# **Proximity Sensors**

# File 9006





Schneider Electric Brands

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# Proximity Sensors Inductive Sensors Interpretation of Catalog Numbers



<b>Proximity Sensors</b>	Example	X S	8	С	1	Α	1	Ρ	Α	L	2				
_					<u> </u>										I
Inductive Sensor															
Cylindrical Optimum			5												
Cylindrical Universal			6												
Optimum Rectangular			7												
Universal Rectangular			8												
Application Specific			9												
FORMAT OR MODE					1										
Rectangular 8x15x32				F	1										
Rectangular 13x26x26				E	1										
Rectangular 15x40x40				С	1										
Rectangular 26x80x80				D	1										
Cylindrical smooth 4mm				L	4										
Cylindrical smooth 6mm				0	5										
Cylindrical 8mm				0	8										
Cylindrical 12mm				1	2										
Cylindrical 18mm				1	8										
Cylindrical 30mm				3	0										
FAMILY TYPE OR MATERIA	AL														
Applications						19									
Plastic						A									
Stainless Steel						S									
APPLICATION						0									
Operating Mode							19								
Food & Beverage							А								
Namur							Е								
Ferrous only							F								
Light industry							L								
Non-ferrous only							N								
Speed Control							R								
Serdac							S								
Weld Field Immune							W								
OUTPUTS															
DC 3 wire PNP								P							
DC 3 wire PNP/NPN								ĸ							
DC 2 wire (3/4)								D							
DC 2 wire automobile (1/4)								С							
DC analog output								А							
AC 2 wire								F							
AC/DC 2 wire								M							
AC/DC 2 wire SCP protect								5							
BUS								В							
FUNCTION															
Analog 0 10mA									1						
Analog 4.20mA									2						
N.O.									A						
N.C.									В						
N.U. + N.U. Programmable/wiring									P						
Programmable									S						
CABLING OR CONNECTIO	N														
M8X1 Nano (S)										М	8				
M12x1 Micro (D)										М	1	2			
7/8 16UN Mini (A)										U	7	8			
1/2 20 UNF MICRO (K)										U	2	1			
Cable 2m										L	2				
Cable 5m										L	5				
Cable 10m										L	1	0			
M12 micro on0.1m pigtail										L	0	1	М	1	2
PG 16 cable gland										Т	1	6			

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# Proximity Sensors Inductive Sensors Interpretation of Catalog Numbers

NOTE: This table is intended to understand catalog numb Rectangular Example	er design X	ations. It i S	s NOT to b	be used to	create n	umbers	which 0	may no P	t exist. Con	sult your l	ocal field	office	0	R30	H*
SENSOR TYPE Self Contained Component	X Z														
SENSING TECHNOLOGY Inductive Proximity		S													
BODY STYLE Miniature			5												
Shielded Non-Shielded Block Style			7 8 D												
FAMILY TYPE Limit Switch Style - Plastic Body				с											
Compact Block Sub Compact Block Miniature Cubic				G H L T											
MANUFACTURING CODES					·		•								
OUTPUT TYPE								N	Р						
PNP AC/DC Universal 2 wire N.O./N.C. NPN N.O.+N.C. PNP N.O.+N.C. MANUFACTURING CODES								P M D N P	P A P C C				•		
SUFFIX															
2 Meter Cable or Conduit Opening Micro Connector DC Alternate Frequency Micro Connector AC/DC 5 Meter Cable 10 Meter Cable Mini Connector, Normally Open														Blank D F K L2 L10 R30	
Mini Connector, Normally Closed Nano Connector DC Bulk Pack														R31 S TQ	
<ul> <li>H suffix, which MAY appear on device or carton labe conduit opening (where applicable). H suffixes shoul</li> </ul>	l, is for m d not be u	anufacturi Ised whei	ng purpos n ordering	es only. It (except w	designat nen non l	es com JS stai	pliance ndards	with sp are requ	ecific natio uired)	nal standa	ards. EX:	H7 = L	JL and (	CSA appro	val, 0.5"
Tubular Example	X		S	1	М	1		8	Ρ	Α	3		7	0	D
Self Contained SENSING TECHNOLOGY	х														
Inductive Proximity Capacitive Proximity			S T												
BODY TYPE Shielded Metal Body Non-shielded Metal Body Non-shielded Plastic Body TYPE OF ENCLOSURE OR FAMILY				1 2 4											
Economy D Standard Length Threaded Metal CaseM Short Length Threaded Metal CaseN Unthreaded Metal CaseL Threaded Plastic CaseP BABBEL DIAMETER					D M N L P										
4mm Diameter 5mm Diameter						0 0		4 5							
6mm Diameter 8mm Diameter						0 0		6 8							
12mm Diameter 18mm Diameter						1		2 8							
32mm Diameter 32mm Diameter MODEL TYPE						3		2							
Analog DC PNP DC NPN DC PNP/NPN, N.O./N.C. (Selectable) DC 2 Wire AC/DC 2 Wire (Universal)									AB P N K D M						
OUTPUT MODE N.O. (Normally Open) N.C. (Normally Closed) N.O. + N.C. Complementary N.O. or N.C. Selectable MANUFACTURING CODES										A B C P	•		•		
CONNECTORS Nano (M8) DC OnlyS															S
Micro DC OnlyD Micro AC OnlyK Mini AC or DCA Micro DC PigtailLD Mini AC or DC PigtailLA EXTENDED CABLE LENGTH															D K A LD LA
5 Meter CableL1 10 Meter CableL2															L1 L2

10/02

# Proximity Sensors Selection Guide Rectangular

Description	Plastic Shielde	ed Fixed and Adj	ustable sensing	напде				
	Fixed Sensing Rar	nge				Auto Adaptable Ad	justable Sensing Ra	ange
	XS7				XS8			
	Q							
Size / Dimensions H x W x D (mm)	J 22x8x8	F 32x15x8	E 26x26x13	C 40x40x15	D 80x80x26	E 26x26x13	C 40x40x15	D 80x80x26
Nominal Sensing Distance Sn (mm)	2.5	5	10	15	40	15	25	60
Supply (Voltage Limits)	•	•		•	•			•
DC 3 wire	10 - 36 V							
Maximum Load	100 mA	200 mA	200 mA					
DC 2 wire	10 - 36 V	-	-	-				
Maximum Load	100 mA	-	-	-				
AC/DC 2 wire	-	-	-	-	-	20 - 264 V	20 - 264 V	20 - 264 V
Maximum Load	-	-	-	-	-	200 mA	300 mA	300 mA
Enclosure Rating		•		•	•			•
Cable Version	IP68							
Connector Version	IP67							
Connection	•	•	•	•	•			•
Cable	2 m (6.6')							
Connector	M8	M8	M8/M12	M8/M12	M12	M8/M12/ U20	M8/M12/ U20	M12/U20
Temperature Rating	-13°F to +158°F (-25°C to +70°C)							
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Plastic Classic Rectangular Shielded & Non-shielded Description Miniature Compact XS5L XSB; XS7,8H; XS7,8G; XS7,8T **1** Б • 10 6 Ò ľ Size (mm) 8x43 10x28 26x40 40x40 50x76 26x26 Nominal Sensing Distance Shielded Sn (mm) 1.5 2 2 10 15 Nominal Sensing Distance Non-shielded Sn (mm) 25 3 4 15 20 Supply (Voltage Limits) DC 3 wire 10 – 30 V 10 – 30 V 10 – 30 V 10 – 58 V 10 – 58 V Maximum Load 100 mA 200 mA 200 mA 200 mA 200 mA DC 2 wire 12 – 58 V 10 – 58 V 10 –58 V Maximum Load 80 mA 100mA 100mA DC 4 wire 10 –58 V 10 – 58 V 10 – 58 V 200 mA Maximum Load 200 mA 200 mA AC 2 wire 93 – 264 V Maximum Load 150 mA AC/DC 2 wire 20 –264 V Maximum Load 200 mA 26x26x26 40x12x26 40x40x40 Cable 43x8x8 28x10x16 Dimension 76x50x41 (mm) Connector 49x8x8 45x12x31 26x26x29 40x40x44 **Enclosure Rating** Cable Version IP67 IP67 IP67 IP67 IP67 Connector Version IP67 IP67 IP67 IP67 IP67 Connection Cable 2 m (6.6') Connector M8 M8 M12 M12 U78 -13°F to +158°F (-25°C to +70°C) Temperature Rating Page Number 266 272 268 270 274 274

Proximity Sensors



# Proximity Sensors Selection Guide Rectangular and Application Specific

Description	Plastic Classic Rectangular Shielded & Unshielded									
	Limit switch style		Long Range Block							
	XS7/8C	XS8 IQ Prox	XSD							
Dimension (mm)	117x40x40	117x40x40	100x80x40	100x80x40						
Nominal Sensing Distance Shielded Sn (mm)	15	25	40	-						
Nominal Sensing Distance Non-shielded Sn (mm)	20	25	50	30 - 60						
Supply (Voltage Limits)	•	•								
DC 3 wire	10 – 58 V	19 – 30 V	-	-						
Maximum Load	200 mA	200 mA	-	-						
DC 2 wire	10 – 58 V	-	10 – 58 V	10 – 58 V						
Maximum Load	100 mA	-	100 mA	100 mA						
DC 4 wire	10 – 58 V	-	10 – 58 V	10 – 58 V						
Maximum Load	200 mA	-	200 mA	200 mA						
AC 2 wire	20 – 264 V	-	20 – 264 V	20 – 264 V						
Maximum Load	350 mA	-	500 mA	500 mA						
AC/DC 2 wire	20 – 264 V	-	-	-						
Maximum Load	200 mA	-	-	-						
Enclosure Rating										
Conduit Version	IP67	IP67	IP67	IP67						
Connection	•	•		•						
Conduit	1/2" NPT	1/2"NPT	1/2" NPT	1/2" NPT						
Temperature Rating	-13°F to +158°F (-25°C to +70°C	-13°F to +158°F (-25°C to +70°C	-13°F to +158°F (-25°C to +70°C	-13°F to +158°F (-25°C to +70°C						
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Description	Cylindrical, Rectan	gular Application	Specific				
	Selective F,NF, N&NF	WFI	Namur	Analog	Capacitive	Magnet Actuated	Rotation Control
						HT I	
Size (mm)	18, 30mm Limit Switch	12, 18mm Compact Block Style	4, 5, 6.5, 8, 12, 18, 30mm Block Style	12, 18, 30mm, F,E,C,D Limit switch	12, 18, 30, 32mm, Limit switch	Compact Block Style Tubular Style	30mm E, C
Nominal Sensing Distance Shielded Sn (mm) Max. Sn shown	5 - 40	2 -10	0.8 - 40	2 - 60	2 - 15	_	10 -15
Supply (Voltage Limits)							
DC 3 wire	10 – 38 V	10 – 36 V	-	24 V / 48 V	10 – 38 V	-	10 – 58 V
Maximum Load	200 mA	250 mA	-	-	300 mA	-	200 mA
DC 4 wire	10 – 38 V	-	-	-	-	-	-
Maximum Load	200 mA	-	-	-	-	-	-
DC 2 wire	-	10 –58 V	7 –12 V	24 V /48 V	-	200 V	-
Maximum Load	-	100 mA	1.65 mA	-	-	0.5 A	-
AC 2 wire	-	93 –132 V	-	-	20 –264 V	120 –240 V	-
Maximum Load	-	150 mA	-	-	350 mA	0.5 A	-
AC/DC 2 wire	20 – 264 V	-	-	-	-	130 -200 V	20 –264 V
Maximum Load	300 mA	-	-	-	-	0.5 A	0.35 A
Enclosure Rating		•	•		•		•
Cable Version	IP68	IP67	IP64/IP67	IP67	IP63/IP67	IP67	IP67
Connector Version	IP67	IP67	-	IP67	-	IP67	IP67
Conduit Entry	IP67	IP67	-	IP67	-	IP67	-
Temperature Rating	-13°F to +158°F (-25°C to +70°C)	-13°F to +158°F (-25°C to +70°C)	-13°F to +158°F (-25°C to +70°C)	-13°F to +158°F (-25°C to +70°C)	-13°F to +158°F (-25°C to +70°C)	-40°F to +140°F (-40°C to +60°C)	-13°F to +158°F (-25°C to +70°C)
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**Proximity Sensors** 

# Proximity Sensors Selection Guide Cylindrical

Description	1	Metal Full	y Shielded F	Metal Full	Metal Fully Shielded/Non-Shielded								
		Standard Se	ensing Range			Extended S	ensing Range		Auto Adapta	Auto Adaptable Adjustable Range			
		XS5				XS6			XS6				
										E.	E Co		
Diameter (mm	ı)	Ø 8	Ø 12	Ø 18	Ø 30	Ø 8	Ø 12	Ø 18	Ø 30	Ø 12	Ø 18	Ø 30	
Nominal Sens Sn (mm)	ing Distance	1.5	2	5	10	2.5	4	8	15	4	8	15	
Supply (Vol	tage Limits)												
DC 3 wire		10 - 36 V	10 - 58 V	10 - 58 V	10 – 58 V	10 - 58 V	10 – 36 V	10 – 36 V	10 – 36 V				
Maximum Loa	d	200 mA	100 mA	100 mA	100 mA								
Dimension	Cable	M8x33	M12x33	M18x36.5	M30x40.6	M8x50	M12x50	M18x60	M18x60	-	-	-	
(mm)	Connector	M8x42	M12x48	M18x48.6	M30x50.7	M8x61	M12x61	M18x72.2	M30x72.2	M12x50	M18x60	M30x60	
DC 2 wire		10 - 58 V	-	-	-	-	-	-	-				
Maximum Loa	d	100 mA	100 mA	100 mA	100 mA	-	-	-	-	-	-	-	
Dimension	Cable	M8x50	M12x50	M18x52.5	M30x50	-	-	-	-	-	-	-	
(mm)	Connector	M8x61	M12x61	M18x64.6	M30x64.2	-	-	-	-	-	-	-	
DC 4 wire		-	-	-	-	-	-	-	-	-	-	-	
Maximum Loa	d	-	-	-	-	-	-	-	-	-	-	-	
Dimension	Cable	-	-	-	-	-	-	-	-	-	-	-	
(mm)	Connector	-	-	-	-	-	-	-	-	-	-	-	
AC/DC 2 wire		-	-	-	-	-	20 - 264 V	20 - 264 V	20 - 264 V	-	-	-	
Maximum Loa	d	-	-	-	-	-	100 mA	100 mA	100 mA	-	-	-	
Dimension	Cable	-	-	-	-	-	M12x50	M18x60	M30x60	-	-	-	
(mm)	Connector	-	-	-	-	-	M12x61	M18x72.2	M30x72.2	-	-	_	
Enclosure I	Rating												
Cable		IP67	IP68	IP68	IP68	IP67	IP68	IP68	IP68	-	-	-	
Connector		IP67											
Connection	1												
Cable Version		2 m (6.6')	-	-	-								
Connector Ve	rsion	M8	M12	M12	M12	M8	M12/U20	M12/U20	M12/U20	1-	-	-	
Operating Ten	nperature Rating	-13°F to +158°F (-25°C to +70°C)											
Page Number		212	212	212	212	210	210	210	210	210	210	210	



# Proximity Sensors Selection Guide Cylindrical

Description		Plastic Un	shielded			Metal Shie	Ided/Non-SI	hielded Fixe	d Sensing F	Range		
		Standard Ser	nsing Range			Standard Ser	nsing Range (C	Classic)	Nominal Range, Miniature			
		XS4.P				XS1, 2M	(N)			XS1, 2 I	_(N)	
										•		Ţ
Diameter (mm	)	Ø 8	Ø 12	Ø 18	Ø 30	Ø 8	Ø 12	Ø 18	Ø 30	Ø 4	Ø 5	Ø 6.5
Nominal Sensi Shielded Sn (n	ing Distance nm)	-	-	-	-	1.5	2	5	10	1	1	1.5
Nominal Sensi Unshielded Sn	ing Distance (mm)	2.5	4	8	15	2.5	4	8	15	-	-	2.5
Supply (Vol	tage Limits)											
DC 3 wire		10 – 38 V	10 –58 V	10 –58 V	10 –58 V	10 –58 V	5 –30 V	5 – 30 V	10 – 38 V			
Maximum Loa	d	200 mA	200 mA	200 mA	200 mA	100 mA	200 mA	200 mA	200 mA	100 mA	100 mA	200 mA
Dimension	Cable	M8x33	M12x33	M18x33	M30x40	M8x50	M12x50	M18x60	M30x60	M4x29	M5x29	M6.5x33
(mm)	Connector	M8x45	M12x45	M18x45	M30x50	M8x61	M12x61	M18x70	M30x70	M4x41	M5x41	M6.5x45
DC 2 wire		-	-	-	-	10 –58 V	10 –58 V	10–58 V	10 –58 V	-	-	-
Maximum Load	d	-	_	-	-	100 mA	100 mA	100 mA	100 mA	-	-	-
Dimension	Cable	-	-	-	-	-	-	-	-	-	-	-
(mm)	Connector	-	-	-	-	-	-	-	-	-	-	-
DC 4 wire		10 – 38 V	-	-	-	-	-	-	10 – 38 V			
Maximum Loa	d	200 mA	200 mA	200 mA	200 mA	-	-	_	-	-	-	200 mA
Dimension	Cable	M8x50	M12x50	M18x60	M30x60	-	-	-	-	-	-	M6.5x50
(mm)	Connector	M8x61	M12x61	M18x70	M30x70	-	-	-	-	-	-	-
AC/DC 2 wire		20 - 264 V	-	-	-							
Maximum Loa	d	100 mA	200 mA	200 mA	200 mA	100 mA	200 mA	200 mA	200 mA	-	-	-
Dimension	Cable	M8x50	M12x50	M18x60	M30x60	2 m(6.6')	2 m(6.6')	2 m(6.6')	2 m(6.6')	-	-	-
(mm)	Connector	M8x61	M12x61	M18x70	M30x70	U20	U20	U20/U78	U20/U78	-	-	-
Enclosure F	Rating											
Cable		IP67	IP68	IP68	IP68	IP67	IP68	IP68	IP68	IP67	IP67	IP67
Connector		IP67										
Connection												
Cable		2 m (6.6')										
Connector		M8 / U20	M12/U20	M8	M8	M8/M12						
Operating Tem	perature Rating	-13°F to +158°F (-25°C to +70°C)	-13°F to +158°F (-25°C to +70°C)	-13°F to +158°F (-25°C to +70°C)	-13°F to +158°F (-25°C to +70°C)	-13°F to +176°F (-25°C to +80°C)	-13°F to +176°F (-25°C to +80°C)	-13°F to +176°F (-25°C to +80°C)	-13°F to +176°F (-25°C to +80°C)	-13°F to +158°F (-25°C to +70°C)	-13°F to +158°F (-25°C to +70°C)	-13°F to +158°F (-25°C to +70°C)
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# OSICONCEPT<sup>™</sup> Proximity Sensors XS Inductive Sensors Auto-Adapable Technology

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#### **Principle of Operation**

Osiconcept, Auto-Adaptable Technology is a patented innovation that offers simplified selection and installation.

Sensor can be flush mounted, non-flush mounted or recessed mounted. A metal background can be placed in immediate proximity of the sensor.

To set-up, activate adaptable technology by pressing button. When no target is present, the sensor will adapt to the environment, then pass the target in front of the sensor in the usual way. The green LED flashes when sensor is adapting to its environment or learning target location, then becomes steady when sensor is set. After the sensor is programmed it will recognize the target and provide output.

NOTE: Follow instruction bulletin provided with Osiconcept Auto-Adaptable product.

#### **Fine Adjustment for Precise Positioning**

The simple process of pressing the self-teach button with the target located in the precise position (lateral movement) across the detector sensing face. This adjustment will only allow the sensor output to change state when the object reaches the precise position in the sensors field.

The simple process of pressing the self-teach button with the target located in the precise position (frontal distance) from the detector sensing face. This adjustment will only allow the sensor output to change state when the object reaches the precise position in the sensors field.

#### Installation

A full line of support brackets allows for simple and fast installation or maintenance. No tools are necessary, simple clips and the sensor is fixed in position and ready for operation. Brackets available for all sizes J, F, E, C, D in flat and 90°.

Brackets available for substitution to existing XS•E, XS•C, and XS•D, see page 300.











Proximity Sensors





# OSICONCEPT<sup>™</sup> Proximity Sensors XS Inductive Sensors Auto-Adapable Technology

Flat			
Dimensions " (mm)	0.51 x 1.0 x 1.0 (13 x 26 x 26)	1.57 x 1.57 x 0.59 (40 x 40 x 15)	3.14 x 3.14 x 1.0 (80 x 80 x 26)
	Size E	Size C	Size D
Applications	Machine Tooling, Molding, Welding	ng Machinery, and Packaging	Material Handling, Conveyors
Sn - Flush Mounted " (mm)	0.2-0.39 (5-10)	0.31-0.59 (8-15)	0.78-1.57 (20-40)
Sn - Non-Flush Mounted " (mm)	0.2-0.59 (5-15)	0.31-0.98 (8-25)	0.78-2.36 (20-60)
Product Reference	XS8E1A1	XS8CE1A1	XS8D1A1
Pages	206	206	206
Cylindrical			
Dimensions " (mm)	0.47 (12)	0.7 (18)	1.18 (30)
Applications	Machining, Food Industry		
Sn - Flush Mounted " (mm)	0.07-0.13 (1.7-3.4)	6.14-0.27 (3.5-7)	0.24-0.47 (6-12)
Sn - Non-Flush Mounted " (mm)	0.07-0.20 (1.7-5)	0.14-0.40 (3.5-10)	0.24-0.71 (6-18)
Product Reference	XS612B•	XS618B●	XS630B•
Pages	210	210	210

**Proximity Sensors** 

# OSICONCEPT<sup>™</sup> Proximity Sensors XS8 Auto-Adaptable Inductive Sensor Flat Rectangular, DC and AC/DC



XS8 •1A1••••L2



XS8 E1A1 •• M8

**Proximity Sensors** 



XS8 E1A1•••M8 XS8 C1A1•••M8

#### Dimensions



inches (mm)

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# Features:

- Enhanced sensing distances
- · Self-adapting to flush or non-flush mounted environments
- 3 wire DC and 2 wire AC/DC
- Self-teach

Nominal Sensing	Circuit	Output	Voltage	Load Current	Operating	Catalog Number
Distance	Туре	Mode	Range	Maximum	Frequency	Catalog Nulliber
DC						
Size E (13x26x26 m	ım) 2 m (6	.6") cable 4				
15mm	PNP	N.O.*	12-24 Vdc	100 mA	1000 Hz	XS8E1A1PAL2
15mm	NPN	N.O.*	12-24 Vdc	100 mA	1000 Hz	XS8E1A1NAL2
Size E (13x26x26 m	ım) M8 co	nnector				
15mm	PNP	N.O.*	12-24 Vdc	100 mA	1000 Hz	XS8E1A1PAM8
15mm	NPN	N.O.*	12-24 Vdc	100 mA	1000 Hz	XS8E1A1NAM8
Size E (13x26x26 m	ım) M12 pi	igtail, 0.1 n	ı			
15mm	PNP	N.O.*	12-24 Vdc	100 mA	1000 Hz	XS8E1A1PAL01M12
15mm	NPN	N.O.*	12-24 Vdc	100 mA	1000 Hz	XS8E1A1NAL01M12
Size C (15x40x40 m	nm) 2 m (6	.6') cable 🔺				
25mm	PNP	N.O.*	12-24 Vdc	200 mA	1000 Hz	XS8C1A1PAL2
25mm	NPN	N.O.*	12-24 Vdc	200 mA	1000 Hz	XS8C1A1NAL2
Size C (15x40x40 m	nm) M8 co	nnector				
25mm	PNP	N.O.*	12-24 Vdc	200 mA	1000 Hz	XS8C1A1PAM8
25mm	NPN	N.O.*	12-24 Vdc	200 mA	1000 Hz	XS8C1A1NAM8
Size C (15x40x40 m	nm) M12 p	igtail, 0.1 n	ı			
25mm	PNP	N.O.*	12-24 Vdc	200 mA	1000 Hz	XS8C1A1PAL01M12
25mm	NPN	N.O.*	12-24 Vdc	200 mA	1000 Hz	XS8C1A1NAL01M12
Size D (26x80x80 m	nm) 2 m (6	.6') cable 🔺				
60mm	PNP	N.O.*	12-24 Vdc	200 mA	100 Hz	XS8D1A1PAL2
60mm	NPN	N.O.*	12-24 Vdc	200 mA	100 Hz	XS8D1A1NAL2
Size D (26x80x80 m	nm) M12 c	onnector				
60mm	PNP	N.O.*	12-24 Vdc	200 mA	100 Hz	XS8D1A1PAM12
60mm	NPN	N.O.*	12-24 Vdc	200 mA	100 Hz	XS8D1A1NAM12
AC						
Size E (13x26x26 m	ım) 2 m (6	.6') cable 🔺				
15mm	2 wire	N.O.*	24-240 Vac/24-210 Vdc	5 – 200 mA	1000/50 Hz	XS8E1A1MAL2
Size E (13x26x26 m	ım) U20 pi	gtail, 0.1 m	1			
15mm	2 wire	N.O.*	24-240 Vac/24-210 Vdc	5 – 200 mA	1000/50 Hz	XS8E1A1MAL01U20
Size C (15x40x40 m	nm) 2 m (6	.6') cable 🔺				
25mm	2 wire	N.O.*	24-240 Vac/24-210 Vdc	5 – 300 mA	1000/50 Hz	XS8C1A1MAL2
Size C (15x40x40 m	nm) U20 pi	gtail, 0.1 m	ı			
25mm	2 wire	N.O.*	24-240 Vac/24-210 Vdc	5 – 300 mA	1000/50 Hz	XS8C1A1MAL01U20
Size D (26x80x80 m	nm) 2 m (6	.6') cable 🔺		·	•	·
60mm	2 wire	N.O.*	24-240 Vac/24-210 Vdc	5 – 300 mA	100/50 Hz	XS8D1A1MAL2
Size D (26x80x80 m	nm) U20 co	onnector	·	·	•	·
60mm	2 wire	N.O.*	24-240 Vac/24-210 Vdc	5 – 300 mA	100/50 Hz	XS8D1A1MAU20
			·		•	

To order a normally closed (N.C.) version change the A to B, example: XS8C1A1PAL2 to XS8C1A1PBL2.

5m cable length available with L5 suffix / 10m cable length available with L10 suffix.

#### Minimum Mounting Clearances (mm)

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XS8E

XS8C

XS8D

Side by Side		Face to Face	
e ≥ 1.6 (40)	e ≥ 5.9 (150)	e ≥ 3.1 (80)	e ≥ 11.8 (300)
e ≥ 2.4 (60)	e ≥ 4.9 (125)	e ≥ 4.7 (120)	e ≥ 9.8 (250)



# **OSICONCEPT™** Proximity Sensors XS8 Auto-Adaptable Inductive Sensor Flat Rectangular, DC and AC/DC

...

#### Specifications



M8 connector, N.O. and N.C. to to pin 4.

2	
	PNP/M12 or M8
	BN/1 + PNP BK/4 (NO) BU/3 -
	Type 2 Wire 0.5" 20-UNF
)	BN/2 ~~

≂

Mechanical		Shielded	Non-shielded			
	XS8E	5 – 10 mm	5 – 15 mm			
Fine Detection Zone	XS8C	8 – 15 mm	8 – 25 mm			
	XS8D	20 – 40 mm	20 – 60 mm			
	XS8E	0 – 10 mm	0 – 15 mm			
Sn	XS8C	0 – 15 mm	0 – 25 mm			
	XS8D	0 – 40 mm	0 – 60 mm			
Tomporature Dance	Storage	-40 ° to +185 ° F (-40 ° to +85 ° C)				
Temperature Range	Operation	-13 ° to +158 ° F (-25 ° to +70 ° C)				
Faclacura Datian	NEMA Type	1, 4X,12				
Enclosure Raling	IEC Type	IP68 cable version / IP67 connect	or version			
Vibration		25 g, amplitude +/- 2mm (f=10-55	Hz)			
Shock Resistance		50 g duration 11ms				
Differential (%of Sr)		1 – 15%				
Repeatability (% of Sr)		2%				
	Output	Yellow				
LED Indicator	Power & Teach	Green				
Enclosure material		РВТ				
Cable		PVR 3x0.34mm <sup>2</sup>				
Connector		M8 Nano 3pin, M12 Micro 4pin, U	20 Micro 3pin			
Electrical		2 wire AC/DC	3 wire DC			
Voltage Range		24 - 240 Vac/24 - 210 V dc	12 – 24 Vdc			
Voltage Limit (including ripple)		20 – 264 Vac/dc	10 – 36 Vdc			
Voltage Drop		5.5 V	2 V			
	XS8E	5200 mA	100 mA			
Load Current Maximum	XS8C	DC:5300 mA/AC:5260 mA	200 mA			
	XS8D	DC:5300 mA/AC:5260 mA	200 mA			
(max.) Leakage (Residual) Currer	nt-open state	1.5 mA –				
Current consumption		-	10 mA			
	XS8E	10 ms	5 ms			
Power up Delay (max.)	XS8C	10 ms	5 ms			
	XS8D	15 ms	10 ms			
	XS8E	0.3 ms	0.3 ms			
On Delay (max.)	XS8C	0.3 ms	0.3 ms			
	XS8D	0.3 ms	0.3 ms			
	XS8E	0.7 ms	0.7 ms			
Off Delay (max.)	XS8C	0.7 ms	0.7 ms			
	XS8D	5 ms	5 ms			
Protoctivo Circuitru	Short Circuit Protection	No Yes				
	Overload Protection	No	Yes			
Agency Listings	(UL)	<u>()</u>	E			

Connector Cables (M8 or S suffix; M12 or D suffix; U20 or K suffix)

	, ,
XSZCS101	Nano Conn., 3 pin, 2 m, straight
XSZCS111	Nano Conn., 3 pin, 2 m, 90°
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°
XSZCK101Y	Micro Conn., 3 pin, 2 m, straight
XSZCK111Y	Micro Conn., 3 pin, 2 m, 90°

For additional cable options and lengths see p. 518

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# **Proximity Sensors XS7 Inductive Sensor** Flat Rectangular, DC







XS7 D1A1 •• M12

# Dimensions





inches (mm)

Dual Dimensions inches

#### Features:

Entire range of flat proximity sensors dedicated to OEM's and their applications.

- Complete flat range offering.
- 2 and 3 wire DC •
- Normally Open or Normally Closed outputs available •
- Cable and connector versions •
- PNP or NPN •

Nominal Sensing	Circuit	Output	Voltage	Load Current	Operating	Ostala a Number
Distance	Туре	Mode	Range	Maximum	Frequency	Catalog Number
Size J (8x8x22 mm) 2 m	(6.6') cabl	e 🔺				1
2.5 mm	2 wire	N.O.★	12-24 Vdc	1.5 – 100 mA	4000 Hz	XS7J1A1DAL2
2.5 mm	PNP	N.O.★	12-24 Vdc	100 mA	2000 Hz	XS7J1A1PAL2
2.5 mm	NPN	N.O.★	12-24 Vdc	100 mA	2000 Hz	XS7J1A1NAL2
Size J (8x8x22 mm) M8	pigtail, 0.1	m				1
2.5 mm	2 wire	N.O.★	12-24 Vdc	1.5 – 100 mA	4000 Hz	XS7J1A1DAL01M8
2.5 mm	PNP	N.O.★	12-24 Vdc	100 mA	2000 Hz	XS7J1A1PAL01M8
2.5 mm	NPN	N.O.★	12-24 Vdc	100 mA	2000 Hz	XS7J1A1NAL01M8
Size F (8x15x32 mm) 2	m (6.6') cab	le ▲				1
5 mm	2 wire	N.O.★	12-24 Vdc	1.5 – 100 mA	5000 Hz	XS7F1A1DAL2
5 mm	PNP	N.O.★	12-24 Vdc	100 mA	2000 Hz	XS7F1A1PAL2
5 mm	NPN	N.O.★	12-24 Vdc	100 mA	2000 Hz	XS7F1A1NAL2
Size F (8x15x32 mm) Ma	8 pigtail, 0.	1 m	1			1
5 mm	2 wire	N.O.★	12-24 Vdc	1.5 – 100 mA	5000 Hz	XS7F1A1DAL01M8
5 mm	PNP	N.O.★	12-24 Vdc	100 mA	2000 Hz	XS7F1A1PAL01M8
5 mm	NPN	N.O.★	12-24 Vdc	100 mA	2000 Hz	XS7F1A1NAL01M8
Size E (13x26x26 mm) 2	2m (6.6') ca	ble 🔺	1			
10 mm	2 wire	N.O.★	12-24 Vdc	1.5 – 100 mA	1000 Hz	XS7E1A1DAL2
10 mm	PNP	N.O.★	12-24 Vdc	100 mA	1000 Hz	XS7E1A1PAL2
10 mm	NPN	N.O.★	12-24 Vdc	100 mA	1000 Hz	XS7E1A1NAL2
Size E (13x26x26 mm)	V8 connect	or	I			
10 mm	2 wire	N.O.★	12-24 Vdc	1.5 – 100 mA	1000 Hz	XS7E1A1DAM8
10 mm	PNP	N.O.★	12-24 Vdc	100 mA	1000 Hz	XS7E1A1PAM8
10 mm	NPN	N.O.★	12-24 Vdc	100 mA	1000 Hz	XS7E1A1NAM8
Size E (13x26x26 mm)	M12 piqtail,	0.1 m ♦	1			
10 mm	2 wire	N.O.★	12-24 Vdc	1.5 – 100 mA	1000 Hz	XS7E1A1DAL01M12
10 mm	PNP	N.O.★	12-24 Vdc	100 mA	1000 Hz	XS7E1A1PAL01M12
10 mm	NPN	N.O.★	12-24 Vdc	100 mA	1000 Hz	XS7E1A1NAL01M12
Size C (15x40x40 mm) 2	2 m (6.6') ca	able 🔺	1			
15 mm	2 wire	N.O.★	12-24 Vdc	1.5 – 100 mA	1000 Hz	XS7C1A1DAL2
15 mm	PNP	N.O.★	12-24 Vdc	100 mA	1000 Hz	XS7C1A1PAL2
15 mm	NPN	N.O.★	12-24 Vdc	100 mA	1000 Hz	XS7C1A1NAL2
Size C (15x40x40 mm)	M8 connect	or	1			
15 mm	2 wire	N.O.★	12-24 Vdc	1.5 – 100 mA	1000 Hz	XS7C1A1DAM8
15 mm	PNP	N.O.★	12-24 Vdc	100 mA	1000 Hz	XS7C1A1PAM8
15 mm	NPN	N.O.★	12-24 Vdc	100 mA	1000 Hz	XS7C1A1NAM8
Size C (15x40x40 mm)	M12 pigtail,	0.1 m ♦	1		1	
15 mm	2 wire	N.O.★	12-24 Vdc	1.5 – 100 mA	1000 Hz	XS7C1A1DAL01M12
15 mm	PNP	N.O.★	12-24 Vdc	100 mA	1000 Hz	XS7C1A1PAL01M12
15 mm	NPN	N.O.★	12-24 Vdc	100 mA	1000 Hz	XS7C1A1NAL01M12
Size D (26x80x80 mm) 2	2 m (6.6') ca	able 🔺	1			
40 mm	2 wire	N.O.★	12-24 Vdc	1.5 – 100 mA	100 Hz	XS7D1A1DAL2
40 mm	PNP	N.O.★	12-24 Vdc	100 mA	100 Hz	XS7D1A1PAL2
40 mm	NPN	N.O.★	12-24 Vdc	100 mA	100 Hz	XS7D1A1NAL2
Size D (26x80x80 mm)	M12 connec	tor	I			
40 mm	2 wire	N.O.★	12-24 Vdc	1.5 – 100 mA	100 Hz	XS7D1A1CAM12
40 mm	2 wire	N.O.★	12-24 Vdc	1.5 – 100 mA	100 Hz	XS7D1A1DAM12
40 mm	PNP	N.O.★	12-24 Vdc	100 mA	100 Hz	XS7D1A1PAM12
40 mm	NPN	N.O.★	12-24 Vdc	100 mA	100 Hz	XS7D1A1NAM12
★ To order a normally close	ed (N.C.) vers	on change the	A to B, example	e: XS718B1PAL2 to >	(S718B1P <b>B</b> L2.	•

0.8m and 0.15m pigtail length available on 2 wire E and C. 5m cable length available with L5 suffix / 10m cable length available with L10 suffix.

