / D

compact 50x50mm — Laser class II / Laser class II

Application

System	Polarised reflex	Thru-beam	Polarised reflex	Thru beam	Back ground suppression	Diffuse
Sensing distance	**1…1.5** m (4)	**4** m	**12** m (7)	**25** m	**0.8** m	**1.2** m
Fixing (mm)	2 x Ø 3 holes / fixing centres 9.5		2 x Ø 4.3 holes / fixing centres 30			
Sensitivity adjustment	Potentiometer	Potentiometer	Teach mode	Teach mode	potentiometer	Teach mode
Case P (plastic) / Setting-up assistance LEDs ⊗	P / ⊗					
Temperature range (°C) / Degree of protection (conforming to IEC 60529)	0…+ 50°C / IP 65 & IP 67		-20…+ 60°C / IP67 & IP69K			
Product certification	CE - cULus		CE, Ecolab			
Dimensions (mm) H x W x D	40 x 10 x 13.5		50 x 50 X 23			

Sensors for DC applications (solid-state output: transistor)

Connection			**M8 connector** (5) - 4 Pin		**M12 connector** - 4 pin			
	PNP	**NO** function	XUYBCO989SP	XUYRCO989SP	–	–	–	–
	NPN	**NO** function	XUYBCO989SN	XUYRCO989SN	–	–	–	–
	PNP	programmable **NO / NC**			XUK9LAPSMM12 (6)	XUK2LAPSMM12R (6)	XUK8LAPPNM12 (6)	XUK5LAPSMM12 (6)
Transmitter			–	XUYECO989	–	XUK2LAKSMM12T (6)	–	–
Supply voltage limits, min./max. (V) including ripple			10…30		12…30			
Switching capacity, max. (mA) / Switching frequency (Hz)			100 / 500		100 / ≤ 2000	100 / ≤ 3500	100 / ≤ 1000	100 / ≤ 600
Overload and short-circuit protection (★) / LED output state indicator (⊗)			★ / ⊗					

(4) 50 x 50 reflector included.
(5) For 2 m pre-cabled version, delete **CO** from the reference. (Example: XUYB**CO**989SP becomes XUYB989SP or XUYR**CO**989SP becomes XUYR989SP).
(6) Fixing braket: XUZA51S to be ordered separately
(7) With reflector XUZC50HP to be ordered separately

Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors

Analogue output
Position control

Laser
class I et
class II

High access
gain for resistance
to accumulation of dirt

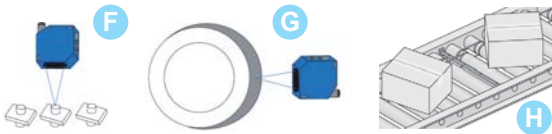| Application					
System	**Diffuse**	**Reflex**	**Diffuse**	**Diffuse**	**Thru-beam**
Sensing distance	**0.20...0.80** m	**0.20...30** m (1)	**0.20...6** m (2)	**0.05...0.40** m	**50** m
Fixing (mm)	fixing ctrs: 30 - 11P cable gland	3 trous 5,8mm		M18 x 1	M18 x 1
Sensitivity adjustment	–	Teach mode		Potentiometer	Potentiometer
Case M (metal) P (plastic) / Setting-up assistance LEDs ⊗	P / ⊗	P / ⊗		M / ⊗	M / ⊗
Temperature range (°C) / Degree of protection (conforming to IEC 60529)	- 25…+ 60 / IP 67	- 20…+ 50 / IP67		- 25…+ 55 / IP 67	- 25…+ 55 / IP 67
Product certification	CE - UL - CSA	CE, cULus		CE - UL - CSA	CE - UL - CSA - C-TICK
Dimensions (mm) Ø x L or H x W x D	86 x 27 x 83	93 x 42 x 95		M18 x 95	M18 x 95

Sensors for DC applications

Connection			**Screw terminals**	**M12 connector** - 5 pins			**M12 connector**	**M12 connector**
Transmitter / Receiver	analogue 4-20 mA / 0-10 V		XUJK803538 (3)	–	–	–	–	–
	analogue 4-20 mA		–	–	–	–	XU5M18AB20D	–
	analogue 4-20mA + 1 PNP		–	–	–	–	–	XU2M18AP20D (2)
	analogue 4-20mA + 2 PNP		–	XUE1AA2NM12		XUE5AA2NM12	–	–
Supply voltage limits, min./max. (V) including ripple			20…30	18…30			10…30	10…30
Switching capacity, max. (mA) / Switching frequency (Hz)			max: 20, min: 4 / 10000	100 / 38 (fast mode), 16 (slow mode)			max: 20, min: 4 / 20	100 / 30
Overload and short-circuit protection (★) / LED output state indicator (⊗)			★ / ⊗	★ / ⊗			★ / ⊗	★ / ⊗

(1) with reflector XUZC250 to be ordered separately.   (2) on white and grey object 0,2 … 6m, on black object 0,2 … 2,5m   (3) With 3-wire PNP output.

Laser
class II

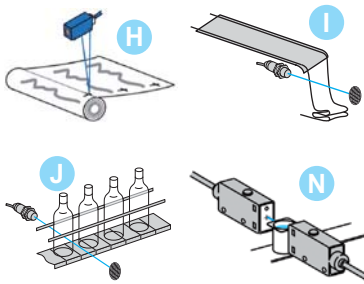| Application			
System	**Diffuse, analogue output**		**Diffuse**
	0-10 V	**4-20 mA**	
Sensing distance	**40...60** mm	**80...300** mm	**0...100** mm
Minimum size of object	1 mm	1.5 x 3.5 mm	85 mm
Fixing (mm)	direct: 3 M4 holes, fixing centres 40 mm		direct on conveyor with specific fixing parts
Sensitivity adjustment	Potentiometer		No
Case P (plastic) / Setting-up assistance LEDs ⊗	P / ⊗		Aluminium tube / x
Temperature range (°C)	0…+ 45°		- 25...+ 55°
Product certification	CE - cULus		CE - UL
Dimensions (mm) H x W x D	50 x 17 x 50		Tube Ø 12 , variable length from 200 to 900 mm (example 415 mm)

Sensors for DC applications (solid-state output: transistor)

Connection	**M12 connector**	**M12 connector**	**Remote M12 connector**
Transmitter / Receiver 0…10 V	XUYPCO925L1ANSP	XUYPCO925L3ANSP	XUY415N4HL03M12
Supply voltage limits, min./max (V) including ripple	18…28		18…30
Switching capacity, max.	3 mA / 0…10 V analogue output	3 mA / 4…20 mA analogue output	100 mA
Switching frequency (Hz)	40		1000
Overload and short-circuit protection (★) / LED output state indicator (⊗)	★ / ⊗		★ / ⊗

Accessories

Suitable female PUR pre-wired plug-in connectors (1)				Female connectors	Fixing for XUE
M8 straight	M12 straight	M8 elbowed	M12 elbowed	M12 (5 pin)	
2 m **XZCP0941L2**	**XZCP1141L2**	**XZCP1041L2**	**XZCP1241L2**	straight **XZCC12FCM50B**	For compact
5 m **XZCP0941L5**	**XZCP1141L5**	**XZCP1041L5**	**XZCP1241L5**	elbowed **XZCC12FDM50B**	**XUZA618**

(1) For PVC cable see page 47

Telemecanique
Sensors

Other versions: **please consult our Customer Care Centre.**

Contrast sensors

Colour sensors

Detection of aqueous liquids

Application	H Diffuse (with teach mode)	Diffuse (with teach mode)	Diffuse	N Thru-beam infrared
System	**Diffuse** (with teach mode)	**Diffuse** (with teach mode)	**Diffuse**	**Thru-beam infrared**
Sensing distance	**19** mm	**9** mm (2)	**0.02** m	**0.2** m (1)
Fixing (mm)	direct: fixing centres 40 x 40	direct: 21 x 28, M5 screws	direct: fixing ctrs. 40x40	direct: fixing ctrs. 20
Sensitivity adjustment	Teach button	Teach button	Teach button	Potentiometer
Case M (metal) P (plastic) / Setting-up assistance LEDs ⊗	P / ⊗	M / ⊗	P / ⊗	P / ⊗
Temperature range (°C) / Degree of protection (conforming to IEC 60529)	- 10…+ 55 / IP 65	- 10…+ 55 / IP 67	- 10…+ 55 / IP 65	0…+ 40 / IP 65
Product certification	CE - cULus	CE	CE - cULus	CE
Dimensions (mm) Ø x L or H x W x D	50 x 15 x 50	96 x 31 x 64	50 x 25 x 50	47 x 13 x 33

Sensors for DC applications (solid-state output: transistor)

Connection			M12 connector	M12 connector	M12 connector - 8 pin	Pre-cabled (2 m)
Transmitter / Receiver	3-wire PNP	NO function	**XUKR1PSMM12**	–	**XUKC1PSMM12**	–
	3-wire NPN	NO function	**XUKR1NSMM12**	–	**XUKC1NSMM12**	–
	3-wire PNP / NPN	programmable NO / NC	–	**XURK1KSMM12**	–	**XUMW1KSNL2**
Supply voltage limits, min./max. (V) including ripple			10…30	10…30	10…30	10.8…26.4
Switching capacity, max. (mA) / Switching frequency (Hz)			100 / 5000	200 / 10000	100 / 1500	100 / 1000

(1) Nominal sensing distance 50 m. Use between 10 and 20 cm, depending on application.
(2) 7 mm with XURZ02; 18 mm with XURZ01.

Luminescence sensors

Detection of transparent materials
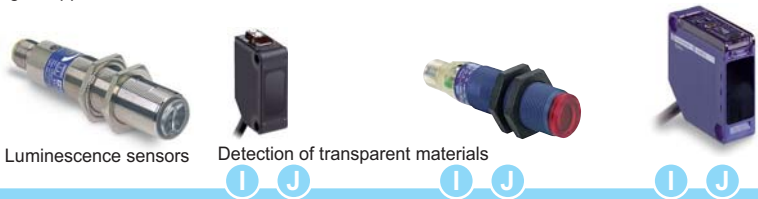
Application	Diffuse (manual)	I J Reflex (potentiometer)	I J Reflex (with teach mode) (50 x 50 reflector included)	I J
System	**Diffuse** (manual)	**Reflex** (potentiometer)	**Reflex** (with teach mode) (50 x 50 reflector included)	
Sensing distance	**0.02…0.08** m	**0.1…2** m	**0…1.4** m (4)	**1.5** m
Fixing (mm)	M18 x 1	M3 holes, fixing centers 24	M18 x 1	direct: fixing ctrs. 40 x 40
Sensitivity adjustment	Potentiometer	Potentiometer	Teach button	
Case M (metal) P (plastic) / Setting-up assistance LEDs ⊗	M / ⊗	P / ⊗	P / ⊗	
Temperature range (°C) / Degree of protection (conforming to IEC 60529)	- 25…+ 55 / IP 67	- 25…+ 55 / IP67	0…+ 55 / IP 67	- 25…+ 55 / IP 65
Product certification	CE - CSA - UL	CE - cURus	CE - UL - CSA - C-TICK	
Dimensions (mm) Ø x L or H x W x D	Ø 18 x 95	33 x 20 x 11	Ø 18 x 64	50 x 18 x 50

Sensors for DC applications (solid-state output: transistor)

Connection			Pre-cabled, PVC (2 m)			
Transmitter / Receiver	3-wire PNP	programmable NO / NC	–	**XUMTAPCNL2**	**XUBTAPSNL2** (5)	–
	3-wire NPN	programmable NO / NC	–	**XUMTANCNL2**	**XUBTANSNL2** (5)	–
	3-wire PNP / NPN	programmable NO / NC	–	–	–	**XUKT1KSML2**
Connection			**M12 connector**	**M8 connector**	**M12 connector**	**M12 connector**
Transmitter / Receiver	3-wire PNP	fonction NO	**XU5M18U1D**	–	–	–
	3-wire PNP	programmable NO / NC	–	**XUMTAPCNM8** (3)	**XUBTAPSNM12** (5)	–
	3-wire NPN	programmable NO / NC	–	**XUMTANCNM8**	**XUBTANSNM12** (5)	–
	3-wire PNP / NPN	programmable NO / NC	–	–	–	**XUKT1KSMM12**
Supply voltage limits, min./max. (V) including ripple			10…30	10…30	10…32	10…30
Switching capacity, max. (mA) / Switching frequency (Hz)			100 / 1000	100 / 1000	100 / 1000	100 / 1500

(3) also available with M12 remote connector with 0.3 m cable : replace M8 by L03M12.
(4) 0…0.8 m for versions with 90° head, to order replace the 8e digit **N** by **W**. Example XUBTAPS**N**L2 becomes XUBTAPS**W**L2
(5) Also available in stainless steel for food and beverage processing applications. To order, replace the letter **A** by **S** in the ref. Example: XUBT**A**PSNL2 becomes XUBT**S**PSNL2.

Accessories

Suitable female plug-in connectors, including PUR pre-wired versions (1)

L = 5 m, without LED	Wired, elbowed	Wired, straight	Screw terminal
M8 (or S) 4 pin	XZCP0666L5	XZCP0566L5	XZCC8FCM30S
M12 (or D) 4 pin	XZCP1241L5	XZCP1141L5	XZCC12FCM40B
M12 8 pin	–	XSZMCR03 (3 m)	–

(1) For PVC cable see page 47

Lenses for colour mark

Lens for 18 mm sensing distance — **XURZ01**

Lens for 7 mm sensing distance — **XURZ02**

Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors

Food/beverage processing series

Application	Stainless steel version for resistance to harsh agents		
System	**Polarised reflex**	**Background suppression**	**Thru-beam**
Sensing distance	**0.4…11** m (1)	**0.03…0.55** m	**0…15** m
Fixing (mm)	2 x Ø 4.3 holes …		
Case M (metal)	M (stainless steel 316L)		
Temperature range (°C) / Degree of protection (conforming to IEC 60529)	-20 … +60°C (100°C for cleaning and sterilization phase whilst not in service) / IP67, IP69K		
Product certification	CE, Ecolab		
Dimensions (mm) H x W x D	50 x 50 X 23		

Sensors for DC applications (solid-state output: transistor)

Connection	**M12 connector** - 4 pin		
Transmitter / Receiver 4-wire PNP	**XUK9SPSMM12**	**XUK8SPSMM12**	**XUK2SKSMM12T** (transmitter) **XUK2SPSMM12R** (receiver)
Supply voltage limits, min./max. (V) including ripple	10…30		
Switching capacity, max. (mA) / Switching frequency (Hz)	100 / 600	100 / 400	100 / 500

(1) With reflector XUZC100 to be ordered separately

Stainless steel version for resistance to harsh agents

System	Multimode (3)	Polarised reflex 50x50 mm reflector included (2)	Diffuse (2)	Thru-beam (2)
Sensing distance	(4)	**3 / 2** m	**0.15 / 0.10** m	**20 / 15** m
Fixing (mm)	M18 x 1	M18 x 1	M18 x 1	M18 x 1
Case M (metal)	M (stainless steel)	M (stainless steel)	M (stainless steel)	M (stainless steel)
Temperature range (°C) / Degree of protection (conforming to IEC 60529)		- 25…+ 55 / IP 67	- 25…+ 55 / IP 67	- 25…+ 55 / IP 67
Product certification	CE - UL - CSA - C-TICK			
Dimensions (mm) Ø x L	Ø 18 x 64	Ø 18 x 62	Ø 18 x 62	Ø 18 x 64

Sensors for DC applications (solid-state output: transistor)

Connection			**Pre-cabled, PvR (2 m)**			
Transmitter / Receiver 3-wire PNP		programmable NO / NC	**XUB0SPSNL2**	**XU9N18PP341**	**XU5N18PP341**	**XU2N18PP341**
	3-wire NPN	programmable NO / NC	**XUB0SNSNL2**	**XU9N18NP341**	**XU5N18NP341**	**XU2N18NP341**
Connection			**M12 connector**			
Transmitter / Receiver 3-wire PNP		programmable NO / NC	**XUB0SPSNM12**	**XU9N18PP341D**	**XU5N18PP341D**	**XU2N18PP341D**
	3-wire NPN	programmable NO / NC	**XUB0SNSNM12**	**XU9N18NP341D**	**XU5N18NP341D**	**XU2N18NP341D**
Thru-beam transmitter accessory		pre-cabled (2 m)	**XUB0SKSNL2T**	–	–	
		connector	**XUB0SKSNM12T**	–	–	
Supply voltage limits, min./max. (V) including ripple			10…36	10…30	10…30	
Switching capacity, max. (mA) / Switching frequency (Hz)			100 / 250	100 / 500	100 / 500	

(2) Also available with 90° head. To order, add the letter **W** after the numbers 341 in the reference. Example: XU9N18PP341 becomes XU9N18PP341**W** or XU9N18PP341**W**D.
(3) Also available with 90° head, to order replace the 8e digit **N** by **W**. Example XUB0SPS**N**L2 becomes XUB0SPS**W**L2
(4) Background suppression: **0.12 m** - Diffuse: **0.3 m** - Reflex polarised: **3 m** - Thru beam: **20 m**

Accessories

Pre-wired connectors			Ecolab reflector 50x50 (2)	Stainless steel fixing bracket
L = 5 m	**Elbowed** XZCPA1241L5	**Straight** XZCPA1141L5	**XUZC50CR**	**XUZA118** (for M18)

XUZA51S (for compact)

(2) Sensing distance for XUK9S: 3m with XUZC50CR or 6m with XUZC50.

Other versions: **please consult our Customer Care Centre.**

OsiSense XU
Photo-electric sensors
with background suppression

Application		Background suppression	Diffuse with background suppression	
System			Sensing distance 1	Sensing distance 2
Sensing distance		**1.5…80** mm	**10…60** mm	**30…110** mm
Minium size of object		–	0.3 mm	0.7 mm
Fixing (mm)		2 x Ø 3 holes / fxg. ctrs. 14.5	direct: 2 M3 holes, fixing centres 24 mm	
Sensitivity adjustment		Potentiometer	Teach mode	
Case P (plastic) / Setting-up assistance LEDs ⊗		P / ⊗	P	
Temperature range (°C) / Degree of protection (conforming to IEC 60529)		0…+ 50 / IP 65 & IP 67	- 20…+ 60°C / IP 67	
Product certification		CE - cULus	CE - cULus	
Dimensions (mm) H x W x D		32 x 13 x 20	35.8 x 12 x 20	

Sensors for DC applications (solid-state output: transistor)

Connection			M8 connector (1) - 4 Pin	M8 connector- 4 Pin	M8 connector- 4 Pin
Transmitter / Receiver	**PNP**	**NO** function	**XUYPSCO989SP**	–	–
	NPN	**NO** function	**XUYPSCO989SN**	–	–
	PNP	programmable **NO / NC**	–	**XUYPSCO929L1SP**	**XUYPSCO929L2SP**
Supply voltage limits, min./max. (V) including ripple			10…30	10…30	10…30
Switching capacity, max. (mA) / Switching frequency (Hz)			100 / 500	100 / 1000	100 / 1000
Overload and short-circuit protection (★) / LED output state indicator (⊗)			★ / ⊗	★ / ⊗	★ / ⊗

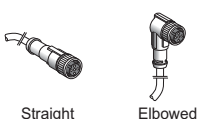(1) For 2 m pre-cabled connection delete CO from the reference. Example: XUYPS**CO**989SP becomes XUYPS989SP.