Proximity Sensors

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Wiring

# **Proximity Sensors XS7 Inductive Sensor** Flat Rectangular, DC

#### Specifications

XS7E, XS7C, XS7D			XS7J		
Connector			XS7F		
M12 M8	Cable	Usable Sensing Range	XS7E		
			XS7C		
	Brown BN +		XS7D		
	Black BK Output	Tomporaturo Bango	Storage		
PNP/M12 or M8	NPN/M12 or M8	Temperature Mange	Operational		
BN/1		Engloquing Boting	NEMA Type		
PNP BK/4 (NO)		Enclosure halling	IEC Type		
	BK/2 (NO) BK/2 (NC)	Vibration			
BU/3	BU/3	Shock Resistance			
M8 connector, N.O. and	N.C. to pin 4.	Differential (%of Sr)			
2 Wire N.O.	2 Wire N.C.	Repeatability (% of Sr)			
	PN/1 ±/-	LED Indicator			
BN/1 BU/4 -/+	₩ NC BU/2 (M12) -/+	Enclosure Material			
		Cable			
		Connector			
Connector M9	Cable	Electrical			
Connector M8	Cable	Voltage Range			
1 2	Blue BU -	Voltage Limit (including ripple)			
	Brown BN + Black BK Output	Voltage Drop			
Black BR Output		Current Limit Maximum			
XS7J, XS7F		Current consumption			
PNP N.O. or N.C.	NPN N.O. or N.C.		XS7J		
BN/1 +	BN/1 +		XS7F		
PNP BK/4	NPN BK/4	Power up Delay (max.)	XS7E		
	BU/3		XS7C		
			XS7D		
2 Wire N.O.	2 Wire N.C.		XS7J		
BN/3 +/-	BN/1 +/-		XS7F		
		On Delay (max.)	XS7E		
BU/4 -/+	BU/2 -/+		XS7C		
			XS7D		
			XS7J		

Mechanical							
	XS7J	0 – 2 mm					
	XS7F	0 – 4 mm					
Usable Sensing Range	XS7E	0 – 8 mm					
	XS7C	0 – 12 mm					
	XS7D	0 – 32 mm					
Town out on Down	Storage	age -40 ° to +185 ° F (-40 ° to +85 ° C)					
Temperature Range	Operational	-13 ° to +158 ° F (-25 ° to +70 °	C)				
Factoria Detina	NEMA Type	1,4X,12					
Enclosure Rating	IEC Type	IP68 Cable version / IP67 Conne	ector version				
Vibration	•	25 g, amplitude +/- 2mm (f=10-5	5 Hz)				
Shock Resistance		50 g duration 11ms					
Differential (%of Sr)		1-15%					
Repeatability (% of Sr)		2%					
LED Indicator		Yellow output					
Enclosure Material		PBT					
Cable		PVR, 3x0.34mm <sup>2</sup>					
Connector		Nano conn. 3 pin M8 / Micro cor	Nano conn. 3 pin M8 / Micro conn. 4 pin M12				
Electrical		2 wire	3 wire				
Voltage Range		12 – 24 Vdc	12 – 24 Vdc				
Voltage Limit (including ripple)		10 – 36 Vdc	10 – 36 Vdc				
Voltage Drop		2 V	4 V				
Current Limit Maximum		100 mA	100 mA				
Current consumption		0.5 mA	10 mA				
	XS7J	10 ms	5 ms				
	XS7F	5 ms	5 ms				
Power up Delay (max.)	XS7E	5 ms	10 ms				
	XS7C	5 ms	5 ms				
	XS7D	10 ms	30 ms				
	XS7J	0.5 ms	0.1 ms				
	XS7F	0.5ms	0.1 ms				
On Delay (max.)	XS7E	0.3 ms	2 ms				
	XS7C	0.3 ms	2 ms				
	XS7D	10 ms	5 ms				
	XS7J	1 ms	0.1 ms				
	XS7F	5 ms	0.1 ms				
Off Delay (max.)	XS7E	0.7 ms	6 ms				
	XS7C	0.7 ms	5 ms				
	XS7D	10 ms	15 ms				
Protoctivo Circuitry	Short Circuit Protection	Yes	Yes				
	Overload Protection	Yes	Yes				
Agency Listings	E164869 CCN NRKH		.e				

#### Minimum Mounting Clearances (mm)

			₽ ₽	2			e-
	Side by Side	Face to Face	Face to Metal Object		Side by Side	Face to Face	Face to Metal Object
XS7E	e ≥ 0.2 (4)	e ≥ 0.9 (24)	e ≥ 0.2 (6)	XS7J	e ≥ 0.03 (1)	e ≥ 0.2 (6)	e ≥ 0.08 (2)
XS7C	e ≥ 0.4 (10)	e ≥ 2.4 (60)	e ≥ 0.6 (15)	XS7F	e ≥ 0.8(020)	e ≥ 0.4(12)	e ≥ 0.12 (3)
XS7D	e ≥ 0.8 (20)	e ≥ 4.7 (120)	e ≥ 1.2 (30)				

#### **Connector Cables**

(M8 or S suffix; M12 or D suffix)

XSZCS101	Nano Conn., 3 pin, 2 m, straight
XSZCS111	Nano Conn., 3 pin, 2 m, 90°
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°

For additional cable options and lengths see p. 518

Proximity Sensors

# **OSICONCEPT™** Proximity Sensors XS6 Extended Range and Auto-Adaptable Inductive Sensor Metal Tubular, DC and AC/DC

Features:

· Increased sensing range, fully shielded

Self-Teach available on 12-30mm versions

Circuit

Туре

PNF

Normally Open or Normally Closed outputs available

Output

Mode

N.O.★

2 wire AC/DC and 3 wire DC

Cable and connector versions

PNP or NPN, DC

8 mm Diameter, 2 m (6.6') cable A

Nominal Sensing

Distance

2.5 mm

thread

M8x1

thread

M12x1

thread

M18x1

thread

M30x1.5



Catalog Number

XS608B1PAL2





XS6 ••B1••M12

#### Dimensions



	Cable		Connector		
	а	b	а	b	
Ø 8	1.9 (50)	1.6 (42)	2.4 (61)	1.6 (40)	
Ø 12	1.9 (50)	1.6 (42)	2.4 (61)	1.6 (42)	
Ø 18	2.3 (60)	0.09 (51)	2.8 (72.2)	2.0 (51)	
ð 30	2.3 (60)	0.09 (51)	2.8 (72.2)	2.0 (51)	

inches (mm)



XS6--B2--L01M12

#### Dimensions

2.44 62	a a

	Connector M12				
	а	b	с		
Ø 12	1.9 (50)	1.4 (37)	0.2 (5)		
Ø 18	2.3 (60)	1.5 (38.5)	0.31 (8)		
Ø 30	29.9 (760)	1.5 (38.5)	0.5 (13)		

inches (mm)

inches mm Dual Dimensions

2.5 mm	NPN	N.O.★	12-48 Vdc	200 mA	5000 Hz	-	XS608B1NAL2
8 mm Diameter, M12 co	onnector						
2.5 mm	PNP	N.O.★	12-48 Vdc	200 mA	5000 Hz	-	XS608B1PAM12
2.5 mm	NPN	N.O.★	12-48 Vdc	200 mA	5000 Hz	-	XS608B1NAM12
12 mm Diameter, 2 m (	6.6') cable	<b>A</b>					
4 mm	2 wire	N.O.★	12-48 Vdc	1.5-100 mA	4000 Hz	25 Hz	XS612B1MAL2
4 mm	PNP	N.O.★	12-48 Vdc	200 mA	5000 Hz	-	XS612B1PAL2
4 mm	NPN	N.O.★	12-48 Vdc	200 mA	5000 Hz	-	XS612B1NAL2
12 mm Diameter, M12 of	connector						
4 mm	2 wire	N.O.★	24-240 Vac/24-210 Vdc	1.5-100 mA	4000 Hz	25 Hz	XS612B1MAU20
4 mm	PNP	N.O.★	12-48 Vdc	200 mA	5000 Hz	-	XS612B1PAM12
4 mm	NPN	N.O.★	12-48 Vdc	200 mA	5000 Hz	-	XS612B1NAM12
18 mm Diameter, 2 m (	6.6') cable	<b>A</b>					
8 mm	2 wire	N.O.★	24-240 Vac/24-210 Vdc	1.5-100 mA	3000 Hz	25 Hz	XS618B1MAL2
8 mm	PNP	N.O.★	12-48 Vdc	200 mA	2000 Hz	-	XS618B1PAL2
8 mm	NPN	N.O.★	12-48 Vdc	200 mA	2000 Hz	-	XS618B1NAL2
18 mm Diameter, M12 of	connector						
8 mm	2 wire	N.O.★	24-240 Vac/24-210 Vdc	1.5-100 mA	3000 Hz	25 Hz	XS618B1MAU20
8 mm	PNP	N.O.★	12-48 Vdc	200 mA	2000 Hz	-	XS618B1PAM12
8 mm	NPN	N.O.★	12-48 Vdc	200 mA	2000 Hz	-	XS618B1NAM12
30 mm Diameter, 2m (6	6.6') cable	<b>A</b>					
15 mm	2 wire	N.O.★	24-240 Vac/24-210 Vdc	1.5-100 mA	2000 Hz	25 Hz	XS630B1MAL2
15 mm	PNP	N.O.★	12-48 Vdc	200 mA	1000 Hz	-	XS630B1PAL2
15 mm	NPN	N.O.★	12-48 Vdc	200 mA	1000 Hz	-	XS630B1NAL2
30 mm Diameter, M12 connector							
15 mm	2 wire	N.O.★	24-240 Vac/24-210 Vdc	1.5-100 mA	2000 Hz	25 Hz	XS630B1MAU20
15 mm	PNP	N.O.★	12-48 Vdc	200 mA	1000 Hz	-	XS630B1PAM12
15 mm	NPN	N.O.★	12-48 Vdc	200 mA	1000 Hz	-	XS630B1NAM12
Self – Teach versi	on+ (Au	to-Adap	table)				
12 mm Diameter, M12 of	connector	piatail 0.1	m				
5 mm	PNP	N.O.★	12-24 Vdc	100 mA	1000 Hz	1-	XS612B2PAL01M12
5 mm	NPN	N.O.★	12-24 Vdc	100 mA	1000 Hz	-	XS612B2NAL01M12
18 mm Diameter, M12 of	connector	pigtail 0.1	m				
9 mm	PNP	N.O.★	12-24 Vdc	100 mA	1000 Hz	-	XS618B2PAL01M12
9 mm	NPN	N.O.★	12-24 Vdc	100 mA	1000 Hz	-	XS618B2NAL01M12
30 mm Diameter, M12 of	connector	pigtail 0.1	m				
15 mm	PNP	N.O.★	12-24 Vdc	100 mA	1000 Hz	-	XS630B2PAL01M12
15 mm	NPN	N.O.★	12-24 Vdc	100 mA	1000 Hz	1-	XS630B2NAL01M12
★ To order a normally close	ed (N.C.) vo	reion change	the A to B example: VS	518B1PAL 2 to	X\$518B1P	12	
Self-teach version only							
5m cable length available with L5 suffix / 10m cable length available with L10 suffix.							
			5				

Entire range of fully shielded metal body cylindrical inductive proximity sensors.

Voltage Range

12-48 Vdc

Load

Max.

200 mA

Current

Operating

Frequency

AC

DC

5000 Hz -

#### Minimum Mounting Clearances " (mm)

Auto-Adaptable	
	z

	Side by Side		Face to Face	
-	Flush	Not Flush	Flush	Not Flush
Ø 12	e ≥ 0.55 (14)	1.9 (50)	e ≥ 1.9 (50)	3.9 (100)
Ø 18	e ≥ 1.1 (28)	3.9 (100)	e ≥ 3.9 (100)	7.9 (200)
Ø 30	e ≥ 1.9 (48)	7.1 (180)	e ≥ 7.1 (180)	14.1 (360)

		E B B B C B B B B B B B B B B B B B B B	₹ <b>U</b>
	Side by Side	Face to Face	Face to Metal Object
Ø 8	e ≥ 0.1 (3)	e ≥ 0.7 (18)	e ≥ 0.17 (4.5)
Ø 12	2 e ≥ 0.2 (4)	e ≥ 0.9 (24)	e ≥ 0.2 (6)
Ø 18	B e ≥ 0.4 (10)	e ≥ 2.4 (60)	e ≥ 0.6 (15)
Ø 30	0 e ≥ 0.8 (20)	e ≥ 4.7 (120)	e ≥ 1.2 (30)

Extended Range

210



Cable Blue

Brown Black

NPN

BN/1

NPN

 $\Diamond$ 

BU/3

Cable

Blue

Brown Black

NPN

1 NPN ∲

\_\_\_\_\_ви

Cable Blue

Brown Black BU –

BU – BN +

ви вк 4

BU –

BN + BK Output

0-10

XSZBPM12

**BK** Output

BN + BK Output

> BK/4 (NO) BK/2 (NC)

# OSICONCEPT<sup>™</sup> Proximity Sensors XS6 Extended Range and Auto-Adaptable Inductive Sensor Metal Tubular, DC and AC/DC

#### Specifications

#### Wiring

...

### 3 Wire Selectable Connector M12



PNP BK/4 (NO) BK/2 (NC) BIJ/3 -







#### 2 Wire AC/DC

Connector U20



#### 2 Wire Non-Polarized



Mechanical		Extended Range	Auto-Adaptable		
			Shielded	Non-shielded	
	08 mm	0 – 2 mm	-	-	
Fire Detection Zerre	12 mm	0 – 3.2 mm	1.7 - 3.4 mm	1.7 - 5 mm	
Fine Detection Zone	18 mm	0 – 6.4 mm	3.5 – 6 mm	3.5 – 9 mm	
	30 mm	0 – 12 mm	6 – 12 mm	6 – 18 mm	
	12 mm	-	0 - 3.4 mm	0 - 5 mm	
Sn	18 mm	-	0 – 6 mm	0 – 9 mm	
	30 mm	-	0 – 12 mm	0 – 18 mm	
	Storage	-40 ° to +185 ° F (-40 ° to +85 ° C)			
Temperature Range	Operation	-13 ° to +158 ° F (-25 ° to +70 ° C)			
Frankraum Dation	NEMA Type	3,4X,6P,12,13			
Enclosure Rating	IEC Type	IP68 cable versions (IP67 connected	or versions)		
	Case	Nickel Plated Brass			
Enclosure Material	Face	PBT			
	08 mm	9 N•m (6.7 lb-ft)			
	12 mm	15 N•m (11 lb-ft)			
Max. Lightening Torque	18 mm	35 N•m (26 lb-ft)			
	30 mm	50 N•m (37 lb-ft)			
Vibration		25 g, amplitude +/- 2mm (f=10-55	Hz)		
Shock Resistance		50 g duration 11ms	,		
Differential (%of Sr)		15%			
Repeatability (% of Sr)		3%			
, <u></u> ,	Power & Teach	_	Green		
LED Indicator	Output	Yellow			
Cable	•	PVR 3x0.34 mm 2/PVR2x0.5 mm <sup>2</sup>	PVR – 4.2 mm O.D.		
Connector		M12 4 pin / U20 3 pin Micro conn. M12 Micro conn. 4 pin			
Electrical		2 wire AC/DC	3 wire DC	Auto-adaptable DC	
Voltage Range		24-240 Vac; 24-210 Vdc	12 – 48 Vdc	12 - 24 Vdc	
Voltage Limit (including ri	ople)	20-264 Vac/dc	10 - 58 Vdc	10 – 36 Vdc	
Voltage Drop		5.5 V	2 V	2 V	
(max.) Leakage (Residua	I) Current-open state	0.8 mA	-	-	
Current consumption		-	10 mA	10 mA	
Maximum Current Limit		AC: 5300 mA / DC: 5200 mA	200 mA	100 mA	
Power up Delay (max.)		20 ms-12 mm / 25 ms-18/30 mm	5 ms	5ms	
· · · · ·	08mm	-	0.2 ms	-	
	12mm	0.5 ms	0.2 ms	0.3 ms	
On Delay (max.)	18mm	0.5 ms	0.3 ms	0.3 ms	
	30mm	0.5 ms	0.6 ms	0.3 ms	
	08mm	-	0.2 ms	-	
	12mm	0.2 ms	0.2 ms	0.7 ms	
Off Delay (max.)	18mm	0.5 ms	0.7 ms	0.7 ms	
	30mm	2 ms	1.4 ms	0.7 ms	
	08mm	-	2500 Hz	-	
Maximum Operating	12mm	AC: 25 Hz / DC: 1000 Hz	2500 Hz	1000 Hz	
Frequency	18mm	AC: 25 Hz / DC: 1000 Hz	1000 Hz	1000 Hz	
	30mm	AC: 25 Hz / DC: 500 Hz	500 Hz	1000 Hz	
	Short Circuit Protection	No	Yes	Yes	
Protective Circuitry	Overload Protection	Yes	Yes	Yes	
	Reverse Polarity Protection	Yes	Yes	Yes	
Agency Listings	(L)	() ()	E	•	

#### Accessories

Description	Catalog Number
Mounting bracket for teach connector	XSZBPM12
8mm tubular mounting bracket	XSZB108
12mm tubular mounting bracket	XSZB112
18mm tubular mounting bracket	XSZB118
30mm tubular mounting bracket	XSZB130

# Connector Cables

XSZB1••

(M12 or D suffix; U20 or K suffix)			
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight		
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°		
XSZCK101Y	Micro Conn., 3 pin, 2 m, straight		
XSZCK111Y	Micro Conn., 3 pin, 2 m, 90°		

For additional cable options and lengths see p. 518

# **Proximity Sensors XS5 Inductive Sensor** Metal Tubular, DC



XS5 ••B1••L2



XS5 ••B1••M12

# Dimensions



Proximity Sensors



	Cable		Connector	
	а	b	a	b
Ø 8	1.9 (50)	1.6 (42)	2.4 (61)	1.6 (40)
Ø 12	1.9 (50)	1.6 (42)	2.4 (61)	1.6 (40)
Ø 18	2.0 (52.5)	1.7 (44)	2.5 (64.6)	1.7 (44)
Ø 30	1.9 (50)	1.6 (42)	2.5 (64.2)	1.6 (41)

3 Wire



	Cable		Connector	
	а	b	а	b
Ø 8	1.3 (33)	1.0 (25)	1.6 (42)	1.0 (26)
Ø 12	1.3 (33)	1.0 (25)	1.9 (48)	1.1 (29)
Ø 18	1.4 (36.5)	1.1 (28)	1.9 (48.6)	1.1 (28)
Ø 30	1.6 (40.6)	1.2 (32)	2.0 (50.7)	1.3 (32)

inches (mm)

#### Features:

Complete range of cylindrical proximity sensors dedicated to OEM's and their applications.

- · Low cost shielded cylindrical inductive proximity sensors
- 2 and 3 wire DC •
- Normally Open or Normally Closed outputs available •
- Cable and connector versions ٠
- PNP or NPN

thread

M18x1

	Nominal Sensing Distance	Circuit Type	Output Mode	Voltage Range	Load Current Maximum	Operating Frequency	Catalog Number
thread	8 mm Diameter, 2 m	(6.6') cable 4	<u> </u>	Ū		1 . ,	
M30x1.5	1.5 mm	2 wire	N.O.★	12-48 Vdc	1.5-100 mA	4000 Hz	XS508B1DAL2
	1.5 mm	PNP	N.O.★	12-24 Vdc	200 mA	5000 Hz	XS508B1PAL2
	1.5 mm	NPN	N.O.★	12-24 Vdc	200 mA	5000 Hz	XS508B1NAL2
	8 mm Diameter, M12	connector					
	1.5 mm	2 wire	N.O.★	12-48 Vdc	1.5-100 mA	4000 Hz	XS508B1DAM12
	1.5 mm	PNP	N.O.★	12-24 Vdc	200 mA	5000 Hz	XS508B1PAM12
	1.5 mm	NPN	N.O.★	12-24 Vdc	200 mA	5000 Hz	XS508B1NAM12
	12 mm Diameter, 2 n	n (6.6') cable	•				
	2 mm	2 wire	N.O.★	12-48 Vdc	1.5-100 mA	4000 Hz	XS512B1DAL2
	2 mm	PNP	N.O.★	12-24 Vdc	200 mA	5000 Hz	XS512B1PAL2
	2 mm	NPN	N.O.★	12-24 Vdc	200 mA	5000 Hz	XS512B1NAL2
	12 mm Diameter, M1	2 connector					
	2 mm	2 wire	N.O.★	12-48 Vdc	1.5-100 mA	4000 Hz	XS512B1DAM12
	2 mm	PNP	N.O.★	12-24 Vdc	200 mA	5000 Hz	XS512B1PAM12
	2 mm	NPN	N.O.★	12-24 Vdc	200 mA	5000 Hz	XS512B1NAM12
	18 mm Diameter, 2 n	n (6.6') cable	•				
or	5 mm	2 wire	N.O.★	12-48 Vdc	1.5-100 mA	3000 Hz	XS518B1DAL2
h	5 mm	PNP	N.O.★	12-24 Vdc	200 mA	2000 Hz	XS518B1PAL2
	5 mm	NPN	N.O.★	12-24 Vdc	200 mA	2000 Hz	XS518B1NAL2
1.6 (40	) 18 mm Diameter, M1	2 connector					
1.6 (40	) 5 mm	2 wire	N.O.★	12-48 Vdc	1.5-100 mA	3000 Hz	XS518B1DAM12
6) 1.7 (44	) 5 mm	PNP	N.O.★	12-24 Vdc	200 mA	2000 Hz	XS518B1PAM12
1.6 (41	5 mm	NPN	N.O.★	12-24 Vdc	200 mA	2000 Hz	XS518B1NAM12
/	30 mm Diameter, 2 n	n (6.6') cable	<b>A</b>	•	•	•	•
	10 mm	2 wire	N.O.★	12-48 Vdc	1.5-100 mA	2000 Hz	XS530B1DAL2
	10 mm	PNP	N.O.★	12-24 Vdc	200 mA	1000 Hz	XS530B1PAL2
	10 mm	NPN	N.O.★	12-24 Vdc	200 mA	1000 Hz	XS530B1NAL2
	30 mm Diameter, M1	2 connector	•	-	•	· ·	·
	10 mm	2 wire	N.O.★	12-48 Vdc	1.5-100 mA	2000 Hz	XS530B1DAM12
	10 mm	PNP	N.O.★	12-24 Vdc	200 mA	1000 Hz	XS530B1PAM12
or	10 mm	NPN	N.O.★	12-24 Vdc	200 mA	1000 Hz	XS530B1NAM12

5m cable length available with L5 suffix / 10m cable length available with L10 suffix.

# Minimum Mounting Clearances (mm)

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	Side by Side	Face to Face	Facing a Metal Object
Ø 8	e ≥ 0.11 (3)	e ≥ 0.7 (18)	e ≥ 0.17 (4.5)
Ø 12	e ≥ 0.15 (4)	e ≥ 0.9 (24)	e ≥ 0.2 (6)
Ø 18	e ≥ 0.4 (10)	e ≥ 2.4 (60)	e ≥ 0.6 (15)
Ø 30	e ≥ 0.8 (20)	e ≥ 4.7 (120)	e ≥ 1.2 (30)







# **Proximity Sensors XS5 Inductive Sensor** Metal Tubular, DC

#### Specifications

Accessories Description

8mm tubular mounting bracket

12mm tubular mounting bracket 18mm tubular mounting bracket

30mm tubular mounting bracket

#### Wiring



Connector M12 Cable Blue

2 Wire Non Polarized



Brown

BU – BN +

#### 3 Wire



Mechanical				
	08mm	0 – 1.2 mm		
	12mm	0 – 1.6 mm		
Usable Sensing Range	18mm	0 – 4 mm		
	30mm	0 – 8 mm		
Tomporeture Dongo	Storage	-40 ° to +185 ° F (-40 ° to +85 ° C	)	
Temperature Range	Operation	-13 ° to +158 ° F (-25 ° to +70 ° C	)	
Enclosure Dating	NEMA Type	3,4X,6P,12,13		
Enclosure Rating	IEC Type	IP68 cable version (except 8mm a	and connector version: IP67)	
Epologuro Motorial	Case	Nickel Plated Brass		
	Face	PBT		
	08mm	5 N•m (3.7 lb-ft)		
Max Tightoning Targua	12mm	6 N•m (4.4 lb-ft)		
Max. Fightering Torque	18mm	15 N•m (11 lb-ft)		
	30mm	40 N•m (29.5 lb-ft)		
Vibration		25 g, amplitude +/- 2 mm (f=10-50	) Hz)	
Shock Resistance		50 g duration 11 ms		
Differential (%of Sr)		15%		
Repeatability (% of Sr)		3%		
LED Indicator		Output status		
Cable		PVR 2x0.5 mm <sup>2</sup>	PVR 3x0.34 mm <sup>2</sup>	
Connector		M12 4pin	M8 3 pin / M12 4pin	
Electrical		2 wire	3 wire	
Voltage Range		12 – 48 Vdc	12 – 24 Vdc	
Voltage Limit (including ripple)		10 – 58 Vdc	10 – 36 Vdc	
Voltage Drop		4V	2V	
Maximum Load Current		1.5100 mA	200 mA	
(max.) Leakage (Residual) Curren	nt-open state	0.5mA	-	
Current consumption		-	10 mA	
Power up Delay (max.)		5 ms	5 ms	
	08mm	0.2 ms	0.1 ms	
On Dolay (max)	12mm	0.2 ms	0.1 ms	
On Delay (max.)	18mm	0.2 ms	0.15 ms	
	30mm	0.3 ms	0.2 ms	
	08mm	0.2 ms	0.1 ms	
Off Doloy (max)	12mm	0.2 ms	0.1 ms	
On Delay (max.)	18mm	0.2 ms	0.35 ms	
	30mm	0.3 ms	0.7 ms	
	Short Circuit Protection	Yes	Yes	
Protective Circuitry	Overload Protection	Yes	Yes	
	Radio Frequency Immunity (RFI)	IEC 61000-4-3 Level 3	IEC 61000-4-3 Level 3	
	Reverse Polarity Protection	Yes	Yes	
Agency Listings		() CSA	E	



XSZB1.

#### **Connector Cables**

(M8 or S suffix; M12 or D suffix)			
XSZCS101	Nano Conn., 3 pin, 2 m, straight		
XSZCS111	Nano Conn., 3 pin, 2 m, 90°		
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight		
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°		

For additional cable options and lengths see p. 518

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Catalog Numbers

XSZB108 XSZB112

XSZB118

XSZB130

# **OSICONCEPT™** Proximity Sensors **XS9 Application Specific Inductive Sensor** Flat Rectangular Analog Output, DC

XS9E111000L2



Operating



Features:

Nominal Sensing

- · DC output current is directly proportional to the target distance
- Four sizes: F (8x15x32); E (13x26x26); C (15x40x40); and D (26x80x80) ٠
- Cable and connector versions •

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	Y	J

XS9F111000L2

XS9D111000L2

#### Dimensions

Proximity Sensors



Nominal Sensing Distance	Circuit Type	Voltage Range	Output	Operating Frequency	Catalog Number
Size F (8x15x32) 2	m(6.6') cable 🔺		•		•
5 mm	3 wire	12-24 Vdc	1-10 V	2000 Hz	XS9F111A1L2
5 mm	3 wire	12-24 Vdc	4-20 mA	2000 Hz	XS9F111A2L2
Size F (8x15x32) N	18 connector pigtai	l 0.1 m			
5 mm	3 wire	12-24 Vdc	1-10 V	2000 Hz	XS9F111A1L01M8
5 mm	3 wire	12-24 Vdc	4-20 mA	2000 Hz	XS9F111A2L01M8
Size E (13x26x26)	2m (6.6') cable 🔺		-		
10 mm	3 wire	12-24 Vdc	1-10 V	1000 Hz	XS9E111A1L2
10 mm	3 wire	12-24 Vdc	4-20 mA	1000 Hz	XS9E111A2L2
Size E (13x26x26)	M12 connector pig	tail 0.1 m	•		•
10 mm	3 wire	12-24 Vdc	1-1 V	1000 z	XS9E111A1L01M12
10 mm	w e	1 -2 V ;	4-2 r A		XS9E111A2L01M12
Size C (15x40) '0)	r (f6 cble▲				
15 mm	3 wire	12-24 Vdc	1-10 V	1000 Hz	XS9C111A1L2
15 mm	3i	24 Vr	4-20 nA	1( /0 Hz	XS9C111A2L2
Size C (15 40 2 3)	i1 ( )n/ ector µ 3	al ). n			
15 mm	3 wire	12-24 Vdc	1-10 V	1000 H.	XS9C111A1L01M12
15 mm	3 wire	12 24 V 1c	4 💭 nA	i Or Hz	XS9C111A2L01M12
Size D (26x80: 30	2 ) ). <u>6')</u> c 🕹 🧎				
40 mm	3 wire	12-24 Vdc	1-10 V	1 <sub>00</sub> Hz	XS9D111A1L2
40 mm	3 wire	12-24 Vdc	4-20 mA	100 Hz	XS9D111A2L2
Size D (26x80x80)	M12 connector				
40 mm	3 wire	12-24 Vdc	1-10 V	100 Hz	XS9D111A1M12
40 mm	2 wire	10.04 V do	4-20 mA	100 H-	YS0D111A2M12

#### Minimum Mounting Clearances " (mm)

XS9F

XS9E

XS9C

XS9D





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Side by Side	Face to	o Face	Face to Metal Object
e ≥ 0.08 (2)	e ≥ 0.47	(12)	e≥0.12 (3)
e≥0.16 (4)	e ≥ 0.9 (	24)	e ≥ 0.23 (6)
e ≥ 0.40 (10)	e ≥ 2.3 (	60)	e≥0.6 (15)
e≥0.8 (20)	e ≥ 4.7 (	120)	e≥1.2 (30)



inches (mm)



# **OSICONCEPT<sup>™</sup>** Proximity Sensors **XS9 Application Specific Inductive Sensor** Flat Rectangular Analog Output, DC

#### Wiring

2 Wire (4 - 20 mA)

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BN/1

-0+ BK/4 Output Current U=R.Is BU/3 R - -

Lleeble Consine Dense	X39L	1101000		
Usable Sensing Range	XS9C	215 mm		
	XS9D	540 mm		
Tomporatura Banga	Storage	-40 ° to +185 ° F (-40 ° to +85 ° C)		
Temperature hange	Operation	-13 ° to +158 ° F (-25 ° to +70 ° C)		
Enclosure Dating	NEMA Type	1, 4X (indoor only) 12		
Enclosure Rating	IEC Type	IP68 cable version / IP67 connector version		
Vibration	L.	25 g, amplitude +/-2 mm (f=10 to 55 Hz)		
Shock		50 g, duration 11 ms		
Enclosure material		PBT		
Cable		PVR 3x0.34 mm <sup>2</sup>		
Connector		M8 Nano conn. 3 pin / M12 Micro conn. 4 pin		
Electrical		2 wire DC		
Voltage Range		12 – 24 Vdc		
Voltage Limit (including ripple	e)	10 – 36 Vdc		
Max. output current drift with	the rated operating temperature	<10%		
Linearity error		+/- 5%		
Desta di sa Oissa itas	Short Circuit Protection	Yes		
Protective Circuitry	Overload Protection	Yes		
Agency Listings		Se CE		

1...5 mm

1 10 mm

#### **Output Curves**

Specifications

Mechanical



XS9F

YSOE

Distance in mm.

12 V         0 10 mA         R $\leq$ 560 Ω         0 - 10 V         Indeterminate           24 V         0 10 mA         R $\leq$ 1500 Ω         0 - 10 V         R = 1000 Ω		Output Current	Resistance	Output Voltage	Resistance
24 V 0 10 mA R ≤ 1500 Ω 0 - 10 V R = 1000 Ω	12 V	0 10 mA	$R \le 560 \ \Omega$	0 - 10 V	Indeterminate
	24 V	0 10 mA	$R \le 1500 \ \Omega$	0 - 10 V	R = 1000 Ω

Note: Ensure a minimum of 5	v between the (+) positive and the sensor output (terminal 3).	

4 to 20 mA XS9F11	XS9E	XS9C	XS9D
Sn = 1 5 mm	Sn = 1 10 mm	Sn = 2 15 mm	Sn = 5 40 mm
$\begin{array}{c} 22\\ 20\\ 10\\ 10\\ 10\\ 0\\ 0\\ 0\\ 2.5\\ 5\\ 6\\ 6\\ 0\\ 0\\ 2.5\\ 5\\ 6\\ 6\end{array}$	$\begin{array}{c} 22\\ 20\\ 10\\ 10\\ 10\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0\\ 0$	22 20 18 14 14 10 0 0 7.5 15 18.5	$\begin{array}{c} 22\\ 20\\ 14\\ 16\\ 16\\ 16\\ 16\\ 16\\ 16\\ 16\\ 16\\ 16\\ 16$

Distance in mm.