Application		Background suppression	Background suppression, 2 chnls.
System			
Sensing distance		**50…300** mm	**50…600** mm
Minimum size of object		0.5 mm	–
Fixing (mm)		direct: 2 M4 holes, ctrs. 54 mm	2 x Ø 4 holes, fixing ctrs. 54
Sensitivity adjustment		Potentiometer	Potentiometer
Case P (plastic) / Setting-up assistance LEDs ⊗		P / ⊗	P / ⊗
Temperature range (°C) / Degree of protection (conforming to IEC 60529)		0…+ 50 / IP 65	0…+ 60 / IP 40
Product certification		CE - cULus	
Dimensions (mm) H x W x D		60 x 18 x 60	60 x 18 x 60

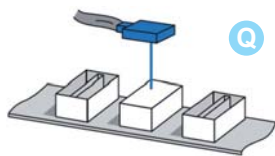## Sensors for DC applications (solid-state output: transistor). Sensors with overload and short-circuit protection

Connection		M8 connector	
Transmitter / Receiver 3-wire PNP / NPN programmable NO / NC		**XUYPS1LCO965S**	**XUYPS2CO945S**
Supply voltage limits, min./max. (V) including ripple		10…30	10…30
Switching capacity, max. (mA) / Switching frequency (Hz)		100 / 5000	100 / 370

Accessories

PUR Pre-wired connectors (1)		M8 (4 pin)			M12 (4 pin)			7/8" (5 pin)	
			Straight	Elbowed		Straight	Elbowed		Straight
		2 m	**XZCP0941L2**	XZCP1041L2	2 m	**XZCP1141L2**	XZCP1241L2	2 m	**XZCP1764L2**
		5 m	**XZCP0941L5**	XZCP1041L5	5 m	**XZCP1141L5**	XZCP1241L5	5 m	**XZCP1764L5**

(1) For PVC cable see page 47

Telemecanique Sensors

Other versions: **please consult our Customer Care Centre.**

objects on conveyors

Application				
System	**Diffuse** **with adjustable background suppression**			
Sensing distance	**20…300** mm	**0…1** m	**1.2** m	**2** m
Fixing (mm)	Fixing : M3 holes, fixing centers 24 mm	Direct fixing centres 40 x 40, M4 screws	M30 x 1.5 or M5, fixing ctrs. 30	Direct: fixing ctrs. 30/38 to 40/50/74 M5 screw
Sensitivity adjustment	potentiomètre	–	Potentiometer	–
Case P (plastic) / Setting-up assistance LEDs ⊗	P / ⊗	P / ⊗	P / ⊗	P / ⊗
Temperature range (°C) / Degree of protection (conforming to IEC 60529)	- 25…+ 55 / IP67	- 25…+ 55 / IP 65	- 25…+ 55 / IP 67, Nema 4X	- 25...+ 55 / IP 67
Product certification	CE- cURus	CE - UL - CSA	CE - UL - CSA	CE - UL - CSA
Dimensions (mm) H x W x D	33 x 20 x 11	50 x 18 x 50	95 x 45 x 44	92 x 30,5 x 71

Sensors for DC applications (solid-state output: transistor). Sensors with overload and short-circuit protection

Connection			**Pre-cabled**	**Pre-cabled, PVC** (2 m)		**Screw terminals**
Transmitter / Receiver	3-wire PNP / NPN	programmable NO / NC	–	**XUK8AKSNL2**	**XUC8AKSNL2** (3)	**XUX8AKSAT16** (3)
	PNP	programmable NO / NC	**XUM8APCNL2**	–	–	–
	NPN	programmable NO / NC	**XUM8ANCNL2**	–	–	–
Connection			**M8 connector**	**M12 connector**		
Transmitter / Receiver	3-wire PNP / NPN	programmable NO / NC	–	**XUK8AKSNM12**	**XUC8AKSNM12** (3)	**XUX8AKSAM12**
	PNP	programmable NO / NC	**XUM8APCNM8** (1)	–	–	–
	NPN	programmable NO / NC	**XUM8ANCNM8**	–	–	–
Supply voltage limits, min./max. (V) including ripple				10…36	10…38	10…36
Switching capacity, max. (mA) / Switching frequency (Hz)				100 / 250	100 / 500	100 / 150

(1) also available with M12 remote connector with 0.3 m cable : replace M8 by L03M12.

Système	**Diffuse** **with adjustable background suppression**			
Sensing distance	**70…120** mm	**10…750** mm	**1.2** m	**2** m
Fixing (mm)	M18 x 1	Direct fixing centres 40 x 40, M4 screws	M30 x 1.5 or M5, fixing ctrs. 30	Direct: fixing ctrs. 30/38 to 40/50/74 M5 screw
Sensitivity adjustment	Potentiometer	teach mode	Potentiometer	–
Case M (metal) P (plastic) / Setting-up assistance LEDs ⊗	M / ⊗	P / ⊗	P / ⊗	P / ⊗
Temperature range (°C) / Degree of protection (conforming to IEC 60529)	- 25…+ 55°C / IP 67	- 25…+ 55°C / IP 65	- 25…+ 55 / IP67, Nema4X	- 25...+ 55 / IP 67
Product certification	CE - UL - CSA	CE - UL - CSA	CE - UL - CSA	CE - UL - CSA
Dimensions (mm) Ø x L or H x W x D	M18 x 82	50 x 18 x 50	95 x 45 x 44	92 x 30,5 x 71

Multi-current/multi-voltage sensors for AC/DC applications

Connection			**Cable L = 2m**	**Cable**	**Cable 2m / Connector 7/8"**	**Screw terminals**
Transmitter / Receiver	AC/DC	NO function	**XU8M18MA230**	–	–	–
		programmable **NO / NC**	–	**XUK8ARCTL2**	**XUC8ARCTL2 / XUC8ARCTU78**	**XUX8ARCTT16**
Supply voltage limits, min./max. (V) including ripple			20…264	20…264	20…264	20…264
Switching capacity, max. (mA) / Switching frequency (Hz)			200 / 25	3000 / 20	3000 / 20	3000 / 20
Overload and short-circuit protection (★) / LED output state indicator (⊗)			(2) / ⊗	–	–	–

(2) Sensor not short-circuit protected. Therefore, it is essential to connect a 0.4 A quick-blow fuse in series with the load.

Photo-electric sensors, fibre optic
Amplifier

	+/- potentiometer	Teach	Teach + Timer	Teach + Timer
Max. / usable sensing distance	Depending on fibre used, plastic only			
Fixing (mm)	DIN rail or direct: fixing centres 25, M3 screws			
Sensitivity adjustment	+/- numeric potentiometer	using teach mode	+/- numeric potentiometer	using teach mode
Case P (plastic) / Setting-up assistance LEDs ⊗	P / ⊗	P / ⊗	P / ⊗	P / ⊗ and 4-digit display
Temperature range (°C) / Degree of protection (conforming to IEC 60529)	0…+ 60 / IP 65	- 10…+ 55 / IP 65 (1)	0…+ 60 / IP 65	- 10…+ 55 / IP 65 (1)
Product certification	CE - cULus	CE - cULus - cURus	CE - cULus	CE - cULus - cURus
Dimensions (mm) L x H x W	60 x 30 x 13	65 x 40 x 10	60 x 30 x 13	65 x 40 x 10

Sensors for DC applications (solid-state output: transistor)

Connection			Pre-cabled, PVC (2 m)			
References	3-wire **PNP** programmable	**NO / NC**	–	XUDA1PSML2	–	XUDA2PSML2
Amplifier	3-wire **NPN** programmable	**NO / NC**	–	XUDA1NSML2	–	XUDA2NSML2
Connection			M8 connector - 4 Pin			
References	3-wire **PNP** programmable	**NO / NC**	–	XUDA1PSMM8	–	XUDA2PSMM8
Amplifier	3-wire **NPN** programmable	**NO / NC**	–	XUDA1NSMM8	–	XUDA2NSMM8
	3-wire **PNP/NPN** programmable	**NO / NC**	XUYAFVCO966S (Glass)	–	XUYAFVCO946S (Glass)	–
			XUYAFPCO966S (Plastic)	–	XUYAFPCO946S (Plastic)	–
Supply voltage limits, min./max. (V) including ripple			10…30	10.8...26.4	10…30	10.8...26.4
Switching capacity, max. (mA) / Switching frequency (Hz)			100 / 1000	100 / 1000	100 / 1000 time delayable	100 / 1000 time delayable
Overload and short-circuit protection (★) / LED output state indicator (⊗)			★ / ⊗	★ / ⊗	★ / ⊗	★ / ⊗

(1) IP 65 with Ø 1 fibre/ IP 64 with Ø 0.5 fibre.

Ecofibre system, assemble your own plastic fibres

Fibre Ø 1 mm	Length = 10 m	Length = 20 m
References	XUFZ910	XUFZ920
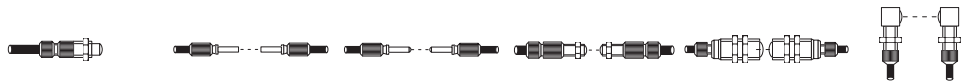
End fittings

Sensing distance (mm)	70	200	800	1200	4000	1200
Type	with threaded end fitting	with plain end fitting, Ø 3, L = 9 mm	with plain end fitting, Ø 3, L = 9 mm	with threaded end fitting	with threaded end fitting	90° mirror, with threaded end fitting
Thread	M8 x 1, L = 10 mm	–	–	M6 x 1, L = 10 mm	M6 x 1, L = 10 mm	M6 x 1, L = 3 to 10 mm
Lens	yes	no	yes	yes	yes	yes
References	XUYA110	XUYA210	XUYA211	XUYA212	XUYA213	XUYA220

Accessories

For thru-beam system plastic fibre optics

Lenses — For increasing sensing distance (pair) **XUFZ01**

With 90° mirror (pair) **XUFZ02**

Fixing clamp with lens (set of 2)

Front screw fixing for fibre optics XUFZ920 **XUFZ04**

For all system plastic fibre optics

Fibre trimmer — For trimming fibres to length (included with all fibre optics) **XUFZ11**

Protective metal tubing

Length 1 m, for fibres with threaded end fittings
For M4 thread **XUFZ210**
For M6 thread **XUFZ310**

Plug-in PUR pre-wired female connectors (1)

Cable length 5 m, without LED
pre-wired, elbowed   pre-wired, straight

XZCP1041L5   **XZCP0941L5**

(1) For PVC cable see page 47

Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors

Plastic fibre optic light guides (length 2 m)

		M4 / M2.6 (1)	M4 / L = 90 mm	M3 / M2.6 (1)	Long range fibres with integrated lens M8 / L = 20 mm	Long range fibres M4 / M2.6 (1)	Flexible fibres M4 / M2.6 (1)
System		**Thru-beam**					
Sensing distance (mm)		**200 or 1500** (2)	**180**	**50 or 1000** (2)	**2500**	**300 or 2000** (2)	**100 or 750** (2)
Fibre cross-section							
Fibre Ø (mm)		Ø 1	Ø 1	Ø 0.5	Ø 1	Ø 1.5	Ø 1
Sheath Ø (mm)		Ø 2.2	Ø 2.2	Ø 1	Ø 2.2	Ø 2.2	Ø 2.2
Temperature range (°C)		- 25...+ 60	- 25...+ 60	- 25...+ 60	- 25...+ 60	- 25...+ 60	- 25...+ 60
References		**XUFN12301**	**XUFN12311**	**XUFN35301**	**XUFN2L01L2**	**XUFN2P01L2**	**XUFN2S01L2**
Fixing		M4 x 0.7	M4 x 0.7	M3 x 0.5	M8 x 1.25	M2.6 x 0.45 / M4 x 0.7	M2.6 x 0.45 / M4 x 0.7

(1) Can be used with 90° mirror XUFZ02 (see preceding page).
(2) With lens accessory XUFZ01 (see preceding page)
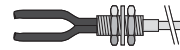
	M6	M4 / M6	M6/L = 90 mm	M4 / M2.6
System	**Diffuse**			
Sensing distance (mm)	**70**	**60**	**60**	**15**
Fibre cross-section				
Fibre Ø (mm)	Ø 1	Ø 1+16 Ø 0.265	Ø 1	Ø 0.5 + 4 Ø 0.23
Sheath Ø (mm)	Ø 2.2 x 2	Ø 2.2 x 2	Ø 2.2 x 2	Ø 1 x 2
Temperature range (°C)	- 25...+ 60	- 25...+ 60	- 25...+ 60	- 25...+ 60
References	**XUFN05321**	**XUFN05323**	**XUFN05331**	**XUFN02323**
Fixing	M6 x 0.75	M6 x 0.75 / M4 x 0.7	M6 x 0.75	M4 x 0.7

	M4 / L = 90 mm	M4 / M2.6	Long range fibres M6 / L = 15 mm
System	**Diffuse**		
Sensing distance (mm)	**18**	**18**	**95**
Fibre cross-section			
Fibre Ø (mm)	Ø 0.5	Ø 0.5	Ø 1.5
Sheath Ø (mm)	Ø 1 x 2	Ø 1 x 2	Ø 2.2 x 2
Temperature range (°C)	- 25...+ 60	- 25...+ 60	- 25...+ 60
References	**XUFN01331**	**XUFN01321**	**XUFN5P01L2**
Fixing	M4 x 0.7	M4 x 0.7	M6 x 0.75

Glass fibre optic light guides (length 0.6 m)

		M4	M4 / Ø 2.5 x 89	M4	M4 / Ø 2.5 x 89	M4
System		**Thru-beam**		**Diffuse**		
Sensing distance (mm)		**200**		**80**		
Fibre cross-section						
End fitting		Straight	Adaptable	Straight	Adaptable	90°
Fibre Ø (mm)		1		1		
Sheath Ø (mm)		2.2		2.2		
Temperature range (°C)		PVC sheath: - 25...+ 60 / Metal wound: - 25...+ 120 / Flexible stainless steel: - 25...+ 200				
References	PVC sheath	**XUYFVERSD61**	–	**XUYFVPSD61**	**XUYFVPSC61**	**XUYFVPSL61**
	Metal wound	**XUYFVERMD61**	**XUYFVERSC61**	**XUYFVPMD61**	**XUYFVPMC61**	**XUYFVPML61**
	Flexible stnl. steel	**XUYFVERTD61**	–	**XUYFVPTD61**	**XUYFVPTC61**	**XUYFVPTL61**
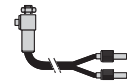
	M12	M18	M18
Nominal sensing distance Sn — Mode proximity or reflex (1)	**5** or **10** cm depending on model	**15** or **50** cm depending on model	**50** mm
Mode thru beam	**20** cm	**61** or **100** cm depending on model	
Operating zone for proximity mode	0.64…5.1 cm (XX512A1…) 0.64…10.2 cm (XX512A2…)	1.9…15.2 cm (XX518A1…) 5.1…50.8 cm (XX518A3…)	2…50 mm
Sensitivity adjustment	Fixed	Adjustable using remote control for XX518 A3. Fixed for XX518A1, XXT18, XXR18	Fixed
Case M (metal), P (plastic)	P	P	M
Product certification	CE	CE	CE
Temperature range (°C)	- 20…+ 65	0…+ 50 (XX518A1…) / - 20…+ 65 (XX518A3…) / 0... 60 (XXT18, XXR18)	0…+ 60
Degree of protection (conforming to IEC 60529)	IP 67		
Dimensions (mm) Ø x L	M12 x 50	M18 x 65	M18 x 75 (M12) M18 x 65 (Cable)

Proximity or Reflex (1) mode with "Discrete" output for DC applications (24 V)

Connection			M8 connector	M12 connector	Pre-cabled (2 m), M12 connector
3-wire	**PNP**	**NO** function	**XX512A2PAM8** (10 cm)	**XX518A3PAM12** (50 cm)	**XXV18B1PAL2** (cable) **XXV18B1PAM12** (M12)
	NPN	**NO** function	**XX512A2NAM8** (10 cm)	**XX518A3NAM12** (50 cm)	**XXV18B1NAL2** (cable) **XXV18B1NAM12** (M12)
4-wire	**PNP/NPN**	**NO** function	**XX512A1KAM8** (5 cm)	**XX518A1KAM12** (15 cm)	–

Application - monitoring levels

	2 emptying levels	**PNP NO** function	–	**XX218A3PHM12** (50 cm) (2)	–
	2 filling levels	**PNP NO** function	–	**XX218A3PFM12** (50 cm) (2)	–
Supply voltage limits, min./max. (V) including ripple			10...28		
Switching capacity, max. (mA)			<100		
Short-circuit protection (★)			★		
LED output state indicator (⊗) / Power on LED (⊗)			⊗ / ⊗	⊗ / ⊗ except XX518A1.. (- / -)	
Voltage drop, closed state (V) at I nominal			<1		
Switching frequency (Hz)			125	40 / 80 (XX518A1..)	
Transmission frequency (kHz)			500	300	

(1) Reflex mode only for sensor with adjustable sensitivity.

(2) 1 NO

Proximity mode with "Analogue" output for DC applications (24 V)

Connection			M12 connector		
4-wire	**Analogue**	**0…10 V** output	–	**XX918A3F1M12** (50 cm)	–
		4…20 mA output	–	**XX918A3C2M12** (50 cm)	–
Supply voltage limits, min./max. (V) including ripple			–	10…28	–
Short-circuit protection (★)			–	★	–
LED output state indicator (⊗) / Power on LED (⊗)			–	⊗ / ⊗	–
Transmission frequency (kHz)			–	300	–

Thru beam mode with "Discrete" output for DC applications (24 V)

Connection		M8 connector	M12 connector	
4-wire	Receiver (NO/PNP + NO NPN)	XXR12A8KAM8	XXR18A3KAM12 (0.61 m) XXR18A4KAM12 (1 m)	–
	Receiver (NC/PNP + NC NPN)	XXR12A8KBM8	XXR18A3KBM12 (0.61 m) XXR18A4KBM12 (1 m)	–
	Transmitter	XXT12A8M8	XXT18A3M12 (0.61 m) XXT18A4M12 (1 m)	–

Accessories

Telemecanique
Sensors

Other versions: **please consult our Customer Care Centre.**

Ultrasonic sensors
Detection of any material

	M30			M30 Long range
Nominal sensing distance Sn Mode proximity or reflex (1)	**1** m	**1** m	**2** m	**8** m
Operating zone for proximity mode	0.1...1 m	0.05...0.99 m	0.12...2 m	0.3...8 m
Sensitivity adjustment	Adjustable using remote control	Adjustable using teach mode		
Case M (metal), P (plastic)	P			P
Product certification	CE			CE
Temperature range (°C)	0…+ 70	0…+ 70		- 20…+ 60
Degree of protection (conforming to IEC 60529)	IP 67	IP 65		
Dimensions (mm) Ø x L	M30 x 78	M30 x 85		M30 x 106

Proximity or Reflex (1) mode with "Discrete" output for DC applications (24 V)

Connection			M12 connector			M12 connector
3-wire	PNP	NO function	XX6V3A1PAM12	–	–	–
	NPN	NO function	XX6V3A1NAM12	–	–	–
4-wire	PNP/NPN	NO function	–	XX630A1KAM12	–	–
	PNP	NO + NC function	–	XX630A1PCM12 (2)	–	XX630A3PCM12
	NPN	NO + NC function	–	XX630A1NCM12 (2)	–	XX630A3NCM12

Application - monitoring levels

	2 emptying levels	PNP NO function	–	XX230A10PA00M12 (3)	XX230A20PA00M12 (3)	–
	2 filling levels	PNP NO function	–	XX230A11PA00M12 (3)	XX230A21PA00M12 (3)	–
Supply voltage limits, min./max. (V) including ripple			10...28			
Switching capacity, max. (mA)			<100			
Short-circuit protection (★)			★			
LED output state indicator (⊗) / Power on LED (⊗)			⊗ / ⊗			
Voltage drop, closed state (V) at I nominal			<1			
Switching frequency (Hz)			70	10		2
Transmission frequency (kHz)			180	200		75

(1) Reflex mode only for sensor with adjustable sensitivity.

Proximity mode with "Analogue" output for DC applications (24 V)

Connection			M12 connector			
4-wire	Analogue	0…10 V output	XX9V3A1F1M12	XX930A1A1M12 (2)	–	XX930A3A1M12
		4…20 mA output	XX9V3A1C2M12	XX930A1A2M12 (2)	–	XX930A3A2M12
Supply voltage limits, min./max. (V) including ripple			10…28	10…28	–	10…28
Short-circuit protection (★)			★	★	–	★
LED output state indicator (⊗) / Power on LED (⊗)			⊗ / ⊗	⊗ / ⊗	–	⊗ / ⊗
Transmission frequency (kHz)			180	200	–	75

(2) Stainless steel 303 version also available. To order, replace the first letter **A** in the reference by **S**. Example: XX630**A**1PCM12 becomes XX630**S**1PCM12.
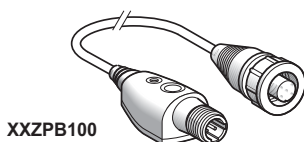(3) 2 NO

Accessories

Programming	Suitable female plug-in connectors

Remote control
teach button for use with sensors XX●18A3●●●, XX●V1●●●, XX●V3●●● and XX●D1

XXZPB100

PUR Pre-wired connectors (1)
elbowed   straight
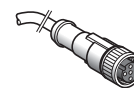
Other connectors
screw terminal

L = 5 m (without LED)					
M8	for XX512A1…	XZCP1041L5	XZCP0941L5	XZCC8FCM40V	
	for XX512A2…	XZCP0666L5	XZCP0566L5	XZCC8FCM30V	
M12	for all sensors except XX512...	XZCP1241L5	XZCP1141L5	XZCC12FCM40B	

(1) For PVC cable see page 47

For fixing see page 46

	Mini flat	**Flat**	**Combined multi-fixing**	**Flat 80 x 80**
Nominal sensing distance Sn — Mode proximity or reflex (1)	**10** cm	**25** cm	**50** cm	**1** m
Mode thru beam	**20** cm	**61** or **100** cm depending on model	–	–
Operating zone for proximity mode	0.62…10.2 cm	5.1…25.4 cm	5.1…50.8 cm	0.1…1 m
	–	–	–	–
Sensitivity adjustment	Fixed	Fixed	Adjustable using remote control	Adjustable using remote control
Case P (plastic)	P	P	P	P
Product certification	CE	CE	CE	CE
Temperature range (°C)	- 20…+ 65	0…+ 50	- 20…+ 65	0…+ 70
Degree of protection (conforming to IEC 60529)	IP 67			
Dimensions (mm) Ø x L or H x W x D	33 x 19 x 7.6	74 x 30 x 16	M 18 / 18 x 33 x 60	80 x 80 x 34

Proximity or Reflex (1) mode with "Discrete" output for DC applications (24 V)

Connection			M12 on 0.15 m flying lead	M12 connector		
3-wire	**PNP**	**NO** function	XX7F1A2PAL01M12	XX7K1A2PAM12	XX7V1A1PAM12	XX8D1A1PAM12
	NPN	**NO** function	XX7F1A2NAL01M12	XX7K1A2NAM12	XX7V1A1NAM12	XX8D1A1NAM12
Supply voltage limits, min./max. (V) including ripple			10…28			
Switching capacity, max. (mA)			<100			
Short-circuit protection (★)			★			
LED output state indicator (⊗) / Power on LED (⊗)			⊗ / ⊗			
Voltage drop, closed state (V) at I nominal			<1			
Switching frequency (Hz)			100	80	40	70
Transmission frequency (kHz)			500	500	300	180

(1) Reflex mode only for sensor with adjustable sensitivity.