		Output Current	Resistance
	12 V	4 20 mA	$R \leq 82 \ \Omega$
fix)	24 V	4 20 mA	$R \leq$ 560 $\Omega$
11,X)	Note: Ensure a minimum (	of 10 V between the $(+)$ nosi	tive and the sensor output (terminal 3)

Connector Cables (M8 or S suffix; M12 or D suffix)					
XSZCS101	Nano Conn., 3 pin, 2 m, straight				
XSZCS111	Nano Conn., 3 pin, 2 m, 90°				
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight				
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°				

For additional cable options and lengths see p. 518

10/02

# OSICONCEPT<sup>™</sup> Proximity Sensors XS9 Application Specific Inductive Sensor Flat Rectangular Motion Detection, DC and AC/DC

# Features:

- Universal AC/DC versions
- · Linear speed threshold adjustment
- Built-in fixed start up delay to overcome start up inertia
- · Reverse polarity protection on DC models
- Ease of mounting (flat body style)

#### **Principle and Applications**

Inductive proximity sensors for monitoring rotation or rolling speed operate by comparing a speed threshold that has been preset by the operator with an instantaneous measurement of the speed of the moving part to be monitored or protected.

These devices provide a simple and economical solution for monitoring drift, belt breakage, couplings, overloads, etc.

■ They are commonly used for applications such as crushers and grinders, mixers and blenders, pumps, centrifuges and centrifugal separators, conveyor belts, bucket elevators, archimedean screws, etc.

#### Installation and Setup

Installing and Positioning the Sensor

■ The sensor must be properly positioned at the outset to ensure that all of the target points on the moving part to be monitored can be detected. The XS9 sensor facilitates this task with its ability to operate as a standard inductive sensor (Telemecanique patent pending).

Thanks to this system, positioning is 100% reliable and can be checked at any time without changing the product parameters.

Self-teaching Speed Setup

- The normal or reference speed for the moving part (1) to be monitored can be set by simply pressing the self-teaching button (2). It is then confirmed with the display LED.
- In case of uncertainty, the product can be restarted at any time in order to return to the factory setting.
- 1. In order to ensure that the moving part can attain its normal speed (inertia), the product output remains closed for nine seconds.
- By default, the sensor's underspeed trip speed is equivalent to the preset speed 30%. Example: if the preset speed is 1000 rotations/min., underspeed tripping will occur when the speed of the moving part falls below 1000 - 1000 x 0.3 = 700 rotations/min. Thresholds of -20%, -11% and -6% can be obtained by pressing the self-teaching button.

Nominal Sensing Distance	Circuit Type	Threshold Range (Pulse/Min.)	Voltage Range	Load Current Maximum	Maximum Frequency (Pulse/Min.)	Start-up Delay	Catalog Number
Size E (13x2)	6x26 mm)	M12 pigtail, 0.1	m				
10 mm	PNP	6-6000	12-24 Vdc	100 mA	48000	9 sec.	XS9E11RPB1L01M12
Size E (13x2)	6x26 mm)	U20 pigtail, 0.1	m				
10 mm	2 wire	6-6000	24-240 Vac/ 24-210 Vdc	5100 mA	48000	9 sec.	XS9E11RMB3L01U20
Size C (15x4	0x40 mm)	M12 pigtail, 0.1	m				
15 mm	PNP	6-6000	12-24 Vdc	200 mA	48000	9 sec.	XS9C11RPB1L01M12
Size C (15x40x40 mm) U20 pigtail, 0.1 m							
15 mm	2 wire	6-6000	24-240 Vac/ 24-210 Vdc	5200 mA AC 5300 mA DC	48000	9 sec.	XS9C11RMB3L01U20









Telemecanique

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# OSICONCEPT<sup>™</sup> Proximity Sensors XS9 Application Specific Inductive Sensor Flat Rectangular Motion Detection, DC and AC/DC

#### Wiring



Blue BU – Brown BN + 3 Black BK Output

 $\sim$ 

Cable





XSZBPM12

#### Dimensions

#### XS9 E/C



Mechanical				
Llashla Canaing Danga	XS9E	0 – 8 mm		
Usable Sensing Range	XS9C	0 – 12 mm		
Temperature Dance	Storage	-40 ° to +185 ° F (-40 ° to +85	° C)	
Temperature nange	Operation	-13 ° to +158 ° F (-25 ° to +70	° C)	
Englacura Bating	NEMA Type	1, 4X,12		
Enclosure halling	IEC Type	IP67		
Vibration		25 g, amplitude +/-2 mm (f=10	0 to 55 Hz)	
Shock Resistance		50 g, duration 11 ms		
LED Indicator	Output	Yellow		
LED Indicator	Power	Green		
Enclosure material		PBT		
Connector		DC: M12 4 pin; AC/DC: U20 3 pin		
Electrical		2 wire AC/DC	3 wire DC	
Voltage Range		24 - 240 Vac/24-210 Vdc	12-24 Vdc	
Voltage Limit (including ripple	)	20 – 264 Vac/dc	10 – 36 Vdc	
Voltage Drop		5.5 V	2 V	
(max.) Leakage (Residual) C	urrent-open state	1.5 mA	-	
Current consumption		-	10 mA	
	XS9E	100 mA	5100 mA	
Load Current Maximum	XS9C	200 mA	5200 mA; DC 5300 mA; AC	
Max. Frequency (Pulse/Min.)		48000		
Ctart up dalau (mau)	XS9E	9 seconds + 1/Fr ★		
Start up delay (max.)	XS9C	9 seconds + 1/Fr ★		
Drotostian Circuitar	Overload Protection	-	Yes	
Protection Circuitry	Short Circuit Protection	-	Yes	
Agency Listings	ency Listings		CE	

\* 1/Fr in the start up delay formula is the actual preset frequency adjusted via potentiometer

#### Accessories

XS9E

XS9C

Specifications

Description	Catalog Number
Teach connector mounting bracket	XSZBPM12

#### Minimum Mounting Clearances (mm)



	А	в	с	D		
Е	0.55	1.0	0.5	0.3	0.8	0.1
	(14)	(26)	(13)	(8.8)	(20)	(3.5)
с	0.55	1.6	0.6	0.4	1.3	0.1
	(14)	(40)	(15)	(9.8)	(33)	(4.5)

inches (mm)

Connector Cables

(M12 or D suffix; U20 or K suffix)					
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight				
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°				
XSZCK101Y	Micro Conn., 3 pin, 2 m, straight				
XSZCK111Y	Micro Conn., 3 pin, 2 m, 90°				

For additional cable options and lengths see p. 518

# Proximity Sensors XS Tubular, Inductive Sensors 4 mm Diameter, DC



Features

- Rugged case designed for the industrial environment
- · Mounting space savings due to short length
- Significant replacement time savings by using the patented plastic mounting bracket (no gauging) or connectors
- Trouble-free operation ensured by extensive protective circuitry
- Works with 24 V secondary transformers
- Normally closed (N.C.) output available on versions marked \*
- UL Listed, CSA Certified and CE Mark

Nominal Sensing Distance	Circuit Type	Voltage Range	Output Mode	Operating Frequency	Mating Connector Style (See p. 518)	Catalog Number
Nickel plated	brass c	ase				
Shielded, 2 m (6.6	') cable					
1 mm	PNP	5-24 V	N.O.★	5000 Hz	-	XS1L04PA310
1 mm	NPN	5-24 V	N.O.★	5000 Hz	-	XS1L04NA310
Shielded, connect	tor - nano	style				
1 mm	PNP	5-24 V	N.O.★	5000 Hz	1 thru 8	XS1L04PA310S
1 mm	NPN	5-24 V	N.O.★	5000 Hz	1 thru 8	XS1L04NA310S
Stainless stee	el case					
Shielded, 2 m (6.6	') cable					
0.8 mm	PNP	5-24 V	N.O.	5000 Hz	-	XS1L04PA311
0.8 mm	NPN	5-24 V	N.O.	5000 Hz	-	XS1L04NA311
Shielded, connect	tor - nano	style				
0.8 mm	PNP	5-24 V	N.O.	5000 Hz	1 thru 8	XS1L04PA311S
0.8 mm	NPN	5-24 V	N.O.	5000 Hz	1 thru 8	XS1L04NA311S

★ To order a normally closed (N.C.) version, change the A to B, example: XS1L04PA310 to XS1L04PB310.

#### Minimum Mounting Clearances (mm/inches)



XS1L•S

LED

41



# Proximity Sensors XS Tubular, Inductive Sensors 4 mm Diameter, DC

#### Wiring

Connector	M8
1 . 3	

Blue	BU –
Brown	BN +
Black	BK Output

Cable

3 wire NO or NC wire color/connector pin





Mechanical			
	Shielded Brass case	0 to 0.8 mm	
Usable sensing range	Stainless Steel Case	0 to 0.64 mm	
Standard temperature range	·	-25° C to +70° C (-13° F to +158° F)	
Enclosure rating - cable	NEMA Type	3, 4X, 6P, 12, 13	
(for connector, see p. 518)	CENELEC Type	IP67	
	Brass case	Nickel plated Brass	
Enclosure material	Stainless steel case	Stainless steel	
	Sensing face	PBT	
Vibration resistance	(IEC 60068.2.6)	25 G, amplitude +/- 2mm, f =10-55Hz	
Shock resistance	(IEC 60068.2.27)	50 G duration 11ms	
Standard target size (steel)		4 mm x 4 mm	
Differential (% of Sr)		15%	
Repeatability (% of Sr)		3%	
LED indicator type		Side mounted LED: Shows output status	
Cable	3 wire	27 AWG (0.11mm <sup>2</sup> ), PvR	
Electrical			
Voltage range - nominal	5 to 24 Vdc		
Voltage limit (including ripple)		5 to 30 Vdc	
Voltage drop (across switch), closed state		2 V	
Maximum load current		100 mA	
Current consumption (no load)		10 mA	
On delay (max.)		0.1 ms	
Off delay (max.)		0.1 ms	
Power-up delay (max.)		5 ms	
	Short circuit protection	Yes	
	Overload	Yes	
Protective circuitry	Radio frequency immunity (RFI)	IEC 61000-4-3 L3	
	Electrostatic; transients; impulse	IEC 6100-4-2 L2; IEC 61000-4-4 L3; 60947.5.2 L3	
	Reverse polarity protection	Yes	
Agency Listings	CR 44087 Class 3211 03	(€	

#### Options

Specifications

Description	Suffix	
Extended temperature range (cable type only)	Down to -40° C (-40° F)	TF
Extended cable length	5 meter cable	L1
	10 meter cable	L2

#### Accessories

Description	Catalog Number
Mounting bracket, plastic	XSZB104
Mounting bracket, diecast zinc	8316 04

Note: Refer to page 351, for target material correction coefficient Km.



0000
8316

Connector Cables (M8 or S suffix)

XSZCS101 Nano Conn., 3 pin, 2 m, straight

 XSZCS111
 Nano Conn., 3 pin, 2 m, 90°

 For additional cable options and lengths see p. 518

**Proximity Sensors** 

# **Proximity Sensors XS Tubular, Inductive Sensors** 5 mm Diameter, DC; Economy Short Length

### Telemecanique





Dual Dimensions inches

M5x0.5



- · Rugged case designed for the industrial environment
- Mounting space savings due to short length ٠
- Significant replacement time savings by using the patented plastic mounting bracket (no gauging) or connectors
- Trouble-free operation ensured by extensive protective circuitry ٠
- Works with 24 V secondary transformers ٠
- Metal mounting nuts included, die cast zinc ٠
- Normally closed (N.C.) output available on versions marked \* •
- UL Listed, CSA Certified and CE Mark •

Nominal Sensing Distance	Circuit Type	Voltage Range	Output Mode	Operating Frequency	Mating Connector Style (See p.518)	Catalog Number
Nickel pla	ated brass o	case				
Shielded, 2	m (6.6') cable					
1 mm	PNP	5-24 V	N.O.★	5000 Hz	·	XS1N05PA310
1 mm	NPN	5-24 V	N.O.★	5000 Hz	_	XS1N05NA310
Stainless	steel case					
Shielded, 2	m (6.6') cable					
0.8 mm	PNP	5-24 V	N.O.	5000 Hz	_	XS1N05PA311
0.8 mm	NPN	5-24 V	N.O.	5000 Hz	_	XS1N05NA311
Shielded, co	onnector - nand	o style			•	•
	DND	5-24 V	N.O.	5000 Hz	1 thru 8	XS1N05PA311S
0.8 mm	PNP	0240				

To order a normally closed (N.C.) version, change the A to B, example: XS1N05PA310 to XS1N05PB310

#### Minimum Mounting Clearances (mm/inches)



220



# Proximity Sensors XS Tubular, Inductive Sensors 5 mm Diameter, DC; Economy Short Length

### Wiring

1 3

#### Connector M8

Cable Blue BU – Brown BN + Black BK Output

# 3 wire NO or NC wire color/connector pin





Mechanical			
llashla asasing manag	Shielded Brass case	0 to 0.8 mm	
Usable sensing range	Stainless steel case	0 to 0.64 mm	
Standard temperature range		-25° C to +70° C (-13° F to +158° F)	
Enclosure rating - cable	NEMA Туре	3, 4X, 6P, 12, 13	
(for connector, see p. 518)	ІЕС Туре	IP67	
	Brass case	Nickel plated Brass	
Enclosure material	Stainless steel case	Stainless steel	
	Sensing face	PBT	
	Brass	1.6 N•m (1.2 lb-ft)	
Max. tightening torque	Stainless steel	2.2 N•m (1.75 lb-ft)	
Vibration resistance	(IEC 60068.2.6)	25 G, amplitude +/- 2 mm, f =10-55 Hz	
Shock resistance	(IEC 60068.2.27)	50 G duration 11ms	
Standard target size (steel)		4 mm x 4 mm	
Differential (% of Sr)		15%	
Repeatability (% of Sr)	3%		
LED indicator type	Side mounted LED: Shows output status		
Cable	3 wire	27 AWG (0.11 mm <sup>2</sup> ), PvR	
Electrical		· ·	
Voltage range – nominal	5 to 24 Vdc		
Voltage limit (including ripple)		5 to 30 Vdc	
Voltage drop (across switch), closed state		2 V	
Maximum load current		100 mA	
Current consumption (no load)		10 mA	
On delay (max.)		0.1 ms	
Off delay (max.)		0.1 ms	
Power-up delay (max.)		5 ms	
	Short circuit protection	Yes	
	Overload	Yes	
Protective Circuitry	Radio frequency immunity (RFI)	IEC 61000-4-3 L3	
	Electrostatic; transients; impulse	IEC 61000-4-2 L2; IEC 61000-4-4 L3; 60947.5.2 L3	
	Reverse polarity protection	Yes	
Agency Listings	Reverse polarity protection CR 44087 Class 3211 03		

#### Options

Specifications

Description		Suffix
Extended temperature range (cable type only)	Down to -40° C (-40° F)	TF
Extended eable length	5 meter cable	L1
Extended cable length	10 meter cable	L2

#### Accessories

Description	Catalog Number
Metal, die cast zinc mounting nuts and lock washer	XSZE105
Mounting bracket, plastic	XSZB105
Mounting bracket, diecast zinc	831605
Stainless steel mounting nuts and lock washer	XSZE305

Note: Refer to page 351, for target material correction coefficient Km.

# XSZB100 831600

Connector	Cables	(M8	or S	suff	b
XSZCS101	Nano Co	onn	3 nin	2 m	s

XSZCS101 Nano Conn., 3 pin, 2 m, straight

 XSZCS111
 Nano Conn., 3 pin, 2 m, 90°

 For additional cable options and lengths see p. 518

Accessories..... page 298

# Proximity Sensors XS Tubular, Inductive Sensors 6.5 mm Diameter, DC; Economy, Short Length, Smooth Barrel





Proximity Sensors

#### Features

- Faster troubleshooting aided by high visibility 360° indicators
- · Economy of size offered by extended range model
- Reduction of relay or software logic using complementary N.O. + N.C. outputs
- Significant replacement time savings by using the patented plastic mounting bracket (no gauging) or connectors
- Trouble-free operation ensured by extensive protective circuitry
- Works with unregulated DC supply powered by 24 V secondary transformer
- Metal mounting nuts included
- Zinc diecast
- Normally closed (N.C.) output available on versions marked \*
- UL Listed, CSA Certified and CE Mark

Nominal Sensing Distance	Circuit Type	Voltage Range	Output Mode	Operating Frequency	Indicator LED (see next page)	Mating Connector (see p. 518)	Catalog Number
Stainless	steel case	9					
Shielded, 2	m (6.6') cable	•					
1.5 mm	PNP	12-24 V	N.O. ★	5000 Hz	A	<u> -</u>	XS1L06PA340
1.5 mm	NPN	12-24 V	N.O. ★	5000 Hz	A	—	XS1L06NA340
1.5 mm	PNP	12-24 V	N.O.+N.C.	5000 Hz	A	<b>—</b>	XS1L06PC410
1.5 mm	NPN	12-24 V	N.O.+N.C.	5000 Hz	A	—	XS1L06NC410
Shielded, co	onnector - na	no style		•			
1.5 mm	PNP	12-24 V	N.O. ★	5000 Hz	В	1 thru 8	XS1L06PA340S
1.5 mm	NPN	12-24 V	N.O. ★	5000 Hz	В	1 thru 8	XS1L06NA340S
Shielded, co	onnector - mi	cro style			•	•	•
1.5 mm	PNP	12-24 V	N.O.	5000 Hz	В	11,12,13,15,16	XS1L06PA340D
1.5 mm	NPN	12-24 V	N.O.	5000 Hz	В	11,12,14,15,16	XS1L06NA340D
Nickel pla	ated brass	case					•
Shielded♦,	EXTENDED F	ANGE 2	m (6.6') cab	le			
2.5 mm	PNP	12-24 V	N.O. ★	2500 Hz	A	-	XS1L06PA349
2.5 mm	NPN	12-24 V	N.O. ★	2500 Hz	A	<b>—</b>	XS1L06NA349
Shielded♦,	EXTENDED F	RANGE c	onnector -	nano style	•	•	
2.5 mm	PNP	12-24 V	N.O.	2500 Hz	В	1 thru 8	XS1L06PA349S
2.5 mm	NPN	12-24 V	N.O.	2500 Hz	В	1 thru 8	XS1L06NA349S
Shielded♦,	EXTENDED F	ANGE c	onnector -	micro style	•		
2.5 mm	PNP	12-24 V	N.O.	2500 Hz	В	11,12,13,15,16	XS1L06PA349D
2.5 mm	NPN	12-24 V	N.O.	2500 Hz	В	11,12,14,15,16	XS1L06NA349D
Stainless	steel case	e		•		•	
Non-shielde	ed, 2 m (6.6') o	cable					
2.5 mm	PNP	12-24 V	N.O.	5000 Hz	А	-	XS2L06PA340
2.5 mm	NPN	12-24 V	N.O.	5000 Hz	A	—	XS2L06NA340
Non-shielde	d, connector	- nano sty	le				
2.5 mm	PNP	12-24 V	N.O.	5000 Hz	В	1 thru 8	XS2L06PA340S
	NDN	12-24 V	N.O.	5000 Hz	В	1 thru 8	XS2L06NA340S
2.5 mm	INFIN						
2.5 mm Non-shielde	ed, connector	- micro stv	/le DC				
2.5 mm Non-shielde 2.5 mm	ed, connector	- micro sty	/le DC N.O.	5000 Hz	В	11,12,13,15,16	XS2L06PA340D
2.5 mm Non-shielde 2.5 mm 2.5 mm	PNP NPN	- micro sty 12-24 V 12-24 V	/le DC N.O. N.O.	5000 Hz 5000 Hz	B	11,12,13,15,16 11,12,14,15,16	XS2L06PA340D XS2L06NA340D
2.5 mm <b>Non-shielde</b> 2.5 mm 2.5 mm 2.5 mm	PNP PNP PNP PNP	- micro sty 12-24 V 12-24 V 12-24 V	/le DC N.O. N.O. N.O.+N.C.	5000 Hz 5000 Hz 5000 Hz	B B B	11,12,13,15,16 11,12,14,15,16 11,12,13,15,16	XS2L06PA340D XS2L06NA340D XS2L06PC410D

See dimension x below.

#### Minimum Mounting Clearances (mm/inches)



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# Proximity Sensors XS Tubular, Inductive Sensors 6.5 mm Diameter, DC; Economy, Short Length, Smooth Barrel

#### Specifications

#### Wiring



# 3 wire NO or NC wire color/ connector pin





M8 connector, N.O. and N.C. to to pin 4.

4 wire NO + NC







Mechanical					
	Chielded	Standard Range	0 to 1.2 mm		
Usable sensing range	Shielded	Extended Range	0 to 2 mm		
	Non-shielded		0 to 2 mm		
Chandard temperature range		Standard Range	-25° C to +70° C (-13° F to +158° F)		
Standard temperature range		Extended Range	-25° C to 50° C (13° F to 122° F)		
Enclosure rating - cable	NEMA Type		3, 4X, 6P, 12, 13		
(for connector see p. 518)	IEC Type		IP67		
	Case		Nickel plated Brass		
Enclosure material	Sensing face		PBT		
Vibration resistance	(IEC 60068.2.6)		25 G, amplitude +/- 2 mm, f =10-55Hz		
Shock resistance	(IEC 60068.2.27)		50 G duration 11 ms		
Standard target size (steel)			6.5 mm x 6.5 mm		
Differential (% of Sr)			15%		
Repeatability (% of Sr)			3%		
	A		360° ring LED: Shows output status		
LED Indicator type	В		One LED visible from 4 quadrants: Shows output status		
3 wire			27 AWG (0.11mm <sup>2</sup> ), PvR		
4 wire (N.O. + N.C.)			28 AWG (0.08mm <sup>2</sup> ), PvR		
Electrical					
Voltage range – nominal			12 to 24 Vdc		
Voltage limit (including ripple)			10 to 38 Vdc		
Voltage drop (across switch), closed state		2V (2.6V extended range)			
Maximum load current			200 mA		
Current consumption (no load)			10 mA		
		Standard Range	0.1 ms		
On delay (max.)		Extended Range	.2 ms		
Off dolou (mov.)		Standard Range	0.1 ms		
Off delay (max.)		Extended Range	.2 ms		
Power-up delay (max.)			5 ms		
	Short circuit protecti	on	Yes		
	Overload		Yes		
Protective circuitry	Radio frequency immunity (RFI)		IEC 61000-4-3 L3		
	Electrostatic; transients; impulse		IEC 61000-4-2 L2; IEC 61000-4-4 L3; 60947.5.2 L3		
	Reverse polarity pro-	tection	Yes		
Agency Listings	E164869 CCN NRKH	CR 44087 Class 3211 03	(€		

# Options

Description	Suffix	
Extended temperature range (cable type and standard sensing distance only)	Down to -40° C (-40° F)	TF
Future and a ship longth	16.4 ft. (5 meter) cable	L1
Extended cable length	32.8 ft. (10 meter) cable	L2

#### Accessories

Description	Catalog Number
Mounting bracket, plastic	XSZB165
Mounting bracket, diecast zinc	831606

Note: Refer to p. 351, for target material correction coefficient Km.

Connector C	ables
-------------	-------

(M8 or S suffix; M12 or D suffix)			
XSZCS101	Nano Conn., 3 pin, 2 m, straight		
XSZCS111	Nano Conn., 3 pin, 2 m, 90°		
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight		
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°		

For additional cable options and lengths see p. 518 Accessories...... page 298

10/02

# Proximity Sensors XS Tubular, Inductive Sensors 8 mm Diameter, DC; Economy Short Length

thread

M8x1

#### Features

- Faster troubleshooting aided by high visibility 360° indicators
- · Economy of size offered by extended range model
- Significant replacement time savings by using the patented plastic mounting bracket (no gauging) or connectors
- Trouble-free operation ensured by extensive protective circuitry
- Works with unregulated DC supply powered by 24 V secondary transformer
- · Metal mounting lock nuts included
- Normally closed (N.C.) output available on versions marked \*
- UL Listed, CSA Certified and CE Mark

Nickel plated brass case           Shielded, 2 m (6.6') cable           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         A         —         XS1N08PA340           1.5 mm         NPN         12-24 V         N.O.★         5000 Hz         A         —         XS1N08PA340           Shielded, connector - nano style         1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         11,12,13,15,16         XS1N08PA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         A         —         XS1N08PA340           1.5 mm         NPN         12-24 V         N.O.★         2000 Hz         A         —         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A         —         XS						
Shielded, 2 m (6.6') cable           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         A          XS1N08PA340           1.5 mm         NPN         12-24 V         N.O.★         5000 Hz         A          XS1N08PA340           Shielded, connector - nano style         1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           1.5 mm         NPN         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08NA340           Shielded, connector - micro style         1         1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         11,12,13,15,16         XS1N08NA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         11,12,14,15,16         XS1N08NA340           Shielded, ◆ EXTENDED RANGE         2 m (6.6') cable         2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A          XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★ <th></th>						
1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         A          XS1N08PA340           1.5 mm         NPN         12-24 V         N.O.★         5000 Hz         A          XS1N08PA340           Shielded, connector - nano style         1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           1.5 mm         NPN         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           1.5 mm         NPN         12-24 V         N.O.★         5000 Hz         B         11,12,13,15,16         XS1N08PA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         11,12,13,15,16         XS1N08PA340           1.5 mm         NPN         12-24 V         N.O.★         5000 Hz         A          XS1N08PA340           1.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A          XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★						
1.5 mm         NPN         12-24 V         N.O.★         5000 Hz         A         —         XS1N08NA344           Shielded, connector - nano style         1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           Shielded, connector - micro style         1         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         11,12,13,15,16         XS1N08PA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         11,12,13,15,16         XS1N08PA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         11,12,14,15,16         XS1N08PA349           2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         A         —         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A         —         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★<						
Shielded, connector - nano style           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           1.5 mm         NPN         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           Shielded, connector - micro style         1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         11,12,13,15,16         XS1N08PA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         11,12,13,15,16         XS1N08PA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         11,12,14,15,16         XS1N08PA340           Shielded, ◆ EXTENDED RANGE         2 m (6.6') cable         2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A          XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A          XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B	)					
1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           1.5 mm         NPN         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           Shielded, connector - micro style         1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08PA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         11,12,13,15,16         XS1N08PA340           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         11,12,13,15,16         XS1N08PA340           Shielded, ◆ EXTENDED RANGE         2 m (6.6') cable         2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A          XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A          XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349						
1.5 mm         NPN         12-24 V         N.O.★         5000 Hz         B         1 thru 8         XS1N08NA344           Shielded, connector - micro style         1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         1 1hru 8         XS1N08NA344           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         11,12,13,15,16         XS1N08PA340           1.5 mm         NPN         12-24 V         N.O.★         5000 Hz         B         11,12,14,15,16         XS1N08PA340           Shielded, ◆ EXTENDED RANGE         2 m (6.6') cable         2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         A          XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A          XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349           2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349	s					
Shielded, connector - micro style           1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         11,12,13,15,16         XS1N08PA340           1.5 mm         NPN         12-24 V         N.O.★         5000 Hz         B         11,12,13,15,16         XS1N08PA340           Shielded, ◆ EXTENDED RANGE         2 m (6.6') cable         2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         A          XS1N08PA349           2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         A          XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A          XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A          XS1N08PA349           2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349	S					
1.5 mm         PNP         12-24 V         N.O.★         5000 Hz         B         11,12,13,15,16         XS1N08PA340           1.5 mm         NPN         12-24 V         N.O.★         5000 Hz         B         11,12,13,15,16         XS1N08PA340           Shielded, ◆ EXTENDED RANGE         2 m (6.6') cable         B         11,12,14,15,16         XS1N08PA349           2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         A          XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A          XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A          XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349           2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349           2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         B         11,12,13,15,16						
1.5 mm         NPN         12-24 V         N.O.★         5000 Hz         B         11,12,14,15,16         XS1N08NA344           Shielded, ◆ EXTENDED RANGE         2 m (6.6') cable         2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         A         —         XS1N08PA349           2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         A         —         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A         —         XS1N08PA349           Shielded, ◆ EXTENDED RANGE         connector - nano style	D					
Shielded, ◆ EXTENDED RANGE         2 m (6.6') cable           2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         A         —         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A         —         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A         —         XS1N08PA349           Shielded, ◆ EXTENDED RANGE         connector - nano style	D					
2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         A         —         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A         —         XS1N08PA349           Shielded, ◆ EXTENDED RANGE         connector - nano style						
2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         A         —         XS1N08NA344           Shielded, ◆ EXTENDED RANGE         connector - nano style						
Shielded, ◆ EXTENDED RANGE         connector - nano style           2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08NA349           Shielded, ◆ EXTENDED RANGE         connector - micro style DC         2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         B         11,12,13,15,16         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         11,12,13,15,16         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         11,12,14,15,16         XS1N08NA349           Non-shielded, 2 m (6.6') cable         Kon-shielded, 2 m (6.6') cable         Kon-shielded         K	)					
2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08PA349           Shielded, ◆ EXTENDED RANGE         connector - micro style DC           2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         B         11,12,13,15,16         XS1N08PA349           2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         B         11,12,13,15,16         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         11,12,14,15,16         XS1N08NA349           Non-shielded, 2 m (6.6') cable         Kon-shielded, 2 m (6.6') cable         Kon-shielded, 2 m (5.6') cable						
2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         1 thru 8         XS1N08NA344           Shielded, ◆ EXTENDED RANGE         connector - micro style DC         2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         B         11,12,13,15,16         XS1N08PA349           2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         B         11,12,13,15,16         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         11,12,14,15,16         XS1N08NA349           Non-shielded, 2 m (6.6') cable         X         XS1N08NA349         XS1N08NA349	s					
Shielded, ◆ EXTENDED RANGE         connector - micro style DC           2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         B         11,12,13,15,16         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         11,12,14,15,16         XS1N08NA349           Non-shielded, 2 m (6.6') cable         Kon-shielded, 2 m (6.6') cable         Kon-shielded, 2 m (6.6') cable         Kon-shielded, 2 m (6.6') cable	S					
2.5 mm         PNP         12-24 V         N.O.★         2500 Hz         B         11,12,13,15,16         XS1N08PA349           2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         11,12,14,15,16         XS1N08NA349           Non-shielded, 2 m (6.6') cable						
2.5 mm         NPN         12-24 V         N.O.★         2500 Hz         B         11,12,14,15,16         XS1N08NA349           Non-shielded, 2 m (6.6') cable         X	D					
Non-shielded, 2 m (6.6') cable	D					
2.5 mm PNP 12-24 V N.O.★ 5000 Hz A — XS2N08PA340						
2.5 mm NPN 12-24 V N.O.★ 5000 Hz A — XS2N08NA340	)					
Non-shielded, connector - nano style						
2.5 mm PNP 12-24 V N.O. 5000 Hz B 1 thru 8 XS2N08PA340	s					
2.5 mm NPN 12-24 V N.O. 5000 Hz B 1 thru 8 XS2N08NA340	S					
Non-shielded, connector - micro style						
2.5 mm PNP 12-24 V N.O. 5000 Hz B 11,12,13,15,16 XS2N08PA340	D					
2.5 mm NPN 12-24 V N.O. 5000 Hz B 11,12,14,15,16 XS2N08NA340	D					

To order a normally closed (N.C.) version, change A to B, example; XS1N08PA340 to XS1N08PB340.

See dimension x below.

Dual Dimensions inches

XS2N08•D

#### Minimum Mounting Clearances (mm/inches)



224

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LED

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LED

LED

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XS1N08•D

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XS1N08•349

XS1N08•349D

XS2N08•S

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Telemecanique



# Proximity Sensors XS Tubular, Inductive Sensors 8 mm Diameter, DC; Economy Short Length

#### Wiring



Blue BU – Brown BN + Black BK Output

3 wire NO or NC wire color/ connector pin





M8 connector, N.O. and N.C. to to pin 4.

Mechanical				
	Chielded	Standard Range	0 to 1.2 mm	
Usable sensing range	Shielded	Extended Range	0 to 2 mm	
	Non-shielded		0 to 2 mm	
		Standard Range	-25° C to +70° C (-13° F to +158° F)	
Standard temperature range		Extended Range	-25° C to 50° C (-13° F to 122° F)	
Enclosure rating - cable	NEMA Type		3, 4X, 6P, 12, 13	
(see page 518)	IEC Type		IP67	
Englacy an exterial	Case		Nickel plated Brass	
Enclosure material	Sensing face		PBT	
Max. tightening torque			5 N•m (3.7 lb-ft)	
Vibration resistance	(IEC 60068.2.6)		25 G, amplitude +/- 2 mm, f =10-55Hz	
Shock resistance	(IEC 60068.2.27)		50 G duration 11 ms	
Standard target size (steel)			8 mm x 8 mm	
Differential (% of Sr)			15%	
Repeatability (% of Sr)			3%	
LED indicator type A B			360° ring LED: Shows output status	
			One LED visible from 4 quadrants: Shows output status	
Cable	3 wire		27 AWG (0.11mm <sup>2</sup> ), PvR	
Electrical				
Voltage range – nominal			12 to 24 Vdc	
Voltage limit (including ripple	)		10 to 38 Vdc	
Voltage drop (across switch)	, closed state		2 V (2.6 V extended range)	
Maximum load current			200 mA	
Current consumption (no loa	d)		10 mA	
		Standard Range	0.1 ms	
On delay (max.)		Extended Range	.2 ms	
Off delay (may)		Standard Range	0.1 ms	
Off delay (fildx.)		Extended Range	.2 ms	
Power-up delay (max.)	Standard/Extende	d Range	5 ms	
	Short circuit prote	ction	Yes	
	Overload		Yes	
Protective circuitry	Radio frequency in	mmunity (RFI)	IEC 61000-4-3 L3	
	Electrostatic; trans	sients; impulse	IEC 61000-4-2 L2; IEC 61000-4-4 L3; 60947.5.2 L3 Extended Range: IEC 61000-4-4 L3	
	Reverse polarity p	rotection	Yes	
Agency Listings	E164869 CCN NRK	CR 44087 Class 3211 03	CE	

#### Options

Description		Suffix
Extended temperature range (cable type and standard sensing distance only)	Down to -40° C (-40° F)	TF
Extended coble length	16.4 ft. (5 meter) cable	L1
Extended cable length	32.8 ft. (10 meter) cable	L2

#### Accessories

Description	Catalog Number
Metal mounting lock nuts	XSZE108
Mounting bracket, plastic	XSZB108
Mounting bracket, diecast zinc	8316 08

Note: Refer to p. 351, for target material correction coefficient Km.

#### Connector Cables

XSZB1••

(M8 or S suffix; M12 or D suffix)				
XSZCS101	Nano Conn., 3 pin, 2 m, straight			
XSZCS111	Nano Conn., 3 pin, 2 m, 90°			
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight			
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°			

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8316 ••

For additional cable options and lengths see p. 518 Accessories ...... page 298

10/02

# Proximity Sensors XS Tubular, Inductive Sensors 8 mm Diameter, DC; Economy Short Length, Non-corrosive



XS4P08•





Proximity Sensors

Dual Dimensions inches

#### Features

thread

M8x1

- Faster troubleshooting aided by high visibility 360° indicators
  - Designed for chemically aggressive environments cutting oils, grease, washdown, etc.
  - Significant replacement time savings using patented plastic mounting bracket
     (no gauging) or connectors
  - Trouble-free operation ensured by extensive protective circuitry
  - Works with unregulated DC supply powered by 24 V secondary transformer
  - Plastic mounting nuts included
  - UL Listed, CSA Certified and CE Mark

Nominal Sensing Distance	Circuit Type	Voltage Range	Output Mode	Operating Frequency	Indicator LED (see next page)	Mating Connector Style (See p. 518)	Catalog Number
Plastic							
Non-shielde	d, 2 m (6.6	') cable					
2.5 mm	PNP	12-24 V	N.O. ★	5000 Hz	А	-	XS4P08PA340
2.5 mm	NPN	12-24 V	N.O. ★	5000 Hz	A	-	XS4P08NA340
Non-shielde	d, connect	or - nano	style				
2.5 mm	PNP	12-24 V	N.O.	5000 Hz	А	1 thru 8	XS4P08PA340S
2.5 mm	NPN	12-24 V	N.O.	5000 Hz	А	1 thru 8	XS4P08NA340S
Non-shielded, connector - micro style							
2.5 mm	PNP	12-24 V	N.O.	5000 Hz	В	11,12,13,15,16	XS4P08PA340D
2.5 mm	NPN	12-24 V	N.O.	5000 Hz	В	11,12,13,15,16	XS4P08NA340D

To order a normally closes (N.C.) version, change A to B, example XS3P08PA340 to XS3P08PB340

#### Minimum Mounting Clearances (mm/inches)





# Proximity Sensors XS Tubular, Inductive Sensors 8 mm Diameter, DC; Economy Short Length, Non-corrosive

#### Specifications

#### Wiring



3 wire NO or NC wire color/ connector pin





M8 connector, N.O. and N.C. to to pin 4.

Mechanical			
	Shielded	0 to 1.2 mm	
Usable sensing range	Non-shielded	0 to 2 mm	
Standard temperature range		-25° C to +80° C (-13° F to +176° F)	
Enclosure rating - cable	NEMA Туре	3, 4X, 6P, 12, 13	
(for connector, see page 518)	IEC Type	IP67	
	Case	PBT	
Enclosure material	Sensing face	PBT	
Tightening torque (max.)		1 N•m (.74 lb-ft)	
Vibration resistance	(IEC 60068.2.6)	25 G, amplitude +/- 2 mm, f =10-55Hz	
Shock resistance	(IEC 60068.2.27)	50 G duration 11 ms	
Standard target size (steel)		8 mm x 8 mm	
Differential (% of Sr)		15%	
Repeatability (% of Sr)		3%	
	A	360° ring LED: Shows output status	
LED indicator type	В	One LED visible from 4 quadrants: Shows output status	
Cable	3 wire	27 AWG (0.11mm <sup>2</sup> ), PvR	
Electrical			
Voltage range - nominal		12 to 24 Vdc	
Voltage limit (including ripple)		10 to 38 Vdc	
Voltage drop (across switch), closed state	e	2 V	
Maximum load current		200 mA	
Current consumption (no load)		10 mA	
On delay (max.)		0.1 ms	
Off delay (max.)		0.1 ms	
Power-up delay (max.)		5 ms	
	Short circuit protection	Yes	
	Overload	Yes	
Protective circuitry	Radio frequency immunity (RFI)	IEC 61000-4-3 L3	
	Electrostatic; transients; impulse	IEC 61000-4-2 L3; IEC 61000-4-4 L3; 60947.5.2 L	
	Reverse polarity protection	Yes	
Agency Listings	69 IRKH (Class 3211 03	(6	

#### Options

Description	Suffix	
Extended temperature range (cable type only)	Down to -40° C (-40° F)	TF
Extended cable length	16.4 ft. (5 meter) cable	L1
	32.8 ft. (10 meter) cable	L2



XSZB1 ••

#### Accessories

Description	Catalog Number
Plastic mounting nuts	XSZE208
Mounting bracket, plastic	XSZB108

Note: Refer to page 351, for target material correction coefficient Km.

# Connector Cables (M8 or S suffix; M12 or D suffix) XSZCS101 Nano Conn., 3 pin, 2 m, straight XSZCS111 Nano Conn., 3 pin, 2 m, 90° XSZCD101Y Micro Conn., 4 pin, 2 m, straight

XSZCD111Y Micro Conn., 4 pin, 2 m, 90° For additional cable options and lengths see p. 518

Accessories......page 298, 317

# **Proximity Sensors** XS Tubular, Inductive Sensors 8 mm Diameter, DC; Universal Standard Length



#### Features

- Faster troubleshooting aided by high visibility 360° indicators
- 2-wire versions simplify wiring
- Rugged case designed for very aggressive environments cutting oils, grease, etc.
- Pigtail connectors maintain the cutting oil enclosure rating while removing the connector from the aggressive environment



- Significant replacement time savings using patented plastic mounting bracket (no gauging) or connectors
- Trouble-free operation ensured by extensive protective circuitry
- Works with unfiltered rectified power supply
- Metal mounting lock nuts included
- Normally closed (N.C.) output available on versions marked \*
- UL Listed, CSA Certified and CE Mark

Stainless steel case         Shielded, zm (6.6) cable         Si m       PPN       N.C       12-8       1, 100 m       40, 01 z       A       -       XSIM08DA210         Si M08e+210D/410D       Sime       NPN       N.C       12-48 V       20 mA       5000 Hz       A       -       XSIM08DA210         Si M08e+210D/410D       Sime       NPN       N.O.       12-48 V       20 mA       5000 Hz       A       -       XSIM08DA210D         Si M08e+210D/410D       Sime       NPN       N.O.       12-48 V       20 mA       5000 Hz       A       -       XSIM08DA210D         Si M08e+210D/410D       Sime       PNP       N.O.       12-48 V       20 mA       5000 Hz       A       -       XSIM08DA210D         Si M08e+210D/410D       Sime       PNP       N.O. *       12-48 V       20 mA       5000 Hz       A       11,12,15,16       XSIM08DA210D         Sime       PNP       N.O. *       12-48 V       20 mA       5000 Hz       A       11,11,2,15,16       XSIM08DA210D         Sime       PNP       N.O. *       12-48 V       20 mA       5000 Hz       A       -       XSIM08DA210D         Sim       PNN       N.O. *		Nominal Sensing Distance	Circuit Type	Output Mode★	Voltage Range	Max. Load	Operating Frequency	Indicator LED1	Mating Connector Style (see p. 518)	Catalog Number
Shielded, 2m (6.6') cable         1/2         8'         1/2 <th></th> <th>Stainles</th> <th>ss steel</th> <th>case</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>		Stainles	ss steel	case						
1.5 r n       - re       N.0.*       12.8 r       1.7.100 m       40.0 r       2       7.5 r       5.5 r       5.5 r       5.5 r       5.5 r       5.5 r       5.5 r       7.5 r       5.5 r       5.5 r       7.5 r       5.5 r       7.5 r       5.5 r       7.5 r       5.5 r       7.5 r       7.5 r       5.5 r       7.5 r       7.5 r       5.5 r       7.5 r	61 6	Shielded,	2m (6.6')	cable _		_				
Sin n       N: 5       2: 3       12: 1mA       00: 12       12: 12: 12: 12: 12: 12: 12: 12: 12: 12:		1.5 r n	∠-\ re	NLO.★	12- B	1100 m i	40 0 z	па		7 31M08DA210
ND       NPN       No.       12-48 V       200 mA       5000 Hz       A       -       X\$1M08NA370         S1M08e-210D/410D       ND       1.5 mm       PNP       N.O.       12-48 V       200 mA       5000 Hz       A       -       X\$1M08PA371@         S1M046-20D/410D       1.5 mm       2-wire       N.O. *       12-48 V       200 mA       4000 Hz       B       11.12.15.16       X\$1M08PA370D         1.5 mm       2-wire       N.O. *       12-48 V       1.5 100 mA       4000 Hz       A       1.1.12.15.16       X\$1M08PA370D         1.5 mm       2-wire       N.O. *       12-48 V       1.5.100 mA       4000 Hz       A       1.1.12.15.16       X\$1M08PA370D         1.5 mm       2-wire       N.O. *       12-48 V       200 mA       5000 Hz       1       1.1.12.15.16       X\$1M08PA370D         1.5 mm       N.N. N. V. *       12-48 V       200 mA       5000 Hz       A       -       X\$4P08PA370         1.5 mm       NPN       N.O. *       12-48 V       200 mA       5000 Hz       A       -       X\$4P08PA370         2.5 mm       PNP       N.O. *       12-48 V       200 mA       5000 Hz       A       -       X\$4P08PA370		or n	<u> </u>	N.( 7	2-3	2() mA	100 IZ -	<b>LLCI</b>		.S1M08PA370
1.5 mm       PNP       N.O.       12-48 V       200 mA       5000 Hz       A       -       XS1M08PA3710         Shielded, connector - micro st, D       12-48 V       200 mA       5000 Hz       A       -       XS1M08PA3710         1.5 mm       2-wire       N.O.*       12-48 V       15-100 mA       4000 Hz       B       11,12,15,16       XS1M08PA3710         1.5 mm       2-wire       N.O.*       12-48 V       200 n       5000 Hz       1       1       N       XS1M08PA370         1.5 mm       2-wire       N.O.*       12-48 V       200 n       5000 Hz       1       1       N       XS1M08PA370         1.5 mm       PNP       N.O.*       12-48 V       200 mA       5000 Hz       1       1       N       XS1M08PA370         1.5 mm       PNP       N.O.*       12-48 V       200 mA       5000 Hz       A       -       XS1M08PA370         2.5 mm       PNP       N.O.*       12-48 V       200 mA       5000 Hz       A       -       XS4P08PA370         2.5 mm       PNP       N.O.*       12-48 V       200 mA       5000 Hz       A       -       XS4P08PA370         2.5 mm       PNP       N.O.*       12-	ш от 🅈 🤉 🗌 🥌	<u>ी हर n – </u>	NPN	℩ℼℷ兼╶╌╴	1∠-48 V	200 mA	5000 Hz	A	-	XS1M08NA370
Shilded, connector - micro st, D       Simological connector - micro st, D       Simological connector - micro st, D         1.5 mm       2-wire       N.O. *       12 if v       1.5-100 mA       4000 Hz       A       11,12,15,16       XS1M08DA210LD         1.5 mm       2-wire       N.O. *       12-48 V       200 n       5000 Hz       11,12,15,16       XS1M08DA210LD         1.5 mm       N.D. *       12-48 V       200 n       5000 Hz       11,12,15,16       XS1M08DA210LD         1.5 mm       N.D. *       12-48 V       200 mA       5000 Hz       11,12,15,16       XS1M08DA214LD         PL.Stic       CASE       N.C. *       12-48 V       200 mA       5000 Hz       11,12,15,16       XS1M08DA214LD         2.5 mm       PNP       N.O.*       12-48 V       200 mA       5000 Hz       A       -       XS4P08PC410         2.5 mm       PNP       N.O.+N.C. t       12-24 V       200 mA       5000 Hz       A       -       XS4P08NC410         Nickel plated brass case, complementary N.O.+N.C. outputs       Shielded, 2m (6.6') cable       -       XS1M08PC410       -       XS1M08PC410         1.5 mm       NPN       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS1M08PC410<		1.5 mm	PNP	N.O.	12-48 V	200 mA	5000 Hz	A	-	XS1M08PA3713
S1M08ee210D/410D       1.5 mm       2-wire       N.O.★       12 is 7       1.5-100 mA       4000 Hz       B       11,12,15,16       X51M08DA210D         1.5 mm       2-wire       N.O.★       12-48 V       10.0 mA       4000 Hz       A       11,12,15,16       X51M08DA210D         1.5 mm       PNP       N.O.★       12-48 V       200 n.       5000 Hz       A       11,11       15       XS1M08DA370D         1.5 mm       PNP       N.O.★       12-48 V       200 n.       5000 Hz       A       11,11       15       XS1M08DA370D         1.5 mm       PNP       N.O.★       12-48 V       200 mA       5000 Hz       A       -       XS1M08DA370D         1.5 mm       PNP       N.O.★       12-48 V       200 mA       5000 Hz       A       -       XS4P08PA370         2.5 mm       PNP       N.O.★       12-44 V       200 mA       5000 Hz       A       -       XS4P08PA370         2.5 mm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS4P08PA370         2.5 mm       NPN       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS4P08PC410 <t< th=""><th></th><th>Shielded,</th><th>connecto</th><th>or - micro s*</th><th>D D</th><th></th><th></th><th></th><th></th><th>·</th></t<>		Shielded,	connecto	or - micro s*	D D					·
XS1M08B3270D       15.1 mm       PNP       N.O. *       12.48 V       15.100 mA       4000 Hz       A       11.112,15,16       XS1M08DA210LD         1.5 mm       PNP       N.O. *       12.48 V       200 n       5000 Hz       1       11.1       15       XS1M08DA210LD         I.5 mm       PNP       N.O. *       12.48 V       200 mA       5000 Hz       11.1       15       XS1M08DA214LD         PLED       N.O. *       12.48 V       200 mA       5000 Hz       A       -       XS1M08DA214LD         2.5 mm       PNP       N.O. *       12.48 V       200 mA       5000 Hz       A       -       XS4P08PA370         Z.5 mm       NNO. *       12.48 V       200 mA       5000 Hz       A       -       XS4P08PA370         Z.5 mm       NPN       N.O. *       12.48 V       200 mA       5000 Hz       A       -       XS4P08PA370         Z.5 mm       NPN       N.O. *       12.48 V       200 mA       5000 Hz       A       -       XS4P08PA370         Z.5 mm       NNO. *       12.48 V       200 mA       5000 Hz       A       -       XS4P08PA370         Z.5 mm	S1M08••210D/410D	1.5 mm	2-wire	N.O. ★	12 # V	1.5-100 mA	4000 Hz	В	11,12,15,16	XS1M08DA210D
XSM08BA210LD       I.s mm       PNP       N.O.*       12-48 V       200 n       5000 Hz       1       11 f. 15       XS1M08PA370D         VC       2 w       V00 n       V00 n       V00 Hz       V00 Hz       V1 f. 15       XS1M08PA370D         V00 Hz       V00 Hz       V1 f. 15       XS1M08PA370D       V00 Hz       V1 f. 15       XS1M08PA370D         V00 Hz       V00 Hz       V1 f. 15       XS1M08PA370D       V00 Hz       V1 f. 15       XS1M08PA370D         V00 Hz       V00 Hz       V1 f. 15       XS1M08PA370D       XS1M08PA370D       XS1M08PA370D         V00 Hz       V00 Hz       V1 f. 15       XS1M08PA370D       XS1M08PA370D       XS1M08PA370D         V00 Hz       V00 Hz       A       -       XS4P08PA370       XS4P08PA370         Z.5 mm       PNP       N.O.*       12-48 V       200 mA       5000 Hz       A       -       XS4P08PC410         Z.5 mm       NPN       N.O.*       12-24 V       200 mA       5000 Hz       A       -       XS1M08PC410         Shielded, connector - micro style       V00 HZ       A       -       XS1M08PC410D       XS1M08PC410D         1.5 mm       PNP       N.O.+N.C.       12-24 V		1.5 mm	2-wire	N.O. ★	12-48 V	1.5-100 mA	4000 Hz	A	11,12,15,16	XS1M08DA210LD <sup>2</sup>
XSIM08e320D       No. 7 1       2       V       NO n       No       Hz       11.1       15.m       XSIM08eNA370D         1.5       mm       2.8       N.C       2.8       N.S10       mA       00.4       1.1.1       1.5.mo       XSIM08eNA370D         V       1.5       mm       2.8       N.C       2.8       N.S10       mA       00.4       1.1.1       1.5.mo       XSIM08eNA370D         V       No-shielded, 2m       (6.6') cable       XSIM08eNA370       XSIM08eNA370       XSIM08eNA370         2.5       mm       PNP       N.O.+N.C. *       12.24 V       200 mA       5000 Hz       A       -       XS4P08PA370         2.5       mm       NPN       N.O.+N.C. *       12.24 V       200 mA       5000 Hz       A       -       XS4P08PC410         2.5       mm       NPN       N.O.+N.C. *       12.24 V       200 mA       5000 Hz       A       -       XS4P08PC410         2.5       mm       NPN       N.O.+N.C.       12.24 V       200 mA       5000 Hz       A       -       XS1M08PC410         1.5       mm       PNP       N.O.+N.C.       12.24 V       200 mA       5000 Hz       A       -		1.5 mm	PNP	N.O. 🖈	12-48 V	200 n .	5000 Hz			XS1M08PA370D
1.5       nm       2 x 3       N.C.       2 8 V       1.5-10 mA       00. The second		ina nin	NPN	N. V	2. V	n 00'	UC Hz		11,1 ,15,	XS1M08NA370D
PLStic Lase         Non-shielded, 2m (6.6') cable         2.5 mm       NPN       N.O.*       12-48 V       200 mA       5000 Hz       A       -       XS4P08PA370         2.5 mm       NPN       N.O.*       12-48 V       200 mA       5000 Hz       A       -       XS4P08PA370         2.5 mm       NPN       N.O.*       12-48 V       200 mA       5000 Hz       A       -       XS4P08PA370         2.5 mm       NPN       N.O.+N.C.*       12-24 V       200 mA       5000 Hz       A       -       XS4P08PC410         2.5 mm       NPN       N.O.+N.C.*       12-24 V       200 mA       5000 Hz       A       -       XS4P08PC410         2.5 mm       NPN       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS4P08PC410         1.5 mm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS1M08PC410         1.5 mm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS1M08PC410         1.5 mm       NPN       N.O.+N.C.       12-24 V       200 mA       5000 Hz       B       11,12,15,16       X		1.5 nm	2 w 9	N.C	2.81	11.5-1( mA			· 1,1∠,15, io	XS1M08DA214LD <sup>2</sup>
Non-shielded, 2m (6.6') cable           2.5 mm         PNP         N.O.*         12-48 V         200 mA         5000 Hz         A         -         XS4P08PA370           2.5 mm         PNP         N.O.*         12-48 V         200 mA         5000 Hz         A         -         XS4P08PA370           2.5 mm         PNP         N.O.*         12-48 V         200 mA         5000 Hz         A         -         XS4P08PC410           2.5 mm         PNP         N.O.+N.C.*         12-24 V         200 mA         5000 Hz         A         -         XS4P08PC410           2.5 mm         NPN         N.O.+N.C.*         12-24 V         200 mA         5000 Hz         A         -         XS4P08PC410           2.5 mm         NPN         N.O.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS4P08PC410           1.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS1M08PC410           1.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS1M08PC410           1.5 mm         NPN         N.O.+N.C.         12-24 V         200 mA	<u>1</u> 4 5	Pl_sti_	Lase				-	-		
No.       N	20.0	Non-shie	ded. 2m (	6.6') cable						
LED         2.5 mm         NPN         N.O.*         12-48 V         200 mA         5000 Hz         A         -         XS4P08NA370           2.5 mm         PNP         N.O.+N.C.*         12-24 V         200 mA         5000 Hz         A         -         XS4P08NA370           2.5 mm         PNP         N.O.+N.C.*         12-24 V         200 mA         5000 Hz         A         -         XS4P08PC410           2.5 mm         NPN         N.O.+N.C.*         12-24 V         200 mA         5000 Hz         A         -         XS4P08PC410           2.5 mm         NPN         N.O.+N.C.*         12-24 V         200 mA         5000 Hz         A         -         XS4P08NC410           Nickel plated brass case, complementary N.O.+N.C. outputs           Shielded, 2m (6.6') cable           1.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS1M08PC410D           Shielded, connector - micro style           1.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         B         11,12,15,16         XS1M08PC410D           Sim PNP N.O.+N.C.         12-24 V         200 mA		2.5 mm	PNP	N.O.*	12-48 V	200 mA	5000 Hz	A	-	XS4P08PA370
LED         2.5 mm         PNP         N.O.+N.C.*         12-24 V         200 mA         5000 Hz         A         -         XS4P08PC410           2.5 mm         NPN         N.O.+N.C.*         12-24 V         200 mA         5000 Hz         A         -         XS4P08PC410           2.5 mm         NPN         N.O.+N.C.*         12-24 V         200 mA         5000 Hz         A         -         XS4P08PC410           XSM08DA210LD         Image: State of the state		2.5 mm	NPN	N.O.★	12-48 V	200 mA	5000 Hz	A	-	XS4P08NA370
LLD         2.5 mm         NPN         N.O.+N.C. ±         12-24 V         200 mA         5000 Hz         A         -         XS4P08NC410           XSM08DA210LD         Nickel plated brass case, complementary N.O.+N.C. outputs         Shielded, 2m (6.6') cable         -         XS1M08PC410           1.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS1M08PC410           1.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS1M08PC410           1.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS1M08PC410D           1.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         B         11,12,15,16         XS1M08PC410D           1.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         B         11,12,15,16         XS1M08PC410D           1.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS2M08PC410           2.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz		2.5 mm	PNP	N.O.+N.C.★	12-24 V	200 mA	5000 Hz	A	-	XS4P08PC410
Nickel plated brass case, complementary N.O.+N.C. outputs         Shielded, 2m (6.6') cable         1.5 mm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS1M08PC410         Shielded, 2m (6.6') cable         1.5 mm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS1M08PC410         Shielded, connector - micro style         1.5 mm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       B       11,12,15,16       XS1M08PC410D         Non-shielded, connector - micro style         2.5 mm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS1M08PC410D         Non-shielded, 2m (6.6') cable         2.5 mm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS2M08PC410D         2.5 mm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS2M08PC410D         2.5 mm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       B       11,12,15,16       XS2M08PC410D <th>π</th> <th>2.5 mm</th> <th>NPN</th> <th>N.O.+N.C.★</th> <th>12-24 V</th> <th>200 mA</th> <th>5000 Hz</th> <th>A</th> <th>-</th> <th>XS4P08NC410</th>	π	2.5 mm	NPN	N.O.+N.C.★	12-24 V	200 mA	5000 Hz	A	-	XS4P08NC410
Site       Shielded, 2m (6.6') cable         1.5 mm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS1M08PC410         Shielded, 2m (6.6') cable         1.5 mm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS1M08PC410         Shielded, connector - micro style         1.5 mm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       B       11,12,15,16       XS1M08PC410D         Shielded, connector - micro style         1.5 mm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       B       11,12,15,16       XS1M08PC410D         Simm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS1M08PC410D         Simm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS2M08PC410D         Simm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A       -       XS2M08PC410D         Simm       PNP       N.O.+N.C.       12-24 V       200 mA       5000 Hz       A		Nickel r	blated b	rass cas	e. com	lementa	rv N.O.+N.	C. outpu	its	
XSM08DA210LD		Shielded	2m (6 6')	cable	-,		<b>,,</b>			
Ist min         NM         IA         IA <t< th=""><th>XSM08DA210LD</th><th>1.5 mm</th><th>PNP</th><th></th><th>12-24 V</th><th>200 mA</th><th>5000 Hz</th><th>Δ</th><th>_</th><th>XS1M08PC410</th></t<>	XSM08DA210LD	1.5 mm	PNP		12-24 V	200 mA	5000 Hz	Δ	_	XS1M08PC410
Shielded, connector - micro style         Internet         Non-shielded, 2m (6.6') cable           1.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         B         11,12,15,16         XS1M08PC410D           Non-shielded, 2m (6.6') cable         2.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         B         11,12,15,16         XS1M08PC410D           2.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS2M08PC410D           2.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS2M08PC410D           2.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS2M08PC410D           2.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         B         11,12,15,16         XS2M08PC410D           2.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         B         11,12,15,16         XS2M08PC410D           2.5 mm         NPN         N.O.+N.C.         12-24 V         200 mA         5000 Hz         B         <		1.5 mm	NPN	N O +N C	12-24 V	200 mA	5000 Hz	A	_	XS1M08NC410
Image: Signal state state         Image: Signal state state         Image: Signal		Shielded.	connecto	pr - micro st	vle	200 11/1	0000112			X011100110410
Image: Second		1.5 mm	PNP	N.O.+N.C.	12-24 V	200 mA	5000 Hz	В	11.12.15.16	XS1M08PC410D
Non-shielded, 2m (6.6) cable         Non-shielded, 2m (6.6) cable         Non-shielded, 2m (6.6) cable           2.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS2M08PC410           2.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS2M08PC410           2.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS2M08PC410D           2.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         B         11,12,15,16         XS2M08PC410D           2.5 mm         NPN         N.O.+N.C.         12-24 V         200 mA         5000 Hz         B         11,12,15,16         XS2M08PC410D           2.5 mm         NPN         N.O.+N.C.         12-24 V         200 mA         5000 Hz         B         11,12,15,16         XS2M08NC410D	1 <u>2</u> 4 4 5 5	1.5 mm	NPN	N O +N C	12-24 V	200 mA	5000 Hz	B	11 12 15 16	XS1M08NC410D
Image: Second state		Non-shiel	ded 2m (	6 6') cable		200 1101	0000112	5	,,	
LED         No.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS2M08NC410           LED         S.5 mm         NPN         N.O.+N.C.         12-24 V         200 mA         5000 Hz         A         -         XS2M08NC410           2.5 mm         PNP         N.O.+N.C.         12-24 V         200 mA         5000 Hz         B         11,12,15,16         XS2M08PC410D           2.5 mm         NPN         N.O.+N.C.         12-24 V         200 mA         5000 Hz         B         11,12,15,16         XS2M08PC410D           XS1M08e370D         Scannet berge under gene for LED function         Scannet berge under gene for LED function         No.+N.C.         12-24 V         200 mA         5000 Hz         B         11,12,15,16         XS2M08NC410D	6.4	2.5 mm	PNP		12-24 V	200 mA	5000 Hz	Δ	-	XS2M08PC410
LED         Non-shielded, connector - micro style         Non-shielded, connector style         Non-shielded, connector - micr	<u> </u>	2.5 mm	NPN	N.O.+N.C	12-24 V	200 mA	5000 Hz	A	_	XS2M08NC410
LED         Les         Les <thles< th=""> <thles< th=""> <thles< th=""></thles<></thles<></thles<>		Non-shiel	ded. con	nector - mic	ro style	200	0000112	1	1	
XS1M08e370D         Non-thick         122-24 V         200 mA         5000 Hz         B         11,12,15,16         XS2M08NC410D		2.5 mm	PNP		12-24 V	200 mA	5000 Hz	В	11 12 15 16	XS2M08PC410D
XS1M08e370D Consection in the interview interview in the interview		2.5 mm	NPN	N.O.+N.C	12-24 V	200 mA	5000 Hz	B	11.12.15.16	XS2M08NC410D
	XS1M08e370D	① Soo no	vt pago upd	or specification	ne for LED f	unction		1-	,,	

XS1M08•370D

\*

Connector is attached to an 0.8 meter (2.6 foot) pigtail cable. 2

3 With stainless steel mounting nuts and washers.

To order a normally closed (N.C.) version, change A to B, example; XS1M08PA370 to XS1M08PB370.

#### Minimum Mounting Clearances (mm/inches)

XS1M08ee210D/41

Dual Dimensions inches



228

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Telemecanique



# **Proximity Sensors** XS Tubular. Inductive Sensors ngth

#### Wiring

Connector M12
4

Cable Blue BU – Brown Black BN + BK Output

#### 3 wire NO or NC



#### 2 wire, non-polarized



#### 4 wire NO + NC





	000
XSZB100	8



	8 mm Diameter, DC; Universal Standard Lenç			
Specifications				
Mechanical				
Usable sensing range	Shielded	0 to 1.2 mm		
	Non-shielded	0 to 2 mm		
Standard temperature range	•	-25° C to +80° C (-13° F to +176° F)		
Enclosure rating -cable	NEMA Type	3, 4X, 6P, 12, 13		
(for connector, see page 518)	IEC Type	IP67		
	Stainless Steel case	stainless steel		
Fuels and metanial	Nickel stated Design	Case: Nickel plated Brass		

#### wire color/connector pin

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Enclosure material	Nickel plated Brass	Case: Nickel plated Brass Sensing face: PBT		
	Plastic	PBT		
	Stainless Steel	9 N•m (6.7 lb-ft)		
Max. tightening torque	Plastic	1 N•m (.74 lb-ft)		
	Nickel plated Brass	9 N•m		
Vibration resistance	(IEC 60068.2.6)	25 G, amplitude +/- 2 mm, f = 10-55Hz		
Shock resistance	(IEC 60068.2.27)	50 G duration 11 ms		
Standard target size (steel)	•	8 mm x 8 mm		
Differential (% of Sr)		15%		
Repeatability (% of Sr)		3%		
LED indicates ture	A	360° ring LED: Shows output status		
LED Indicator type	В	One LED visible from 4 quadrants: Shows output status		
Cable	2 or 3 wire	27AWG (0.11 mm <sup>2</sup> ), PvR		
Electrical	•			
Voltage range – nominal		12 to 48 Vdc (12-24 complementary output)		
Voltage limit (including ripple)		10 to 58 Vdc (10-38 complementary output)		
Voltage drop (across	2 wire	4 V		
switch), closed state	3 wire	2 V		
	2 wire	1.5-100 mA		
Maximum load current	3 wire	100 mA		
	4 wire complementary output	200 mA		
Current consumption (no load)	3 wire	10 mA		
Residual (leakage) current, open state,	2 wire	0.6 mA		
	2 wire	0.2 ms		
On delay (max.)	3 wire	0.1 ms		
	2 wire	0.2 ms		
Off delay (max.)	3 wire	0.1 ms		
	2 wire	5 ms		
Power-up delay (max.)	3 wire	5 ms		
Protective circuitry	•			
	Short circuit protection	Yes		
	Overload	Yes		
	Radio frequency immunity (RFI)	IEC 61000-4-3 L3		
	Electrostatic; transients; impulse	2 wire IEC 61000-4-2 L3, IEC 61000-4-4 L4; 60947.5.2 L2 3 wire IEC 61000-4-2 L2, IEC 61000-4-4 L3; 60947.5.2 L2		
	Reverse polarity protection	Yes		
Agency Listings	CR 44087 Class 3211 03	(€		

# Options

Description	Suffix	
Extended temperature range (cable type only)	Down to -40° C (-40° F)	TF
Extended cable length	16.4 ft. (5 meter) cable	L1
	32.8 ft. (10 meter) cable	L2

#### Accessories

Description	Catalog Number
Plastic mounting nuts	XSZE208
Metal mounting nuts and lock washers	XSZE108
Mounting bracket, plastic	XSZB108
Mounting bracket, diecast zinc	8316 08
Stainless steel mounting nuts	XSZE208
Stainless steel lock washers	XSZE908

Note: Refer to page 351, for target material correction coefficient Km.

Connector	Cables (M12 or D suffix)
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight

XSZCD111Y Micro Conn., 4 pin, 2 m, 90°

10/02

For additional cable options and lengths see p. 518 Accessories ...... page 298, 317

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# **Proximity Sensors XS Tubular, Inductive Sensors** 8 mm Diameter, AC/DC; Universal Standard Length





#### Features

- Faster troubleshooting aided by high visibility 360° indicator
- Rugged case designed for aggressive environments. ٠
- Worry-free replacement: standard length, extended temperature range, AC or DC power supply
- Significant replacement time savings using patented plastic mounting bracket (no gauging) or connectors
- Trouble-free operation ensured by extensive protective circuitry
- Normally closed (N.C.) output available on versions marked\*
- Plastic mounting nuts for plastic and lock nuts for metal housing included
- UL Listed, CSA Certified and CE Mark ٠

Nominal	Output	Voltage F	Range	Operating	Frequency	Indicator	Mating	Catalog
Sensing Distance	Mode	AC	DC	AC	DC	LED (see next page)	Connector Style (see p. 518)	Number
Nickel p	Nickel plated brass case							
Shielded,	2m (6.6') d	able						
1.5 mm	N.O. ★	24-240 V	24-210 V	25 Hz	4000 Hz	А	-	XS1M08MA230
Shielded, connector - micro style AC								
1.5 mm	N.O. ★	24-240 V	24-210 V	25 Hz	4000 Hz	В	17,18	XS1M08MA230K
Non-shielded, 2m (6.6') cable								
2.5 mm	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	A	-	XS2M08MA230
Non-shielded, connector - micro style AC								
2.5 mm	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	В	17,18	XS2M08MA230K
Plastic case								
Non-shielded, 2m (6.6') cable								
2.5 mm	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	A	-	XS4P08MA230
Non-shielded, connector - micro style AC								
2.5 mm	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	A	17,18	XS4P08MA230K

Dual Dimensions inches

Proximity Sensors

#### Minimum Mounting Clearances (mm/inches)





# Proximity Sensors XS Tubular, Inductive Sensors 8 mm Diameter, AC/DC; Universal Standard Length

#### Wiring





Blue BU – Brown BN + Black BK Output

wire color/connector pin 2 wire, AC/DC for connector version only

	BN/2	L1 +/-
$\square$		AC/DC
$\sim$	BU/3	L2 -/+

moonumou			
	Shielded	0 to 1.2 mm	
Usable sensing range	Non-shielded	0 to 2 mm	
Standard temperature range		-25° C to +80° C (-13° F to +176° F)	
Enclosure rating - cable	NEMA Туре	3, 4X, 6P, 12, 13	
(for connector, see page 518)	ІЕС Туре	IP67	
Enclosure material	Nickel plated brass	Case: Nickel plated Brass Sensing face: PBT	
	Plastic	PBT	
<b>T</b> :	Nickel plated brass	9 N•m (79.6 lb-ft)	
lightening torque (max.)	Plastic	1 N•m (.74 lb-ft)	
Vibration resistance	(IEC 60068.2.6)	25 G, amplitude +/- 2 mm, f =10-55 Hz	
Shock resistance	(IEC60068.2.27)	50 G duration 11 ms	
Standard target size (steel)		8 mm x 8 mm	
Differential (% of Sr)		15%	
Repeatability (% of Sr)		3%	
	А	360° ring LED: Shows output status	
LED indicator type	В	One LED visible from 4 quadrants: Shows output status	
Cable	2 wire	27 AWG (0.11 mm <sup>2</sup> ), PvR	
Electrical			
Voltage range		24 to 240 Vac (50/60 Hz), 24 to 210 Vdc	
Voltage limit (including ripple)		20 to 264 Vac/Vdc	
Maximum Voltage drop (across switch), closed state		5.5V	
Inrush current (inductive @ 20ms)		2A	
Minimum load current		5 mA	
Maximum load current		100 mA 20 $\leq$ Vdc $\leq$ 58 IEC 60947-5-2 Utilization category DC-13 Vdc > 58 IEC 60947-5-2 Utilization category DC-12	
Residual (leakage) current,	24 Vac/Vdc	0.8 mA	
open state	120 Vac/Vdc	1.5 mA	
On delay (max.)		.2 ms	
Off delay (max.)		.2 ms	
Power-up delay (max.)		40 ms	
	Short circuit protection	No★	
Protective circuitry	Radio frequency immunity (RFI)	IEC 61000-4-3 L3	
	Electrostatic; transients; impulse	IEC 61000-4-2 L4; IEC 61000-4-4 L4; 60947.5.2 L3	
Agency Listings	CR 44087 Class 3211 03	CE	

# roximity Sensors

#### Options

Specifications

Mechanical

Description		
Extended temperature range (cable type only)	Down to -40° C (-40° F)	TF
Extended coble length	16.4 ft. (5 meter) cable	L1
Extended cable length	32.8 ft. (10 meter) cable	L2



Accessories

Plastia mounting pute	
Flastic mounting huts	SZE208
Metal mounting lock nuts XSZ	SZE108
Mounting bracket, plastic XSZ	SZB108
Mounting bracket, diecast zinc 831	1608

Note: Refer to p. 351, for target material correction coefficient Km.