## Proximity mode with "Analogue" output for DC applications (24 V)

Connection			–		M12 connector	
4-wire	**Analogue**	**0…10 V** output	–	–	XX9V1A1F1M12	XX9D1A1F1M12
		4…20 mA output	–	–	XX9V1A1C2M12	XX9D1A1C2M12
Supply voltage limits, min./max. (V) including ripple			–	–	10…28	10…28
Short-circuit protection (★)			–	–	★	★
LED output state indicator (⊗) / Power on LED (⊗)			–	–	⊗ / ⊗	⊗ / ⊗
Transmission frequency (kHz)			–	–	300	180

Thru beam mode with "Discrete" output for DC applications (24 V)

Connection			–			
4-wire	Receiver (NO/PNP + NO/NPN)		XXRF1A8KAM12L	XXRK1A3KAM12 (0,61m) XXRK1A4KAM12 (1m)	–	–
	Receiver (NC/PNP + NC/NPN)		XXRF1A8KBM12L	XXRK1A3KBM12 (0,61m) XXRK1A4KBM12 (1m)	–	–
	Transmitter		XXTF1A8M12L	XXTK1A3M12 (0,61m) XXTK1A4M12 (1m)	–	–

Accessories

Fixings - 3D fixings with ball joint

XUZ 2001   XUZ B20●●

XUZ 2003

3D kit example
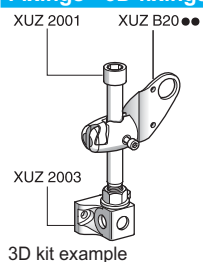
Bracket with ball joint for cylindrical sensors
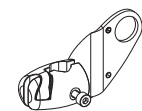
for
Ø 12	**XUZB2012**
Ø 18	**XUZB2003**
Ø 30	**XUZB2030**

M12 rod for ball joint

XUZ2001

Fixing support for M12 rod
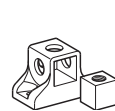
XUZ2003

Simple fixings

90° fixing brackets
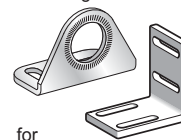
for
Ø 12	**XXZ12**
Ø 18	**XUZA118**
Ø 30	**XXZ30**
XX7F	**XXZ1933**

Mounting plates for XX7K
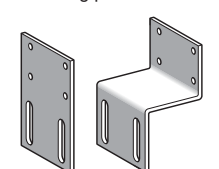
| flat | **XXZ3074F** |
| cranked | **XXZ3074S** |

Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors

OsiSense XZ
Cabling system
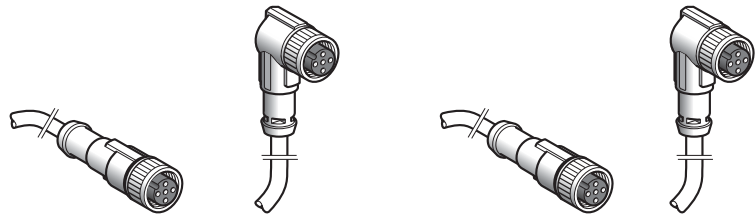### Pre-wired female connectors

PVC cable
M8 and M12 connector

PVC cable
1/2" and 7/8" connector

PUR cable halogen free
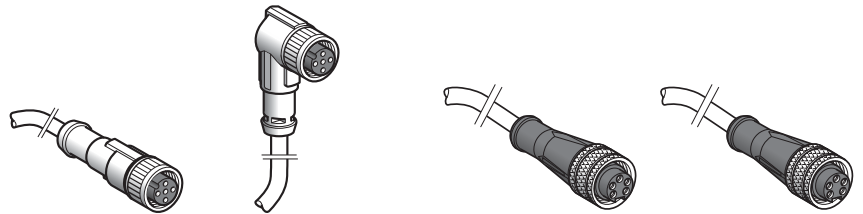M8, M12,1/2" and 7/8" connector

Reinforced PVC cable, stainless steel ring
M8, M12,1/2" and 7/8" connector

Connector Size		M8 Straight 3 pin	Elbowed 3 pin	Straight 4 pin	Elbowed 4 pin
References	PVC cable	XZCPV0566L●	XZCPV0666L●	XZCPV0941L●	XZCPV1041L●
	PUR cable	XZCP0566L●	XZCP0666L●	XZCP0941L●	XZCP1041L●
	PVC cable IP69K	XZCPA0566L●	–	XZCPA0941L●	–
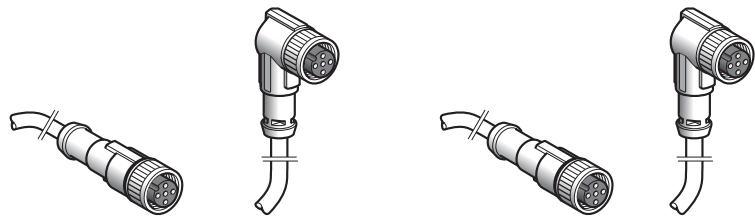
Connector Size		M12 Straight 4 pin	Elbowed 4 pin	Straight 5 pin	Elbowed 5 pin
References	PVC cable	XZCPV1141L●	XZCPV1241L●	XZCPV1164L●	XZCPV1264L●
	PUR cable	XZCP1141L●	XZCP1241L●	XZCP1164L●	XZCP1264L●
	PVC cable IP69K	XZCPA1141L●	XZCPA1241L●	XZCPA1164L●	–

Connector Size		1/2" Straight 3 pin	Elbowed 3 pin	7/8" Straight 3 pin	Straight 5 pin
References	PVC cable	XZCPV1865L●	XZCPV1965L●	XZCPV1670L●	–
	PUR cable	XZCP1865L●	XZCP1965L●	XZCP1670L●	XZCP1764L●
	PVC cable IP69K	XZCPA1865L●	XZCPA1965L●	–	–

Complete each reference by adding the length of cable, as 2 for 2 m, 5 for 5 m and 10 for 10 m
Eg: XZCPV1141L**2** is pre-wired connector M12 connectors with 4 contacts and 2 m PVC cable
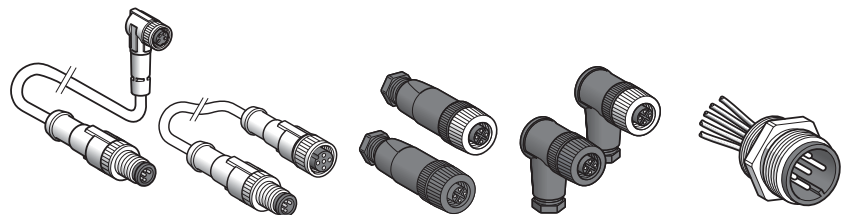
Other accessories	Jumpers	Connector	Receptacle
References	XZCR...	XZCC...	XZCE...

OsiSense XCC

Opto-electronic rotary encoders
Incremental

Diameter of housing (mm)		Ø 40	Ø 40	Ø 58	Ø 58	Stainless steel 316L	Ø 58 Parametrable	Ø 90
Shaft Ø (mm)		Ø 6	Ø 6	Ø 6	Ø 10		Ø 14 (1)	Ø 12
Type of shaft (2)		solid shaft	through shaft	solid shaft	solid shaft		through shaft	solid shaft
Maximum rotational speed (rpm)		9000	9000	9000	9000		6000	6000
Maximum frequency (kHz)		100	100	300	300		300	100
Maximum load (daN)		2	2	10	10	25	5	20
Torque (N.cm)		0.2	0.25	0.4	0.4		0.6	1
Product certification		CE	CE	CE	CE		CE	CE
Temperature range (°C)		- 20…+ 80	- 20…+ 80	- 30…+ 100	- 30…+ 100		- 30…+ 70	- 20…+ 80
Degree of protection (conforming to IEC 60529)		IP 54	IP 52	IP 65 / IP 67 (3)	IP 65 / IP 67 (3)	IP69K	IP 65	IP 66
Supply voltage	5 V, RS 422	4.5…5.5 V	4.5…5.5 V	4.75…30 V	4.75…30 V		4.75…30 V	4.5…5.5 V
	Push-pull	11…30 V	11…30 V	5…30 V	5…30 V		5…30 V	11…30 V
Connection		**Pre-cabled (2 m)**, radial		**M23 male connector**, radial		**Pre-cabled (2 m)**, axial	**M23 male connector**, radial	
Resolution (Points)	Output stage							
100	5 V, RS 422	XCC1406PR01R	XCC1406TR01R	XCC1506PS01X	XCC1510PS01X	–	–	XCC1912PS01RN
	Push-pull	XCC1406PR01K	XCC1406TR01K	XCC1506PS01Y	XCC1510PS01Y	–	–	XCC1912PS01KN
360	5 V, RS 422	XCC1406PR03R	XCC1406TR03R	XCC1506PS03X	XCC1510PS03X	–	–	XCC1912PS03RN
	Push-pull	XCC1406PR03K	XCC1406TR03K	XCC1506PS03Y	XCC1510PS03Y	XCC1510SPA03Y	–	XCC1912PS03KN
500	5 V, RS 422	XCC1406PR05R	XCC1406TR05R	XCC1506PS05X	XCC1510PS05X	–	–	XCC1912PS05RN
	Push-pull	XCC1406PR05K	XCC1406TR05K	XCC1506PS05Y	XCC1510PS05Y	–	–	XCC1912PS05KN
1000	5 V, RS 422	XCC1406PR10R	XCC1406TR10R	XCC1506PS10X	XCC1510PS10X	–	–	XCC1912PS10RN
	Push-pull	XCC1406PR10K	XCC1406TR10K	XCC1506PS10Y	XCC1510PS10Y	–	–	XCC1912PS10KN
1024	5 V, RS 422	XCC1406PR11R	XCC1406TR11R	XCC1506PS11X	XCC1510PS11X	–	–	XCC1912PS11RN
	Push-pull	XCC1406PR11K	XCC1406TR11K	XCC1506PS11Y	XCC1510PS11Y	XCC1501SPA11Y	–	XCC1912PS11KN
2500	5 V, RS 422	–	–	XCC1506PS25X	XCC1510PS25X	–	–	XCC1912PS25RN
	Push-pull	–	–	XCC1506PS25Y	XCC1510PS25Y	–	–	XCC1912PS25KN
3600	5 V, RS 422	–	–	–	–	–	–	XCC1912PS36RN
	Push-pull	–	–	–	–	–	–	XCC1912PS36KN
256…4096	5 V, RS 422	–	–	–	–	–	XCC1514TSM02X	–
	Push-pull	–	–	–	–	–	XCC1514TSM02Y	–
5000	5 V, RS 422	–	–	XCC1506PS50X	XCC1510PS50X	–	–	XCC1912PS50RN
	Push-pull	–	–	XCC1506PS50Y	XCC1510PS50Y	XCC1510SPA50Y	–	XCC1912PS50KN
360…5760	5 V, RS 422	–	–	–	–	–	XCC1514TSM03X	–
	Push-pull	–	–	–	–	–	XCC1514TSM03Y	–
500…8000	5 V, RS 422	–	–	–	–	–	XCC1514TSM05X	–
	Push-pull	–	–	–	–	–	XCC1514TSM05Y	–
10 000	5 V, RS 422	–	–	–	–	–	–	XCC1912PS00RN
	Push-pull	–	–	–	–	–	–	XCC1912PS00KN
1024…16 384	5 V, RS 422	–	–	–	–	–	XCC1514TSM11X	–
	Push-pull	–	–	–	–	–	XCC1514TSM11Y	–
5000…80 000	5 V, RS 422	–	–	–	–	–	XCC1514TSM50X	–
	Push-pull	–	–	–	–	–	XCC1514TSM50Y	–

Accessories

Shaft couplings

with spring
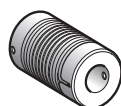
	Bore diameter (encoder side)	Bore diameter (machine side)	Reference
	6 mm	6 mm	XCCRAR0606
	6 mm	8 mm	XCCRAR0608
	6 mm	10 mm	XCCRAR0610
	10 mm	10 mm	XCCRAR1010
	10 mm	12 mm	XCCRAR1012

elastic

	6 mm	6 mm	XCCRAE0606

Fixing brackets

Plain bracket
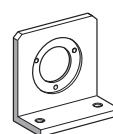
	for Ø 58 mm	XCCRE5SN
	for Ø 90 mm	XCCRE9SN

Bracket with play compensator
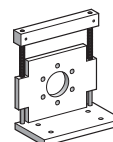
	for Ø 58 mm	XCCRE5RN
	for Ø 90 mm	XCCRE9RN

Other versions: **please consult our Customer Care Centre.**

**Absolute
- single turn**

**Absolute
- multiturn**

**Communicating
multiturn absolute**
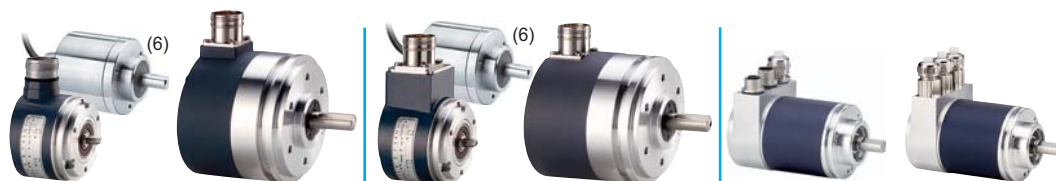
Diameter of housing (mm)	Ø 58	Ø 90	Ø 58	Ø 90	Ø 58 CANopen	Ø 58 PROFIBUS-DP
Shaft Ø (mm)	**Ø 10**	**Ø 12**	**Ø 10**	**Ø 12**	**Ø 10**	**Ø 10**
Type of shaft (2)	**solid shaft**	**solid shaft**	**solid shaft**	**solid shaft**	**solid shaft** (4)	**solid shaft** (4)
Maximum rotational speed (rpm)	9000	6000	6000	6000	6000	6000
Maximum frequency (kHz)	100	100 (1000 SSI)	100 (500 SSI)	100 (500 SSI)	800	800
Maximum load (daN)	10 / 25 (6)	20	10	20	11	11
Torque (N.cm)	0.4	1	0.4	1	0.3	0.3
Product certification	CE	CE	CE	CE	CE	CE
Temperature range (°C)	- 20…+ 90	- 20…+ 85	- 20…+ 85	- 20…+ 85	- 40…+ 85	- 40…+ 85
Degree of protection (conforming to IEC 60529)	IP 65 / IP 67 (3) / IP69K (6)	IP 66	IP 65 / IP 67 (3) / IP69K (6)	IP 66	IP 64	IP 64
Supply voltage	11…30 V					
Connection	**M23 male connector**, radial / 2m Axial cable (6)				**2 x M12 + 1 x Pg 9**	**3 x Pg 9**

Resolution	Output stage	Code						
… 8192 points	Push-pull	Binaire	**XCC2510PS81KB**	**XCC2912PS81KBN**	–	–	–	–
		Gray	**XCC2510PS81KGN** **XCC2510SPA81KGN** (6)	**XCC2912PS81KGN**	–	–	–	–
	SSI, 13 bits	Binaire	**XCC2510PS81SBN**	**XCC2912PS81SBN**	–	–	–	–
		Gray	**XCC2510PS81SGN** **XCC2510SPA81SGN** (6)	**XCC2912PS81SGN**	–	–	–	–
4096 points / 8192 turns	SSI, 25 bits (5)	Gray	–	–	**XCC3510PS48SGN** **XCC3510SPA48SGN** (6)	–	–	–
8192 points / 4096 turns	SSI, 25 bits (5)	Binaire			**XCC3510PS84SBN**	**XCC3912PS84SBN**	–	–
		Gray	–	–	**XCC3510PS84SGN**	**XCC3912PS84SGN**	–	–
8192 points / 4096 turns	CANopen, 25 bits	Binaire	–	–	–	–	–	–
			–	–	–	–	**XCC3510PS84CBN**	–
	PROFIBUS-DP, 25 bits	Binaire	–	–	–	–	–	**XCC3510PV84FBN**

(1) Anti-rotation device included with through shaft version encoders. To achieve Ø 6, 8, 10 or 12 mm through shafts, use the reduction collars.
(2) All versions are also available with through shaft and anti-rotation device.
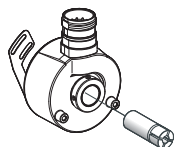(3) IP 67 with sealed collar XCCRB3.
(4) Versions available with hollow shaft and anti-rotation device.
(5) "Parallel" outputs possible for multiturn absolute encoders using derserialisation jumper cables XCCRM23SUB37●●.
(6) product in Stainless steel 316L

Reduction collars		
For Ø 58 mm incremental encoders with through shaft		
	Ø 14 to Ø 6 mm	**XCCR158RDA06**
	Ø 14 to Ø 8 mm	**XCCR158RDA08**
	Ø 14 to Ø 10 mm	**XCCR158RDA10**
	Ø 14 to Ø 12 mm	**XCCR158RDA12**
IP 67 sealed collar		
For encoders XCC1510, 2510, 3510		
	Ø 58 mm	**XCCRB3**

Pre-wired connectors and jumper cables	
Pre-wired M23 female connectors (cable length 5 m)	
8-wire for SSI encoders	**XCCPM23122L5**
10-wire for incremental encoders	**XCCPM23121L5**
16-wire for parallel single turn absolute encoders	**XCCPM23161L5**
Deserialisation jumper cables (M23 F - SUB-D37 M) (L = 0.5 m)	
SSI Gray - // Gray PNP	**XCCRM23SUB37PG**
SSI binary - // binary NPN	**XCCRM23SUB37PB**

Other versions: **please consult our Customer Care Centre.**

Telemecanique
Sensors

Presentation

OsiSense XG is open to the majority of ISO 18000-3, ISO 15693 and ISO 14443 electronic tags.

OsiSense XG integrates Modbus RTU, Uni-Telway, Modbus TCP/IP (using Ethernet box XGSZ33ETH) and Profibus DP (with box XGSZ33PDP) protocols.

The OsiSense XG RFID offer comprises:

- 2 models of 13.56 MHz smart antenna (read/write)
- 11 models of 13.56 MHz electronic tags
- 1 portable RFID diagnostics terminal
- 3 models of network connection boxes plus connection and mounting accessories.

Setting-up

OsiSense XG smart antenna are simple to set-up:

- Integrated RFID and network functions
- No programming
- Automatic detection of the RFID electronic tags (read or write)
- Automatic setting of the communication parameters (speed, format, parity, protocol, etc.)
- Configuration of the network address (1 to 15) using badge included with the smart antenna
- Low sensitivity to metal environments.

Installation

OsiSense XG smart antenna easily integrate in flexible manufacturing production lines:

- quick connection using M12 connector
- screw fixing or clip-on mounting.