★ See p. 298 for protective fuses.



XSZCK101Y Micro Conn., 3 pin, 2 m, straight XSZCK111Y Micro Conn., 3 pin, 2 m, 90°

 XSZCK111Y
 Micro Conn., 3 pin, 2 m, 90°

 For additional cable options and lengths see p. 518

Accessories ..... page 298

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# **Proximity Sensors** XS Tubular, Inductive Sensors 12 mm Diameter, DC; Economy Short Length





To order a normally closed (N.C.) version, change A to B, example; XS1M08MA230 to XS1M08MB230. \*

#### Minimum Mounting Clearances (mm/inches)



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Cable

## Proximity Sensors XS Tubular, Inductive Sensors 12 mm Diameter, DC; Economy Short Length

-25° C to +70° C (-13° F to +158° F)

-25° C to +80° C (-13° F to +176° F)

-25° C to +50° C (-13° F to +122° F)

25 G, amplitude +/- 2 mm, f=10-55 Hz

360° ring LED: Shows output status

22 AWG (0.34 mm<sup>2</sup>), PvR

21 AWG (0.22 mm<sup>2</sup>), PvR

One LED visible from 4 quadrants: Shows output status

0 to 1.6 mm

0 to 3.2 mm

0 to 3.2 mm

3, 4X, 6P, 12, 13

3, 4X, 6P, 12, 13

Nickel plated brass

6 N•m (4.4 lb-ft)

2 N•m (1.5 lb-ft)

12 mm x 12 mm

12 to 24 Vdc

10 to 38 Vdc

2V

200 mA

10 mA

0.1 ms

0.2 ms

0.1 ms

0.2 ms

5 ms

50 G duration 11 ms

IP67

IP68

PBT

PBT

15%

3%

Standard Range

Extended Range

NEMA Type

NEMA Type

Sensing face

IEC Type

IEC Type

Case

Shielded

Plastic

Non-shielded

Ni plated brass

Nickel plated brass

Nickel plated brass

Nickel plated brass

(IEC 60068.2.6)

(IEC 60068.2.27)

4 wire (N.O. + N.C.)

Standard/Extended Range

Plastic case

Plastic case

Plastic

A

В

3 wire

#### Wiring

Connector M12

#### Specifications Mechanical

Extended range

Usable sensing range

Standard temperature range

Enclosure rating - cable

Enclosure material

Tightening torque (max.)

Standard target size (steel)

Vibration resistance

Differential (% of Sr)

LED indicator type

Cable

Electrical

Repeatability (% of Sr)

Voltage range - nominal

Maximum load current

On delay (max.)

Off delay (max.)

F

I

Power-up delay (max.)

Voltage limit (including ripple)

Current consumption (no load)

Voltage drop (across switch), closed state

Shock resistance

(for connector see page 518)



#### 4 wire NO + NC











	Short circuit protec	lion	res	
Protective circuitry	Overload		Yes	
	Radio frequency in	nmunity (RFI)	IEC 61000-4-3 L3	
	Electrostatic; trans	ients; impulse	IEC 61000-4-2 L2; IEC 6	31000-4-4 L3; 60947.5.2 L3
	Reverse polarity pr	otection	Yes	
Agency Listings	E164869 CCN NRK	- CR 44087 Class 3211 0	• <b>(                                   </b>	
Options				
Description				Suffix
Extended temperature rang	je (cable type only)	Down to -40° C (-40° F	-)	TF
		16.4 ft. (5 meter) cable		L1
Extended cable length		32.8 ft. (10 meter) cable		L2
ccessories				
Description			Cata	alog Number

Standard Range

Extended Range

Standard Range

Extended Range

Description		Catalog Number
Plastic mounting nuts		XSZE212
Metal mounting nuts		XSZE112
Mounting bracket 90° steel		9006PA12
Mounting bracket, plastic		XSZB112
Mounting bracket, diecast zinc		831612
0.5" NPT conduit adapter length: 2" (50.8mm)	Aluminum	74281

Note: Refer to p. 351 for target material correction coefficient Km.

#### Connector Cables (M12 or D suffix)

## XSZCD101Y Micro Conn., 4 pin, 2 m, straight

XSZCD111Y Micro Conn., 4 pin, 2 m, 90°

For additional cable options and lengths see p. 518 Accessories ...... page 298, 316

## **Proximity Sensors** XS Tubular, Inductive Sensors 12 mm Diameter, DC; Universal Standard Length



#### Features

- Faster troubleshooting aided by high visibility 360° indicators
- 2 wire versions simplify wiring ٠
- Rugged case designed for aggressive environments
- Worry free replacement: standard length, extended temperature and supply voltage range, improved enclosure ratings (IP68), 3 wire complementary PNP + NPN with selectable N.O./ N.C. output circuit.
- Significant replacement time savings using patented plastic mounting bracket (no gauging) ٠ or connectors
- Pigtail connectors, version (0.8m/2.6' cable) provide cutting oil (IP68) rating and connection for aggressive environments
- Trouble free operation ensured by extensive protective circuitry
- Works with unfiltered rectified power supply
- Metal mounting lock nuts included
- Normally closed (N.C.) output available on versions (marked \*)
- UL Listed, CSA Certified and CE Mark

Nominal Sensing Distance	Circuit Type	Voltage Range	Output Mode	Max. Load	Operating Frequency	Indicator LED 1	Mating Connector Style (see p. 518)	Catalog Number
Nickel plated	brass ca	ise				1		-
Shie ded (6.6	i') cable		of					
i mn	2 vire 🛛 🗌	2.8	0 *	1.5 00 A		רבת	F	XS1M12DA210
2 mil	PNP	12-48 V	N.O. ★	200 mA	5000 Hz	A	_	XS1M12PA370
2 mm	NPN	12-48 V	NO.*	200 mA	5000 Hz	А	_	XS1M12NA370
2 mm	PNP/NPN	1 .24	N.C /N.C.	200 mA	5000 Hz	А	_	XS1M12KP340
Shielded, connect	tor - micro	style DO	;					
2 mm	2-wii	2-48 V	N.O *	5-1 0 11	∕≂∿H⊂		1 12 15 16	XS1M12DA210D
2 m 1	PNP	2-3	N J	2 IU mA	00/ H 🖵 🗌	DD	1., 12,, 15,16	XS1M12PA370D
2 m	NPN	12-48 V	N.O. ★	200 mA	5000 Hz	В	11,12,14,15,16	XS1M12NA370D
2 mm	PNP/NPN	12-24V	N.O./N.C.	200 mA	5000 Hz	В	11,12,15,16	XS1M12KP340D
Shielded, connect	tor - micro	style DO	C - 0.8 m	(2.6 ft) pig	tail			
2 mm	2-wire	12-48 V	N.O. ★	1.5-100 mA	4000 Hz	А	9,10,11,12,15,16	XS1M12DA210LD
Shielded, connect	tor - mini s	tyle - 0.8	3 m (2.6 f	t) pigtail				
2 mm	2-wire	12-48 V	N.O. ★	1.5-100 mA	4000 Hz	А	21,22	XS1M12DA210LA
Non-shielded, 2 m	n (6.6') cab	le						
4 mm	PNP	12-48 V	N.O. ★	200 mA	5000 Hz	A	_	XS2M12PA370
4 mm	NPN	12-48 V	N.O. ★	200 mA	5000 Hz	A	_	XS2M12NA370
4 mm	PNP + NPN	12-24V	N.O./N.C.	200 mA	5000 Hz	A	_	XS2M12KP340
Non-shielded, con	nector - m	nicro sty	le D					•
4 mm	PNP	12-48 V	N.O. ★	200 mA	5000 Hz	В	11,12,13,15,16	XS2M12PA370D
4 mm	NPN	12-48 V	N.O. ★	200 mA	5000 Hz	В	11,12,14,15,16	XS2M12NA370D
4 mm	PNP + NPN	12-24V	N.O./N.C.	200 mA	5000 Hz	В	11,12,15,16	XS2M12KP340D

To order a normally closed (N.C.) version change the A to B, example: XS1M12PA370 to XS1M12PB370. See next page under specifications for LED function.

Dual Dimensions inches mm

XS2•370D

Minimum Mounting Clearances (mm/inches)

1

Side by side Face to face Mounting in a metal support Facing a metal object XS1 Shielded e: 6/.24 e: 24/.94 D: 12/.47. H: 0/0 e: 4/.16 D: 36/1.42, H: 8/.31 XS2 Non-shielded e: 16/.63 e: 48/1.89 e: 12/.47

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10/02



## **Proximity Sensors** XS Tubular, Inductive Sensors 12 mm Diameter, DC; Universal Standard Length

0 to 1.6 mm

0 to 3.2 mm

PBT

15%

3%

Std

3, 4X, 6P, 12, 13

IP68 - cutting oil proof

Nickel plated Brass

15 N•m (11 lb-ft)

12 mm x 12 mm

output status

12 to 48 Vdc

22 AWG (0.34 mm<sup>2</sup>), PvR

50 G duration 11 ms

-25° C to +80° C (-13° F to +176° F)

25 G, amplitude +/- 2 mm, f =10-55 Hz

360° ring LED: Shows output status

One LED visible from 4 quadrants: Shows

KP Models

12 to 24 Vdc

Suffix

TF

L1

L2

#### Wiring



Specifications

Usable sensing range \*

Standard temperature range

Enclosure rating - cable (for connector, see p. 518)

Tightening torque (max.)

Standard target size (steel)

Enclosure material

Vibration resistance

Differential (% of Sr)

LED indicator type

Cable

Electrical

Options

Description

Repeatability (% of Sr)

Voltage range - nominal

Shock resistance

Shielded

Non-shielded

NEMA Type

Nickel plated brass

Nickel plated brass

(IEC 60068.2.6)

(IEC 60068.2.27)

IEC Type

в

2 or 3 wire

Mechanical

Wire color/connector pin 3 wire NO or NC



#### 3 wire, selectable PNP/NPN, NO/NC



#### 4 wire, programmable, NO or NC output

BN/1 (NO),BU/3 (NC)		BN/ <u>1 (</u>	NO),BU/3 (NC)
PNP	WH/2 +	NPN	ר ריי
$\Diamond$	BK/4	$\Diamond$	WH/2
BU/3 (N	IO).BU/1 (NC)	BU/3 (I	- DR/4 

#### 2 wire non-polarized





Case

Sensing face



XSZB1••

**Connector Cables** 



Description	
Accessories	
	32.8 ft. (10 meter) cable
Extended cable length	16.4 ft. (5 meter) cable
Extended temperature range (cable type only)	Down to -40° C (-40° F)

Description	Catalog Number	
Plastic mounting nuts	XSZE212	
Metal mounting lock nuts	XSZE112	
Mounting bracket, 90° steel	9006PA12	
Mounting bracket, plastic	XSZB112	
Mounting bracket, diecast zinc	831612	
0.5" NPT conduit adapter length 2" (50.8mm)	Aluminum	74281

Refer to page 351 for target material correction coefficient Km.

<b>·</b> · · ·	· , · · · · ,
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°
XSZCA101Y	Micro Conn., 3 pin, 2 m, straight
XSZCA111Y	Micro Conn., 3 pin, 2 m, 90°

For additional cable options and lengths see p. 518 Accessories ..... page 298, 316

(M12 or D suffix; U78 or A suffix)

## **Proximity Sensors** XS Tubular, Inductive Sensors 12 mm Diameter, DC; Universal Standard Length, Non-corrosive

Features









XS1M12DA211LA



XS1P12•370



M12x1 ٠

thread

- Faster troubleshooting aided by high visibility 360° indicators
- 2 wire versions simplify wiring
- High impact stainless steel and plastic cases for aggressive environments cutting oils, grease, solvents, etc.
- Worry free replacement: standard length, extended temperature and supply voltage range, improved enclosure ratings (IP68), 3 wire complementary PNP + NPN with selectable N.O./ N.C. output circuit
- Significant replacement time savings using patented plastic mounting bracket (no gauging) or connectors
- Pigtail connector version (0.8 m /2.6 ' cable) provides cutting oil (IP68) rating and connection for aggressive environments.
- Trouble free operation ensured by extensive protective circuitry
- Works with unfiltered rectified power supply
- Stainless steel lock nuts for metal or plastic mounting nuts for plastic housings included
- Normally closed (N.C.) output available on versions marked \*
- UL Listed, CSA Certified and CE Mark

Nominal	Circuit	Voltage	Output	Max.	Operating	Indicator	Mating	Catalog
Sensing Distance	Туре	Range	Mode	Load	Frequency	I ED ①	con e tc Style رجاف i1)	l'umber
🔓 nle	r ∍t e' ca			ITA				
Sc.ded,	2m (6.ô') ca	ple						
2 mm	2-wire	12-48 V	N.O	1.5-100 mA	4000 Hz	А	—	XS1M12DA211
2 mm	PNP	12-48 V	] . – –	200 mA	5000 Hz	A	—	XS1M12PA371
2 mm	NPN	12-48 V	N.O.	200 mA	5000 Hz	A	-	XS1M12NA371
Shielded,	connector -	ni s /lo	- 0.8 m (2	.6 fi pi∖ta"l	00		16	
2 n n	:- ire	? 4. 1	r o. 🚍	1.5 00 mA	4 00 Iz 🗌	णण	2 ?	XS1M12DA211LA
No -sh.Jk	(6.6	5') cable						
4 mm	PNP	12-48 V	N.O.	200 mA	5000 Hz	A	—	XS2M12PA371
4 mm	NPN	12-48 V	N.O.	200 mA	5000 Hz	A	—	XS2M12NA371
Plastic of	ase	-	•			-		
Non-shield	led, 2m (6.6	3') cable						
4 mm	PNP	12-48 V	N.O.★	200 mA	5000 Hz	A	_	XS4P12PA370
4 mm	NPN	12-48 V	N.O.★	200 mA	5000 Hz	A	—	XS4P12NA370
4 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	5000 Hz	A	—	XS4P12KP340
Non-shield	led, connec	tor - micro	style DC	•	•	•	•	•
4 mm	PNP	12-48 V	N.O.★	200 mA	5000 Hz	A	11,12,13,15,16	XS4P12PA370D
4 mm	NPN	12-48 V	N.O.★	200 mA	5000 Hz	A	11,12,14,15,16	XS4P12NA370D
4 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	5000 Hz	A	11,12,15,16	XS4P12KP340D

To order a normally closed (N.C.) version change the A to B, example: XS1M12PA371 to XS1M12PB371. n

See next page under specifications for LED function.

Dual Dimensions inches



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## **Proximity Sensors XS Tubular, Inductive Sensors** 12 mm Diameter, DC; Universal Standard Length, Non-corrosive

#### Wiring



# 4 wire, programmable, NO or NC output

#### BN/1 (NO),BU/3 (NC) BN/1 (NO),BU/3 (NC) WH/2 PNP NPN BK/4 $\Diamond$ $\Diamond$

#### WH/2 BK/4 BU/3 (NO),BU/1 (NC)

#### 2 wire non-polarized

BU/3 (NO),BU/1 (NC)





XSZB1••

# 0 8316••

I Isable sensing range +	Shielded	0 to 1.6 mm		
	Non-shielded	0 to 3.2 mm		
Standard temperature range	·	-25° C to +80° C (-13° F to +176° F)		
Enclosure rating - cable NEMA Type		3, 4X, 6P, 12, 13		
(for connector, see p. 518) IEC Type		IP68		
	Stainless steel case	#303 Stainless steel		
Enclosure material	Sensing face	PBT		
	Plastic	PBT		
Tightoning torque (may)	Stainless steel	30 N•m (22 lb-ft)		
rightening torque (max.)	Plastic	2 N•m (1.5 lb-ft)		
Vibration resistance	(IEC 60068.2.6)	25 G, amplitude +/- 2 mm, f =	10-55 Hz	
Shock resistance	(IEC 60068.2.27)	50 G duration 11ms		
Standard target size (steel)		12 mm x 12 mm		
Differential (% of Sr)		15%		
Repeatability (% of Sr)		3%		
LED indicator type	A	360° ring LED: Shows output	status	
Cable	2 or 3 wire	22 AWG (0.34 mm <sup>2</sup> ), PvR		
Electrical	•	Standard	KP-Models	
Voltage range – nominal		12 to 48 Vdc	12 to 24 Vdc	
Voltage limit (including ripple)		10 to 58 Vdc	10 to 38 Vdc	
Voltage drop (across	3 wire	2 V	2.6V	
switch), closed state	2 wire	4 V		
Minimum load current	2 wire	1.5 mA		
Man instant la sel summant	2 wire	100 mA		
Maximum load current	3 wire	200 mA		
Current consumption (no load)	3 wire	10 mA		
Residual (leakage) current, open state	2 wire	0.6 mA		
	2 wire	0.5 ms		
On delay (max.)	3 wire	0.1 ms		
	2 wire	0.5 ms		
Oli delay (max.)	3 wire	0.1 ms		
	2 wire	5 ms		
Power-up delay (max.)	3 wire	5 ms		
	Short circuit protection	Yes		
	Overload	Yes		
Protective circuitry	Radio frequency immunity (RFI)	IEC 61000-4-3 Level 3		
	Electrostatic; transients; impulse (L - indicates level number)	2 wire: IEC 61000-4-2 L3; IEC 3 wire: IEC 61000-4-2 L2; IE	C 61000-4-4 L3; 60947.5.2 L3 C 61000-4-4 L3; 60947.5.2 L3	
	Reverse polarity protection	Yes		
Agency Listings	E164869 CCN NRKH	CR 44087 Class 3211 03	CE	

## Options

Specifications

Mechanical

Description	Suffix	
Extended temperature range (cable type only)	Down to -40° C (-40° F)	TF
Extended cable length	16.4 ft. (5 meter) cable	L1
	32.8 ft. (10 meter) cable	L2

#### Accessories

Description	Catalog Number	
Plastic mounting nuts		XSZE212
Stainless steel mounting nuts		XSZE312
Locknut washers, stainless steel	XSZE912	
Mounting bracket, 90° steel	9006PA12	
Mounting bracket, plastic	XSZB112	
Mounting bracket, diecast zinc	831612	
0.5" NPT conduit adapter length 2" (50.8mm)	Aluminum	74281

Refer to p. 351 for target material correction coefficient Km.

Connector Cables (M12 or D suffix; U78 or A suffix)			
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight		
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°		
XSZCA101Y	Mini Conn., 3 pin, 2 m, straight		
XSZCA111Y	Mini Conn., 3 pin, 2 m, 90°		
For additional cable options and lengths see p. 5			

ns and lengths see p. 518 Accessories ..... page 298, 316

## Proximity Sensors XS Tubular, Inductive Sensors 12 mm Diameter, AC/DC; Universal Standard Length

## Telemecanique



LED

50

LED



- Faster troubleshooting aided by high visibility 360° indicators
- Rugged metal or plastic cases designed for aggressive environments cutting oils, grease, etc.
- Worry free replacement: standard length, extended temperature and supply voltage range, improved enclosure ratings (IP68), AC/DC power supply
- Significant replacement time savings using patented plastic mounting bracket (no gauging) or connectors
- Metal locking nuts for metal or plastic mounting nuts for plastic housings included
- Normally closed (N.C.) output available on versions marked \*
- UL Listed, CSA Certified and CE Mark

Nominal Sensing	AC or	Output	Voltage Range		Operating Frequency		SCP	Indicator	Mating Connector Style	Catalog
Distance	AC/DC	Mode ×	AC	DC	AC	DC	Ī		(see p. 518)	Number
Nickel p	plated b	orass ca	ase							
Shielded,	2 m (6.6'	) cable								
2 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	4000 Hz	no	Α	_	XS1M12MA230
2 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	4000 Hz	yes	A	—	XS1M12MA250
Shielded,	connect	or - micro	style AC							
2 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	4000 Hz	no	В	17,18	XS1M12MA230K
Non-shiel	ded, 2 m	(6.6') cab	le							
4 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	no	Α	_	XS2M12MA230
4 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	yes	А	_	XS2M12MA250
Non-shiel	ded, con	nector - n	nicro style	e AC						
4 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	no	В	17,18	XS2M12MA230K
Plastic	case									
Non-shiel	ded, 2 m	(6.6') cab	le							
4 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	4000 Hz	no	А	_	XS4P12MA230
Non-shielded, connector - micro style										
4 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	no	A	17,18	XS4P12MA230K

To order a normally closed (N.C.) version change the A to B, example: XS1M12PA260 to XS1M12PB260.

① See next page under specifications for LED function.



XS3/XS4P•

Proximity Sensors

#### Minimum Mounting Clearances (mm/inches)

65

LED

56

40

XS4P•K

\*

XS2M •K





## **Proximity Sensors XS Tubular, Inductive Sensors** 12 mm Diameter, AC/DC; Universal Standard Length

#### Wiring

Connector
1
2003

Blue BU – BN + BK Output Brown Black

Cable

Specifications

wire color/connector pin 2 wire, AC/DC for connector version only



Mechanical		
Shielded		0 to 1.6 mm
Usable sensing range*	Non-shielded	0 to 3.2 mm
Standard temperature range	•	-25° C to +80° C (-13° F to +176° F)
Enclosure rating - cable	NEMA Type	3, 4X, 6P, 12, 13
(for connector, see p. 518)	IEC Type	IP68
	Nickel plated brass case	Nickel plated Brass
Enclosure material	Sensing face	PBT
	Plastic case	PBT
	Nickel plated brass	15 N•m (11 lb-ft)
rightening torque (max.)	Plastic	2 N•m (1.5 lb-ft)
Vibration resistance	(IEC 60068.2.6)	25 G, amplitude +/- 2 mm, f =10-55 Hz
Shock resistance	(IEC 60068.2.27)	50 G duration 11 ms
Standard target size (steel)	·	12 mm x 12 mm
Differential (% of Sr)		15%
Repeatability (% of Sr)		3%
LED indicator type	A	360° ring LED: Shows output status
LED Indicator type	В	One LED visible from 4 quadrants: Shows output status
Cable 2 wire		22 AWG (0.34 mm <sup>2</sup> ), PvR
Electrical	*	
Voltage range		24 to 240 Vac (50/60 Hz), 24 to 210 Vdc
Voltage limit (including ripple)		20 to 264 Vac/Vdc
Maximum Voltage drop (across	switch), closed state	5.5V
Inrush current (inductive @ 20m	ns)	2A
Minimum load current		5 mA
Maximum load current		200 mA 20 $\leq$ Vdc $\leq$ 58 IEC 60947-5-2 Utilization category DC-13 Vdc $>$ 58 IEC 60947-5-2 Utilization category DC-12
Residual (leakage) current, ope	n state	0.6 mA
On delay (max.)		0.2 ms
Off delay (max.)		0.2 ms
	Without SCP	40 ms
Power-up delay (max.)	With SCP	70 ms
Protective circuitry	*	
Short circuit protection		Optional▲
Overload	· ·	Yes
Radio frequency immunity	(RFI)	IEC 61000-4-3 Level 3
Electrostatic; transients; im	pulse (L - level number)	IEC 61000-4-2 L4; IEC 61000-4-4 L4; 60947.5.2 L3
Agency Listings	E164869 CCN NRKH CCA 4 Class	4087 5 3211 03 <b>( E</b>



Options

#### Description Extended temperature range (cable type only) Down to -40° C (-40° F) TF 16.4 ft. (5 meter) cable L1 Extended cable length 32.8 ft. (10 meter) cable L2

## Accessories

Description	Catalog Number
Plastic mounting nuts	XSZE212
Metal mounting nuts and lock washers	XSZE112
Mounting bracket, 90° steel	9006PA12
Mounting bracket, plastic	XSZB112
Mounting bracket, diecast zinc	831612
0.5" NPT conduit adapter length 2" (50.8 mm)	74281

Refer to p. 351 for target material correction coefficient Km.

. For devices without SCP, see p. 298 for protective fuses.

Connector Cables (U20 or K suffix)

XSZB1••

XSZCK101Y Micro Conn., 3 pin, 2 m, straight

0

8316••

XSZCK111Y Micro Conn., 3 pin, 2 m, 90°

For additional cable options and lengths see p. 518 Accessories ...... page 298, 316

Suffix

## Proximity Sensors XS Tubular, Inductive Sensors 18 mm Diameter, DC; Economy Short Length



#### Minimum Mounting Clearances (mm/inches)



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## Telemecanique

## **Proximity Sensors XS Tubular Inductive Sensors** 18 mm Diameter, DC; Economy Short Length

0 to 4 mm

#### Wiring

#### Specifications

Connector Ca	able	Mechanical	
	ue BU –	Usable sensing range $\star$	Shie
	ack BK Output		Non
		Standard temperature range	Nick
Wire color/connector pi	in	Extended range	Plas
5 WIE NO OF NO			<u> </u>
BN/1	<u> </u>	Enclosure rating - cable	Nick
PNP BK/4 NO	+	for connector, see p. 518	Plas
		Epolosuro matorial	Nicł
BU/3			Plas
BN/1		Tichtoning torque (mou)	Nick
	+	rightening torque (max.)	Plas
NPN		Vibration resistance	(IEC
BK/2 NC		Shock resistance	(IEC
BK/4 NO		Standard target size (steel)	Shie
BU/3			Uns
4 wire NO + NC		Differential (% of Sr)	
		Repeatability (% of Sr)	
BN/1			А
PNP NO BK/4	+	LED indicator type	в
NC WH/2		Cable	3 or
	<u> </u>	Electrical	
BII/3		Voltage range - nominal	
00/0		Voltage limit (including ripple)	
		Voltage drop (across switch), close	ed state





XSZB1.

	Chielded	Standard Range	0 to 4 mm		
Usable sensing range $\star$	Shielded	Extended Range	0 to 8 mm		
	Non-shielded		0 to 6.4 mm		
	Nickel plated brass		-25° C to +70° C (-13° F to +158° F)		
Standard temperature range	Plastic		-25° C to +80° C (-13° F to +176° F)		
Extended range	•		-25° C to +50° C (-13° F to +122° F)		
	Nichal state diamage	NEMA Type	3, 4X, 6P, 12, 13		
Enclosure rating - cable	NICKEI plated brass	IEC Type	IP67		
for connector, see p. 518	Diastia	NEMA Type	3, 4X, 6P, 12, 13		
	Plastic	IEC Type	IP68		
	Niekel plated brace	Case	Nickel plated brass		
Enclosure motorial	Nickel plated brass	Sensing face	PBT		
Enclosure material		Case	PBT		
	Plastic	Sensing face	PBT		
	Nickel plated brass	-	15 N•m (11 lb-ft)		
lightening torque (max.)	Plastic		5 N•m (3.7 lb-ft)		
Vibration resistance	(IEC 60068.2.6)		25 G, amplitude +/- 2 mm, f =10-55 Hz		
Shock resistance	(IEC 60068.2.27)		50 G duration 11 ms		
	0	Standard range	0.7" x 0.7" (18 mm x 18 mm)		
Standard target size (steel)	Shielded	Extended range	1.18" x 1.18" (30 mm x 30 mm)		
	Unshielded	•	0.94" x 0.94" (24 mm x 24 mm)		
Differential (% of Sr)	•		15%		
Repeatability (% of Sr)			3%		
	A		360° ring LED: Shows output status		
LED indicator type	В		One LED visible from 4 quadrants: Shows output status		
Cable	3 or 4 wire		22 AWG (0.34 mm <sup>2</sup> ), PvR		
Electrical					
Voltage range – nominal			12 to 24 Vdc		
Voltage limit (including ripple)			10 to 38 Vdc		
Voltage drop (across switch), clos	ed state		2 V		
Maximum load current			200 mA		
Current consumption (no load)			10 mA		
On delay (max.)			0.15 ms		
Off delay (max.)			0.35 ms		
Power-up delay (max.)			5 ms		
· · · · · · ·	Short circuit protection	n	Yes		
	Overload		Yes		
Dura ta activaria a incruitaria	Radio frequency imm	unity (RFI)	IEC 61000-4-3 Level 3		
Protective circultry	Electrostatic; transier	nts; impulse	IEC 61000-4-2 L2; IEC 61000-4-4 L3; 60947.5.2 L3 Extended range: IEC 61000-4-4 L3		
	Reverse polarity prote	ection	Yes		
Agency Listings	Е 164869 ССN NRKH	CR 44087 Class 3211 0	<sup>33</sup> C E		
		<b>~</b>			

Standard Range

## Options

Description	Suffix	
Extended temperature range (cable type and standard sensing distance only)	Down to -40° C (-40° F)	TF
Extended cable length	16.4 ft. (5 meter) cable	L1
	32.8 ft. (10 meter) cable	L2

#### Accessories

\*

Description	Catalog Number	
Plastic mounting nuts	XSZE218	
Metal mounting nuts and lock washer	XSZE118	
Mounting bracket 90° steel	9006PA18	
Mounting bracket, plastic, long length	XSZB118	
0.5" NDT conduit adapter length 0" (50.0 mm)	Aluminum	7428
0.5 NPT conduit adapter length 2 (50.8 mm)	Stainless	74282

Refer to p. 351 for target material correction coefficient Km.

Connector Cables (M12 or D suffix) XSZCD101Y Micro Conn., 4 pin, 2 m, straight

XSZCD111Y Micro Conn., 4 pin, 2 m, 90° For additional cable options and lengths see p. 518 Accessories ..... page 298. 316

10/02

## **Proximity Sensors XS Tubular Inductive Sensors** 18 mm Diameter, DC; Universal Standard Length



- Faster troubleshooting aided by high visibility 360° indicators
- 2 wire versions simplify wiring
- Rugged case designed for aggressive industrial environments
- Worry free replacement: standard length, extended temperature and supply voltage range. improved enclosure ratings (IP68), 3 wire complementary PNP + NPN with selectable N.O./ N.C. output circuit
- Significant replacement time savings using patented plastic mounting bracket (no gauging) or connectors
- Trouble free operation ensured by extensive protective circuitry
- Works with unfiltered rectified power supply
- Pigtail connector version (0.8 m/2.6' cable) provides cutting oil (IP68) ratings and connection for aggressive environments. Screw terminals models for wiring special cables.
- Metal mounting lock nuts included
- Normally closed (N.C.) output available on versions marked \*
- UL Listed, CSA Certified and CE Mark

#### Nickel plated brass case

Nominal Sensing Distance	Circuit Type	Voltage Range	Output Mode	Max. Load	Operating Frequency	Indicator	Mating Connector Style is: 9 p. (18)	Catalog Number
Shie ded	2m 🤅 🗇 🔎	. 'e						
	2-wir	া হ. অ. –	, T. ₩ T	1100 nA	3000 Hz	A	-	XS1M18DA210
5 mm	PNP	12-48 V	N.O. ★	200 mA	2000 Hz	A	—	XS1M18PA370
5 mm	NPN	12-48 V	N 0.+	200 mA	2000 Hz	A	—	XS1M18NA370
5 mm	PNP + NPN	12-24 V	N )./ I.C	200 mA	2000 Hz	A	—	XS1M18KP340
Shielded of	connector -	micro sty	ne DC - 0.8	3 m (2.6 ft) p	igtail		_	
5 mm	2-wire	12-19 V	N.O.★	1.5-1 🗸 . A	3000 Hz	A	11, 2,12, 3	XS1M18DA210LD
รก มช่าช่	crar_tor -	<u>่าเว</u> ร	eu		1010			•
5 n 1 7	7 -w .e	1 48		1.5-1_0 mA	3000 11Z	18 18	11,12,15,16	XS1M18DA210D
5 mm	PNP	12-48 V	N.O. ★	200 mA	2000 Hz	В	11,12,13,15,16	XS1M18PA370D
5 mm	NPN	12-48 V	N.O.★	200 mA	2000 Hz	В	11,12,14,15,16	XS1M18NA370D
5 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	2000 Hz	В	11,12,15,16	XS1M18KP340D
Shielded,	connector -	mini styl	e - 0.8 m (	2.6 ft) pigta	il			
5 mm	2-wire	12-48 V	N.O.★	1.5-100 mA	3000 Hz	A	21,22	XS1M18DA210LA
Shielded,	connector -	mini styl	e 3 PIN					
5 mm	PNP	12-48 V	N.O. ★	200 mA	2000 Hz	В	21,22	XS1M18PA370A
5 mm	NPN	12-48 V	N.O. ★	200 mA	2000 Hz	В	21,22	XS1M18NA370A
Shielded,	screw term	inal conn	ection					
5 mm	2 wire	12-48 V	N.O.★	1.5-100mA	3000 Hz	В	<b>—</b>	XS1M18DA210B
5 mm	PNP	12-48 V	N.O. ★	200 mA	2000 Hz	В	_	XS1M18PA370B
5 mm	NPN	12-48 V	N.O.★	200 mA	2000 Hz	В	_	XS1M18NA370B
Non-shield	ded, 2m (6.6	3') cable						
8 mm	PNP	, 12-48 V	N.O. ★	200 mA	2000 Hz	А	I_	XS2M18PA370
8 mm	NPN	12-48 V	N.O. ★	200 mA	2000 Hz	A		XS2M18NA370
8 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	2000 Hz	A	<b> </b> _	XS2M18KP340
Non-shield	ded, conned	ctor - mic	ro style		!	+		ł
8 mm	PNP	12-48 V	N.O.★	200 mA	2000 Hz	В	11,12,13,15,16	XS2M18PA370D
8 mm	NPN	12-48 V	N.O. ★	200 mA	2000 Hz	В	11,12,14,15,16	XS2M18NA370D
8 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	2000 Hz	в	11.12.15.16	XS2M18KP340D

To order a normally closed (N.C.) version change the A to B, example: XS1M18PA370 to XS1M18PB370.

1 See next page under specifications for LED function.

#### Minimum Mounting Clearances (mm/inches)



242

Proximity Sensors



## **Proximity Sensors XS Tubular Inductive Sensors** 18 mm Diameter, DC; Universal Standard Length

0 to 4 mm

0 to 6.4 mm

#### Wiring

Connector	Cable
	Blue Brow Black
Wire color/co	onnector pin



Cable

Brown

Black

BU -

BN+

**BK Output** 



4 wire, programmable, NO or NC output

Blue

Brown

Black

BN/ <u>1 (N</u>	D),BU/3 (NC)	
PNP	1WH/2 +	Г
$\Diamond$	BK/4	
BU/3 (NO	0),BU/1 (NC)	L

Ľ NPN WH/2  $\Diamond$ BK/4 BU/3 (NO),BU/1 (NC)

BN/1 (NO),BU/3 (NC)

BU –

BN +

BK Output

#### 2 wire non-polarized





Shielded

Non-shielded



XSZB1ee

**Connector Cables** 

#### Options

Specifications

Usable sensing range★

Standard temperature range

Mechanical

Description	Suffix	
Extended temperature range (cable type only)	Down to -40° C (-40° F)	TF
Extended eable length	16.4 ft. (5 meter) cable	L1
Extended cable length	32.8 ft. (10 meter) cable	L2

#### Accessories

Description	Catalog Number	
Plastic mounting nuts	XSZE218	
Metal mounting nuts and lock washers	XSZE118	
Mounting bracket, 90° steel	9006PA 18	
Mounting bracket, plastic	XSZB118	
0.5" NDT conduit edepter length 0" (50.0 mm)	Aluminum	7428
0.5" NP1 conduit adapter length 2" (50.8 mm)	Stainless	74282

Refer to p. 351 for target material correction coefficient Km \*

(WIZ OF D SUIIX, 078 OF A SUIIX)						
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight					
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°					
XSZCA101Y	Micro Conn., 3 pin, 2 m, straight					
XSZCA111Y	Micro Conn., 3 pin, 2 m, 90°					

T D ouffire 1179 or A ouffire)

For additional cable options and lengths see p. 518 Accessories..... page 298, 316

## **Proximity Sensors XS Tubular Inductive Sensors** 18 mm Diameter, DC; Universal Standard Length, Non-corrosive





#### Features

- Faster troubleshooting aided by high visibility 360° indicators
- 2 wire versions simplify wiring
- High impact stainless steel and plastic cases for aggressive environments cutting oils, grease, solvents, etc.
- Worry free replacement: standard length, extended temperature and supply voltage range, improved enclosure ratings (IP68)
- Pigtail connector version (0.8 m /2.6' cable) provides cutting oil (IP68) ratings and connection for aggressive environments.
- Significant replacement time savings using patented plastic mounting bracket (no gauging) or connectors
- Trouble free operation ensured by extensive protective circuitry
- Works with unfiltered rectified power supply
- Stainless steel locknuts for metal or plastic mounting nuts for plastic housings included
- Normally closed (N.C.) output available on versions marked **\***
- UL Listed, CSA Certified and CE Mark

Nominal Sensing Distance	Circuit Type	Voltage Range	Output Mode	Max. Load	Operating Frequency	Indicator LED 1	Mating Connector Style (see p. 518)	Catalog Number
Stainle	ss steel c	ase		L A	10			
Si ded	2 " (( )) 3	a. Te						·
t mr	2-wir	.2-4	<del>x</del> =	1.5-100 mA	3000 Hz	A	-	XS1M18DA211
5 mm	PNP	12-48 V	N.O.	200 mA	2000 Hz	A	—	XS1M18PA371
5 mm	NPN	12-48 V	<b>0</b>	200 mA	2000 Hz	A	—	XS1M18NA371
Shielded,	connector -	mini sty	e-).m (2	2.6 ft) pigtai	l		•	
5 mm	2-wire	12-48 V	N.O. ★	1.5-100 mA	3000 Hz	A	21 ^2	XS1M18DA211LA
Non chiel	ded, 2 m (6.	) ( bl					516	•
8 m 1	TF	ī.⊽.ē⊽ —	N ).	200 nA		AUTO		XS2M18PA371
8 m 1	V.VP.	12 48 .	N.J.	200 mA	2000 Hz	A	—	XS2M18NA371
Plastic	case		•				•	
Non-shiel	ded, 2 m (6.	6') cable						
8 mm	PNP	12-48 V	N.O. ★	200 mA	2000 Hz	A	_	XS4P18PA370
8 mm	NPN	12-48 V	N.O. ★	200 mA	2000 Hz	A	_	XS4P18NA370
8 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	2000 Hz	A	_	XS4P18KP340
Non-shiel	ded, connec	tor - mici	o style				•	•
8 mm	PNP	12-48 V	N.O.★	200 mA	2000 Hz	А	11,12,13,15,16	XS4P18PA370D
8 mm	NPN	12-48 V	N.O. ★	200 mA	2000 Hz	A	11,12,14,15,16	XS4P18NA370D
8 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	2000 Hz	A	11,12,15,16	XS4P18KP340D
Non-shiel	ded, screw	terminal c	onnector		•	•		
8 mm	PNP	12-48 V	N.O.	200 mA	2000 Hz	A	—	XS4P18PA370B
0 mm	NDN	12-48 V	NO	200 mA	2000 Hz	Δ	<u> </u>	YS4P18NA370B

Dual Dimensions inches thread M18x1

To order a normally closed (N.C.) version change the A to B, example: XS1M12PA371 to XS1M12PB371. 1 See next page under specifications for LED function.

#### Minimum Mounting Clearances (mm/inches)







Face to face

е









## Proximity Sensors XS Tubular Inductive Sensors 18 mm Diameter, DC; Universal Standard Length, Non-corrosive

#### Wiring

Connector	

Wire color/connector pin 3 wire NO or NC



Cable

Blue Brown Black BU – BN +

**BK** Output

4 wire, programmable, NO or NC output

BN/ <u>1 (</u>	NO),BU/3 (NC)	BN/ <u>1 (</u>	NO),BU/3 (NC)
PNP		NPN	ר רי+
$\Diamond$	BK/4	$\Diamond$	WH/2
BU/3 (	NO),BU/1 (NC)	BU/3 (1	NO),BU/1 (NC)

#### 2 wire non-polarized

7428•

XSZB1••

**Connector Cables** 

	BN/3	
$\Diamond$	BU/4	-[]-

Lloople consing ranget	Shielded		0 to 4 mm			
	Non-shielded		0 to 6.4 mm	0 to 6.4 mm		
Standard temperature range			-25° C to +80° C (-13° F to +17	-25° C to +80° C (-13° F to +176° F)		
Enclosure rating - cable	NEMA Type		3, 4X, 6P, 12, 13			
(for connector, see p. 518)	IEC Type		IP68			
	o	Case	#303 Stainless steel			
Enclosure material	Stainless steel	Sensing face	PBT			
	Plastic		PBT			
	Stainless steel		50 N•m 37 (lb-ft)			
lightening torque (max.)	Plastic		5 N•m 3.7 (lb-ft)			
Vibration resistance	(IEC 60068.2.6)		25 G, amplitude +/- 2 mm, f = 1	0-55 Hz		
Shock resistance	(IEC 60068.2.27)		50 G duration 11 ms			
	Shielded		0.7" x 0.7" (18 mm x 18 mm)			
Standard target size (steel)	Non-shielded		0.94" x 0.94" (24 mm x 24 mm)			
Differential (% of Sr)			15%			
Repeatability (% of Sr)			3%			
LED indicator type	А		360° ring LED: Shows output st	atus		
Cabla	2 wire		20 AWG (0.5 mm <sup>2</sup> ), PvR			
Cable	3 wire		22 AWG (0.34 mm <sup>2</sup> ), PvR			
Electrical			Standard	KP- Models		
Voltage range			12 to 48 Vdc	12 to 24 Vdc		
Voltage limit (including ripple)			10 to 58 Vdc	10 to 38 Vdc		
		2 wire	4 V	-		
Voltage drop (across	Nickel plated brass	3 wire	2 V	-		
switch), closed state	& Stainless	4 wire	-	2.6		
	Plastic	3 wire	2 V			
Minimum load current	2 wire		1.5 mA			
Maximum load aumant	2 wire		100 mA			
Maximum load current	3 wire		200 mA			
Residual (leakage) current, open state	2 wire		0.6 mA			
On delay (max.)			0.15 ms			
Off delay (max.)			0.35 ms			
Power-up delay (max.)			5 ms			
	Short circuit protection	ı	Yes			
	Overload		Yes			
	Radio frequency imm	nunity (RFI)	IEC 61000-4-3 Level 3			
Protective circuitry	Electrostatic; transier	nts; impulse	2 wire: IEC 61000-4-2 L3; IEC 6 60947.5.2 L3	61000-4-4 L3;		
	(L - indicates level number)		3 wire: IEC 6000-4-2 L2; IEC 6 60947.5.2 L3	1000-4-4 L3;		
	Reverse polarity prot	ection	Yes			
Agency Listings	E 164869 CCN NRKH	CR 44087 Class 3211	<sup>03</sup> C E			

## Options

9006PA••

Specifications

Mechanical

Description	Suffix	
Extended temperature range (cable type only)	Down to -40° C (-40° F)	TF
Extended cable length	16.4 ft. (5 meter) cable	L1
	32.8 ft. (10 meter) cable	L2

## Accessories

Description	Catalog Number	
Plastic mounting nuts	XSZE218	
Stainless steel mounting nuts	XSZE318	
Locknut washers, stainless steel	XSZE918	
Mounting bracket, 90° steel	9006PA18	
Mounting bracket, plastic	XSZB118	
0.5" NDT conduit adapter (conthe 0" (FO 0mm)	Aluminum	7428
0.5 NPT conduit adapter length 2 (50.8mm)	Stainless	74282

★ Refer to p. 351 for target material correction coefficient Km.

For additional cable options and lengths see p. 518 Accessories..... page 298, 316

(M12 or D suffix; U78 or A suffix) XSZCD101Y Micro Conn., 4 pin, 2 m, straight XSZCD111Y Micro Conn., 4 pin, 2 m, 90° XSZCA101Y Micro Conn., 3 pin, 2 m, straight XSZCA111Y Micro Conn., 3 pin, 2 m, 90°

## Proximity Sensors XS Tubular Inductive Sensors 18 mm Diameter, AC/DC; Universal Standard Length

.63

70

thread

M18x1



LED

XS2M18•K

LED

XS2M18•A



#### Features

- 360° LED indicators
- Extended temperature range
- Extended supply voltage range
- IP68 AC/DC power supply
- Patented plastic mounting bracket
- Connector options
  - Extensive protective circuitry
- · Metal locknuts for metal or plastic mounting nuts for plastic housings included
- Normally closed (N.C.) output available on versions marked \*
- UL Listed, CSA Certified and CE Mark

Nominal Sensing	AC or	Output	Voltage	Range	Opera Frequ	ting encies	SCP	Indicator	Mating Connector	Catalog
Distance	AC/DC	AC DC AC DC			LEDU	Style (see p. 518)	Number			
Nickel b	orass c	ase								
Shielded,	2 m (6.6	) cable								
5 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	no	A	—	XS1M18MA230
5 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	yes	С	—	XS1M18MA250
Shielded,	connect	or - micr	o style A	С					•	
5 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	no	В	17,18	XS1M18MA230K
5 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	yes	В	17,18	XS1M18MA250K
Shielded,	connect	or - mini	style	•					•	
5 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	no	В	23,24	XS1M18MA230A
5 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	yes	С	23,24	XS1M18MA250A
Shielded,	screw te	rminal c	onnectio	n						•
5 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	no	В	_	XS1M18MA230B
Non-shiel	ded, 2 m	(6.6') ca	ble						•	•
8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	no	A	_	XS2M18MA230
8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	yes	С	—	XS2M18MA250
Non-shiel	ded, con	nector -	micro sty	/le AC						•
8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	no	В	23,24	XS2M18MA230K
8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	yes	В	23,24	XS2M18MA250K
Non-shiel	ded, con	nector -	mini styl	e					•	
8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	no	В	18	XS2M18MA230A
8 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	2000 Hz	yes	С	18	XS2M18MA250A
Plastic	case								•	•
Non-shiel	ded, 2 m	(6.6') ca	ble							
8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	no	A	—	XS4P18MA230
Non-shiel	ded, con	nector -	micro sty	/le					•	•
8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	no	A	17,18	XS4P18MA230K
Non-shiel	ded, con	nector -	mini styl	e	•	•		•	•	•
8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	no	A	23,24	XS4P18MA230A
Shielded,	screw te	rminal c	onnectio	n	•	•		•	•	•
8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	no	В	—	XS4P18MA230B
★ To orde	r a normall	v closed (N	I.C.) versio	n change th	ne A to E	. example:	XS1M1	2PA260 to X	S1M12P <b>B</b> 260.	

① See next page under specifications for LED function.

#### Dual Dimensions <u>inches</u> mm

#### Minimum Mounting Clearances (mm/inches)



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## Telemecanique

## OSICONCEPT<sup>™</sup> Proximity Sensors XS Tubular Inductive Sensors 18 mm Diameter, AC/DC; Universal Standard Length

#### Wiring

Connector Micro	Mini	Cable	
2 . 3		Blue Brown Black	BU – BN + BK Output

# Wire color/connector pin 2 wire, AC/DC or AC



Lisable sensing range	Shielded		0 to 4 mm		
Usable sensing range *	Non-shielded		0 to 6.4 mm		
Standard temperature range	Standard temperature range		-25° C to +80° C (-13° F to +176° F)		
Enclosure rating - cable	NEMA Type		4X, 6P, 12, 13		
(for connector, see p. 518)	IEC Type		IP68		
	Niekel plated brook	Case	Nickel plated brass		
Enclosure material	Nickel plated brass	Sensing face	PBT		
	Plastic		PBT		
	Nickel plated brass		35 N•m 26 (lb-ft)		
rightening torque (max.)	Plastic		5 N•m 3.7 (lb-ft)		
Vibration resistance	(IEC 60068.2.6)		25 G, amplitude +/- 2 mm, f = 10-55 Hz		
Shock resistance	(IEC 60068.2.27)		50 G duration 11 ms		
	Shielded		0.7" x 0.7" (18 mm x 18 mm)		
Standard target size (steel)	Non-shielded		0.94" x 0.94" (24 mm x 24 mm)		
Differential (% of Sr)			15%		
Repeatability (% of Sr)			3%		
	A		360° ring LED: Shows output status		
LED indicator true	В		One LED visible from 4 quadrants: Shows output status		
LED Indicator type	-		2 LED indicators: Red shows output status		
	C		Green shows normal operation (SCP only)		
Cablo	2 wire		20 AWG (0.5 mm <sup>2</sup> ), PvR		
Cable	3 wire		22 AWG (0.34 mm <sup>2</sup> ), PvR		
Electrical			· · · ·		
Voltage range			24 to 240 Vac, 24-210 Vdc		
Voltage limit (including ripple)			20 to 264 Vac/dc		
Voltage drop (across			5.5.1/		
switch), closed state (max)			5.5 V		
Inrush current			2 A		
Minimum load current			5 mA		
Maximum load current			200 mA 20 $\leq$ Vdc $\leq$ 58 IEC 60947-5-2 Utilization category DC-1 Vdc > 58 IEC 60947-5-2 Utilization category DC-12		
Residual (leakage) current,	without SCP		0.6 mA		
open state	with SCP		1.5 mA		
<b>O</b> <sub>12</sub> al al and (man)	without SCP		0.2 ms		
On delay (max)	with SCP		2 ms		
o <i>"</i> , , , , , , , , , , , , , , , , , , ,	without SCP		0.2 ms		
Off delay (max)	with SCP		4 ms		
	without SCP		40 ms		
Power-up delay (max.)	with SCP		70 ms		
	Short circuit protection	on	Optional▲		
Protective circuitry	Radio frequency imm	unity (RFI)	IEC 61000-4-3 Level 3		
· · · · · · · · · · · · · · · · · · ·	Electrostatic: transients: impulse		IEC 61000-4-2 L4: IEC 61000-4-4 L4: 60947 5 2 L3		
Protective circuitry Agency Listings	Short circuit protection Radio frequency immunity (RFI) Electrostatic; transients; impulse CR 144087 CCN NRKH Class 3211 (Class 321 (Class 3211 (Class 321 (Class 321 (Class 321 (Class 321 (Class		IEC 61000-4-3 Level 3       IEC 61000-4-2 L4; IEC 61000-4-4 L4; 60947.5.       03		

#### Options

Specifications

Mechanical

Description		Suffix					
Extended temperature range (cable type only)	Down to -40° C (-40° F)	TF					
Extended cable length	5 meter cable	L1					
	10 meter cable	L2					

#### Accessories

Description	Catalog Number	
Plastic mounting nuts	XSZE218	
Metal mounting nuts and lock washers	XSZE118	
Mounting bracket, 90° steel	9006PA18	
Mounting bracket, plastic	XSZB118	
0.5" NPT conduit adapter length 2" (50.8 mm)	Aluminum	7428
0.5 NFT conduit adapter length 2 (50.6 mm)	Stainless	74282

★ Refer to p. 351 for target material correction coefficient Km.

For devices without SCP, see p. 298 for protective fuses.

XSZE	31	9006PA••

**7428** 

Connector Cables (U20 or K suffix; U78 or A suffix)				
XSZCK101Y	Micro Conn., 3 pin, 2 m, straight			
XSZCK111Y	Micro Conn., 3 pin, 2 m, 90°			
XSZCA101Y	Micro Conn., 3 pin, 2 m, straight			
XSZCA111Y	Micro Conn., 3 pin, 2 m, 90°			

For additional cable options and lengths see p. 518 Accessories ...... page 298, 316

## Proximity Sensors XS Tubular Inductive Sensors 30 mm Diameter, DC; Economy Short Length

thread



#### Features

•

- 360° LED indicators
- Extended range models
- Complementary N.O. + N.C. models
- Rugged metal or plastic cases
  - Patented plastic mounting bracket
- Connector options
- Extensive protective circuitry
- Works with unregulated DC supply powered by 24 V secondary transformer
- Metal locknuts for metal or plastic mounting nuts for plastic housing included
- Normally closed (N.C.) output available on versions mode marked \*
- UL Listed, CSA Certified and CE Mark

			·		-	-	
Nominal	Circuit	Voltage	Output	Operating	Indicator	Mating Connector	Catalog
Sensing	Type	Range	Mode	Frequency	LED ①	Style (see p. 518)	Number
Distance	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			,			
Nickel plate	ed brass	case					
Shielded, 2 m	(6.6') cable	;					
10 mm	PNP	12-24 V	N.O.★	1000 Hz	А	—	XS1N30PA340
10 mm	NPN	12-24 V	N.O.★	1000 Hz	A	—	XS1N30NA340
10 mm	PNP	12-24 V	N.O. + N.C.	1000 Hz	А	—	XS1N30PC410
10 mm	NPN	12-24 V	N.O. + N.C.	1000 Hz	А	—	XS1N30NC410
Shielded♦, co	nnector - n	nicro style				•	
10 mm	PNP	12-24 V	N.O.★	1000 Hz	В	11,12,13,15,16	XS1N30PA340D
10 mm	NPN	12-24 V	N.O.★	1000 Hz	В	11,12,14,15,16	XS1N30NA340D
10 mm	PNP	12-24 V	N.O. + N.C.	1000 Hz	В	11,12,13,15,16	XS1N30PC410D
10 mm	NPN	12-24 V	N.O. + N.C.	1000 Hz	В	11,12,14,15,16	XS1N30NC410D
Shielded♦, EX	TENDED F	RANGE, 2 m	(6.6') cable				
20 mm	PNP	12-24 V	N.O.★	500 Hz	A	_	XS1N30PA349
20 mm	NPN	12-24 V	N.O.★	500 Hz	A	—	XS1N30NA349
Shielded, EXT	ENDED RA	NGE, conne	ctor - micro s	style			•
20 mm	PNP	12-24 V	N.O.★	500 Hz	В	11,12,13,15,16	XS1N30PA349D
20 mm	NPN	12-24 V	N.O.★	500 Hz	В	11,12,14,15,16	XS1N30NA349D
Non-shielded,	2 m (6.6') (	cable					•
15 mm	PNP	12-24 V	N.O.	1000 Hz	A	_	XS2N30PA340
15 mm	NPN	12-24 V	N.O.	1000 Hz	A	_	XS2N30NA340
15 mm	PNP	12-24 V	N.O. + N.C.	1000 Hz	A	_	XS2N30PC410
15 mm	NPN	12-24 V	N.O. + N.C.	1000 Hz	A	_	XS2N30NC410
Non-shielded,	connector	- micro style	e				•
15 mm	PNP	12-24 V	N.O.	1000 Hz	В	11,12,13,15,16	XS2N30PA340D
15 mm	NPN	12-24 V	N.O.	1000 Hz	В	11,12,14,15,16	XS2N30NA340D
15 mm	PNP	12-24 V	N.O. + N.C.	1000 Hz	В	11,12,13,15,16	XS2N30PC410D
15 mm	NPN	12-24 V	N.O. + N.C.	1000 Hz	В	11,12,14,15,16	XS2N30NC410D
Plastic cas	e						•
Non-shielded,	2 m (6.6')	cable					
15 mm	PNP	12-24 V	N.O.	1000 Hz	A	_	XS4P30PA340
15 mm	NPN	12-24 V	N.O.	1000 Hz	A	—	XS4P30NA340
15 mm	PNP	12-24 V	N.O. + N.C.	1000 Hz	A	_	XS4P30PC410
15 mm	NPN	12-24 V	N.O. + N.C.	1000 Hz	A	_	XS4P30NC410
Non-shielded	connector	- micro style	<u>.</u>			•	•

1000 Hz 11,12,13,15,16 XS4P30PA340D 15 mm PNP 12-24 V N.O. Α XS4P30NA340D 15 mm NPN 12-24 V NO 1000 Hz 11 12 14 15 16 А PNP 12-24 V XS4P30PC410D N.O. + N.C 1000 Hz 15 mm Α 11.12.13.15.16 15 mm NPN 12-24 V N.O. + N.C. 1000 Hz Α 11,12,14,15,16 XS4P30NC410D

★ To order a normally closed (N.C.) version change the A to B, example: XS1N12PA340 to XS1N12PB340.

See next page under specifications for LED function
See dimension X below.

#### Minimum Mounting Clearances (mm/inches)



😰 Telemecanique



## **Proximity Sensors XS Tubular Inductive Sensors** 30 mm Diameter, DC; Economy Short Length

0 to 8 mm

0 to 16 mm

0 to 12 mm

IP67

IP68

PBT

PBT

PBT

15%

3. 4X. 6P. 12. 13

3, 4X, 6P, 12, 13

Nickel plated brass

40 N•m 29.5 (lb-ft)

50 G duration 11 ms

20 N•m 15 (lb-ft)

-25° C to +70° C (-13° F to +158° F)

-25° C to +80° C (-13° F to +176° F)

25 G, amplitude +/- 2 mm, f = 10-55 Hz

1.18" x 1.18" (30 mm x 30 mm)

1.88" x 1.88" (48 mm x 48 mm)

1.41" x 1.41" (36 mm x 36 mm)

-25° C to 50° C (-13° F to +122° F)

Standard Range

Extended Range

NEMA Type

NEMA Type

Sensing face

Sensing face

Standard Range

Extended range

IEC Type

IEC Type

Case

Case

#### Wiring



Wire color/connector p 3 wire NO or NC





4 wire NO NC







XSZB1••

10/02

Coble		Mechanical				
Blue BU -		Usable sensing range★	Shielded			
Brown	BN +		Non-shielded			
Black	BK Output	Standard tomporature range	Nickel plated brass			
		Standard temperature range	Plastic			
r pin		Extended range				
		Enclosure rating - cable	Nickel plated brass			
+		(for connector, see p. 518)	Plastic			
		Enclosuro motorial	Nickel plated brass			
	-		Plastic			
		Tightoning torque (max.)	Nickel plated brass			
		rightening torque (max.)	Plastic			
	+	Vibration resistance	(IEC 60068.2.6)			
	Shock resistance	(IEC 60068.2.27)				
	Standard target size (steel)	Shielded				
-			Unshielded			
		Differential (% of Sr)				

Specifications

Mechanical

4	wire	NO	+	NC	

Repeatability (% of Sr)			3%	
	А		360° ring LED: Shows output status	
LED indicator type	В		One LED visible from 4 quadrants: Shows output status	
Cable	3 or 4 wire		22 AWG (0.34 mm <sup>2</sup> ), PvR	
Electrical	•		÷	
Voltage range			12 to 24 Vdc	
Voltage limit (including ripp	ole)		10 to 38 Vdc	
Voltage drop (across switc	h), closed state		2 V	
Maximum load current			200 mA	
Current consumption (no I	oad)		10 mA	
On delay (max.)	Shielded	Standard Range	0.3 ms	
	Silleided	Extended Range	0.6 ms	
	Non-shielded		0.3 ms	
	Shielded	Standard Range	0.7 ms	
Off delay (max.)	Silleided	Extended Range	1.4 ms	
	Non-shielded		0.7 ms	
Power up delay			5 ms	
	Short circuit prote	ection	Yes	
	Overload		Yes	
	Radio frequency	immunity (RFI)	IEC 61000-4-3 Level 3	
Protective circuitry	Electrostatio: tran	ciente: impulse	2 wire: IEC 61000-4-2 L3; IEC 61000-4-4 L2; 60947.5.2 L3	
	(L – indicates leve	el number)	3 wire: IEC 61000-4-2 L3; IEC 61000-4-4L3; 60947.5.2 L3 Extended range: IEC 61000-4-4 L3	
	Reverse polarity	protection	Yes	
Agency Listings	E 164869 CCN NRI	CR 44087 Class 3211 0	· ( E	

#### Options

Description	Suffix	
Extended temperature range (cable type and standard sensing distance only)	Down to -40° C (-40° F)	TF
Extended cable length	16.4 ft. (5 meter) cable	L1
	32.8 ft. (10 meter) cable	L2

#### Accessories

Description		Catalog Number
Plastic mounting nuts		XSZE230
Metal mounting nuts and lock nuts	XSZE130	
Mounting bracket 90° steel		9006PA30
Mounting bracket, plastic, long length		XSZB130
0.5" NPT conduit adapter length 2" (50.8mm)	Aluminum	7427

Refer to p. 351 for target material correction coefficient Km.

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Downloaded from Elcodis.com electronic components distributor

Connector Cables (M12 or D suffix) XSZCD101Y Micro Conn., 4 pin, 2 m, straight XSZCD111Y Micro Conn., 4 pin, 2 m, 90° ×

For additional cable options and lengths see p. 518 Accessories..... page 298, 316

## **Proximity Sensors XS Tubular Inductive Sensors** 30 mm Diameter, DC; Universal Standard Length





**Proximity Sensors** 

## Features

- Faster troubleshooting aided by high visibility 360° indicators
- 2 wire versions simplify wiring
- Rugged case designed for aggressive industrial environments
- Worrv free replacement: standard length, extended temperature and supply voltage range, improved enclosure ratings (IP68), 3 wire complementary PNP + NPN with selectable N.O./ N.C. output circuit
- Pigtail connector version (0.8 m /2.6' cable) provides cutting oil (IP68) ratings and connection for aggressive environments.
- Significant replacement time savings using patented plastic mounting bracket (no gauging) or connectors
- Trouble free operation ensured by extensive protective circuitry
- Works with unfiltered rectified power supply •
- Metal mounting lock nuts included
- Normally closed (N.C.) output available on versions marked \*
- UL Listed, CSA Certified and CE Mark

Nominal Sensing Distance	Circuit Type	Voltage Range	Output Mode	Max. Load	Operating Frequency	Indicator LED ①	Mating Connector Style (see p. 518)	Catalog Number
Nickel r	plated bra	ISS C25	e	L A				
<del>ک'`</del> ded	2r ( ""	a le		5 - 7 -				
	2-wire	<u>2</u> . <u>.</u> .	<u>,</u> .	1 100 nA	∠00∪ Hz	A	- '	XS1M30DA210
10 mm	PNP	12-48 V	N.O.★	200 mA	1000 Hz	А	—	XS1M30PA370
10 mm	NPN	12-48 V	N 0.	200 mA	1000 Hz	А	—	XS1M30NA370
10 mm	PNP + NPN	12-24 V	N. )./ I.C	200 mA	1000 Hz	А	—	XS1M30KP340
Shielded,	connector -	micro st	yie Du - u	.8 m (2.6 ft)	pigtail		_	
10 mm	2-wire	12-48 V	N.O.★	1.5-1 4	2000 Hz	۹	11 3,17, 9	XS1M30DA210LD
Sn aidad	connector -	<u>liiz</u> it	e S		7010			•
10 m 7	7 w e –	46	1 \star 🕓	1.5-1 0 mA	2000	13	11,12,15,16	XS1M30DA210D
10m	r'NP	12-48 V	N.O.★	200 mA	1000 Hz	В	11,12,13,15,16	XS1M30PA370D
10 mm	NPN	12-48 V	N.O.★	200 mA	1000 Hz	В	11,12,14,15,16	XS1M30NA370D
10 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	1000 Hz	В	11,12,15,16	XS1M30KP340D
Shielded,	connector -	mini sty	e - 0.8 m	(2.6 ft) pigta	il		•	
10 mm	2-wire	12-48 V	N.O.★	1.5-100 mA	2000 Hz	A	21,22	XS1M30DA210LA
Shielded,	connector -	mini sty	е		•		•	
10 mm	PNP	12-48 V	N.O.	200 mA	1000 Hz	В	21,22	XS1M30PA370A
10 mm	NPN	12-48 V	N.O.	200 mA	1000 Hz	В	21,22	XS1M30NA370A
Shielded,	connector -	screw te	rminal co	nnection	•			•
10 mm	2 wire	12-48 V	N.O.★	1.5-100 mA	2000 Hz	В	—	XS1M30DA210B
10 mm	PNP	12-48 V	N.O.★	200 mA	1000 Hz	В	<b>—</b>	XS1M30PA370B
10 mm	NPN	12-48 V	N.O.★	200 mA	1000 Hz	В	—	XS1M30NA370B
Non-shiel	ded, 2 m (6.	6') cable			•		•	
15 mm	PNP	12-48 V	N.O.★	200 mA	1000 Hz	A	I–	XS2M30PA370
15 mm	NPN	12-48 V	N.O.★	200 mA	1000 Hz	A	<u> _</u>	XS2M30NA370
15 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	1000 Hz	A	<u> _</u>	XS2M30KP340
Non-shiel	ded, connec	ctor - mic	ro style		•		•	•
15 mm	PNP	12-48 V	N.O.★	200 mA	1000 Hz	В	11,12,13,15,16	XS2M30PA370D
15 mm	NPN	12-48 V	N.O.★	200 mA	1000 Hz	В	11,12,14,15,16	XS2M30NA370D
15 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	1000 Hz	В	11,12,15,16	XS2M30KP340D

To order a normally closed (N.C.) version change the A to B, example: XS1M12PA370 to XS1M12PB370. ി

See next page under specifications for LED function.

#### Minimum Mounting Clearances (mm/inches)



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## **Proximity Sensors XS Tubular Inductive Sensors** 30 mm Diameter, DC; Universal Standard Length

#### Wiring

Connector	Cable	
	Blue Brown Black	BU – BN + BK Output
Wire color/connect 3 wire NO or NC	or pin	
BN/1	BN	J/1
PNP BK/4 NO BK/2 NQ -	NPN	BK/2 NG BK/4 NO
BU/3	BL	J/3
Connector	Cable	
$3 ( \bullet \bullet )^1$	Blue Brown	BU – BN +

Blue Brown Black	BU – BN + BK Output

#### 4 wire, programmable, NO or NC output

BN/ <u>1 (N</u>	D),BU/3 (NC)
PNP	1WH/2 +
	BK/4
	」 中.
BU/3 (N	),BU/1 (NC)

NPN NH/2  $\Diamond$ BK/4 BU/3 (NO),BU/1 (NC)

BN/1 (NO),BU/3 (NC)

#### 2 wire non-polarized





XSZB1••

Connector	Cables
-----------	--------

(M12 or D suffix; U78 or A suffix)			
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight		
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°		
XSZCA101Y	Micro Conn., 3 pin, 2 m, straight		
VC7CA111V	Miero Conn. 2 nin. 2 m. 00º		

For additional cable options and lengths see p. 518 Accessories ..... page 298, 316

## Specifications

Mechanical					
	Shielded	0 to 8 mm			
Usable sensing range*	Non-shielded	0 to 12 mm			
Standard temperature range		-25° C to +80° C (-13° F to +176° F)			
Enclosure rating - cable	NEMA Type	3, 4X, 6P, 12, 13			
(for connector, see p. 518)	IEC Type	IP68 – cutting oil proof, I	IP67 for B screw terminals		
Engloquito motorial	Nickel plated brass	Case: Nickel plated Bras	55		
Enclosure material	Nickel plated blass	Sensing face: PBT			
Tightening torque (max.)	Nickel plated brass	50 N•m 37 (lb-ft)			
Vibration resistance	(IEC 60068.2.6)	25 G, amplitude +/- 2 mr	m, f = 10-55 Hz		
Shock resistance	(IEC 60068.2.27)	50 G duration 11 ms			
Ctandard target size (steel)	Shielded	1.18" x 1.18" (30 mm x 3	30 mm)		
Standard target size (steel)	Non-shielded	1.41" x 1.41" (36 mm x 3	36 mm)		
Differential (% of Sr)		15%			
Repeatability (% of Sr)		3%			
LED indicator tune	A	360° ring LED: Shows o	utput status		
LED Indicator type	В	One LED visible from 4 of	quadrants: Shows output status		
0-51-	2 wire	20 AWG (0.5 mm <sup>2</sup> ), PvF	3		
Cable	3 wire	22 AWG (0.34 mm <sup>2</sup> ), Pv	/R		
Electrical		Std.	KP-Models		
Voltage range – nominal		12-48 Vdc	12-24 Vdc		
Voltage limit (including ripple)		10-58 Vdc	10-38 Vdc		
Voltage drop (across	3 wire	2 V	2.6 V		
switch), closed state	2 wire	4 V			
Minimum load current	2 wire	1.5 mA			
	2 wire	100 mA			
Maximum load current	3 wire	200 mA			
Current consumption (no load)	3 wire	10 mA			
Residual (leakage) current,	2 wire	0.5 mA			
open state	2 wiro	0.2 ms			
On delay (max.)	2 wire	0.3 ms			
	2 wire	0.3 ms			
Off delay (max.)	2 wire	0.7 ms			
Power-up delay (max )	0 1110	5 ms	5 mc		
Protective circuitry		0 113			
Short circuit protection		Yes			
Overload		Yes			
Radio frequency immunity (RFI)		IEC 61000-4-3 Level 3			
Electrostatic: transients: impulse		2 wire IEC 61000-4-2 L3; IEC 61000-4-4 L3; 60947 5 2 L3			
(L - indicates level number)		3 wire IEC 61000-4-2 L3; IEC 61000-4-4 L2; 60947.5.2 L3			
Reverse polarity protection		Yes			
Agency Listings	E 164869 CCN NRKH	CR 44087 Class 3211 03	()		

## Options

Description		Suffix
Extended temperature range (cable type only)	Down to -40°+ C (-40°+ F)	TF
Extended cable length	16.4 ft. (5 meter) cable	L1
	32.8 ft. (10 meter) cable	L2

#### Accessories

Description	Catalog Number	
Metal mounting lock nuts		XSZE130
Mounting bracket, 90° steel and lock washers		9006PA30
Mounting bracket, plastic		XSZB130
0.5" NPT conduit adapter length 2" (50.8mm)	Aluminum	7427

Refer to p. 351 for target material correction coefficient Km.