Smart antenna, 13.56 MHz		Flat form 40	Flat form 80
Dimensions (mm), W x H x D		40 x 40 x 15	80 x 80 x 26
Nominal sensing distance depending on tag (mm)		18 to 70	20 to 100
Type of associated tag		ISO 15693 and ISO 14443 standard tags. Automatic detection of the type of tag.	
Display		1 dual colour LED for the communication network, 1 dual colour LED for the RFID communication	
Conformity to standards		CE, EN 301489-1, EN 301489-3, ETS 300330-1 and ETS 300330-2, FCC part 15 - UL	
Degree of protection conforming to IEC 60529		IP 67	
Serial link	Type	RS 485	
	Protocol	Modbus and Uni-Telway	
	Speed (Bauds)	9600…115 200 (automatic detection)	
Ambient air temperature (°C)		For operation: - 25…+ 70 °C, for storage: - 40…+ 85 °C	
Nominal supply voltage		24 VDC PELV (Protective Extra Low Voltage)	
Connection		M12, 5-pin male, shielded connector on flying lead. Only for connection to the communication network and the supply	
References		**XGCS4901201**	**XGCS8901201**

Electronic tags		Flat form 40		ISO badge (1)	Disc	Flat form 26	Cylindrical
Dimensions (mm), W x H x D		40 x 40 x 15		54 x 85.5 x 0.8	Ø 30 x 3	26 x 26 x 13	M18 x 1 x 12
Type of memory		EEPROM	FRAM	EEPROM			
Memory capacity (bytes)		3 408	32 768	256	112	256	256
Nominal sensing distance (mm)	With station XGCS49●	33	25	70	48	40	18
(Read/Write)	With station XGCS89●	48	39	100	65	55	20
Time (ms)	Read	$9.25 + 0.375 \times n$ (2)	$6 + 0.25 \times n$ (2)	$12 + 0.825 \times n$ (2)			
	Write	$13 + 0.8 \times n$ (2)	$6 + 0.25 \times n$ (2)	$20 + 11.8 \times n$ (2)	$12 + 5.6 \times n$ (2)	$20 + 11.8 \times n$ (2)	$19 + 4.1 \times n$ (2)
Degree of protection conforming to IEC 60529		IP 68		IP 65		IP 68	
Standard supported		ISO 14443		ISO 15693			
Mounting on metal support		Yes		No		Yes	No
References		**XGHB444345**	**XGHB443245**	**XGHB90E340**	**XGHB320345**	**XGHB221346**	**XGHB211345**

(1) Customised versions on request.   (2) n = number of 16-bit words.

Other versions: **please consult our Customer Care Centre.**

Telemecanique
Sensors

Connection boxes	Ethernet Modbus TCP/IP box	Profibus box	EtherNet/IP box
Dimensions (mm), W x H x D	130 x 80 x 51		130 x 80 x 51
Protocols	Modbus TCP/IP	Profibus DP	EtherNet/IP
Supply voltage	24 VDC PELV. M12, 4-pin male, A coding, connector		
Conformity to standards	CE - UL	CE	CE
Station connection	M12, 5-pin female, A coding, connector		
Degree of protection conforming to IEC 60529	IP 65		
References	**XGSZ33ETH**	**XGSZ33PDP**	**XGSZ33EIP**

Terminal	Portable 13.56 MHz RFID diagnostics terminal
Dimensions (mm), W x H x P	78 x 153 x 27
Function	Read/Write operations on electronic tags
Operating system	Proprietary OS
Conformity to standards	CE, FCC class A, Part 15
Display	53 x 95 mm colour OLED touchscreen 272 x 480 pixels resolution
Degree of protection conforming to IEC 60529	IP 40
Memory — RAM	256 Mb
Memory — Storage	internal 2 GB + USB socket for memory stick
Reference	**XGST2422** (battery, battery charger, 2 GB USB memory stick, and carrying case included with terminal). RFID reader to be ordered separately: **XGCS4901201** (integrated reader) or **XGW4F111** (remote reader)

Connection accessories		for Modbus network			for Profibus	for Ethernet	Pre-wired connector	"T" connector
Description		Modbus connecting cable M12 connectors Male / Female	Pre-wired connector M12 male / Bare wires	Modbus connecting cable M12 female / Mini-DIN 8	Profibus connecting cables M12 connectors Male / Female	Ethernet connecting cable M12 male / RJ 45	Pre-wired supply connector M12 female	Network M12 "T" connector 1 male / 2 female
Application		RS485 connection between a smart antenna and a connection box or between 2 Modbus boxes	Connection between a Modbus box and a Modbus / Uni-Telway network	Connection between a Modbus box and a PLC	Connection between Profibus box and Profibus network	Connection between an Ethernet box and the Ethernet network	24 VDC supply to connection boxes	For chaining of smart antennas on RS485 network
L = 2 m		**TCSMCN1M1F2**	**TCSMCN1F2**	**TCSMCN1F9M2P**	**FTXDP1220**	**XGSZ12E4503** (3)	**XGSZ09L2**	**TCSCTN011M11F**
L = 5 m		**TCSMCN1M1F5**	**TCSMCN1F5**	–	**FTXDP1250**	**XGSZ12E4510** (4)	**XGSZ09L5**	

(3) L = 3 m   (4) L=10 m

Field expander		RS232/RS485 converter	Technical documentation
To be associated with a smart antenna XGCS4901201 for conveying and handling applications		For connecting a PC to an OsiSense XG smart antenna	OsiSense XG smart antenna guide
50 x 400 mm	250 x 250 mm		
XGFEC540	**XGFEC2525**	**XGSZ24**	**DIA4ED3051001**

Other versions: **please consult our Customer Care Centre.**

Preventa, the safety attitude around your machine life cycle

The Preventa range enhances safety throughout a machine's entire life cycle from design, manufacture, installation, adjustment, operation and servicing right through to decommissioning.

In addition to moral obligation and economic consequences, the law requires that machinery is safe in the interests of accident prevention. Preventa offers an extensive range of safety products, compliant with international standards, designed to provide the most comprehensive protection for personnel and equipment.
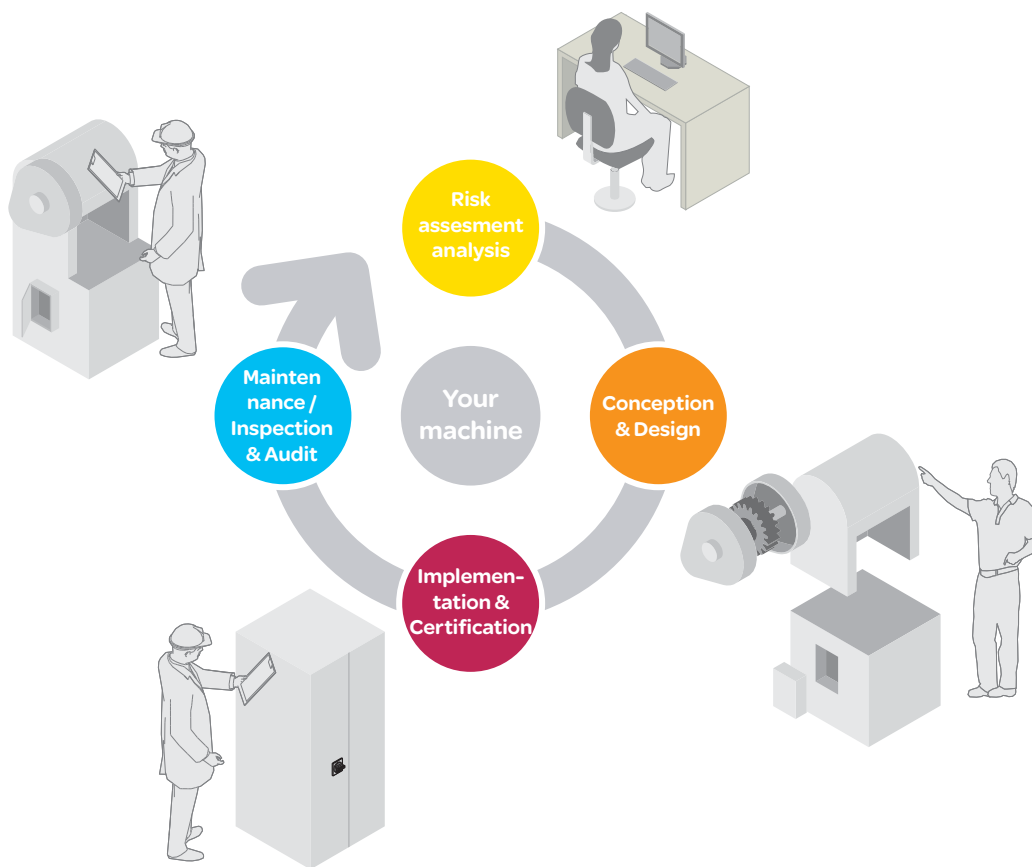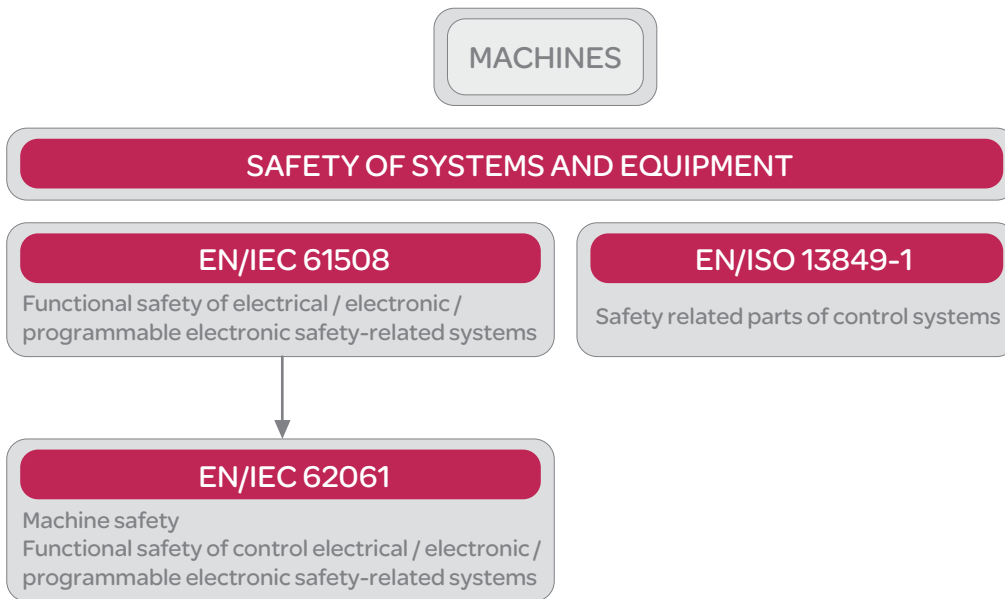

> New machines - the Machinery Directive

The previous Machinery Directive 98/37/EC was elaborated to help manufacturers ensuring a minimum safety level for machinery and equipment sold within the EU (European Union).

From 29 December 2009 on, the new European Machinery Directive 2006/42/EC is effective. Machines must comply with the Essential Health and Safety Requirements (EHSRs) listed in Annex I of the Directive, thus setting a common minimum level of protection across the EEA (European Economic Area).

Machine manufacturers, or their authorised representatives within the EU, must ensure that the machine is compliant with all requirements from this Directive. This technical file is available to reinforce authorities requests as well as the CE marking must be affixed and a Declaration of Conformity has been signed before the machine may be placed on the market within the EU.
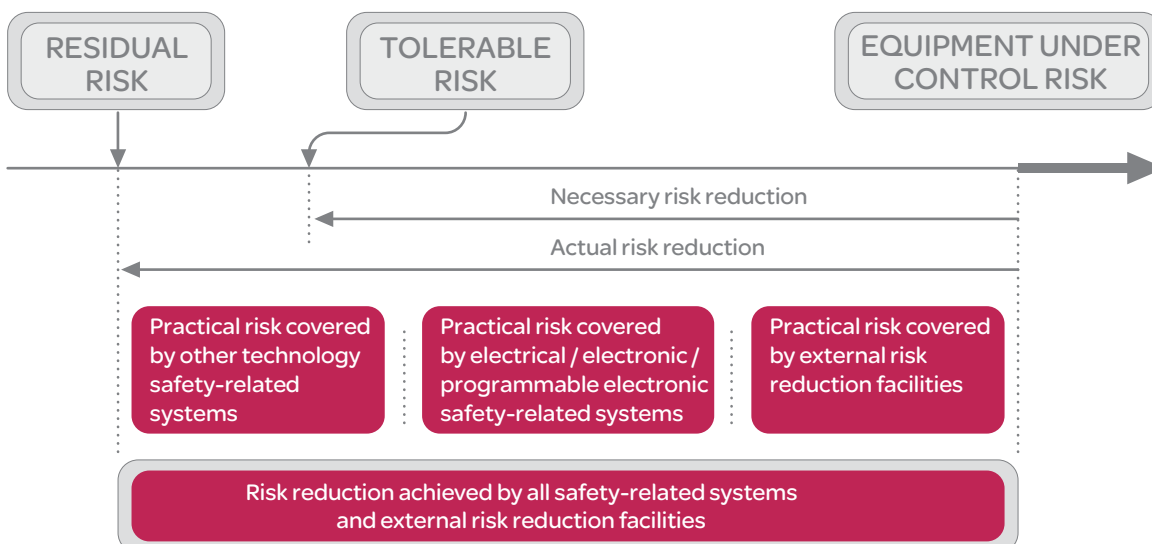
Functional safety

> Safety integrity level (SIL), Performance level (PL)

MACHINES

SAFETY OF SYSTEMS AND EQUIPMENT

EN/IEC 61508

Functional safety of electrical / electronic /
programmable electronic safety-related systems

EN/ISO 13849-1

Safety related parts of control systems

EN/IEC 62061

Machine safety
Functional safety of control electrical / electronic /
programmable electronic safety-related systems

Risk reduction according to EN/IEC 61508 and EN/ISO 13849-1

- **Safety** is achieved by risk reduction (for those hazards that cannot be designed-out).
- **Residual risk** is the risk remaining after protective measures have been taken.
- **Protective measures** realised by E/E/PE* safety related systems contribute to risk reduction.
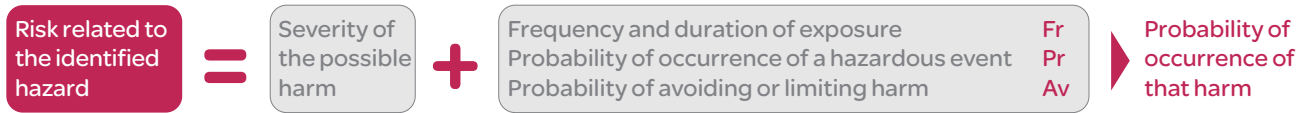
* Electric / Electronic / Programmable electronic

RESIDUAL
RISK

TOLERABLE
RISK

EQUIPMENT UNDER
CONTROL RISK

Necessary risk reduction

Actual risk reduction

Practical risk covered
by other technology
safety-related
systems

Practical risk covered
by electrical / electronic /
programmable electronic
safety-related systems

Practical risk covered
by external risk
reduction facilities

Risk reduction achieved by all safety-related systems
and external risk reduction facilities

Functional safety of machinery

> Approach according to EN/IEC 62061

Risk estimation for SIL assignment

Risk related to the identified hazard	=	Severity of the possible harm	+	Frequency and duration of exposure	Fr	>	Probability of occurrence of that harm
				Probability of occurrence of a hazardous event	Pr		
				Probability of avoiding or limiting harm	Av		

Example of SIL assignment

This assignment should be carried by determining the risk parameters that are shown below in an example.

Consequences	Severity (Se)
Irreversible: death, losing an eye or arm	4
Irreversible: broken limb(s), losing a finger(s)	3
Reversible: requiring attention from a medical practitioner	2
Reversible: requiring first aid	1

Frequency and duration of exposure (Fr)	
Frequency of exposure	> 10 min
1 h	5
> 1 h to 1 day	5
> 1 day to 2 weeks	4
> 2 weeks to 1 year	3
> 1 year	2

Probability of occurrence	Probability (Pr)
Very high	5
Likely	4
Possible	3
Rarely	2
Negligible	1

Probability of avoiding or limiting harm (Av)	
Impossible	5
Rarely	3
Probable	1

Serial no.	Hazard	Se	Fr	Pr	Av	CI
1	Hazard X	4	5 +	4 +	3 =	12
2						

Consequences	(Se)	Class CI					Frequency and duration Fr		Probability of hzd. Event Pr		Avoidance Av	
		3-4	5-7	8-10	11-13	14-15						
Death, losing an eye or arm	4	SIL 2	SIL 2	SIL 2	SIL 3	SIL 3	<= 1 hour	5	Common	5		
Permanent, losing fingers	3		OM	SIL 1	SIL 2	SIL 3	> 1 h to <= 1 day	5	Likely	4		
Reversible, medical attention	2			OM	SIL 1	SIL 2	> 1 day to <= 2 wks	4	Possible	3	Impossible	5
Reversible, first aid	1				OM	SIL 1	2 wks to <= 1 year	3	Rarely	2	Possible	3
							> 1 year	2	Negligible	1	Likely	1

In this example the SIL 3 must be achieved by the safety-related control function intended to reduce the risk related to the identified hazard.

Determination of the SIL level achieved by the Safety-related control function (SRCF)

According to standard EN/IEC 62061 for each safety related control function, the SIL level is linked to:
• a target failure value for the probability of dangerous failure by hour of the SRCF: PFHD
• architectural constraints (hardware fault tolerance, diagnosis)
• a set of requirements related to the lifecycle of the safety related electrical control system

Safety integrity level (SIL)	Probability of a dangerous Failure per Hour PFHD
3	$>10^{-8}$ to $<10^{-7}$
2	$>10^{-7}$ to $<10^{-6}$
1	$>10^{-6}$ to $<10^{-5}$

λ_s = rate of safe failures,
λ_{dd} = rate of detected dangerous failures,
λ_{du} = rate of undetected dangerous failures
$\lambda_d = \lambda_{dd} + \lambda_{du}$

In practice, detected dangerous failure are dealt with by fault

• The rate of failures λ can be expressed as follows: $\lambda = \lambda_s + \lambda_{dd} + \lambda_{du}$
• The calculation of the PFHD for a system
or subsystem depends on several parameters:
 o the dangerous failure rate (λ_d) of the subsystem elements
 o the fault tolerance (e.g. redundancy) of the system
 o the diagnostic test interval (T2)
 o the proof test interval (T1) or lifetime whichever is smaller
 o the susceptibility to common cause failures (β)
• For each of the four different logical architectures A to D there is a different formula to calculate the PFHD. (see EN/IEC 62061)
• For a simple system without redundancy and without diagnostic:
PFHD = λ_d x 1/h

Telemecanique Sensors

> Approach according to EN/ISO 13849-1

Determination of the Performance Level requested (PLr)

Done using the risk graphic opposite

S = Severity of injury
S1 = Slight (normally reversible injury)
S2 = Serious (normally irreversible) injury including death
F = Frequency and/or exposure time to the hazard
F1 = Seldom to less often and/or the exposure time is short
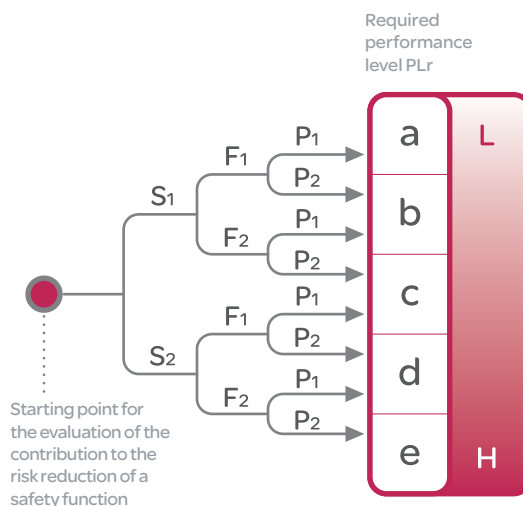F2 = Frequent to continuous and/or the exposure time is long
P = Possibility of avoiding the hazard or limiting the harm
P1 = Possible under specific conditions
P2 = Scarcely possible
L = Low contribution to risk reduction
H = High contribution to risk reduction

Required performance level PLr

Starting point for the evaluation of the contribution to the risk reduction of a safety function

Determination of the PL achieved by the Safety-related parts of control systems (SRP/CS)

According to standard EN/ISO 13849-1, the Performance level (PL) is linked to a target failure value of probability of dangerous failure per hour for each safety related control function.

Performance level (PL)	Probability of a dangerous Failure per Hour
a	$\geq 10^{-5} \ldots < 10^{-4}$
b	$\geq 3 \times 10^{-6} \ldots < 10^{-5}$
c	$\geq 10^{-6} \ldots < 3 \times 10^{-6}$
d	$\geq 10^{-7} \ldots < 10^{-6}$
e	$\geq 10^{-8} \ldots < 10^{-7}$

For a SRP/CS (or a combination of SRP/CS) designed according the requirements of the article 6, the PL could be estimated with the figure beside after estimation of several factors such as system structure (categories), mechanism of failures detection [Diagnosis Coverage (DC)], components reliability [mean time to dangerous failure (MTTFd), Common Cause Failure (CCF)]…

MTTF$_d$ of each channel = low
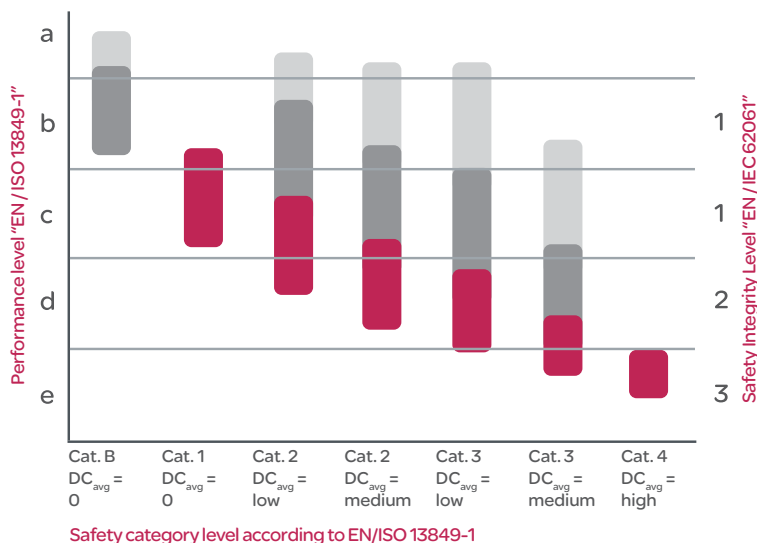MTTF$_d$ of each channel = medium
MTTF$_d$ of each channel = high

Safety category level according to EN/ISO 13849-1
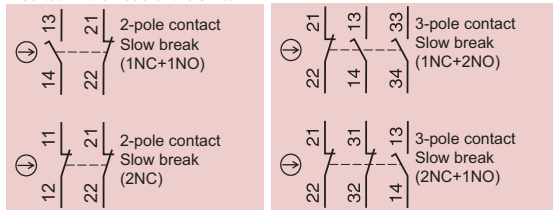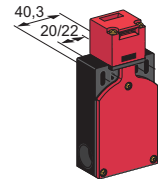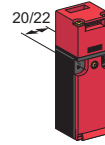
ISO entry (to EN 50262)

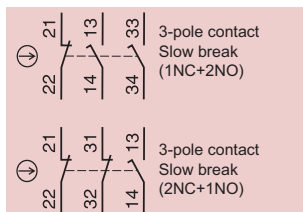Illustration of contacts with the actuator inserted in the head of the switch

2-pole contact Slow break (1NC+1NO)	3-pole contact Slow break (1NC+2NO)
2-pole contact Slow break (2NC)	3-pole contact Slow break (2NC+1NO)

Without locking
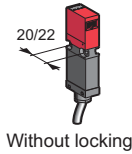
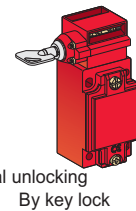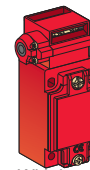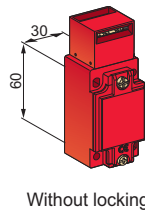| Plastic, double insulated switches			Type XCSMP	Type XCSPA		Type XCSTA
Maximum safety level (3)			PL=e, category 4 conforming to EN/ISO 13849-1 and SIL CL3 conforming to EN/IEC 62061			
Actuation speed (min --> max)			0,05m/s --> 1,5m/s	0,1m/s --> 0,5m/s		0,1m/s --> 0,5m/s
Rated operational characteristics (conforming to EN IEC 60947-5-1)			AC 15, C 300 / DC 13, Q 300			
Degree of protection conforming to IEC 60529			IP67			
Reliability data B$_{10d}$			5 000 000 value given for a service life of 20 years, limited by mechanical or contact wear			
Body + Head dimensions (mm) W x D x H			30 x 15 x 87 mm	30 x 30 x 93,5 mm		52 x 30 x 114,5 mm
Resistence to forcible withdrawal of actuator			8 N	10 N (1)		10 N (1)
Wiring connection			pre-cabled, L = 2m	1 x ISO M16 entry.	1 x PG11 entry	2 x ISO M16 entries. (2)
Safety contacts	1NC+1NO	break before make, slow break	XCSMP59L2	XCSPA592	XCSPA591	–
	2NC	slow break	XCSMP79L2	XCSPA792	XCSPA791	–
	1NC+2NO	break before make, slow break	–	XCSPA892	XCSPA891	XCSTA592
	2NC+1NO	break before make, slow break	XCSMP70L2	XCSPA992	XCSPA991	XCSTA792
	2NC+1NO	snap action	–	XCSPA492	XCSPA491	–
	3NC	slow break	XCSMP80L2	–	–	XCSTA892

(1) In order to increase the resistance to 50 N, you must add the accessory XCSZ21 to the key actuators XCSZ12
(2) With entry for n° 11 (Pg 11) cable gland, replace the last digit in the reference by 1 (example: XCSTA592 becomes XCSTA591).

3-pole contact Slow break (1NC+2NO)	
3-pole contact Slow break (2NC+1NO)	

ISO entry (to EN 50262)

Illustration of contacts with the actuator inserted in the head of the switch

Without locking

With interlocking, manual unlocking
By button — By key lock

Metal, double insulated switches			Type XCSA		Type XCSB	Type XCSC
Maximum safety level (3)			PL=e, category 4 conforming to EN/ISO 13849-1 and SIL CL3 conforming to EN/IEC 62061			
Actuation speed (min --> max)			0,01m/s --> 0,5m/s		0,01m/s --> 0,5m/s	
Rated operational characteristics (conforming to EN IEC 60947-5-1)			AC 15, A 300 / DC 13, Q 300			
Degree of protection conforming to IEC 60529			IP67			
Reliability data B$_{10d}$			5 000 000 value given for a service life of 20 years, limited by mechanical or contact wear			
Body + Head dimensions (mm) W x D x H			40 x 44 x 113.5 mm		52 x 44 x 113.5 mm	
Resistence to forcible withdrawal of actuator			20 N		1500 N	
Wiring connection			1 x ISO M20 entry	1 x PG13,5 entry	1 x ISO M20	1 x PG13,5 entry
Safety contacts	1NC+2NO	break before make, slow break	XCSA502	XCSA501	XCSB502	XCSC501
	2NC+1NO	break before make, slow break	XCSA702	XCSA701	XCSB702	XCSC701
	3NC	slow break	XCSA802	XCSA801	–	XCSC801

(3) Using an appropriate and correctly connected control system.

Accessoires

Straight actuator — Right-angled actuator — Pivoting actuator, RH door — Pivoting actuator, LH door

For safety switches XCSMP	Actuators			
References	XCSZ81	XCSZ84	XCSZ83	XCSZ85

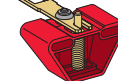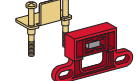Straight actuator — Wide actuator L=40 mm (4) — Right-angled actuator — Pivoting actuator — Guard/door retainer

For safety switches XCSPA/TA	Actuators				Retaining device
References	XCSZ11	XCSZ12	XCSZ14	XCSZ13	XCSZ21

(4) For L = 29 mm, reference = **XCSZ15.**

Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors

Illustration of contacts with the actuator
inserted in the head of the switch

New

13 21 — 2-pole contact Slow break (1NC+1NO)
14 22

11 21 — 2-pole contact Slow break (2NC)
12 22

21 13 33 — 3-pole contact Slow break (1NC+2NO)
22 14 34

21 31 13 — 3-pole contact Slow break (2NC+1NO)
22 32 14

153.3
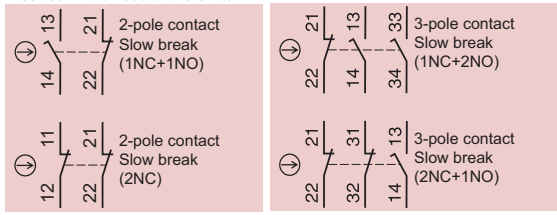
Safety interlock switches Standard version and Connector version		Type XCSLF, metal		Type XCSLE, plastic	
Maximum safety level (3)		PL=e, category 4 conforming to EN/ISO 13849-1 and SIL CL3 conforming to EN/IEC 62061			
Degree of protection conforming to IEC 60529		IP66 and IP67	IP65	IP66 and IP67	IP65
Reliability data B10d		5 500 000 value given for a service life of 20 years, limited by mechanical or contact wear			
Body + Head dimensions (mm) W x D x H		43,5 x 51 x 205 mm		43,5 x 51 x 205 mm	
Resistence to forcible withdrawal of actuator		3 000 N		1 400 N	
Locking		on de-energization (1)		on de-energization (1)	
Power supply for the solenoid and the LEDs		24VAC/DC			
Material case		Zamak		Polyamide	
Wiring connection (2)		3 x ISO M20	Connector M23 (4)	3 x ISO M20	Connector M23 (4)
Safety contacts	1NC+1NO (break before make, slow break)	XCSLF2525312	XCSLF252531M2	XCSLE2525312	XCSLE252531M2
	2NC (simultaneous, slow break)	XCSLF2727312	XCSLF272731M2	XCSLE2727312	XCSLE272731M2
	1NC+2NO (break before make, slow break)	XCSLF3535312	XCSLF353531M3	XCSLE3535312	XCSLE353531M3
	2NC+1NO (break before make, slow break)	XCSLF3737312	XCSLF373731M3	XCSLE3737312	XCSLE373731M3
	3NC (simultaneous, slow break)	XCSLF3838312	XCSLF383831M3	XCSLE3838312	XCSLE383831M3

New   New

21 13 33 — 3-pole contact Slow break (1NC+2NO)
22 14 34

21 31 13 — 3-pole contact Slow break (2NC+1NO)
22 32 14
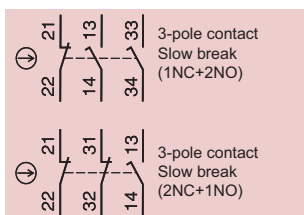
Illustration of contacts
with the actuator
inserted in the head
of the switch

153.3

Safety interlock switches Push button version and Push button with connector version		Type XCSLF, metal			
Maximum safety level (3)		PL=e, category 4 conforming to EN/ISO 13849-1 and SIL CL3 conforming to EN/IEC 62061			
Degree of protection conforming to IEC 60529		IP66	IP65	IP66	IP65
Reliability data B10d		5 500 000 value given for a service life of 20 years, limited by mechanical or contact wear			
Body + Head dimensions (mm) W x D x H		43,5 x 51 x 205 mm			
Resistence to forcible withdrawal of actuator		3 000 N			
Locking		on de-energization (1)		on de-energization (1)	
Push button with or without key no. 455 to release		Without		With	
Power supply for the solenoid and the LEDs		24VAC/DC			
Material case		Zamak			
Wiring connection (2)		3 x ISO M20	Connector M23 (4)	3 x ISO M20	Connector M23 (4)
Safety contacts	1NC+2NO (break before make, slow break)	XCSLF3535412	XCSLF353541M3	XCSLF3535612	XCSLF353561M3
	2NC+1NO (break before make, slow break)	XCSLF3737412	XCSLF373741M3	XCSLF3737612	XCSLF373761M3

(1) For locking on energisation of solenoid, please refer to www.tesensors.com
(2) With cable entry for 1/2" NPT, please refer to www.tesensors.com
(3) Using an appropriate and correctly connected control system.
(4) M23 to XCSLF***M2 products: Connector M23, 16 pin
    M23 to XCSLF***M3 products: Connector M23, 19 pin

Accessories
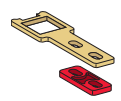
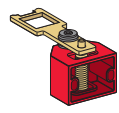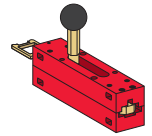| For safety switches XCSA/B/C/LE/LF	Actuators			Door lock
	Straight actuator	Wide actuator	Pivoting actuator	
References	XCSZ01	XCSZ02	XCSZ03	XCSZ05

Other versions: **please consult our Customer Care Centre.**

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Safety switches
with rotary lever or spindle

ISO entry
(to EN 50262)

	2-pole contact Slow break (1NC+1NO)
13 21 / 14 22	
11 21 / 12 22	2-pole contact Slow break (2NC)

Stainless steel, elbowed (flush with rear of switch) lever

Stainless steel straight lever

Stainless steel spindle, L = 30 mm

20/22
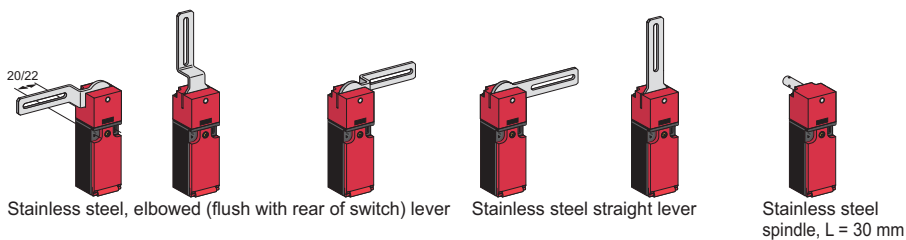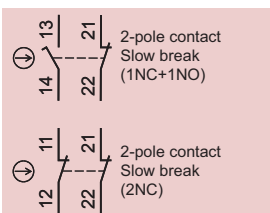
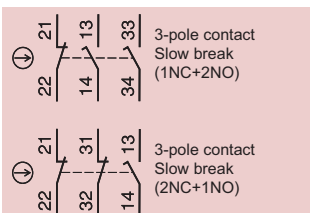| **Plastic switches**		**Type XCSPL with rotary lever or XCSPR with spindle** 1 x ISO M16 cable entry (1) (2)					
Maximum safety level (3)		PL=e, category 4 conforming to EN/ISO 13849-1 and SIL CL3 conforming to EN/IEC 62061					
Minimum torque (actuation / positive opening)		0,1 / 0,25 N.m					
Degree of protection		IP 67					
Rated operational characteristics (conforming to EN IEC 60947-5-1)		AC 15, A 300 / DC 13, Q 300					
Dimensions (body + head) W x D x H		30 x 30 x 160 mm					30 x 30 x 96 mm
Lever position		Lever to left	Lever centred	Lever to right	Lever to left or right	Lever centred	–
Tripping angle		5°					
Reliability data B10d		5 000 000 (value given for a service life of 20 years, limited by mechanical or contact wear)					
Complete switch	1NC+1NO break before make, slow break	**XCSPL592** →	**XCSPL582** →	**XCSPL572** →	**XCSPL562** →	**XCSPL552** →	**XCSPR552** →
	2NC slow break	**XCSPL792** →	**XCSPL782** →	**XCSPL772** →	**XCSPL762** →	**XCSPL752** →	**XCSPR752** →
	1NC+2NO break before make, slow break	–	–	–	**XCSPL862** →	–	–
	2NC+1NO break before make, slow break	–	**XCSPL982** →	–	**XCSPL962** →	–	**XCSPR952** →

	3-pole contact Slow break (1NC+2NO)
21 13 33 / 22 14 34	
21 31 13 / 22 32 14	3-pole contact Slow break (2NC+1NO)

ISO entry
(to EN 50262)

Stainless steel, elbowed (flush with rear of switch) lever

Stainless steel straight lever

Stainless steel spindle Length 30 mm

40,3
20/22

Plastic switches		**Type XCSTL with rotary lever or XCSTR with spindle** 2 x ISO M16 cable entries (2) (4)		
Maximum safety level (3)		PL=e, category 4 conforming to EN/ISO 13849-1 and SIL CL3 conforming to EN/IEC 62061		
Minimum torque (actuation / positive opening)		0.1 / 0.45 N.m		
Degree of protection		IP 67		
Rated operational characteristics (conforming to EN IEC 60947-5-1)		AC 15, A 300 / DC 13, Q 300		
Dimensions (body + head) W x P x H		52 x 30 x 180 mm		52 x 30 x 117 mm
Lever position		Lever centred	Lever centred	–
Tripping angle		5°		
Reliability data B10d		5 000 000 (value given for a service life of 20 years, limited by mechanical or contact wear)		
Complete switch	1NC+2NO break before make, slow break	**XCSTL582** →	**XCSTL552** →	**XCSTR552** →
	2NC+1NO break before make, slow break	**XCSTL782** →	**XCSTL752** →	**XCSTR752** →

(1) With entry for n° 11 (Pg 11) cable gland, replace the last digit in the reference by 1 (example: XCSPL592 becomes XCSPL591).
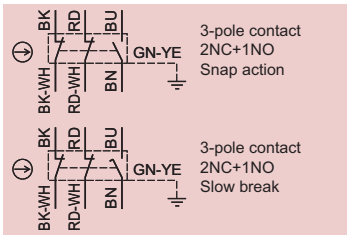(2) For entry for ISO M20 cable gland, also order adaptor DE9RA1620 (sold in lots of 5).
(3) Using an appropriate and correctly connected control system.
(4) With entry for n° 11 (Pg 11) cable gland, replace the last digit in the reference by 1 (example: XCSTL582 becomes XCSTL581).

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Other versions: **please consult our Customer Care Centre.**

Metal end plunger

Roller plunger

Thermoplastic roller lever

Miniature switches		Type XCSM, metal pre-cabled, L = 1 m (1)		
Maximum safety level (2)		PL=e, category 4 conforming to EN/ISO 13849-1 and SIL CL3 conforming to EN/IEC 62061		
Maximum actuation speed		0.5 m/s	0.5 m/s	1.5 m/s
Minimum force or torque (actuation / positive opening)		8.5 N / 42.5 N	7 N / 35 N	0.5 N.m / 0.1 N.m
Degree of protection		IP 66 + IP 67 + IP 68	IP 66 + IP 67 + IP 68	IP 66 + IP 67 + IP 68
Dimensions (body + head) W x D x H		30 x 16 x 60 mm	30 x 16 x 70.5 mm	30 x 32 x 92.5 mm
Reliability data B10d		50 000 000 (value given for a service life of 20 years, limited by mechanical or contact wear)		
Complete switch	2NC+1NO snap action	XCSM3910L1 →	XCSM3902L1 →	XCSM3915L1 →
	2NC+1NO slow break	XCSM3710L1 →	XCSM3702L1 →	XCSM3715L1 →
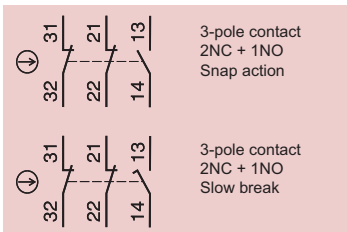
Metal end plunger

Roller plunger

Thermoplastic roller lever

Metal end plunger

Roller plunger

Thermoplastic roller lever

Compact switches		Type XCSD, metal 1 x ISO M20 x 1.5 cable entry (3)			Type XCSP, plastic 1 x ISO M20 x 1.5 cable entry (2)		
Maximum safety level (2)		PL=e, category 4 conforming to EN/ISO 13849-1 and SIL CL3 conforming to EN/IEC 62061					
Maximum actuation speed		0.5 m/s	1.5 m/s		0.5 m/s	1.5 m/s	
Minimum force or torque (actuation / positive opening)		15 N / 45 N	12 N / 36 N	10 N.m / 0.1 N.m	15 N / 45 N	12 N / 36 N	10 N.m / 0.1 N.m
Degree of protection		IP 66 + IP 67			IP 66 + IP 67		
Dimensions (body + head) W x D x H (mm)		34 x 34.5 x 89	34 x 34.5 x 99.5	34 x 43 x 121.5	34 x 34.5 x 89	34 x 34.5 x 99.5	34 x 43 x 121.5
Reliability data B10d		50 000 000 (value given for a service life of 20 years, limited by mechanical or contact wear)					
Complete switch	2NC+1NO snap action	XCSD3910P20	XCSD3902P20	XCSD3918P20	XCSP3910P20	XCSP3902P20	XCSP3918P20
	2NC+1NO slow break	XCSD3710P20	XCSD3702P20	XCSD3718P20	XCSP3710P20	XCSP3702P20	XCSP3718P20

(1) For a 2 m long cable, replace the last digit of the reference by 2 (example: XCSM3910L1 becomes XCSM3910L2).
For a 5 m long cable, replace the last digit of the reference by 5 (example: XCSM3910L1 becomes XCSM3910L5).
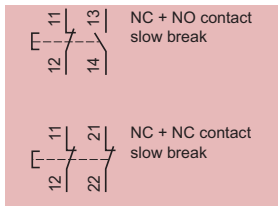(2) Using an appropriate and correctly connected control system.
(3) For Pg 13.5 and 1/2" NPT cable entries, refer to www.tesensors.com.