**Proximity Sensors** 

## Proximity Sensors XS Tubular Inductive Sensors 30 mm Diameter, DC; Universal Standard Length, Non-Corrosive





#### Features

- Faster troubleshooting aided by high visibility 360° indicators
- · 2 wire versions simplify wiring
- High impact stainless steel and plastic cases for aggressive environments cutting oils, grease, solvents, etc.
- Worry free replacement: standard length, extended temperature and supply voltage range, improved enclosure ratings (IP68), 3 wire complementary PNP + NPN with selectable N.O./ N.C. output circuit
- Significant replacement time savings using patented plastic mounting bracket (no gauging) or connectors
- Pigtail connector version (0.8 m /2.6' cable) provides cutting oil (IP68) ratings and connection for aggressive environments.
- Trouble free operation ensured by extensive protective circuitry
- · Works with unfiltered rectified power supply
- Stainless steel or plastic mounting nuts included
- Normally closed (N.C.) output available on versions marked\*
- UL Listed, CSA Certified and CE Mark

Nominal Sensing Distance	Circuit Type	Voltage Range	Output Mode	Max Load	Operating Frequency	Indicator L :D 1	Mating Connento Style (, ne p. i1 )	Catalog Number
ົີ ແ nle	t e' c د °	63			Val			
<b>ડ</b> ંded,	2 m (u.6') u	aole						/
10 mm	2-wire	12-48 V	N.O. ★	1.5-100 mA	2000 Hz	A	_	XS1M30DA211
10 mm	PNP	12-48 V	N D.	200 mA	1000 Hz	A	—	XS1M30PA371
10 mm	NPN	12-48 V		200 mA	1000 Hz	A	—	XS1M30NA371
Shielded,	connector	- micro st	' <sup>ı</sup> e - 0.8 m	(2.6 🐪 'gta	ail			
10 m	^-v`~	2 + 1	N 🛪 🗖	1.5- A	2 00 z		1 12 15 6	XS1M30DA211LI
Sh eld, ,	n er or	n ni tyl	(8),	2.6 ft, pigta		FOR		•
10mm	2-wire	12-48 V	N.O. ★	1.5-100 mA	2000 Hz	A	21,22	XS1M30DA211L
Non-shiel	ded, 2 m (6	6') cable	•	•	•			•
15 mm	PNP	12-48 V	N.O.	200 mA	1000 Hz	A	_	XS2M30PA371
15 mm	NPN	12-48 V	N.O.	200 mA	1000 Hz	A	—	XS2M30NA371
Plastic	case							
Non-shiel	ded, 2 m (6	6') cable						
15 mm	PNP	12-48 V	N.O.★	200 mA	1000 Hz	A	—	XS4P30PA370
15 mm	NPN	12-48 V	N.O.★	200 mA	1000 Hz	A	—	XS4P30NA370
15 mm	PNP/NPN	12-24 V	N.O./N.C.	200 mA	1000 Hz	A	—	XS4P30KP340
Non-shiel	ded, conne	ctor - mic	ro style D	C	•		•	•
15 mm	PNP	12-48 V	N.O.★	200 mA	1000 Hz	A	11,12,13,15,16	XS4P30PA370D
15 mm	NPN	12-48 V	N.O.★	200 mA	1000 Hz	A	11,12,14,15,16	XS4P30NA370D
15 mm	PNP/NPN	12-24 V	N.O/.N.C.	200 mA	1000 Hz	А	11.12.15.16	XS4P30KP340D

Minimum Mounting Clearances (mm/inches)



Proximity Sensors

Minimun



Wire color/connector pin 3 wire NO or NC BN/1

BK/4 NO

3K/2 NQ

BN/1 (NO),BU/3 (NC)

WH/2

BN/3

BU/4

BK/4

BU/3 (NO),BU/1 (NC)

2 wire non-polarized

Cable

Black

NPN

 $\Diamond$ 

Cable Blue

Brown Black

NPN

 $\Diamond$ 

4 wire, programmable, NO or NC output

Blue BU -Brown BN +

<u>BN/1</u>

BU/3

BK Output

BK/2 NG

BK/4 NO

BU –

BN/1 (NO),BU/3 (NC)

WH/2

BK/4

9006PA••

BU/3 (NO),BU/1 (NC)

+/-

-/+

BN + BK Output

## **Proximity Sensors XS Tubular Inductive Sensors** 30 mm Diameter, DC; Universal Standard Length, Non-Corrosive

## Wiring Connector

PNP

 $\Diamond$ 

Connector

ؿ

PNP

 $\Diamond$ 

 $\Diamond$ 

7427

XSZB1••

**Connector Cables** 

BU/3

Specifications

Mechanical						
	Shielded	Shielded		0 to 8 mm		
Usable sensing range★	Non-shielded	Non-shielded		0 to 12 mm		
Standard temperature range			-25° C to +80° C (-1	3° F to +176° F)		
Enclosure rating cable	NEMA Type		3, 4X, 6P, 12, 13			
(for connector, see p. 517)	IEC Type		IP68			
	0	Case	#303 Stainless steel			
Enclosure material	Stainless steel	Sensing face	PBT			
	Plastic		PBT			
	Stainless steel		100 N•m 74 (lb-ft)			
lightening torque (max.)	Plastic		20 N•m 15 (lb-ft)			
Vibration resistance	(IEC 60068.2.6)		25 G, amplitude +/-	2 mm, f = 10-55 Hz		
Shock resistance	(IEC 60068.2.27)		50 G duration 11 ms	3		
	Shielded		1.18" x 1.18" (30 mm	n x 30 mm)		
Standard target size (steel)	Non-shielded		1.41" x 1.41" (36 mm	n x 364 mm)		
Differential (% of Sr)			15%			
Repeatability (% of Sr)			3%			
LED indicator type	A		360° ring LED: Show	ws output status		
	2 wire		20 AWG (0.5 mm <sup>2</sup> ),	PvR		
Cable	3 wire		22 AWG (0.34 mm <sup>2</sup> )	), PvR		
Electrical		Standard	KP-Models			
Voltage range – nominal			12 to 48 Vdc	12-24 Vdc		
Voltage limit (including ripple)			10 to 58 Vdc	10-38 Vdc		
		2 wire	4 V			
Voltage drop (across		3 wire	2 V			
Switch), closed state		4 wire	– 2.6 V			
Minimum load current	2 wire	•	1.5 mA	÷		
Maximum land annual	2 wire		100 mA			
Maximum load current	3 wire		200 mA			
Current consumption (on load)	•	3 wire	10 mA			
Residual (leakage) current, open st	ate	2 wire	0.5 mA			
		2 wire	0.2 ms	0.2 ms		
On delay (max.)		3 wire	0.3 ms			
<b>O</b> <sup>#</sup> data (man)		2 wire	0.3 ms			
Off delay (max.)		3 wire	0.7 ms			
Power-up delay (max.)		•	5 ms			
	Short circuit protect	Short circuit protection		Yes		
	Overload		Yes			
Protective circuitry	Radio frequency in	nmunity (RFI)	IEC 61000-4-3 Level 3			
	Electrostatic; trans	Electrostatic; transients; impulse (L - indicates level number)		2 wire: IEC 61000-4-2 L3; IEC 61000-4-4 L3; 60947.5.2 L3		
	(L - indicates level			3 wire: IEC 61000-4-2 L2; IEC 61000-4-4 L3; 60947.5.2 L4		
	Reverse polarity pr	Reverse polarity protection		Yes		
Agency Listings	E 164869 CCN NRK	H	CR 44087 Class 3211 0	<sup>13</sup> (f		

## Options

★

Description	Suffix	
Extended temperature range cable type only	Down to -40° C (-40° F)	TF
Extended cable length	16.4 ft. (5 meter) cable	L1
	32.8 ft. (10 meter) cable	L2

## Accessories

Description		Catalog Number
Plastic mounting nuts	XSZE230	
Stainless steel mounting nuts	XSZE330	
Locknut washers, stainless steel	XSZE930	
Mounting bracket, 90° steel	9006PA30	
Mounting bracket, plastic		XSZB130
0.5" NPT conduit adapter length 2" (50.8mm)	Aluminum	7427

Refer to p. 351 for target material correction coefficient Km.

(M12 or D suffix; U78 or A suffix)						
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight					
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°					
XSZCA101Y	Micro Conn., 3 pin, 2 m, straight					
XSZCA111Y	Micro Conn., 3 pin, 2 m, 90°					

For additional cable options and lengths see p. 518 Accessories ...... page 298, 316

## Proximity Sensors XS Tubular Inductive Sensors 30 mm Diameter, AC/DC; Universal Standard Length









Dual Dimensions <u>inches</u> mm

Proximity Sensors

#### Features

- 360° LED indicators
- Extended temperature range
- Extended supply voltage range
- IP68
- AC/DC power supply
- Patented plastic mounting bracket
- Connector options
- · Extensive protective circuitry
- Metal lock nuts for metal or plastic mounting nuts for plastic housing and lock washers included
- Normally closed (N.C.) output available on versions marked \*
- UL Listed, CSA Certified and CE Mark

Nominal Sensing Distance	Output Medet	Voltage	Range	Opera Frequ	ating ency	SCP		Mating Connector Style	Catalog	
	Mode *	AC	DC	AC	DC			(see p. 518)	Number	
Nickel p	olated	brass c	ase	•						
Shielded,	2 m (6.6	') cable								
10 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	2000 Hz	no	Α	—	XS1M30MA230
10 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	2000 Hz	yes	С	<b> </b>	XS1M30MA250
Shielded,	connec	tor - micr	o style A	Ċ						
10 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	2000 Hz	no	В	13,14	XS1M30MA230
10 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	2000 Hz	yes	В	13,14	XS1M30MA250
Shielded,	connec	tor - mini	style							
10 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	2000 Hz	no	В	17,20	XS1M30MA230
10 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	2000 Hz	yes	С	18,20	XS1M30MA250
Shielded,	screw te	erminal c	onnectio	n					•	•
10 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	2000 Hz	no	В	—	XS1M30MA230
Non-shie	lded, 2 m	n (6.6') ca	ble							
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	no	A	—	XS2M30MA230
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	yes	С	_	XS2M30MA250
Non-shie	Ided, cor	nector -	micro sty	le AC					•	
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	no	В	13,14	XS2M30MA230
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	yes	В	13,14	XS2M30MA250
Non-shie	Ided, cor	nector -	mini style	9					•	
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	no	В	18,19	XS2M30MA230
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	yes	С	18,19	XS2M30MA250
Plastic	case								•	•
Non-shie	lded. 2 m	n (6.6') ca	ble							
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	no	A	—	XS4P30MA230
Non-shie	Ided, cor	nector -	micro stv	le		1		1		
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	no	A	13,14	XS4P30MA230
Non-shiel	ded, cor	nector -	mini style	÷						
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	no	Α	18,20	XS4P30MA230A
Non-shie	lded, scr	ew term	inal conn	ector		1		1		
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	no	В	_	XS4P30MA230E

See next page under specifications for LED function.

#### Minimum Mounting Clearances (mm/inches)

thread

M30x1.5





## **Proximity Sensors XS Tubular Inductive Sensors** 30 mm Diameter, AC/DC; Universal Standard Length

0 to 8 mm

0 to 12 mm

PBT

3, 4X, 6P, 12, 13

-25° C to +80° C (-13° F to +176° F)

IP68 - P67 for B screw terminals Nickel plated brass

#### Wiring

Connector Micro	Mini	Cable	
2	3	Blue Brown Black	BU – BN + BK Output

## Wire color/connector pin 2 wire, AC/DC or AC



	Plastic	PBI				
Tichtoning torque (may)	Nickel plated brass	50 N•m 37 (lb-ft)				
rightening torque (max.)	Plastic	20 N•m 15 (lb-ft)				
Vibration resistance	(IEC 60068.2.6)	25 G, amplitude +/- 2 mm, f = 10-55 Hz				
Shock resistance	(IEC 60068.2.27)	50 G duration 11 ms				
Ctandard target size (steel)	Shielded	1.18" x 1.18" (30 mm x 30 mm)				
Standard target size (steel)	Non-shielded	1.41" x 1.41" (36 mm x 36 mm)				
Differential (% of Sr)		15%				
Repeatability (% of Sr)		3%				
	A	360° ring LED: Shows output status				
LED indicator type	В	One LED visible from 4 quadrants: Shows output status				
	С	2 LED indicators: Red shows output status Green shows normal operation (SCP only)				
Cable	2 wire	22 AWG (0.5 mm <sup>2</sup> ), PvR				
Electrical						
Voltage range – nominal		24 to 240 Vac (50/60 Hz), 24 to 210 Vdc				
Voltage limit (including ripple)		20 to 264 Vac/Vdc				
Voltage drop (across switch), clos	sed state	5.5 V				
Inrush current		2 A				
Minimum load current		5 mA				
	AC	300 mA				
Maximum load current	DC	200 mA 20 ≤ Vdc ≤ 58 IEC 60947-5-2 Utilization category DC-1 Vdc > 58 IEC 60947-5-2 Utilization category DC-12				
Residual (leakage) current.	Without SCP	0.6 mA				
ED indicator type able <b>Jectrical</b> oltage range – nominal oltage limit (including ripple) oltage drop (across switch), close irrush current linimum load current laximum load current esidual (leakage) current, pen state in delay (max.) ff delay (max.) ower-up delay (max.) rotective circuitry	With SCP	1.5 mA				
	Without SCP	0.2 ms				
ibration resistance ibrock resistance itandard target size (steel) ifferential (% of Sr) tepeatability (% of Sr) ED indicator type iable ilectrical ioltage range – nominal ioltage drop (across switch), close rush current finimum load current tesidual (leakage) current, pen state in delay (max.) iff delay (max.) rotective circuitry igency Listings	With SCP	2 ms				
oltage drop (across switch), close irush current linimum load current laximum load current esidual (leakage) current, pen state in delay (max.)	Without SCP	0.3 ms				
	With SCP	5 ms				
Off delay (max.)	Without SCP	40 ms				
	With SCP	70ms				
	Without SCP	40 ms				
Power-up delay (max.)	With SCP	70 ms				
	Short circuit protection	Optional▲				
Protective circuitry	Radio frequency immunity (RFI)	IEC 61000-4-3 Level 3				
	Electrostatic; transients; impulse	IEC 61000-4-2 L4; IEC 61000-4-4 L4; 60947.5.2 L3				
Agency Listings	E 164869 CCN NRKH	CR 44087 Class 3211 03				

Case

Sensing face



XSZB1••

#### **Connector Cables**

(U20 or K suffix; U78 or A suffix) XSZCK101Y Micro Conn., 3 pin, 2 m, straight XSZCK111Y Micro Conn., 3 pin, 2 m, 90° XSZCA101Y Mini Conn., 3 pin, 2 m, straight XSZCA111Y Mini Conn., 3 pin, 2 m, 90°

For additional cable options and lengths see p. 518

Accessories ..... page 298, 316

Suffix

TF

L1

L2

**Proximity Sensors** 

# Accessories

Extended cable length

Extended temperature range cable type only

Options Description

Specifications

Usable sensing range\*

Enclosure rating - cable (connector, see p. 518)

Enclosure material

Standard temperature range

Shielded

Non-shielded

NEMA Type

Nickel plated brass

IEC Type

Mechanical

Description	Catalog Number	
Plastic mounting nuts	XSZE230	
Metal mounting nuts and lock washers	XSZE130	
Mounting bracket, 90° steel	9006PA30	
Mounting bracket, plastic	XSZB130	
0.5" NPT conduit adapter length 2" (50.8 mm) Aluminum		7427

Down to -40° C (-40° F)

16.4 ft. (5 meter) cable

32.8 ft. (10 meter) cable

Refer to p. 351 for target material correction coefficient Km. \*

For devices without SCP, see p. 298 for protective fuses.

## **Proximity Sensors XS Tubular Inductive Sensors** Economy D Series – DC, AC



#### Features

Entire family of proximity sensors dedicated to OEMs and "just enough" applications.

• DC tubular body style ranging from 6.5 mm to 30 mm diameter, in 3 wire, N.O. output

Telemecanique

- AC tubular body style ranging from 12 mm to 30 mm diameter, in 2 wire, N.O. output ٠
- Brass metal case with either 2 meter cable or connector options •
- Shielded and non-shielded versions available
- Mounting nuts included ٠
- Sold in multiples of 10 easy to open bags ٠

_	thread
	M30x1.5

a = Overall Length (mm)

b = Threaded Section (mm) c = for Non-shielded Sensors (mm)



#### Dimensions

		á	a	I	C	С	
		IN	mm	IN	mm	IN	mm
C E	Cable	1.65	42.0	I	-	-	-
0.5 mm	Connector	-	I	I	-	-	-
8 mm	Cable	1.65	42.0	1.60	40.6	-	-
	Connector	2.42	61.4	1.56	39.6	-	-
10	Cable	1.66	42.2	1.57	40.0	.26	7
12 11111	Connector	2.09	53.0	1.56	39.6	-	-
10 mm	Cable	2.06	52.2	1.95	49.6	-	-
1011111	Connector	2.52	64.0	1.96	49.7	-	-
20 mm	Cable	2.05	52.0	1.95	49.6	-	-
30 mm	Connector	-	-	-	-	-	-

					Operating	
Circuit	Output	Voltage	Voltage Drop	Load Current	Frequency	Catalog
Туре	Mode	Range	Maximum	Maximum	Maximum	Number
6.5 mm, Shie	Ided, DC-2	Meter (6') Cable-No	ominal Sensing Dis	stance-1.5 mm		I
PNP	N.O.	12 to 24 Vdc	3 V	50 mA	3000 Hz	XS1L06PA140
NPN	N.O.	12 to 24 Vdc	3 V	50 mA	3000 Hz	XS1L06NA140
8 mm, Shield	ed, DC-2 M	Aeter (6') Cable-Non	ninal Sensing Dist	ance-1.5 mm		
PNP	N.O.	12 to 24 Vdc	3 V	50 mA	3000 Hz	XS1D08PA140
NPN	N.O.	12 to 24 Vdc	3 V	50 mA	3000 Hz	XS1D08NA140
8 mm, Shield	ed, DC-Mi	cro Style Connector	★–Nominal Sensi	ng Distance-1.	5 mm	
PNP	N.O.	12 to 24 Vdc	3 V	50 mA	3000 Hz	XS1D08PA140D
NPN	N.O.	12 to 24 Vdc	3 V	50 mA	3000 Hz	XS1D08NA140D
12 mm, Shiel	ded, DC-2	Meter (6') Cable-No	minal Sensing Dis	tance-2 mm		
PNP	N.O.	12 to 24 Vdc	3 V	100 mA	2000 Hz	XS1D12PA140
NPN	N.O.	12 to 24 Vdc	3 V	100 mA	2000 Hz	XS1D12NA140
12 mm, Shiel	ded, DC-N	licro Style Connecto	or ★–Nominal Sens	sing Distance-2	2 mm	
PNP	N.O.	12 to 24 Vdc	3 V	100 mA	2000 Hz	XS1D12PA140D
NPN	N.O.	12 to 24 Vdc	3 V	100 mA	2000 Hz	XS1D12NA140D
12 mm, Non-	shielded, D	C-2 Meter (6') Cable	-Nominal Sensing	g Distance–4 m	m	L
PNP	N.O.	12 to 24 Vdc	3 V	100 mA	1000 Hz	XS2D12PA140
NPN	N.O.	12 to 24 Vdc	3 V	100 mA	1000 Hz	XS2D12NA140
12 mm, Non-	shielded, D	C-Micro Style Conr	nector-Nominal Se	ensing Distance	–4 mm	I
PNP	N.O.	12 to 24 Vdc	3 V	100 mA	1000 Hz	XS2D12PA140D
NPN	N.O.	12 to 24 Vdc	3 V	100 mA	1000 Hz	XS2D12NA140D
12 mm. Shiel	ded. AC-2	Meter (6') Cable-No	minal Sensing Dis	tance-2 mm		I
2 wire	N.O.	24 to 240 Vac	7V	200 mA	25 Hz	XS1M12FA264
18 mm. Shiel	ded. DC-2	Meter (6') Cable-No	minal Sensing Dis	tance-5 mm		
PNP	N.O.	12 to 24 Vdc	3 V	100 mA	1000 Hz	XS1D18PA140
NPN	N.O.	12 to 24 Vdc	3 V	100 mA	1000 Hz	XS1D18NA140
18 mm. Shiel	ded. DC-N	licro Style Connecto	or ★–Nominal Sens	sing Distance-5	5 mm	
PNP	N.O.	12 to 24 Vdc	3 V	100 mA	1000 Hz	XS1D18PA140D
NPN	N.O.	12 to 24 Vdc	3 V	100 mA	1000 Hz	XS1D18NA140D
18 mm. Non-	shielded. C	C-2 Meter (6') Cable	e-Nominal Sensing	a Distance–8 m	m	I
PNP	N.O.	12 to 24 Vdc	3 V	100 mA	250 Hz	XS2D18PA140
NPN	N.O.	12 to 24 Vdc	3 V	100 mA	250 Hz	XS2D18NA140
18 mm. Non-	shielded. D	C-Micro Style Conr	nector <b>*</b> -Nominal	Sensing Distar	ice–8 mm	
PNP	N O	12 to 24 Vdc	3 V	100 mA	250 Hz	XS2D18PA140D
NPN	N.O.	12 to 24 Vdc	3 V	100 mA	250 Hz	XS2D18NA140D
18 mm. Shiel	ded. AC-2	Meter (6') Cable-No	minal Sensing Dis	tance-5 mm		
2 wire	N.O.	24 to 240 Vac	4.5 V	300 mA	25 Hz	XS1M18FA264
30 mm, Shiel	ded, DC-2	Meter (6') Cable-No	minal Sensing Dis	tance-10 mm	-	
PNP	N.O.	12 to 24 Vdc	3 V	100 mA	200 Hz	XS1D30PA140
NPN	N.O.	12 to 24 Vdc	3 V	100 mA	200 Hz	XS1D30NA140
30 mm, Shiel	ded, DC-N	licro Style Connecto	or ★–Nominal Sens	sing Distance-1	0 mm	L
PNP	N.O.	12 to 24 Vdc	3 V	100 mA	200 Hz	XS1D30PA140D
NPN	N.O.	12 to 24 Vdc	3 V	100 mA	200 Hz	XS1D30NA140D
30 mm, Non-	shielded, D	C-2 Meter (6') Cable	-Nominal Sensing	g Distance-15 i	nm	I <u> </u>
PNP	N.O.	12 to 24 Vdc	3 V	100 mA	60 Hz	XS2D30PA140
NPN	N.O.	12 to 24 Vdc	3 V	100 mA	60 Hz	XS2D30NA140
30 mm, Non-	shielded. D	C-Micro Style Conr	nector <b>★</b> -Nominal	Sensing Distar	ice–15 mm	
PNP	N.O.	12 to 24 Vdc	3 V	100 mA	60 Hz	XS2D30PA140D
NPN	N.O.	12 to 24 Vdc	3 V	100 mA	60 Hz	XS2D30NA140D
30 mm. Shiel	ded, AC-2	Meter (6') Cable-No	minal Sensing Dis	tance-10 mm	L	L -
2 wire	N.O.	24 to 240 Vac	4.5 V	300 mA	25 Hz	XS1M30FA264

See p. 517 for matching connector cables.

\*



## Proximity Sensors XS Tubular Inductive Sensors Economy D Series – DC, AC

AC

#### Wiring



Cable Blue BU – Brown BN + Black BK Output

3 Wire, NPN, NO



2 Wire, AC, NO



XSZB1••

XSZE•••

Diameter		0.25" (6.5 mm)	0.31" (8 mm)	0.47" (12 mm)	0.7" (18 mm)	1.18" (30 mm)	0.47" (12 mm)	0.7" (18 mm)	1.18" (30 mm)	
Usable Sensing Range ★	Shielded	0.04" (1.2mm)	0.04" (1.2 mm)	0.06" (1.6 mm)	0.16" (4 mm)	0.31" (8 mm)	0.06" (1.6 mm)	0.16" (4 mm)	0.31" (8 mm)	
	Non-shielded	_	-	0.12" (3.2 mm)	0.25" (6.4 mm)	0.47" (12 mm)	-	-	_	
Temperature Range		-13° F to +	⊦158° F (-2	5° C to +70	0° C)					
Enclosure NEMA Type		1								
Rating	CENELEC Type	IP66 (con	IP66 (connector style is IP65)				IP67			
Vibration		25 G, amp	olitude =/- 2	? mm, f = 10	0-55 Hz					
Shock Resistance		50 G, for 1	11 ms							
Maximum Differential (% of Sr)		15%								
Maximum Repeatability (% of Sr)		3%								
LED Indicator Type		One, mounted at rear (connector style is 4 viewing ports at 90 degrees)								
Enclosure Mater	al	Brass								
Wiring		3 x 0.34 mm <sup>2</sup> (8 mm = 3 x 0.11 mm <sup>2</sup> ) 2 x 0.34 mm <sup>2</sup>								
Electrical										
Voltage Range		12 to 24 Vdc					24 to 240 Vac			
Voltage Limit (Ind	cluding Ripple)	10 to 30 Vdc					20 to 264 Vac			
Current Consum	ption (Maximum) (No Load)	10 mA					-			
Maximum Leaka	ge (Residual) Current-open State	-					1.5 mA			
Voltage Drop (Cl	osed State)	3 V					7 V	4.5 V		
Power-up Delay	(Maximum)	5 ms	5 ms	5 ms	5 ms	10 ms	40 ms			
On Delay (Maxim	num)	0.5 ms	0.5 ms	0.5 ms	1 ms	2 ms	10 ms			
Off Delay (Maxin	num)	1 ms	1 ms	0.5 ms	2 ms	6 ms	15 ms			
Protective	Short Circuit Protection	Yes					No			
Circuitry	Overload Protection	Yes					No			
Agency Listings		E 164869 CCN NRKH Class 3211 03								

DC

★ Refer to p. 351 for target material correction coefficient Km.

#### Accessories

XS1D08

XS2D12

XS1D/M12

XS1D/M18

XS1D/M30

Specifications

Mechanical

Description	For Sensor Diameter	Catalog Number
Mounting Brackets	0.25" (6.5 mm)	XSZB165
	0.31" (8 mm)	XSZB108
	0.47" (10 mm)	XSZB112
	0.47 (12 mm)	9006PA12
	0.7" (10.mm)	XSZB118
	0.7 (18 mm)	9006PA18
	1 10" (20 mm)	XSZB130
	1.18 (30 mm)	9006PA30
	0.31" (8 mm)	XSZE108
Mounting Nuto	0.47" (12 mm)	XSZE112
Mounting Nuts	0.7" *18 mm)	XSZE118
	1.18" (30 mm)	XSZE130

#### Minimum Mounting Clearances (mm/inches)

3

4

16

10

20

0.12

0.16

0.63

0.39

0.79

		-								
Side by	side		Face to face		Facing a m	etal object	Mount	ing in a r	metal si	upport
	e				-	e e		<b>▲</b> □ + <b>↓</b>		
		е		е		е		d		h
	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
XS1L06	0.12	3	0.71	18	0.18	4.5	0.31	8	0	0

18

24

48

60

120

0.18

0.24

0.47

0.59

1.18

4.5

6.0

12.0

15.0

30.0

0.31

0.47

1.42

0.59

1.18

8

12

36 0.31

15

30

0

0

0

0

Connector Cables (M12 or D suffix)	
------------------------------------	--

9006PA••

XSZCD101Y Micro Conn., 4 pin, 2 m, straight

XSZCD111Y Micro Conn., 4 pin, 2 m, 90°

For additional cable options and lengths see p. 518

Accessories ...... page 298, 316

0.71

0.94

1.89

2.36

4.72

0

0

8

0 0

257

## **Proximity Sensors XS Tubular Inductive Sensors** Extended Range – AC/DC, DC

Catalog

Number



#### **Features**

Circuit

Type

thread

M8x1

Extended range feature available in Universal AC/DC, or DC only sensors, where previously only available in DC

Load

Current

Operating

Frequency

Connection ★

AC/DC has same extended sensing range as in DC only sensors

Voltage

Drop

- Available in moulded cable or connector versions
- rugged IP68 Nickel plated brass casing •

Voltage

Range

- 360° LED for complete visibility
- Metal lock nuts included in carton

Output

Mode

b = Threaded Section (mm)	
	thread
	M12x1
b	
	thread
a b	M18x1

a = Overall Length (mm)

а					
		AC/C	AC/DC		
		mm	in.	mm	in.
<u>с г</u>	Cabled version	-	-	33	1.29
0.0 mm	Nano connector	-	-	42	1.65
	Micro connector	-	-	45	1.77
	Cabled version	-	-	33	1.29
8 mm	Nano connector	-	-	42	1.65
	Micro connector	-	-	45	1.77
12 mm	Cabled version	50	1.96	33	1.29
12 11111	Micro connector	61	2.4	48	1.88
	Cabled version	60	2.36	33.5	1.31
18 mm	Micro connector	70	2.75	48	1.88
	Mini connector	-	-	-	-
20 mm	Cabled version	60	2.36	40.5	1.59
30 11111	Micro connector	70	2.75	50	1.96

		AC/DC		DC	
		mm	in.	mm	in.
	Cabled version	-	-	30	1.18
6.5 mm	Nano connector	-	-	34	1.33
	Micro connector	-	-	24	0.94
	Cabled version	-	-	26	1.02
8 mm	Nano connector	-	-	26	1.02
	Micro connector	-	-	24	0.94
10	Cabled version	42	1.65	26	1.02
12 11111	Micro connector	40	1.57	25	0.98
	Cabled version	51.5	2.02	26	1.02
18 mm	Micro connector	51.5	2.02	26	1.02
	Mini connector	-	-	-	—
20 mm	Cabled version	51.5	2.02	32	1.25
30 mm	Micro connector	51.5	2.02	32	1.25

туре	wode	_	Max.	Max.	Max.		Number
6.5mm Di	ameter, DC,	, Shielded - N	ominal Sens	sing Distance	e - 2mm		
PNP	N.O.	12-24 Vdc	2.6 V	200 mA	2500 Hz	2 meter (6') cable	XS1L06PA349
NPN	N.O.	12-24 Vdc	2.6 V	200 mA	2500 Hz	2 meter (6') cable	XS1L06NA349
PNP	N.O.	12-24 Vdc	2.6 V	200 mA	2500 Hz	Nano Style Connector	XS1L06PA349S
NPN	N.O.	12-24 Vdc	2.6 V	200 mA	2500 Hz	Nano Style Connector	XS1L06NA349S
PNP	N.O.	12-24 Vdc	2.6 V	200 mA	2500 Hz	Micro Style Connector	XS1L06PA349D
NPN	N.O.	12-24 Vdc	2.6 V	200 mA	2500 Hz	Micro Style Connector	XS1L06NA349D
8mm Diar	neter, DC, S	Shielded - No	minal Sensi	ng Distance	2.5mm		
PNP	N.O.	12-24 Vdc	2.6 V	200 mA	2500 Hz	2 meter (6') cable	XS1N08PA349
NPN	N.O.	12-24 Vdc	2.6 V	200 mA	2500 Hz	2 meter (6') cable	XS1N08NA349
PNP	N.O.	12-24 Vdc	2.6 V	200 mA	2500 Hz	Nano Style Connector	XS1N08PA349S
NPN	N.O.	12-24 Vdc	2.6 V	200 mA	2500 Hz	Nano Style Connector	XS1N08NA349S
PNP	N.O.	12-24 Vdc	2.6 V	200 mA	2500 Hz	Micro Style Connector	XS1N08PA349D
NPN	N.O.	12-24 Vdc	2.6 V	200 mA	2500 Hz	Micro Style Connector	XS1N08NA349D
12mm Dia	meter, DC,	Shielded - N	ominal Sens	ing Distance	- 4mm		
PNP	N.O.	12-24 Vdc	2 V	200 mA	2500 Hz	2 meter (6') cable	XS1N12PA349
NPN	N.O.	12-24 Vdc	2 V	200 mA	2500 Hz	2 meter (6') cable	XS1N12NA349
PNP	N.O.	12-24 Vdc	2 V	200 mA	2500 Hz	Micro Style Connector	XS1N12PA349D
NPN	N.O.	12-24 Vdc	2 V	200 mA	2500 Hz	Micro Style Connector	XS1N12NA349D
12mm Dia	meter, Univ	versal AC/DC	, Shielded -	Nominal Sen	sing Distance	- 4mm	•
2 wire	N.O.	12-24 Vdc	5.5 V	200mA	25 Hz /1000 Hz	2 meter (6') cable	XS1M12MA239
2 wire	N.O.	12-24 Vdc	5.5 V	200mA	25 Hz /1000 Hz	Micro Style Connector	XS1M12MA239K
18mm Dia	meter, DC,	Shielded - N	ominal Sens	ing Distance	- 10mm		
PNP	N.O.	12-24 Vdc	2 V	200 mA	1000 Hz	2 meter (6') cable	XS1N18PA349
NPN	N.O.	12-24 Vdc	2 V	200 mA	1000 Hz	2 meter (6') cable	XS1N182NA349
PNP	N.O.	12-24 Vdc	2 V	200 mA	1000 Hz	Micro Style Connector	XS1N18PA349D
NPN	N.O.	12-24 Vdc	2 V	200 mA	1000 Hz	Micro Style Connector	XS1N18NA349D
18mm Dia	meter, Univ	versal AC/DC	, Shielded -	Nominal Sen	sing Distance	- 10mm	
2 wire	N.O.	12-24 Vdc	5.5 V	200 mA	25 Hz /1000 Hz	2 meter (6') cable	XS1M18MA239
2 wire	N.O.	12-24 Vdc	5.5 V	200 mA	25 Hz /1000 Hz	Micro Style Connector	XS1M18MA239K
2 wire	N.O.	12-24 Vdc	5.5 V	200 mA	25 Hz /1000 Hz	Mini Style Connector	XS1M18MA239A
30mm Dia	meter, DC,	Shielded - N	ominal Sens	ing Distance	- 20mm		
PNP	N.O.	12-24 Vdc	2 V	200 mA	500 Hz	2 meter (6') cable	XS1N30PA349
NPN	N.O.	12-24 Vdc	2 V	200 mA	500 Hz	2 meter (6') cable	XS1N30NA349
PNP	N.O.	12-24 Vdc	2 V	200 mA	500 Hz	Micro Style Connector	XS1N30PA349D
NPN	N.O.	12 - 24 Vdc	2 V	200 mA	500 Hz	Micro Style Connector	XS1N30NA349D
30mm Dia	meter, Univ	versal AC/DC	, Shielded -	Nominal Sen	sing Distance	20mm	
2 wire	N.O.	24 to 240 V	5.5 V	200 mA	25 Hz /1000 Hz	2 meter (6') cable	XS1M30MA239
2 wire	N.O.	24 to 240 V	5.5 V	200 mA	25 Hz /1000 Hz	Mini Style Connector	XS1M30MA239A

12 mm (.47") d = 14 mm (.551") h = 1.2 mm (.047")

30 mm (1.18") d = 28 mm (1.10") h = 3.6 mm (.141")

30 mm (1.18") d = 28 mm (1.10") h = 1.8 mm (.070")

h = 6 mm (.236")

60 mm (2.36") d = 50 mm (1.96")

See p. 518 for matching connector cables. +

48 mm (1.88")

96 mm (3.77")

96 mm (3.77")

240 mm (9.44")



8 mm (.314")

20 mm (.787")

20 mm (.787")

40 mm (1.57")



2	5	8	

18 mm

30 mm

12 mm (AC/DC)

18 mm (AC/DC)

x = 6 mm (.236")

d = 12 mm (.472") x = 1.6 mm (.062")

d = 18 mm (.708") x = 3.6 mm (.141")

d = 18 mm (.708") x = 1.8 mm (.070")

d = 30 mm (1.18")



#### Wiring





3 wire, DC, NO or NC







XSZE

Max Repeatability (% of Sr)		3%						
Cable		360° ring LED, visible from all quadrants						
LED Indicator type	Connector	One LED, v	One LED, visible from 4 quadrants					
Enclosure material		Nickel plate	d brass					
Wiring		27 AWG	27 AWG	22 AWG	22 AWG	22 AWG		
Cable material		PvR	PvR	PvR	PvR	PvR		
Electrical		•		•	•	•		
				AC / DC	AC / DC	AC / DC		
Voltage range		24 V to 240	Vac/dc, 12 V to	o 24 Vdc	•	•		
Voltage limit (includir	ng ripple)	20 V to 264	Vac/dc, 10 to 3	38 Vdc				
Voltage Drop (max.)		2.6 V	2.6 V	5.5 V / 2.6 V	5.5 V / 2 V	5.5 V / 2 V		
Max. Leakage (Residual) Current -open state, AC				0.8 mA	0.8 mA	0.8 mA		
Current Consumption	n (no load)	10 mA						
Power-up delay (max	<b>(</b> .)	5 ms	5 ms	20ms / 5 ms	25 ms / 5 ms	25 ms / 5 ms		
On delay (max.)		0.2 ms	0.2 ms	0.5 ms / 0.2 ms	0.5 ms 0.3 ms	0.5 ms / 0.6 ms		
Off delay (max.)		0.2 ms	0.2 ms	0.2 ms	0.5 ms / 0.7 ms	2 ms / 1.4 ms		
	Short circuit protection	yes						
	Overload protection	yes						
	Reverse polarity protection	yes						
Protective Circuitry	Radio frequency immunity (RFI)	IEC 61000-4-3 Level 3						
	Electrostatic, Transients, Impulse	IEC 61000-	IEC 61000-4-2 Level 3; IEC 61000-4-4 Level 3; 60947.5.2 Level 3					
Agency Listings	(Ų)			CE				

6.5 mm

0 to 0.08"

(0 to 2 mm)

6.5x6.5x1

15%

3, 4x, 6p, 12, 13

IP68 (except connectors)

50 G, duration 11ms"

8 mm

-13 F to + 25 F (-25 C to +70 C)

0 to 0.08

(0 to 2 mm)

25 G, amplitude +/- 2mm, f = 10 - 55 Hz

8x8x1

★ Refer to p. 351 for target material correction coefficient Km.