Coded magnetic technology
Plastic coded magnetic system

(1)
XCSDM3

(1)
XCSDM4

Type of system With integrated safety module	SIL2/Category 3 XCSDM3	SIL3/Category 4 XCSDM4
Maximum safety level	SIL 2 conforming to EN/IEC 61508,PL=d, category 3 conforming to EN/ISO 13849-1	SIL 3 conforming to EN/IEC 61508, PL=e, category 4 conforming to EN/ISO 13849-1
Switches for actuation	Face to face, face to side, side to side	
Degree of protection	Pre-cabled: IP66 / IP67, IP69K, connector: IP67	
Type of contact	2 solid-state output PNP/NO, 1,5 A / 24VDC (2 A up to 60°C)	
Rated operational characteristics (conforming to EN IEC 60947-5-1)	Ub: 24 VDC +10% - 20%	
Dimensions W x D x H	34 x 27 x 100 mm	
Operating zone	Sao= 10 mm / Sar= 20 mm	
Reliability data	MTTFd = 182 years; PFH = 3.94E -9; PFD = 1.15E -5; SFF = 92.5%; HFT = 1	
References — Connection — for cable L= 2m	**XCSDM379102**	**XCSDM480102**
for cable L= 5m	**XCSDM379105**	**XCSDM480105**
for cable L= 10m	**XCSDM379110**	**XCSDM480110**
for connector M12	**XCSDM3791M12**	**XCSDM4801M12**

Plastic coded magnetic

(1)
Contact (1NC+1NO staggered)
Contact (2NC staggered)

(1)
Contact (1NC+2NO, 1NO staggered)
Contact (2NC+1NO, 1NC staggered)

Rectangular Without LED (2)
Rectangular Without LED (2)
Cylindrical Without LED (2)
Rectangular Without LED (2)
Rectangular Without LED (2)
Cylindrical Without LED (2)

Plastic switches		Type XCSDM coded magnetic					
		Pre-cabled, L = 2 m			Connector on flying lead, L = 15 cm (3)		
Maximum safety level (5)		PL=e, category 4 conforming to EN/ISO 13849-1 and SIL 3 conforming to EN/IEC 61508					
Switches for actuation		Face to face, face to side, side to side		Face to face	Face to face, face to side, side to side		Face to face
Degree of protection		IP 66 + IP 67			IP 66 + IP 67		
Type of contact		REED			REED		
Rated operational characteristics (conforming to EN IEC 60947-5-1)		Ue = 24 VDC, Ie = 100 mA			Ue = 24 VDC, Ie = 100 mA		
Dimensions W x D x H		16 x 7 x 51 mm	25 x 13 x 88 mm	M30 x 38,5 mm	16 x 7 x 51 mm	25 x 13 x 88 mm	M30 x 38.5 mm
Operating zone (4)		Sao = 5 / Sar = 15	Sao = 8 / Sar = 20		Sao = 5 / Sar = 15	Sao = 8 / Sar = 20	
Reliability data B10d		50 000 000 (value given for a service life of 20 years, limited by mechanical or contact wear)					
Switch with coded magnet	1NC+1NO staggered	**XCSDMC5902**	**XCSDMP5902**	**XCSDMR5902**	**XCSDMC590L01M8**	**XCSDMP590L01M12**	**XCSDMR590L01M12**
	2NC staggered	**XCSDMC7902**	**XCSDMR7902**	**XCSDMR7902**	**XCSDMC790L01M8**	**XCSDMP790L01M12**	**XCSDMR790L01M12**
	1NC+2NO, 1NO staggered	–	**XCSDMP5002**	–	–	**XCSDMP500L01M12**	–
	2NC+1NO, 1NC staggered	–	**XCSDMP7002**	–	–	**XCSDMP700L01M12**	–

(1) Illustration of contacts with the magnet in front of the switch.
(2) For version with LED indicator, replace the last 0 in the reference by 1 (example: XCSDMC5902 becomes XCSDMC5912).
(3) For associated pre-wired female connectors, please refer to the "Preventa XCS safety switches" catalogue.
(4) Sao: assured operating distance. Sar: assured release distance.
(5) Using an appropriate and correctly connected control system

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Other versions: **please consult our Customer Care Centre.**

Emergency stops
Emergency stop rope pull switches

ISO entry
(to EN 50262)

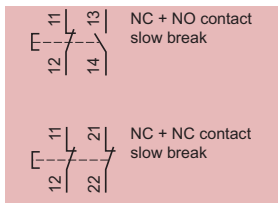|	NC + NO contact slow break
11 / 12 ─ 13 / 14	

	NC + NC contact slow break
11 / 12 ─ 21 / 22	

Booted pushbutton reset   Key release pushbutton reset (key n° 421)

For operating cable length ≤ 30 m		Latching, without indicator light 3 x ISO M20 cable entries (1)		with indicator light
Maximum safety level (2)		PL=e, category 4 conforming to EN/ISO 13849-1 and SIL 3 conforming to EN/IEC 61508		
Mechanical life		800 000 operating cycles		
Shock / vibration resistance		50 gn / 10 gn		
Degree of protection		IP 65		
Conformity to standards		EN/IEC 60947-5-5, EN/ISO 13850: 2006, UL 508 and CSA C 22-2 n° 14 (with suffix H7)		
Dimensions W x D x H		201 x 71 x 68 mm		
Operating cable length		≤ 30 m		
Operating cable anchoring point		To right or to left		
Reliability data B10d		4 000 000 (value given for a service life of 20 years, limited by mechanical or contact wear)		
Contact	1 NC + NO slow break	**XY2CH13250H29**	**XY2CH13450H29**	**XY2CH13253**
	1 NC + NC slow break	**XY2CH13270H29**	**XY2CH13470H29**	**XY2CH13273**
	2NC+1NO slow break	**XY2CH13290H29**	–	**XY2CH13293H29**

	NC + NO contact slow break
11 / 12 ─ 13 / 14	

	NC + NC contact slow break
11 / 12 ─ 21 / 22	

Booted pusbutton reset   Key release pushbutton reset (key n° 421)

For operating cable length ≤ 70 m		Latching, without indicator light 3 plain holes with Pg13,5 cable entries			
Maximum safety level (2)		PL=e, category 4 conforming to EN/ISO 13849-1 and SIL 3 conforming to EN/IEC 61508			
Mechanical life (millions of operating cycles)		0.01			
Shock / vibration resistance		50 gn / 10 gn			
Degree of protection		IP 65			
Conformity to standards		EN/IEC 60947-5-5, EN/ISO 13850: 2006, UL 508 and CSA C 22-2 n° 14 (with suffix H7)			
Dimensions W x D x H		229 x 82 x 142 mm			
Operating cable length		≤ 70 m			
Operating cable anchoring point		To left	To right	To left	To right
Reliability data B10d		50.000 (value given for a service life of 20 years, limited by mechanical or contact wear)			
Contact	1 NC + NO slow break	**XY2CE2A250**	**XY2CE1A250**	**XY2CE2A450**	**XY2CE1A450**
	1 NC + NC slow break	**XY2CE2A270**	**XY2CE1A270**	**XY2CE2A470**	**XY2CE1A470**
	2 NC + NO slow break	**XY2CE2A290** (3)	**XY2CE1A290** (3)	**XY2CE2A490** (3)	**XY2CE1A290** (3)

(1) With entry for n° 13 (Pg 13.5) cable gland, delete H29 from the end of the reference (example: XY2-CH13250H29 becomes XY2-CH13250).
(2) Using an appropriate and correctly connected control system.
(3) With protected LED, 24V or 130 V supply voltage pilot light, add 6 at the end of the reference. (example : XY2CE1A290 becomes XY2CE1A296).
   With protected LED, 230 V supply voltage pilot light, add 7 at the end of the reference. (example : XY2CE1A290 becomes XY2CE1A297).

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Other versions: **please consult our Customer Care Centre.**

Preventa
Detection

Mats
Safety mats [1]
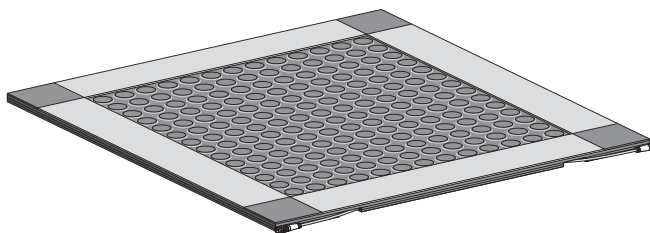
Maximum safety level achieved by the solution (EN ISO 13849-1, EN/IEC 62061)	PLd/cat3, SILCL2			
Degree of protection	IP 67			
Response time (s)	Mat itself: 20 ms, with module: XPSAK ≤ 40 ms, XPSMP < 30 ms			
Sensitivity	Single mat > 20 kg / Group of mats > 35 kg			
Maximum load	2000 N/cm^2			
Connection (2)	By M8 jumper cable (1 male / 1 female), L = 100 mm			
Dimensions W x D x H	500 x 500 x 11 mm	500 x 750 x 11 mm	750 x 750 x 11 mm	750 x 1250 x 11 mm
References	XY2TP1	XY2TP2	XY2TP3	XY2TP4

	Accessories								
Rails (set of 2) Length	194 mm	394 mm	444 mm	494 mm	644 mm	694 mm	744 mm	1194 mm	1244 mm
References	XY2TZ10	XY2TZ20	XY2TZ30	XY2TZ40	XY2TZ50	XY2TZ60	XY2TZ70	XY2TZ80	XY2TZ90

Corners and rail connectors	External corners (set of 4)	Internal corner + external corner	Rail connectors, L = 56 mm with outlet for cable (set of 2)	Rail connectors, L = 6 mm (set of 2)
References	XY2TZ4	XY2TZ5	XY2TZ1	XY2TZ2

(1) "end of commercialisation by end of 2012, end of service by end of 2013"
(2) For associated jumper cable and pre-wired connector, please refer to www.tesensors.com

Selection guidance software

	Protect Area Design
For safety mats	XY2TP
Reference	Downloadable on www.tesensors.com

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Other versions: **please consult our Customer Care Centre.**

Light curtains
Type 2 conforming to IEC 61496-2

Light curtain functions
- Auto/Manual,
- Monitoring of external switching devices (EDM: External Devices Monitoring),
- LED display of operating modes

Maximum safety level achieved by the solution (EN ISO 13849-1)		PLc/cat2	
Type **Slim range**		**Multi-beam, infrared transmission** **Manual starting**	**Automatic starting**
Nominal sensing distance (Sn)		0.3…15 m	
Detection capacity		30 mm "hand"	
Number of safety circuits		2 solid-state PNP	
Response time (depending on model)		14…24 ms	
Connection		M12 Connector	
Reliability data		PFHd = 2.29E -7 conforming to EN/IEC 61508	
Height protected (mm)	150	XUSLNG5D0150	XUSLNG5C0150
	300	XUSLNG5D0300	XUSLNG5C0300
	450	XUSLNG5D0450	XUSLNG5C0450
	600	XUSLNG5D0600	XUSLNG5C0600
	750	XUSLNG5D0750	XUSLNG5C0750
	900	XUSLNG5D0900	XUSLNG5C0900
	1050	XUSLNG5D1050	XUSLNG5C1050
	1200	XUSLNG5D1200	XUSLNG5C1200
	1350	XUSLNG5D1350	XUSLNG5C1350
	1500	XUSLNG5D1500	XUSLNG5C1500

	Accessories		
Cable length	3 m	10 m	30 m
Pre-wired connector for XUSLN For receiver	XSZNCR03	XSZNCR10	XSZNCR30
(screened cable) For transmitter	XSZNCT03	XSZNCT10	XSZNCT30

Type 2 conforming to IEC 61496-1 et 2

Light curtain functions
- Auto/Manual,
- Monitoring of external switching devices (EDM: External Devices Monitoring),
- LED display of operating modes
- Integral muting function.

Maximum safety level achieved by the solution (EN ISO 13849-1, EN/IEC 62061)			PLc/cat2, SILCL1
Type			**Single-beam with infrared emission**
Height protected (conforming to prEN 999)			750…1200 mm (1 to 4 beams)
Nominal sensing distance (Sn)			8 m
Number of circuits	Safety		2N/O
	Additional		4 solid-state
Response time			< 25 ms
Reliability data			PFHd = 4.6E -7 conforming to EN/IEC 61508
			PFHd = 5.5E -7 conforming to EN/IEC 61508, with "muting" function
Modules (integral muting function)		24 VDC	XPSCM1144P (1)
Thru-beam pairs,	Pre-cabled, L = 5m	PNP	XU2S18PP340L5 (2)
axially aligned	M12 connector	PNP	XU2S18PP340D (2)

(1) For version with non removable terminal block, delete the letter P from the end of the reference. Example: XPSCM1144**P** becomes XPSCM1144).

(2) For alignment at 90° to the mounting axes, insert the letter W in the reference before the last letter. Example: XU2S18PP340L5 becomes XU2S18PP340**W**L5).

Functions accessible by cabling alone
- Automatic start
- Auxiliary output (PNP, status signalling)
- Alignment aid by display of each light beam broken
- LED display of operating modes and faults

Maximum safety level achieved by the solution (EN ISO 13849-1, EN/IEC 62061)		PLe/cat4, SILCL3			
Type		**Multi-beam, infrared transmission** **Light curtains**		**Cascadable light curtains**	
Nominal sensing distance (Sn)		0,3…7 or 3 m with PDM (2)	0,3…20 or 8 m with PDM (2)	0,3…7 or 3 m with PDM (2)	0,3…20 or 8 m with PDM (2)
Detection capacity		14 mm "finger"	30 mm "hand"	14 mm "finger"	30 mm "hand"
Number of circuits	Safety	2 solid-state PNP		2 solid-state PNP	
	Auxiliary (alarm)	1 solid-state PNP		1 solid-state PNP or NPN	
Response time (depending on model)		23…41 ms	23…32 ms	23…41 ms	23…32 ms
Connection		M12 connector			
Reliability data		PFHd = 4.9E -8 conforming to EN/IEC 61508			
Functions accessible via programming and diagnostic module		■ Auto/Manual ■ Monitoring of external switching devices (EDM: External Device Monitoring) ■ Test (MTS : Monitoring Test Signal), ■ Light beam coding (A or B) ■ Sensing distance (short, long) ■ Programming and downloading of configuration settings, via programming and diagnostic module (PDM) ■ Display of operating modes and faults by LED and/or PDM (2)		■ Auto/Manual, manual 1st cycle ■ Monitoring of external switching devices (EDM: External Device Monitoring) ■ Test (MTS : Monitoring Test Signal), ■ Blanking (ECS/B), Monitored Blanking, Floating Blanking (FB) ■ Reduction of resolution ■ Response time (normal, slow) ■ Light beam coding (A or B) ■ Sensing distance (short, long) ■ Auxiliary output (alarm or status signalling, PNP or NPN) ■ Start button (N/O or N/C, 0 V or 24 V) ■ Muting ■ Display of operating modes and faults by LED and/or PDM (2)	
Transmitter + receiver **(1) Height protected (mm)**	280	XUSLBQ6A0280	–	XUSLDMQ6A0280	–
	320	–	–	XUSLDMQ6A0320	–
	360	XUSLBQ6A0360	XUSLBR5A0360	–	XUSLDMY5A0360
	440	XUSLBQ6A0440	–	XUSLDMQ6A0440	–
	520	XUSLBQ6A0520	XUSLBR5A0520	XUSLDMQ6A0520	XUSLDMY5A0520
	600	XUSLBQ6A0600	–	XUSLDMQ6A0600	–
	680	–	XUSLBR5A0680	–	XUSLDMY5A0680
(1) Other height protected, see catalog:	720	XUSLBQ6A0720	–	XUSLDMQ6A0720	–
"Preventa safety Solutions"	880	XUSLBQ6A0880	XUSLBR5A0880	XUSLDMQ6A0880	XUSLDMY5A0880
(2) PDM module : Programming and Diagnostic Module,	1040	–	XUSLBR5A1040	–	XUSLDMY5A1040
see following page.	1200	–	XUSLBR5A1200	–	–
	1400	–	XUSLBR5A1400	–	XUSLDMY5A1400
	1560	–	XUSLBR5A1560	–	XUSLDMY5A1560

Type		**Segments for cascadable light curtains**	
Detection capacity		14 mm "finger"	30 mm "hand"
Transmitter + receiver **Height protected (mm)**	280	XUSLDSQ6A0280	–
	320	XUSLDSQ6A0320	–
	360	–	XUSLDSY5A0360
	440	XUSLDSQ6A0440	–
	520	XUSLDSQ6A0520	XUSLDSY5A0520
	600	XUSLDSQ6A0600	–
	680	–	XUSLDSY5A0680
	720	XUSLDSQ6A0720	–
	880	XUSLDSQ6A0880	XUSLDSY5A0880
	1040	–	XUSLDSY5A1040
	1400	–	XUSLDSY5A1400
	1560	–	XUSLDSY5A1560

Type 4 conforming to IEC 61496-2

Light curtain functions
- Auto/Manual/Manual 1st cycle
- Monitoring of external switching devices (EDM: External Devices Monitoring),
- Test input (MTS: Monitoring Test Signal),
- Alignment aid by LED display of each light beam broken,
- LED display of operating modes and alarms,
- Coding of the beams

Maximum safety level achieved by the solution (EN ISO 13849-1, EN/IEC 62061)			PLe/cat4, SILCL3	
Type **Compact range**			**Single-beam and multi-beam, infrared transmission** **Transmitter/receiver**	**Transmitter/passive receiver**
Nominal sensing distance (Sn)			0.8…20 ou 70 m (according to config)	0.8…8 m
Detection capacity			Body	
Number of circuits	Safety		2 solid-state PNP	
	Auxiliary (alarm or following)		1 solid-state PNP	
Response time (depending on model)			16…24 ms	
Connection			M12 Connector (1)	M12 Connector
Reliability data			PFHd = 2.7E -9 conforming to EN/IEC 61508	
Beam	Interval	Number		
	–	1	XUSLPZ1AM	–
	300 mm	4	XUSLPZ4A0300M	–
		5	XUSLPZ5A0300M	–
		6	XUSLPZ6A0300M	–
	400 mm	3	XUSLPZ3A0400M	–
	500 mm	2	XUSLPZ2A0500M	XUSLPB2A500M
		3	XUSLPZ3A0500M	–
	600 mm	2	XUSLPZ2A0600M	XUSLPB2A600M

(1) Light curtain with M12 connector output, for terminal block output, replace **M** from the end of the reference by **B**. Example : XUSLPZ1A**M** becomes XUSLPZ1A**B**

Cabling accessories

Type			Prolongateurs			
Longueur			5 m	10 m	15 m	30 m
Pre-wired connector for (screened cable)	XUSLB/XUSLDM	For receiver	XSZBCR05	XSZBCR10	XSZBCR15	XSZBCR30
		For transmitter	XSZBCT05	XSZBCT10	XSZBCT15	XSZBCT30
	XUSLP	For receiver	XSZPCR05	XSZPCR10	XSZPCR15	XSZPCR30
		For transmitter	XSZPCT05	XSZPCT10	XSZPCT15	XSZPCT30

Type		Jumper cables for segments XUS LDS						
Cable length		0,3 m	0,5 m	1 m	2 m	2 m	5 m	10 m
Reference	For receiver	XSZDCR003	XSZDCR005	XSZDCR010	XSZDCR020	XSZDCR030	XSZDCR050	XSZDCR100
	For transmitter	XSZDCT003	XSZDCT005	XSZDCT010	XSZDCT020	XSZDCT030	XSZDCT050	XSZDCT100

Setting-up accessories

Type	Programming and Diagnostic Module (PDM)	Laser alignment tool
For light curtains	XUSLB / XUSLDM	All type XUSL
Reference	XUSLPDM	XUSLAT1

Preventa
Detection

Safety modules for monitoring
emergency stops and limit switches
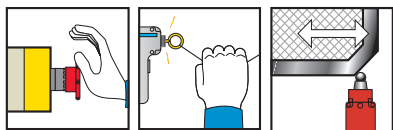
Maximum safety level of the solution attained (EN ISO 13849-1, EN/IEC 62061)		PL e / Cat. 4, SILCL 3							
Number of circuits	Safety	3 N/O	3N/O	3 N/O	3 N/O	7 N/O	3N/O + 3N/O time del.	2N/O + 1N/O time del.	2N/O + 3N/O time del.
	Additional	1 solid-state	1 N/C	–	1 N/C + 4 solid-state	2 N/C + 4 solid-state	3 solid-state	–	4 solid-state
Display (number of LEDs)		2	2	3	4	4	11	3	4
Width of housing		22.5 mm	22.5 mm	22.5 mm	45 mm	90 mm	45 mm	22.5 mm	45 mm

Optimum solutions: safety modules (for monitoring 1 safety function)

Supply voltage (1)	24 VDC	–		–	–	–	XPSAV11113P	XPSABV11330P (2)	–
	24 VAC/DC	XPSAC5121P	XPSAXE5120P (2)	XPSAF5130P	XPSAK311144P	XPSAR311144P	–	–	XPSATE5110P
	230 VAC	–	–	–	–	–	–	–	XPSATE3710P

(1) For version with non removable terminal block, delete the letter **P** from the end of the reference (example: XPSAV11113**P** becomes XPSAV11113).
(2) For a version with spring terminals, replace the letter **P** with the letter **C** at the end of the reference (example: XPSAXE5120**P** becomes XPSAXE5120**C**)

coded magnetic switches
enabling switch

Maximum safety level of the solution attained (EN ISO 13849-1, EN/IEC 62061)		PL e / Cat. 4, SILCL 3		
For monitoring		2 coded magnetic switches maximum	6 coded magnetic switches maximum	enabling switch
Number of circuits	Safety	2N/O	2N/O	2N/O
	Additional	2 solid-state	2 solid-state	2 solid-state
Display (number of LEDs)		3	15	3
Width of housing		22.5 mm	45 mm	22.5 mm

Optimum solutions: safety modules (for monitoring 1 safety function)

Supply voltage	24 VDC	XPSDMB1132P (1)	XPSDME1132P (1)	XPSVC1132P (1)

(1) For version with non removable terminal block, delete the letter P from the end of the reference (example: XPSDMB1132P becomes XPSDMB1132).
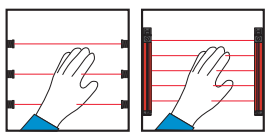
safety mats and edging

Maximum safety level of the solution attained (EN ISO 13849-1, EN/IEC 62061)		PL d / Cat. 3, SILCL 2
Number of circuits	Safety	3N/O
	Additional	1N/C + 4 solid-state
Display (number of LEDs)		4
Width of housing		45 mm

Optimum solutions: safety modules (for monitoring 1 safety function)

Supply voltage	24 VAC/DC	XPSAK311144P (1)

(1) For version with non removable terminal block, delete the letter P from the end of the reference (example: XPSAK311144P becomes XPSAK311144).

Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors

Safety modules for monitoring
light curtains

Maximum safety level of the solution attained (EN ISO 13849-1, EN/IEC 62061)		PL c / Cat. 2, SILCL 1	PL e / Cat. 4, SILCL 3		
Number of circuits	Safety	2N/O	3N/O	3N/O	7N/O
	Additional	4 solid-state	–	1N/C + 4 solid-state	1N/C + 4 solid-state
Display (number of LEDs)		4	3	4	4
Width of housing		45 mm	22.5 mm	45 mm	90 mm
Integral Muting function		Yes	No	No	No

Optimum solutions: safety modules (for monitoring 1 safety function)

Supply voltage	24 VDC	**XPSCM1144P** (1)	–	–	–
	24 VAC/DC	–	**XPSAFL5130P** (1)	**XPSAK311144P** (1)	**XPSAR311144P** (1)

(1) For version with non removable terminal block, delete the letter P from the end of the reference (example: XPSCM1144P becomes XPSCM1144).

zero speed, time delay and lifts

New
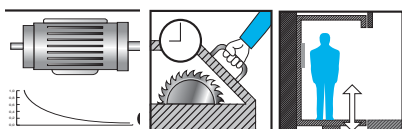
Maximum safety level of the solution attained (EN ISO 13849-1, EN/IEC 62061)		PL d / Cat. 3, SILCL 2			PL e / Cat. 4, SILCL 3
For monitoring		Motor zero speed condition	Safety time delay		Lifts
Number of circuits	Safety	1N/O + 1N/C	1N/O time delay	1N/O pulse	2N/O
	Additional	2 solid-state	2N/C + 2 solid-state	2N/C + 2 solid-state	2 solid-state
Display (number of LEDs)		4	4	4	4
Width of housing		45 mm	45 mm	45 mm	22.5 mm

Optimum solutions: safety modules (for monitoring 1 safety function)

Supply voltage	24 VDC	**XPSVNE1142P** (1)	–	–	–
	24 VAC/DC	–	**XPSTSA5142P** (2)	**XPSTSW5142P** (2)	**XPSEDA5142**

(1) Motor frequency ≤ 60 Hz.. For frequencies ≥ 60 Hz, please refer to the "Safety solution" catalogue.

(2) Removable terminal block version only.

Main sectors of activity subject to a higher risk of explosion or fire

Flour mills

Wood and aluminium workshops

Bagging

Grain silos

Grain drying areas

Bulk conveying

Telemecanique
Sensors

Other versions: **please consult our Customer Care Centre.**

Explosive atmospheres

A reference for installations in ATEX Dust explosive atmospheres.

What is an explosive atmosphere according to the Directive?

It is the mixing with air, in atmospheric conditions, of flammable substances in the form of gas, vapour, mist or dust which, in the event of combustion, spreads throughout the non burning mix.

Implementation of European Directives

> *Directive 99/92/EC*

This requires that a risk analysis be performed for all industrial processes. If there is any risk of an explosion:
- the zones are defined and physically identified,
- the installation is classified by governing bodies.

> *Directive 94/9/EC*

This requires certification of the products in accordance with the classification of the zones of use

> *Dust zones*

- Zone 20: area where an explosive atmosphere exists in the form of combustible clouds of dust in the air, either permanently, for long periods or frequently.

- Zone 21: area where an explosive atmosphere exists in the form of combustible clouds of dust in the air during normal operation occasionally.

- Zone 22: area where an explosive atmosphere in the form of combustible clouds of dust in the air is unlikely to occur during normal operation but, if it does occur, it is only for a short period.
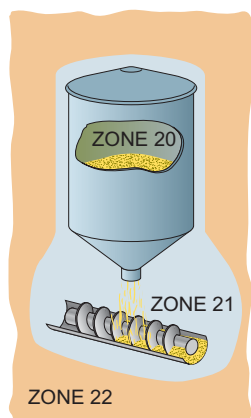
A selection of certified products, conforming to the European Directive ATEX94/9/EC, to ensure maximum safety for your installations in a zone where the risk of explosion or fire is high.

The products in this catalogue are certified by a European Union Commission notified body.

Limit switches
Miniature, fixing by the body

Limit switch type	XCMD metal, pre-cabled			
With head for movement	Linear (plunger)			
Conformity	**Directive ATEX 94/9/EC, EN/IEC 60079-0, EN/IEC 60079-31**			
Zone D (dust)	**21 - 22**			
EC type examination certificate number / marking	**INERIS 04ATEX0014X / ⟨Ex⟩ II2 D-Ex tb IIIC T85°C Db IP66/67**			
Type of operator	Metal end plunger	Metal end plunger with elastomer boot	Steel roller plunger	Retractable steel roller lever plunger
Mechanical durability (millions of operating cycles)	10			
Actuation speed	0.5 m/s			
Switches conforming to standard IEC 947-5-1 section 3	⊝→			
Temperature range	– 20...+ 60°C			
Degree of protection (conforming to IEC 60529)	IP66 and IP67			
Rated operational characteristics (conforming to EN IEC 60947-5-1)	AC15; C300 (Ue = 240 V, Ie = 0.75 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)			
Short-circuit protection	By 6 A cartridge fuse type gG (gl)			
Cable entry	Pre-cabled, adjustable direction, length = 5 m			
Fixing centres	20 mm			
Body dimensions, W x D x H	30 x 16 x 50 mm			
References 2NC+2NO snap action	**XCMD4110L5EX**	**XCMD4111L5EX**	**XCMD4102L5EX**	**XCMD4124L5EX**

Compact, fixing by the body

Limit switch type	XCKD metal conforming to standard EN 500047				
With head for movement	Linear (plunger)				
Conformity	**Directive ATEX 94/9/EC, EN/IEC 60079-0, EN/IEC 60079-31**				
Zone D (dust)	**21 - 22**				
EC type examination certificate number / marking	**INERIS 04ATEX0014X / ⟨Ex⟩ II2 D-Ex tb IIIC T85°C Db IP66/67**				
Type of operator	Metal end plunger	Metal end plunger with elastomer boot	Steel roller plunger	Thermoplastic roller lever plunger, horiz. actuation in 1 direct.	Thermoplastic roller lever plunger, vert. actuation in 1 direct.
Mechanical durability (millions of operating cycles)	15		10	15	
Actuation speed	0.5 m/s			1 m/s	
Switches conforming to standard IEC 947-5-1 section 3	⊝→				
Temperature range	– 20...+ 60°C				
Degree of protection (conforming to IEC 60529)	IP66 and IP67				
Rated operational characteristics (conforming to EN IEC 60947-5-1)	AC15; B300 (Ue = 240 V, Ie = 1.5 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)				
Short-circuit protection	By 6 A cartridge fuse type gG (gl)				
Cable entry	1 entry fitted with ISO M16 cable gland				
Fixing centres	20 mm				
Body dimensions, W x D x H	31 x 30 x 65 mm				
References 2NC+1NO snap action	**XCKD3910P16EX**	**XCKD3911P16EX**	**XCKD3902P16EX**	**XCKD3921P16EX**	**XCKD3927P16EX**

Other characteristics: please refer to the "Detection for OsiSense automation solutions" catalog

Telemecanique Sensors

Other versions: **please consult our Customer Care Centre.**

XCMD metal, pre-cabled

Rotary (lever)				Linear (plunger)		
Directive ATEX 94/9/EC, EN/IEC 60079-0, EN/IEC 60079-31						
21 - 22						
INERIS 04ATEX0014X / Ⓔⓧ II2 D-Ex tb IIIC T85°C Db IP66/67						
Steel roller lever	Thermoplastic roller lever	Roller lever with ball bearing mounted roller	Variable length thermoplastic roller lever	M12 with metal end plunger	M16 with metal end plunger with elastomer boot	M12 with steel roller plunger
10						
1.5 m/s				0.5 m/s		0.1 m/s
⊝						
– 20...+ 60°C						
IP66 and IP67						
AC15; C300 (Ue = 240 V, Ie = 0.75 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)						
By 6 A cartridge fuse type gG (gl)						
Pre-cabled, adjustable direction, length = 5 m						
20 mm				M12 x 1	M16 x 1	M12 x 1
30 x 16 x 50 mm						
XCMD4116L5EX	**XCMD4115L5EX**	**XCMD4117L5EX**	**XCMD4145L5EX**	**XCMD41F0L5EX**	**XCMD41G1L5EX**	**XCMD41F2L5EX**

XCKD metal conforming to standard EN 500047

Linear (plunger)	Rotary (lever)				Multi-directional	Linear (plunger)	
Directive ATEX 94/9/EC, EN/IEC 60079-0, EN/IEC 60079-31							
21 - 22							
INERIS 04ATEX0014X / Ⓔⓧ II2 D-Ex tb IIIC T85°C Db IP66/67							
Thermoplastic roller lever plunger, horiz. or vert. actuation in 1 dir.	Thermoplastic roller lever	Thermoplastic roller lever, Ø 50 mm	Variable length thermoplastic roller lever	Variable length thermoplastic roller lever, Ø 50 mm	"Cat's whisker"	M18 with metal end plunger	M18 with steel roller plunger
15	10				5	10	
1 m/s	1.5 m/s				1 m/s	0.5 m/s	
⊝					–	⊝	
– 20...+ 60°C							
IP66 and IP67							
AC15; B300 (Ue = 240 V, Ie = 1.5 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)							
By 6 A cartridge fuse type gG (gl)							
1 entry fitted with ISO M16 cable gland							
20 mm						M18 x 1	
30 x 16 x 50 mm							
XCKD3928P16EX	**XCKD3918P16EX**	**XCKD3939P16EX**	**XCKD3945P16EX**	**XCKD3949P16EX**	**XCKD3906P16EX**	**XCKD39H0P16EX**	**XCKD39H2P16EX**

Other versions: **please consult our Customer Care Centre.**

Telemecanique Sensors

Limit switches
Classic, fixing by the body

Limit switch type With head for movement	XCKM metal, 3 cable entries Linear (plunger)			Rotary (lever)	Multi-directional
Conformity	Directive ATEX 94/9/EC, EN/IEC 60079-0, EN/IEC 60079-31				
Zone D (dust)	21 - 22				
EC type examination certificate number / marking	INERIS 04ATEX0014X / ⟨Ex⟩ II2 D-Ex tb IIIC T85°C Db IP66/67				
Type of operator	Metal end plunger	Steel roller plunger	Thermoplastic roller lever plunger, horiz. actuation in 1 direct.	Thermoplastic roller lever	"Cat's whisker"
Mechanical durability (millions of operating cycles)	20				10
Actuation speed	0.5 m/s		1.5 m/s		0.5 m/s
Switches conforming to standard IEC 947-5-1 section 3	⟲				–
Temperature range	– 20...+ 60°C				
Degree of protection (conforming to IEC 60529)	IP66				
Rated operational characteristics (conforming to EN IEC 60947-5-1)	AC15; B300 (Ue = 240 V, Ie = 1.5 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)				
Short-circuit protection	By 6 A cartridge fuse type gG (gl)				
Cable entry	3 tapped entries for ISO M20 cable gland (1)				
Fixing centres	41 mm				
Body dimensions, W x D x H	63 x 30 x 64 mm				
References 2NC+1NO snap action	XCKM3910H29EX	XCKM3902H29EX	XCKM3921H29EX	XCKM3915H29EX	XCKM3906H29EX

(1) 2 entries fitted with blanking plugs, 1 entry fitted with ISO M20 cable gland

Application - hoisting, handling, conveying

Limit switch type With head for movement	XCKMR metal, 3 cable entries Rotary (lever)	
Conformity	Directive ATEX 94/9/EC, EN/IEC 60079-0, EN/IEC 60079-31	
Zone D (dust)	21 - 22	
EC type examination certificate number / marking	INERIS 04ATEX0014X / ⟨Ex⟩ II2 D-Ex tb IIIC T85°C Db IP66/67	
Type of operator	Metal rod levers, "crossed"	Metal rod levers, "crossed" reversed head
Mechanical durability (millions of operating cycles)	2	
Actuation speed	1.5 m/s	
Switches conforming to standard IEC 947-5-1 section 3	⟲	
Temperature range	– 20...+ 60°C	
Degree of protection (conforming to IEC 60529)	IP66	
Rated operational characteristics (conforming to EN IEC 60947-5-1)	AC15; A300 (Ue = 240 V, Ie = 3 A)/DC13; Q300 (Ue = 125 V, Ie = 0.55 A)	
Short-circuit protection	By 10 A cartridge fuse type gG (gl)	
Cable entry	3 tapped entries for ISO M20 cable gland (1)	
Fixing centres	61.5 mm	
Body dimensions, W x D x H	118 x 59 x 77 mm	
2 (NC+NC) staggered, slow break contacts	XCKMR54D1H29EX	XCKMR54D2H29EX
2 (NC+NO) snap action contacts, both actuated in each direction	–	
2 (NC+NO) snap action contacts, 1 actuated in each direction	–	
2 CO staggered snap action contacts	–	

(1) 2 entries fitted with blanking plugs, 1 entry fitted with ISO M20 cable gland

Other characteristics: please refer to the "Detection for OsiSense automation solutions" catalog.

Telemecanique
Sensors

Other versions: **please consult our Customer Care Centre.**
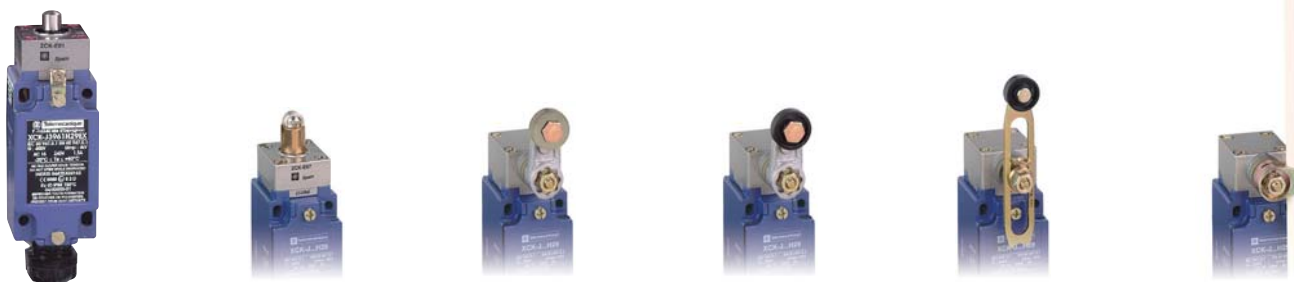
XCKJ metal, fixed body, conforming to standard EN 50041
Linear (plunger) | Rotary (lever)

Directive ATEX 94/9/EC, EN/IEC 60079-0, EN/IEC 60079-31

21 - 22

INERIS 04ATEX0014X / ⟨Ex⟩ II2 D-Ex tb IIIC T85°C Db IP66/67

Metal end plunger	Steel roller plunger	Steel roller lever	Thermoplastic roller lever	Variable length thermoplastic roller lever	Polyamide rod lever, Ø 6 x 200 mm
30	25	30		20	
0.5 m/s	1 m/s	1.5 m/s			
⊖→				–	
– 20...+ 60°C					
IP66					
AC15; B300 (Ue = 240 V, Ie = 1.5 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)					
By 6 A cartridge fuse type gG (gl)					
1 entry fitted with ISO M20 cable gland					
30 x 60 mm					
40 x 44 x 77 mm					
XCKJ3961H29EX	**XCKJ3967H29EX**	**XCKJ390513H29EX**	**XCKJ390511H29EX**	**XCKJ390541H29EX**	**XCKJ390559H29EX**
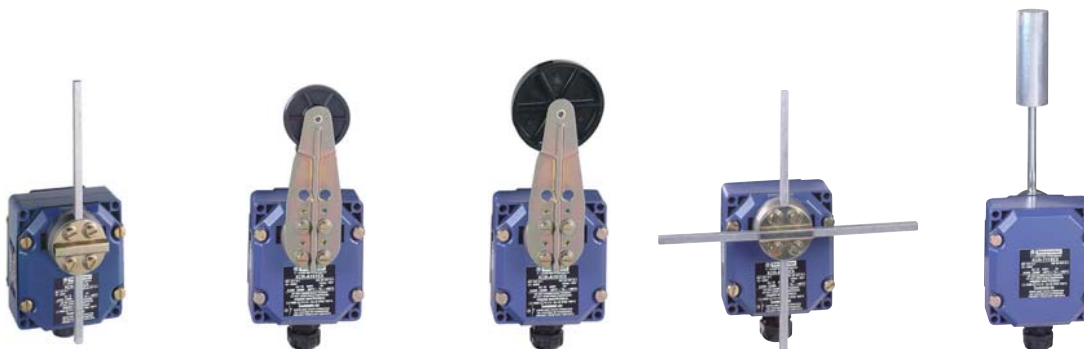
XCR metal
Rotary (lever) | Conveyor belt shift monitoring switches

Directive ATEX 94/9/EC, EN/IEC 60079-0, EN/IEC 60079-31

21 - 22

INERIS 04ATEX0024X / ⟨Ex⟩ II2 D-Ex tb IIIC T85°C Db IP66

Square (6 mm) rod lever, spring return to off position	Thermoplastic roller (Ø 30 mm) lever, spring return to off position	Large thermoplastic roller (Ø 50 mm) lever, spring return to off position	Metal rod levers, "crossed", stay put	Galvanised steel operating lever	Stainless steel operating lever
10				0.3	
1.5 m/s					
⊖→				–	
– 20...+ 60°C					
IP65					
AC15; A300 (Ue = 240 V, Ie = 3 A)/DC13; Q300 (Ue = 250 V, Ie = 0.27 A)					
By 10 A cartridge fuse type gG (gl)					
1 entry fitted with n° 13 cable gland					
85 x 75 mm					
85 x 75 x 95 mm					
–					
XCRA111EX	**XCRA121EX**	**XCRA151EX**	**XCRE181EX** (2)	–	
XCRB111EX	**XCRB121EX**	**XCRB151EX**	**XCRF171EX** (3)	–	
–				**XCRT115EX**	**XCRT215EX**

(2) "Crossed" rods   (3) "T" rods

Electromechanical pressure & vacuum switches
Adjustable differential, regulation between 2 thresholds

Type	Vacuum switches and vacu-pressure switches with setting scale		
Size	- 1 bar	- 0.2 bar	5 bar
Conformity	Directive ATEX 94/9/EC, EN/IEC 60079-0, EN/IEC 60079-31		
Zone D (dust)	21 - 22		
EC type examination certificate number / marking	INERIS 04ATEX0058 / ⟨Ex⟩ II2 D-Ex tb IIIC T85°C Db IP66		
Fluid connection	1/4" BSP female		
Electrical connection	Screw terminals, 1 entry fitted with ISO M20 cable gland		
Temperature range	– 20...+ 60°C		
Degree of protection	IP66		
Rated operational characteristics (conforming to EN IEC 60947-5-1)	AC15; B300 (Ue = 240 V, Ie = 1.5 A; Ue = 120 V, Ie = 3 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)		
Short-circuit protection	By 10 A cartridge fuse type gG (gl)		
Setting range of upper limit (PH)	–0.14…–1 bar	–0.02…–0.2 bar	–0.5…5 bar
Body dimensions, W x D x H	55 x 77.5 x 158 mm	150 x 155.5 x 145 mm	113 x 35 x 75 mm
Fluids controlled	Oil, water, air, up to +70°C	Oil, air, up to +160°C	Oil, water, air, up to +70°C
Possible differential (subtract from PH to give PB) (1) · Min. at low setting	0.13 bar	0.018 bar	0.5 bar
Min. at high setting	0.13 bar	0.018 bar	0.5 bar
Max. at high setting	0.8 bar	0.18 bar	6 bar
1 CO single pole, snap action contact	XMLBM02V2S12EX	XMLBM03R2S12EX	XMLBM05A2S12EX

(1) For **XMLBM02V2S12EX** and **XMLBM03R2S12EX** vacuum switches add to PB to give PH

Type	Pressure switches with setting scale		
Size	10 bar	20 bar	35 bar
Conformity	Directive ATEX 94/9/EC, EN/IEC 60079-0, EN/IEC 60079-31		
Zone D (dust)	21 - 22		
EC type examination certificate number / marking	INERIS 04ATEX0058 / ⟨Ex⟩ II2 D-Ex tb IIIC T85°C Db IP66		
Fluid connection	1/4" BSP female		
Electrical connection	Screw terminals, 1 entry fitted with ISO M20 cable gland		
Temperature range	– 20...+ 60°C		
Degree of protection	IP66		
Rated operational characteristics (conforming to EN IEC 60947-5-1)	AC15; B300 (Ue = 240 V, Ie = 1.5 A; Ue = 120 V, Ie = 3 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)		
Short-circuit protection	By 10 A cartridge fuse type gG (gl)		
Setting range of upper limit (PH)	0.7…10 bar	1.3…20 bar	3.5…35 bar
Body dimensions, W x D x H	35 x 75 x 113 mm		
Fluids controlled	Oil, water, air, up to +70°C		
Possible differential (subtract from PH to give PB) · Min. at low setting	0.57 bar	1 bar	1.7 bar
Min. at high setting	0.85 bar	1.6 bar	2.55 bar
Max. at high setting	7.5 bar	11 bar	20 bar
1 CO single pole, snap action contact	XMLB010A2S12EX	XMLB020A2S12EX	XMLB035A2S12EX

Other characteristics: please refer to the "Detection for OsiSense automation solutions" catalog.

Telemecanique Sensors

Other versions: **please consult our Customer Care Centre.**

Pressure switches with setting scale				
0.05 bar	0.35 bar	1 bar	2.5 bar	4 bar
Directive ATEX 94/9/EC, EN/IEC 60079-0, EN/IEC 60079-31				
21 - 22				
INERIS 04ATEX0058 / ⟨Ex⟩ II2 D-Ex tb IIIC T85°C Db IP66				
1/4" BSP female				
Screw terminals, 1 entry fitted with ISO M20 cable gland				
– 20...+ 60°C				
IP66				
AC15; B300 (Ue = 240 V, Ie = 1.5 A; Ue = 120 V, Ie = 3 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)				
By 10 A cartridge fuse type gG (gl)				
0.026…0.05 bar	0.045…0.35 bar	0.05…1 bar	0.3…2.5 bar	0.25…4 bar
200 x 204 x 145 mm	110 x 110 x 162 mm		55 x 77.5 x 158 mm	55 x 77.5 x 158 mm
Oil, air, up to +160°C			Oil, water, air, up to +70°C	
0.0014 bar	0.042 bar	0.04 bar	0.16 bar	0.2 bar
0.004 bar	0.05 bar	0.06 bar	0.21 bar	0.25 bar
0.04 bar	0.3 bar	0.75 bar	1.75 bar	2.4 bar
XMLBL05R2S12EX	**XMLBL35R2S12EX**	**XMLB001R2S12EX**	**XMLB002A2S12EX**	**XMLB004A2S12EX**

(1) For **XMLBM02V2S12EX** and **XMLBM03R2S12EX** vacuum switches add to PB to give PH

Pressure switches with setting scale			
70 bar	160 bar	300 bar	500 bar
Directive ATEX 94/9/EC, EN/IEC 60079-0, EN/IEC 60079-31			
21 - 22			
INERIS 04ATEX0058 / ⟨Ex⟩ II2 D-Ex tb IIIC T85°C Db IP66			
1/4" BSP female			
Screw terminals, 1 entry fitted with ISO M20 cable gland			
– 20...+ 60°C			
IP66			
AC15; B300 (Ue = 240 V, Ie = 1.5 A; Ue = 120 V, Ie = 3 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)			
By 10 A cartridge fuse type gG (gl)			
7…70 bar	10…160 bar	22…300 bar	30…500 bar
35 x 75 x 113 mm			
Oil, up to +160°C			
4.7 bar	9.3 bar	19.4 bar	23 bar
8.8 bar	20.8 bar	37 bar	52.6 bar
50 bar	100 bar	200 bar	300 bar
XMLB070D2S12EX	**XMLB160D2S12EX**	**XMLB300D2S12EX**	**XMLB500D2S12EX**

Inductive proximity sensors
Discrete, metal case

M12　　　M18　　　M30

Sensor type		3-wire DC PNP, flush mountable in metal		
Conformity		Directive ATEX 94/9/EC, EN 60079-0, EN 60079-31		
Zone D (dust)		21 - 22		
EC type examination certificate number / marking		INERIS 04ATEX0022X / ⟨Ex⟩ II2 D-Ex tb IIIC T90°C Db IP68		
Nominal sensing distance Sn		4 mm	8 mm	15 mm
Operating zone		0...3.2 mm	0...6.4 mm	0...12 mm
Temperature range		– 20...+ 60°C		
Degree of protection (conforming to IEC 60529)		IP68		
Connection		Pre-cabled, PvR, L = 10 m		
Dimensions		M12 x 50 mm	M18 x 60 mm	M30 x 60 mm
Supply voltage (including ripple)		10...58 VDC		
Maximum switching capacity		200 mA		
Overload and short-circuit protection		Yes		
LED output state indicator		Yes		
Voltage drop, closed state, at I nominal		≤ 2 V		
Switching frequency		2500 Hz	1000 Hz	500 Hz
References	NO function	XS612B1PAL10EX	XS618B1PAL10EX	XS630B1PAL10EX
	NC function	XS612B1PBL10EX	XS618B1PBL10EX	XS630B1PBL10EX

Analog, metal case

M12　　　M18　　　M30

Sensor type		Analogue, 2-wire AC/DC, flush mountable in metal		
Conformity		Directive ATEX 94/9/EC, EN 60079-0, EN 60079-31		
Zone D (dust)		21 - 22		
EC type examination certificate number / marking		INERIS 04ATEX0022X / ⟨Ex⟩ II2 D-Ex tb IIIC T90°C Db IP67		
Nominal sensing distance Sn		2 mm	5 mm	10 mm
Operating zone		0.2...2 mm	0.5...5 mm	1...10 mm
Temperature range		– 20...+ 60°C		
Degree of protection (conforming to IEC 60529)		IP67		
Connection		Pre-cabled, PvR, L = 2 m		
Dimensions		M12 x 50 mm	M18 x 60 mm	M30 x 60 mm
Supply voltage (including ripple)		10…38 VAC/DC		
Linearity error		10%		
Operating frequency		1500 Hz	500 Hz	300 Hz
References	4…20 mA output	XS1M12AB120EX	XS1M18AB120EX	XS1M30AB120EX

Other characteristics: please refer to the "Detection for OsiSense automation solutions" catalog

Telemecanique
Sensors

Other versions: **please consult our Customer Care Centre.**

Inductive Proximity sensors
Rotation monitoring, metal case

M30

Sensor type	3-wire DC PNP, flush mountable in metal	
Conformity	Directive ATEX 94/9/EC, EN 60079-0, EN 60079-31	
Zone D (dust)	21 - 22	
EC type examination certificate number / marking	INERIS 04ATEX0022X / ⟨Ex⟩ II2 D-Ex tb IIIC T90°C Db IP67	
Nominal sensing distance Sn	10 mm	
Operating zone	0…8 mm	
Temperature range	– 20...+ 60°C	
Degree of protection (conforming to IEC 60529)	IP67	
Connection	Pre-cabled, PvR, L = 2 m	
Dimensions	M30 x 81 mm	
Supply voltage (including ripple)	10...58 VDC	
Maximum switching capacity	200 mA	
Overload and short-circuit protection	Yes	
LED output state indicator	Yes	
Voltage drop, closed state, at I nominal	≤ 2 V	
Version	Slow	Fast
Maximum speed of passing object	6000 impulses/minute	48,000 impulses/minute
Adjustable frequency range	6…150 impulses/minute	120…3000 impulses/minute
References NC function	XSAV11373EX	XSAV12373EX

Other versions: **please consult our Customer Care Centre.**

Namur inductive sensors
Metal or plastic case

| | | | | M5 | M8 | | M12 | M18 | M30 |

Sensor type		2-wire DC, flush mountable in metal							
Case type		Metal			Plastic				
Conformity		Directive ATEX 94/9/EC, EN/IEC 60079-0,EN/IEC 60079-11							
Zone D (dust)		20 (to be used in conjunction with intrinsically safe enclosures, see page 5)							
EC type examination certificate number / marking		INERIS 04ATEX0016X / ⟨Ex⟩ II1 D-Ex ia IIIC T85°C Da IP66/67							
Nominal sensing distance Sn		0.8 mm		1.5 mm			2 mm	5 mm	10 mm
Operating zone		0…0.6 mm		0…0.8 mm		0…1.2 mm	0…1.6 mm	0…4 mm	0…8 mm
Temperature range		– 20...+ 60°C							
Degree of protection (conforming to IEC 60529)		IP67							
Connection		Pre-cabled, PvR, L = 2 m							
Dimensions		M5 x 30 mm		M8 x 26.5 mm			M12 x 38.5 mm	M18 x 41 mm	M30 x 43.5 mm
Supply voltage (including ripple)		7…12 VDC							
Maximum switching capacity		≤ 1 mA							
Overload and short-circuit protection		Yes							
Residual current, open state		≥ 3 mA							
Switching frequency		1500 Hz		1000 Hz		800 Hz		500 Hz	300 Hz
References	NC function	XSMN08122EX		XSAN01122EX		XSPN01122EX	XSPN02122EX	XSPN05122EX	XSPN10122EX

Plastic case

| | M12 | M18 | M30 | Forme D |

Sensor type		2-wire DC, non flush mountable in metal			
Case type		Plastic			
Conformity		Directive ATEX 94/9/EC, EN/IEC 60079-0,EN/IEC 60079-11			
Zone D (dust)		20			
EC type examination certificate number / marking		INERIS 04ATEX0016X / ⟨Ex⟩ II1 D-Ex ia IIIC T85°C Da IP66/67			
Nominal sensing distance Sn		4 mm	8 mm	15 mm	40 mm
Operating zone		0…3.2 mm	0…6.4 mm	0…12 mm	0…32 mm
Temperature range		– 20...+ 60°C			
Degree of protection (conforming to IEC 60529)		IP67			
Connection		Pre-cabled, PvR, L = 2 m			
Dimensions		M12 x 38.5 mm	M18 x 41 mm	M30 x 43.5 mm	100 x 80 x 40 mm
Supply voltage (including ripple)		7…12 VDC			
Maximum switching capacity		≤ 1 mA			
Overload and short-circuit protection		Yes			
LED output state indicator		Yes			
Residual current, open state		≥ 3 mA			
Switching frequency		400 Hz	300 Hz	200 Hz	25 Hz
References	NC function	XSPN04122EX	XSPN08122EX	XSPN15122EX	XSDN401229EX

(1) Flush mountable in metal

Other characteristics: please refer to the "Detection for OsiSense automation solutions" catalog

Telemecanique
Sensors

Module type	Discrete			
	Inputs	Relay inputs/outputs		
Conformity	Directive ATEX 94/9/EC, EN 60079-0, EN 60079-11, EN 61241-11			
Zone D (dust)	Mounted outside zone (to be used in conjunction with products for zone 20, 21 or 22)			
EC type examination certificate number / marking	LCIE 00ATEX6034X / ⟨Ex⟩ II(1) GD-[Ex ia Ga]IIC / [Ex ia Da]IIIC			
Zone 20 Number of input channels	2 4	2	2	
Number of output channels	–	1	1	
Type of output channel, load excitation	–	Low consumption solenoid valve, < 7 mA	High consumption solenoid valve, < 40 mA	
		– with hysteresis	– with hysteresis	
Outside zone Number of recopying channels	2 4	2	2	
Switching voltage	5…230 VAC; 5…24 VDC			
Switching current	10 mA…0.5 A (AC); 10 mA…0.5 A, L/R 48 ms (DC)			
Temperature range	– 20...+ 60°C			
Connection	Removable screw terminal blocks			
Mounting	On 35 mm DIN rail			
Dimensions, W x D x H	29.5 x 120 x 90 mm			
Supply voltage (including ripple)	24 VDC (0.95…1.1 Un)			
Consumption	5 W			
References	NY320N2RB1 NY340N4RB1	NY321L2RB1 NY321L1RB1	NY321H2RB1 NY321H1RB1	

Module type	Discrete			
	Load excitation outputs			
Conformity	Directive ATEX 94/9/EC, EN 60079-0, EN 60079-11, EN 61241-11			
Zone D (dust)	Mounted outside zone (to be used in conjunction with products for zone 20, 21 or 22)			
EC type examination certificate number / marking	LCIE 00ATEX6034X / ⟨Ex⟩ II(1) GD-[Ex ia Ga]IIC / [Ex ia Da]IIIC			
Zone 20 Number of load excitation channels	2		4	
Maximum current	< 7 mA	< 40 mA	< 7 mA	< 40 mA
Outside zone Control voltage	24 VDC ± 10%			
Control current	State 1 = 6.5 < I < 9 mA and 21.6 < U < 26.4 V; State 0 = I ≤ 0.4 mA and U ≤ 1.2 V			
Temperature range	– 20...+ 60°C			
Connection	Removable screw terminal blocks			
Mounting	On 35 mm DIN rail			
Dimensions, W x D x H	29.5 x 120 x 90 mm			
Supply voltage (including ripple)	24 VDC (0.95…1.1 Un)			
Consumption	5 W			
References	NY302L0NB1	NY302H0NB1	NY304L0NB1	NY304H0NB1

Safety switches
and actuators

Preventa

3-pole contact
Slow break
1NC+2NO

3-pole contact
Slow break
2NC+1NO
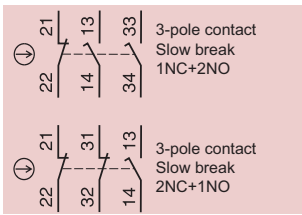
Position of the contact
when the actuator is in
the head of the switch

ISO entry
(to EN 50262)

Metal switches type	XCSA/B/C, 1 entry fitted with ISO M20 cable gland		
With head	Without locking	Interlocking, unlocking by button	Interlocking, unlocking by key lock
Conformity	Directive ATEX 94/9/CE, EN/IEC 60079-0, EN/IEC 60079-31		
Zone D (dust)	21 - 22		
EC type examination certificate number / marking	INERIS 04ATEX0014X / Ⓔx Ⅱ2 D-Ex tb ⅢC T85°C Db IP67		
Maximum safety level (1)	PL=e, category 4 conforming to EN/ISO 13849-1 and SIL CL3 conforming to EN/IEC 62061		
Actuation speed (min → max)	0,1 m/s → 0,5 m/s		
Degree of protection	IP 67		
Rated operational characteristics (conforming to EN IEC 60947-5-1)	AC 15, A 300 / DC 13, Q 300		
Temperature range	-20…+60°C		
Dimensions (body+head) W x D x H	40 x 44 x 113.5 mm	52 x 44 x 113.5 mm	52 x 44 x 113.5 mm
Short-circuit protection	By 10 A cartridge fuse type gG (gI)		
Reliability data B10d	5 000 000 (value given for a service life of 20 years, limited by mechanical or contact wear)		
Complete switch 1NC+2NO	XCSA502EX →	XCSB502EX →	XCSC502EX →
2NC+1NO	XCSA702EX →	XCSB702EX →	XCSC702EX →

Accessories
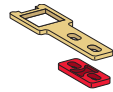
Straight actuator

Wide actuator
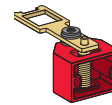
Pivoting actuator
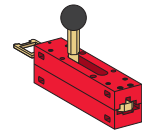
For safety switches XCSA/B/C	Actuators			Door lock
References	XCSZ01	XCSZ02	XCSZ03	XCSZ05

Coded magnetic

Contact
1NC+1NO
staggered

Contact
2NC
staggered
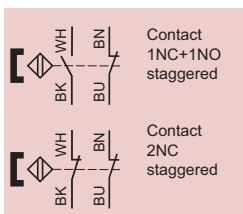
Contact states shown
are whilst the magnet is
in front of the switch

Plastic switches type	XCSDM coded magnetic, Pre-cabled, L = 2 m
	Rectangular without LED
Conformity	Directive Atex 94/9/CE, EN 60079-0, EN 60079-18, EN 60079-31, EN 1088, EN/ISO 13849-1
Zone D (dust)	0-1-2/20-21-22*(according to protection mode, mD or ia).
EC type examination certificate number / marking	INERIS 04ATEX0036 / Ⓔx Ⅱ1 D-Ex ia ⅢB Da T135°C / Ⓔx Ⅱ2 D-Ex tb ⅢC T135°C Db IP67
Maximum safety level (1)	PL=e, category 4 conforming to EN/ISO 13849-1 and SIL CL3 conforming to EN/IEC 62061
Switches for actuation	Face to face, face to side, side to side
Degree of protection	IP 66 + IP 67
Type of contact	REED
Rated operational characteristics (conforming to EN IEC 60947-5-1)	Ue = 24 VDC, Ie = 100 mA
Temperature range	-20…+60°C
Dimensions W x D x H	16 x 7 x 51 mm
Operating zone	Sao = 5 / Sar = 15
Short-circuit protection	By 10 A cartridge fuse type gG (gI)
Reliability data B10d	50 000 000 (value given for a service life of 20 years, limited by mechanical or contact wear)
Switch with coded magnet 1NC+1NO staggered	XCSDMC5902EX
2NC staggered	XCSDMC7902EX

(1) Using an appropriate and correctly connected control system.

Telemecanique
Sensors

Other versions: **please consult our Customer Care Centre.**

Emergency stops
Emergency stop rope pull switches

For operating cable up to 70 m long		Latching, without indicator light			
Conformity		Directive ATEX 94/9/EC, EN/IEC 60079-0, EN/IEC 60079-31			
Zone D (dust)		21 - 22			
EC type examination certificate number / marking		INERIS 04ATEX0015 / ⟨Ex⟩ II2 D-Ex tb IIIC T85°C Db IP65			
Maximum safety level (1)		PL=e, category 4 conforming to EN/ISO 13849-1 and SIL CL3 conforming to EN/IEC 62061			
Mechanical durability (millions of operating cycles)		0.01			
Temperature range		– 20...+ 60°C			
Degree of protection		IP65			
Connection		2 entries fitted with blanking plugs, 1 entry fitted with ISO M20 cable gland			
Rated operational characteristics (conforming to EN IEC 60947-5-1)		AC15; A300 (Ue = 240 V, Ie = 3A)/DC13; Q300 (Ue = 250 V, Ie = 0.27 A)			
Short-circuit protection		By 10 A cartridge fuse type gG (gl)			
Dimensions, W x D x H		229 x 82 x 142 mm		229 x 105 x 142 mm	
Reset		By booted pushbutton		By key release pushbutton (key n° 421)	
Operating cable length		≤ 70 m		≤ 70 m	
Operating cable anchoring point		To left	To right	To left	To right
Reliability data B10d		50 000 (value given for a service life of 20 years, limited by mechanical or contact wear)			
References	NC+NO slow break	XY2CE2A250EX	XY2CE1A250EX	XY2CE2A450EX	XY2CE1A450EX
	NC+NC slow break	XY2CE2A270EX	XY2CE1A270EX	XY2CE2A470EX	XY2CE1A470EX

(1) Using an appropriate and correctly connected control system.

Other characteristics: please refer to the "Machine safety" catalog