## Options

9006PA••

Description	Suffix
16.4 ft. (5 meter) cable	L2
32.8 ft. (10 meter) cable	L5

#### Accessories

Specifications

Usable sensing range  $\star$ 

NEMA Type

IEC Type

Temperature range

Max tightening torque

Standard target size (steel) (mm)

Max Differential (% of Sr)

Enclosure rating

Shock resistance

Vibration

Mechanical

Description	For Sensor Diameter	Catalog Number
<b>-</b>	0.25" (6.5 mm)	XSZB165
	0.31" (8 mm)	XSZB108
	0.47" (40)	XSZB112
	0.47° (12 mm)	9006PA12
Mounting Brackets	0.7' (10 mm)	XSZB118
	0.7 (18 mm)	9006PA18
	1 101 (00)	XSZB130
	1.18° (30 mm)	9006PA30
	0.31" (8 mm)	XSZE108
	0.47" (10 mm)	XSZE112
Mounting Nuts	0.47 (12 mm)	XSZE118
	0.7' (18 mm)	XSZE130

Connector Cables (M8 or S suffix; M12 or D suffix; U20 or K suffix; U78 or A suffix)

XSZCS101	Nano Conn., 3 pin, 2 m, straight
XSZCS111	Nano Conn., 3 pin, 2 m, 90°
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°
XSZCK101Y	Micro Conn., 3 pin, 2 m, straight
XSZCK111Y	Micro Conn., 3 pin, 2 m, 90°
XSZCA901Y	Mini Conn., 3 pin, 2 m, straight
XSZCA911Y	Mini Conn., 3 pin, 2 m, 90°

For additional cable options and lengths see p. 518 Accessories ...... page 298, 316

## Proximity Sensors XS Tubular Inductive Sensors Extended Range – AC/DC, DC

30 mm

0 to 0.62

30x30x1

(0 to 16 mm)

18 mm

0 to 0.31

5 N•m 3.7 (lb-ft) 6 N•m 4.4 (lb-ft) 15 N•m 11 (lb-ft) 40 N•m 29.5 (lb-ft)

18x18x1

(0 to 8 mm)

12 mm

0 to 0.12

12x12x1

(0 to 3.2 mm)

## **Proximity Sensors XS Inductive Sensors** 18 mm, Ferrous Only - DC







thread M18x1

• Ideal for machining, sorting applications

- Responds only to ferrous metals, ignoring non ferrous metals such as Aluminum ٠
- Stainless steel body
- Cable and micro-style connector versions offered \*

Output Circuit Voltage Load Current Operating Catalog Mode Max. Frequency Max. Number Туре Range Shielded - 2 meter (6.6') cable - Nominal Sensing Distance - 5 mm PNP XS1M18PAS40 1000 Hz 12-24 Vdc 200 mA N.O. Shielded - micro-style connector \* - Nominal Sensing Distance - 5 mm PNP 1000 Hz XS1M18PAS40D N.O. 12-24 Vdc 200 mA

See p. 518 for matching connector cables



Dual Dimensions inches mm

## Minimum Mounting Clearances (mm/inches)





## Proximity Sensors XS Inductive Sensors 18 mm, Ferrous Only - DC

## Wiring



S	ne	cif	ica	tio	ns
3	pe		ιca	uu	115

Mechanical		
Usable sensing range *	0 - 4 mm (.16")	
Temperature range		-13° to 158° F (-25° to 70° C)
Enclosure rating	IEC Type	IP68 (except connector version)
Tightening torque (max.)		50 N•m 37 (lb-ft)
Standard target size (steel)		18 x 18 x 1
Differential (% of Sr)		15%
Repeatability (% of Sr)		3%
LED indicator type	Cable version	360° ring LED
	Connector version	4 LED windows at 90 degrees
Enclosure Material		Stainless steel
Wiring		22 AWG (0.34 mm <sup>2</sup> ), PvR cable
Electrical		
Voltage range		12 to 24 Vdc
Voltage limit (including ripple)		10 to 38 Vdc
Voltage drop (across switch, closed state)		2.6 V
Current Consumption (no load)		15 mA
Maximum Load Current		200 mA
Power-up delay (max.)		5 ms
On delay (max.)		0.3 ms
Off delay (max.)		0.7 ms
	Short circuit protection	Yes
	Overload protection	Yes
	Reverse polarity protection	Yes
Protective Circuitry	Radio frequency immunity (RFI)	Yes
	Electrostatic discharges	Yes
	Fast transients (motor start/stop interference)	Yes
	Impulse voltages (lightning, etc.)	Yes
Agency Listings	E 164869 CCN NRKH OF Class 3211 03	CE

#### Options

Description	Suffix	
Extended temperature range (cable type only)	Down to -40+ C (-40+ F)	TF
Extended cable length	16.4 ft. (5 meter) cable	L1
	32.8 ft. (10 meter) cable	L2

#### Accessories

Description		Catalog Number
Stainless steel mounting nuts		XSZE318
Mounting bracket, 90° steel		9006PA18
Mounting bracket, plastic		XSZB118
0.5" NDT conduit adapter length 0" (50.0 mm)	Aluminum	7428
0.5" NPT conduit adapter length 2" (50.8 mm)	Stainless	74282

★ Refer to p. 351 for target material correction coefficient Km



XSZB1••

#### Connector Cables (M12 or D suffix)

XSZCD101Y Micro Conn., 4 pin, 2 m, straight

XSZCD111Y Micro Conn., 4 pin, 2 m, 90°

For additional cable options and lengths see p. 518 Accessories..... page 298, 316 **Proximity Sensors** 

## **Proximity Sensors XS Inductive Sensors** 18 mm, Non Ferrous Only - DC

thread M18x1



## 2.02 10 70 V LED XS1M18PAS20D

Dual Dimensions inches mm

#### Features:

- Response to non ferrous metals only, such as Aluminum, ignoring ferrous material such as steel
- · Ideal for mounting in areas where metal is close
- Stainless steel body •
- Cable and micro-style connector versions offered \*

Circuit Type	Output Mode	Voltage Range	Load Current Max.	Operating Frequency Max.	Catalog Number
Shielded - 2 meter	r (6') cable - Nomin	al Sensing Distanc	e - 5 mm		
PNP	N.O.	12-24 Vdc	200 mA	1000 Hz	XS1M18PAS20
Shielded - micro-style connector * - Nominal Sensing Distance - 5mm					
PNP	N.O.	12-24 Vdc	200 mA	1000 Hz	XS1M18PAS20D

See p.518 for matching connector cables

## Minimum Mounting Clearances (mm/inches)





## Proximity Sensors XS Inductive Sensors 18 mm, Non Ferrous Only - DC

#### Wiring



#### Specifications

Mechanical			
Usable sensing range ★		0 - 4 mm (.16")	
Temperature range		-13° to 158° F (-25° to 70° C)	
Enclosure rating	IEC Type	IP68 (except connector version)	
Tightening torque (max.)		50 N•m 37 (lb-ft)	
Standard target size (aluminum)		18 x 18 x 1	
Differential (% of Sr)		15%	
Repeatability (% of Sr)		3%	
LED indicator type	Cable version	360° ring LED	
EED Indicator type	Connector version	4 LED windows at 90 degrees	
Enclosure material		Metal	
Wiring		22 AWG (0.34 mm <sup>2</sup> ), PvR cable	
Electrical			
Voltage range		12 to 24 Vdc	
Voltage limit (including ripple)		10 to 38 Vdc	
Voltage drop (across switch, closed state)	2.6 V		
Current Consumption (no load)		15 mA	
Maximum Load Current		200 mA	
Power-up delay (max.)		5 ms	
On delay (max.)		0.3 ms	
Off delay (max.)		0.7 ms	
	Short circuit protection	Yes	
	Overload protection	Yes	
	Reverse polarity protection	Yes	
Protective Circuitry	Radio frequency immunity (RFI)	Yes	
	Electrostatic discharges	Yes	
	Fast transients (motor start/stop interference)	Yes	
	Impulse voltages (lightning, etc.)	Yes	
Agency Listings	E 164869 CCN NRKH CCR 44087 Class 3211 03	C E	

#### Options

Description		Suffix
Extended temperature range (cable type only)	Down to -40° C (-40° F)	TF
Extended coble length	16.4 ft. (5 meter) cable	L1
	32.8 ft. (10 meter) cable	L2

#### Accessories

Description		Catalog Number
Stainless steel mounting nuts		XSZE318
Mounting bracket, 90° steel		9006PA18
Mounting bracket, plastic		XSZB118
0.5" NDT conduit adopter length 0" (50.0 mm)	Aluminum	7428
0.5 NPT conduit adapter length 2 (50.8 mm)	Stainless	74282

★ Refer to p. 351 for target material correction coefficient Km



XSZB1••

## Connector Cables (M12 or D suffix)

XSZCD101Y Micro Conn., 4 pin, 2 m, straight XSZCD111Y Micro Conn., 4 pin, 2 m, 90°

XSZCDTTTY Micro Conn., 4 pin, 2 m, 90°

For additional cable options and lengths see p. 518 Accessories ..... page 298, 316 **Proximity Sensors** 

## Proximity Sensors XS Inductive Sensors Ferrous/Non-Ferrous; Universal, DC

thread

M30x1.5

2.75



#### Features

- Detects all types of metals at the same sensing distance, whereas, metals such as aluminum and copper require standard sensor to be closer (see chart on next page).
- Body types include 18 mm nickel plated brass housing, 30 mm stainless steel housing, and limit switch style in plastic housing.
- All are suitable for flush mounting in metal.
- Ideal for "drop in" replacements for tubular and limit switch style standard sensors.
- Universal selectable output: PNP, NPN, N.O. and N.C.
- Available with 2 meter cable, micro style connector or 2.6' pigtail with micro connector for very aggressive chemical environments.
- Tubular bodies have 360° visibility LED (four LED windows at 90° for connector version).
- · Metal mounting nuts included with tubular versions.
- UL Listed, CSA Certified and CE Mark.

Sensing Distance	Circuit Type	Output Mode	Voltage Range	Connection	Load Current Max	Operating Frequency	Catalog Number
Shielded,	18 mm Dia	ameter					
5 mm	PNP/NPN	N.O./N.C.	12-24 Vdc	2 m (6.6') cable	200 mA	1000 Hz	XS1M18KPM40
5 mm	PNP/NPN	N.O./N.C.	12-24 Vdc	Micro Style DC Connector *	200 mA	1000 Hz	XS1M18KPM40D
Shielded,	30 mm Dia	ameter					
10 mm	PNP/NPN	N.O./N.C.	12-24 Vdc	2 m (6.6') cable	200 mA	1000 Hz	XS1M30KPM40
10 mm	PNP/NPN	N.O./N.C.	12-24 Vdc	Micro Style DC Connector, 0.8 m (2.6') pigtail *	200 mA	1000 Hz	XS1M30KPM40LD
Shielded,	Shielded, Limit Switch Style Body						
15 mm	PNP/NPN	N.O./N.C.	12-24 Vdc	Screw Terminal	200 mA	1000 Hz	XS7C40KPM40

See p. 518 for matching connector cables

## Minimum Mounting Clearances (mm/inches)



LED

XS1M30KPM40

2.02

LED

XS1M30KPM40LD



- (1) Output LED (Yellow)
- (2) 0.5" NPT conduit opening(3) Oblong mounting hole:
- 0.21" x 0.28" (5.3mm x 7mm)

Dual Dimensions inches

264



## **Proximity Sensors XS Inductive Sensors** Ferrous/Non-Ferrous; Universal, DC

32° to 122° F (0° to 50° C Tubular, cable3, 4X, 6P, 12,13

Tubular, cable

XS1M1835 N•m

XS1M3050 N•m

XS1M30

XS7

Tubular, connector See connector rating Limit switch body 4, 6P, 12

Tubular, connectorSee connector rating Limit Switch BodyIEC IP67

Stainless Steel

7 gn, amplitude ± 1mm (f = 10 Hz to 42 Hz)

ABS Plastic

XS1M18 Nickel Plated Brass

IEC IP68

#### Wirina



#### 4 wire programmable NO or NC selectable output

Cable

Blue

Brown

Black

BU –

BN + BK Output







# 9006PA•



Shock resistance	(IEC 60068-2-27)	30 gn, duration 11 ms
Standard Target Size 0.7" (18 mm) 1.18" (30 mm) Limit switch		0.7" x 0.7" (18 mm x 18 mm) 1.18" x 1.18" (30 mm x 30 mm) 1.77" x 1.77" (45 mm x 45 mm)
Differential (max)	(% of Sr.)	15%
Repeatability (max)	(% of Sr.)	3%
LED indicator type LED indicator type Tubular, connector Tubular, pigtail Limit switch body		360° ring LED 4 LED windows at 90° 360° ring LED LED power On
10.7" (8 mm) cable       0.7" (18 mm) connect       Connection       1.18" (30 mm) cable       1.18" (30 mm) pigtail       Limit switch body		4 wire #22 AWG (0.34 mm <sup>2</sup> ), PvR 4 pin Micro Style DC 4 wire #22 AWG (0.34 mm <sup>2</sup> ), PvR 4 pin Micro Style DC, 0.8 m (2.6') pigtail, PvR #14 AWG Screw Terminals
Electrical		
Voltage Range Voltage Limit (including ripple	)	12 - 24 Vdc 10 - 38 Vdc
Voltage Drop (across switch) closed state (max)		2.6 V
Current consumption (no load) (max)		15 mA
Load Current (max)		200 mA
Operating frequency (max)		1000 Hz

(IEC 60068-2-6)

/IEC 60069 0

NEMA Туре

IEC Type

Case

Current consumption (no load) (max)		15 mA	
Load Current (max)		200 mA	
Operating frequency (max)		1000 Hz.	
On delay (max)		0.3 ms	
Off delay (max)		0.7 ms	
Power-up delay (max)		5 ms	
Short circuit protection		Yes	
Overload protection		Yes	
Reverse polarity protection		Yes	
Protective circuitry	Radio Frequency Immunity (RFI) Electrostatic, Transients, Impulse	IEC 60947-5-2 and NEMA ICS 5, Part 4	
Agency Listings	E 164869 CCN NRKH	CR 44087 Class 3211 03	

# Accessories

On de Off de Power Short Overlo Revers

Specifications

Standard Temperature Range

Mechanical

Enclosure Rating

Enclosure Material

Vibration resistance

Tightening torque (max.)

Size	Description	Catalog Number
18 mm	Metal mounting nuts	XSZE118
18 mm	Metal mounting bracket	9006PA18
18 mm	Plastic mounting bracket	XSZB118
30 mm	Stainless steel mounting nuts	XSZE330
30 mm	Metal mounting bracket	9006PA30
30 mm	Plastic mounting bracket	XSZB130

Standard sensor technology requires an adjustment of up to 70% of the sensing distance to detect various metals. Because the Ferrous/Non-Ferrous sensor detects all metals at the same distance, compensation is no longer needed. A smaller device can now perform at a range comparable to a larger sized or non-shielded device.

#### Standard vs. Fe/NonFe Prox Sensing Range (%)



Connector Cables (M12 or D suffix)

XSZCD101Y Micro Conn., 4 pin, 2 m, straight

XSZCD111Y Micro Conn., 4 pin, 2 m, 90°

For additional cable options and lengths see p. 518 Accessories ..... page 298, 316



## Proximity Sensors XS5L8 Inductive Sensors Miniature, Rectangular, DC

XS5L81•••S

XS5L82\*\*\*S





XS5L82

**Proximity Sensors** 

Features:

- 90 degree sensing, for mounting in restricted spaces with face at end or center
- PNP/NPN, N.O. Output
- 360° ring or LED indicator visible from 4 quadrants
- Small, 0.13" x 0.13" x 1.7" (8 mm x 8 mm x 43 mm) square metal housing
- Mount side by side with no interference
- UL Listed and CSA Certified

Sensing Face	Circuit Type	Output Mode	Voltage Range Max.	Load Current Max.	Operating Frequency Max.	Catalog Number
1.5 mm Nomina	al Sensing Dista	nce, 2 M (6.6') ca	able			
Тор	PNP	N.O.	10-30 Vdc	100 mA	2500 Hz	XS5L81PA140
Тор	NPN	N.O.	10-30 Vdc	100 mA	2500 Hz	XS5L81NA140
1.5 mm Sensing	g Distance, Nan	o style Connecto	or *			
Тор	PNP	N.O.	10-30 Vdc	100 mA	2500 Hz	XS5L81PA140S
Тор	NPN	N.O.	10-30 Vdc	100 mA	2500 Hz	XS5L81NA140S
1.5 mm Nomina	al Sensing Dista	nce, 2 M (6.6') ca	able			
Center	PNP	N.O.	10-30 Vdc	100 mA	2500 Hz	XS5L82PA140
Center	NPN	N.O.	10-30 Vdc	100 mA	2500 Hz	XS5L82NA140
1.5 mm Sensing	g Distance, Nan	o style Connecto	or *			
Center	PNP	N.O.	10-30 Vdc	100 mA	2500 Hz	XS5L82PA140S
Center	NPN	N.O.	10-30 Vdc	100 mA	2500 Hz	XS5L82NA140S

\* See p. 518 for matching connector cables

#### **Minimum Mounting Clearances**



#### Dimensions





#### Wiring



Mechanical		
Usable sensing range ★		1.2 mm
Temperature range		-13° to 158° F (-25° to 70° C)
Enclosure rating	ІЕС Туре	IP67 (connector version depends on connector)
Differential (% of Sr)		20%
Repeatability (% of Sr)		3%
	Cable Type	360° ring
LED Indicator	Connector type	90°, or visible from 4 quadrants
Enclosure material		Metal
Wiring		27 AWG (0.11 mm <sup>2</sup> ), PvR cable
Electrical		
Voltage range		12 to 24 Vdc
Voltage limit (including ripple)		10 to 30 Vdc
Voltage drop (across switch, closed state)		2.6 V
Maximum Load Current		100 mA
Current consumption (m	ax.)(no load)	10 mA
Residual (leakage) curre	ent, open state	0.1 mA
Power-up delay (max.)		5 ms
On delay (max.)		0.5 ms
Off delay (max.)		1 ms
Physical Characteristics		
	Short circuit protection	yes
Protective Circuitry	Overload protection	yes
	Reverse polarity protection	ves

## Options

Description	Suffix
5 meter (16') Cable	L1
10 meter (33') Cable	L2

Refer to p. 351 for target material correction coefficient Km ×

Connector Cables (M8 or S suffix)

XSZCS101 Nano Conn., 3 pin, 2 m, straight XSZCS111 Nano Conn., 3 pin, 2 m, 90°

For additional cable options and lengths see p. 518

**Proximity Sensors** 

**Proximity Sensors** 

**XS5L8 Inductive Sensors** Miniature, Rectangular, DC

## Proximity Sensors XS7/8H Miniature, Inductive Sensor Sub-compact Block Style, DC





Proximity Sensors



Dual Dimensions inches mm Miniature micro switch type inductive proximity sensor for industrial applications.

## Features:

- Very fast response time
- Rugged plastic housing
- · Extremely small for mounting in difficult to access locations
- Easy replacement of mechanical micro-switches with matching footprint (V3)
- Longer life and substantially faster speed than mechanical switches
- High levels of radio frequency immunity (RFI), electrostatic discharge, fast transients and impulse voltage protected
- UL Listed, CSA Certified and CE Mark

Circuit type	Output mode	Voltage range	Load current (max.)	Operating frequency	Catalog Number
2 mm (.078") sensing range – Shielded					
DC models, 3 wire 2 m (6.6') cable					
PNP	N.O.	10-30 Vdc	200 mA	5000 Hz	XS7H10PA340
NPN	N.O.	10-30 Vdc	200 mA	5000 Hz	XS7H10NA340
3 mm (.118") sensing range – Non-shielded					
DC models, 3 wire 2 m (6.6') cable					
PNP	N.O.	10-30 Vdc	200 mA	5000 Hz	XS8H10PA340
NPN	N.O.	10-30 Vdc	200 mA	5000 Hz	XS8H10NA340
Minimum Mounting Clearances (mm/inches)					
Side by side	Side by side Face to face		Facing a metal object	Mounting	g in a metal support
		€ € €		<u>e</u>	
XS7 Shielded e: XS8 Non-shielded e:	e: 7/.27 : 10/.39	e: 30/1.18 e: 40/1.57	e: 7/.2 e: 10/.3	7 9	e: 0/0 e: 5/.19


# Proximity Sensors XS7/8H Miniature, Inductive Sensor Sub-compact Block Style, DC

## Wiring



## Specifications

Mechanical					
	Shielded	0-1.6 mm (0.06")			
Usable sensing range	Non-shielded	0-2.4 mm (0.19")			
	Shielded	-13° F to +158° F (-25° C to +70° C)			
Standard temperature range	Non-shielded	+14° F to +122° F (-10° C to +50° C)			
Enclosure rating	IEC Type	IP67			
Vibration resistance	-	25 G, Amplitude +/- 2 mm, f = 10-55 Hz			
Standard target size (steel)	Shielded	0.08" x 0.08" x 0.04" (2 mm x 2 mm x 1 mm)			
Standard target size (steel)	Non-shielded	0.12" x 0.12" x 0.04" (3 mm x 3 mm x 1 mm)			
Repeatability (% of Sr)		3%			
Cable		22 AWG, PvR			
Electrical					
Differential (% of Sr)		Maximum 15%			
Voltage drop (across switch)		2 V			
Current Consumption (no load	(ב	10 mA			
On and off delay (maximum)		.1 ms			
Power-up delay		5 ms			
Reverse polarity protection		Standard			
	Radio frequency immunity (RFI)	IEC 61000-4-3 Level 3			
Protective circuitry	Electrostatic: transients: impulse	IEC 61000-4-2 Level 2: IEC 61000-4-4 Level 4: IEC 60947.5.2			
Agency Listings	E 164869 CCN NRKH CCR 44087 Class 3211 03	(€			

Note: Refer to page 351 for target material correction coefficient Km.

## Options

Description	Suffix
5 meter (16') Cable	L1
10 meter (33') Cable	L2

# Proximity Sensors XS7/8G Inductive Sensors Compact Block Style





Proximity Sensors



1.22 31

42

0

## Features:

- Universal AC/DC and DC only models available
- Selectable PNP/NPN, N.O. and N.C. output
- Compact 0.47" x 1.02" x 1.57" (12 x 26 x 40 mm) body style, for tight mounting spaces
- PLC compatible
- Rugged plastic housing
- Very high Radio Frequency Immunity
- · Cable or Nano Style Connector versions offered \*
- UL Listed, CSA Certified and CE Mark

Circuit Type	Output Mode	Voltage Range Max.	Voltage Drop Max.	Load Current Max.	Operating Frequency Max.	Catalog Number
Universal AC	/DC, Shielded -	2 meter (6.6') ca	ble, Nominal Se	ensing Distance -	- 2 mm	
2 wire	N.O.	20 - 264 Vac/dc	5.5 V	5 to 200 mA	25 Hz AC/350 Hz DC	XS7G12MA230
2 wire	N.C.	20 - 264 Vac/dc	5.5 V	5 to 200 mA	25 Hz AC/350 Hz DC	XS7G12MB230
DC, Shielded	- 2 meter (6.6')	cable, Nominal	Sensing Distand	e - 2 mm		
PNP	N.O.	10 - 30 Vdc	1.8 V	100 mA	2000 Hz	XS7G12PA140
NPN	N.O.	10 - 30 Vdc	1.8 V	100 mA	2000 Hz	XS7G12NA140
PNP	N.O.+N.C.	10 - 58 Vdc	2.6 V	200 mA	2000 Hz	XS7G12PC440
NPN	N.O.+N.C.	10 - 58 Vdc	2.6 V	200 mA	2000 Hz	XS7G12NC440
DC, Shielded	- Nano Connec	tor, Nominal Se	nsing Distance -	• 2 mm *		
PNP	N.O.	10 - 30 Vdc	1.8 V	100 mA	2000 Hz	XS7G12PA140S
NPN	N.O.	10 - 30 Vdc	1.8 V	100 mA	2000 Hz	XS7G12NA140S
Universal AC	DC, Non-shield	ded - 2 meter (6.	6') cable, Nomin	al Sensing Dista	nce - 4 mm	
2 wire	N.O.	20 - 264 Vac/dc	5.5 V	5 to 200 mA	25 Hz AC/350 Hz DC	XS8G12MA230
2 wire	N.C.	20 - 264 Vac/dc	5.5 V	5 to 200 mA	25 Hz AC/350 Hz DC	XS8G12MB230
DC, Non-shie	Ided - 2 meter (	6.6') cable, Nom	inal Sensing Dis	stance - 4 mm		
PNP	N.O.	10 - 30 Vdc	1.8 V	100 mA	1000 Hz	XS8G12PA140
NPN	N.O.	10 - 30 Vdc	1.8 V	100 mA	1000 Hz	XS8G12NA140
PNP	N.O.+N.C.	10 - 58 Vdc	2.6 V	200 mA	1000 Hz	XS8G12PC440
NPN	N.O.+N.C.	10 - 58 Vdc	2.6 V	200 mA	1000 Hz	XS8G12NC440
DC, Shielded	- Nano Connec	tor, Nominal Se	nsing Distance -	• 4 mm *		
PNP	N.O.	10 - 30 Vdc	1.8 V	100 mA	1000 Hz	XS8G12PA140S
NPN	N.O.	10 - 30 Vdc	1.8 V	100 mA	1000 Hz	XS8G12NA140S

0.6 Amp fuse is recommended for devices without short circuit protection. See accessories p. 298.

See p. 518 for matching connector cables

## **Minimum Mounting Clearances**



(1) 1 elongated hole 3.1 x 5.1mm (0.12" x 0.20")

(2) Cable, L= 2m (6.6')

M8

(3) 2 holes M= 3 x 5mm (0.12" x 0.20")

XS•G12•A140S

Side view

Dual Dimensions inches

270 -



#### Wiring



Blue BU – Brown BN + Black BK Output

Cable

2-wire AC or DC NO or NC XS•G12M•230

3-wire DC NO XS•G12PA140 XS•G12PA140S



XS•G12NA140 XS•G12NA140S

4-wire DC NO + NC XS•G12PC440



XS•G12NC440



## Specifications

Mechanical			
	Shielded	0 - 1.6 mm (.06")	
Usable sensing range ★	Non-shielded	0 - 3.2 mm (.13")	
Temperature range		-13° to 158° F (-25° to 70° C)	
Enclosure rating	IEC Type	IP67 (except connector style)	
Vibration 9conforming to IED 68-2-6	6)	25 G, amplitude =/-2 mm, f = 10 - 5	5 Hz
Shock resistance	,	50 G for 11 ms (conforming to IEC	60068-2-7)
Standard target size (steel)		12 x 12 mm (0.47" x 0.47")	· · · ·
Differential (% of Sr)		20%	
Repeatability (% of Sr)		10%	
LED indicator		Located on top of sensor	
Enclosure material		Plastic	
Wiring		22 AWG (0.34 mm <sup>2</sup> ), PvR cable	
Electrical		AC/DC models	DC models
Methoda and an		24 to 240 Vac	12 to 24 Vdc
voltage range		24 to 210 Vdc	
Voltage limit (including ripple)		20 to 264 Vac/dc	10 to 30 Vdc
Current consumption (max.)(no load	d)		10 mA
Max. Leakage (Residual) Current -	open state	0.8 mA at 24 V, 1.5 mA at 120 V	0.1 mA
Power-up delay (max.)		40 ms	4 ms
On delay (max.)		1 ms	0.5 ms
Off delay (max.)		2 ms	1 ms
Protostina Circuitar	Short circuit protection	No	Yes
Protective Circuitry	Overload protection	No	Yes
Agency Listings	E 164869 CCN NRKH	CR 44087 Class 3211 03	CE

## Options

Suffix	
тт	
TF	
L1	
L2	
	Suffix           TT           TF           L1           L2

★ Refer to p. 351 for target material correction coefficient Km.

#### Connector Cables (M8 or S suffix)

XSZCS101Nano Conn., 3 pin, 2 m, straightXSZCS111Nano Conn., 3 pin, 2 m, 90°

For additional cable options and lengths see p. 518

# **Proximity Sensors XSB Rectangular, Inductive Sensors** Compact Block, AC and DC; Plug-in



Dual Dimensions inches

Compact long range plug-in inductive proximity sensors for industrial applications.

## Features:

- Housings: XSB Plastic (thermoplastic polyester) •
- Screw terminals or mini style receptacle •
- Radio Frequency Immunity (RFI) •
- Noise and transient protection •
- Reverse polarity protection (DC models) •
- Selected models are offered with short circuit protection (SCP) and overload protection
- UL Listed and CSA Certified. Factory Mutual approved for non incendive applications: NAMUR sensors approved for intrinsically safe applications. CE mark.

## 25mm (.984") sensing range, Plug-in, Non-shielded

	•	, .	• • •				
inches	Output Mode	Voltage Range	Max. Load	Residual (leakage) Current	Operating Frequency Current	LED/SCP★	Catalog Number
mm	NAMUR - DC, 2	wire, screw tern	ninals for use w	ith intrinsically	safe relays		
	1mA/3mA	7-12 V	-	-	250 Hz	No/Yes	XSBN25122
	DC models, 2 v	vire, screw termir	nals				
	N.O.	12-58 V	80 mA	1.2 mA	250 Hz	No/No	XSBC25710
	AC models, 2 w	vire, screw termin	nals				
	N.O.	93-132 V	150 mA	1.7 mA (P)2	40 Hz	Yes/Yes	XSBA25513
	N.C.	93-132 V	150 mA	1.7 · (P)2	10 12	Yes/Yes	XSBA25523
	IN. 7.	0-32 V	212-10	.5 nA P)©	10 17	Yes/No	XSBA25811
	<u>, , , , , , , , , , , , , , , , , , , </u>	+032 V	2/0 mA	4.5 mA (P)2	40 Hz	Yes/No	XSBA25821
	N.O.	93-264 V	50 m/.	4.∽ m (B)	Hz 🗋	1 JE 10	X: 3/ 25511
Ampliog		9(-26-7 V	50 mA	4. m (I 🥃 🔤	4 Hz	Yes, In	≚:3A21
ADDIIGa	C n 🔤 3, ? W	re,ini style co	ที่เกษษะเดิก 🕄				
	N.O.	93-132 V	150 m/	1.7 m ∖(P)©	40 Hz	Yes/Yes	XSBA25513R3
	N.C.	§ -1 2	150 N	1. m (F 🤋	40 Hz	Yes/Yes	XSBA25523R3
	N.O.	93 54		4.5 MA (Р)	40 Hz	Yes/No	XSBA25911R3
	N.C.	93-264 V	150 mA	4.5 mA (P)2	40 Hz	Yes/No	XSBA25921R3

## PLC Applications:

2

P = PLC compatible.

R = Bleeder resistor needed for PLC application.

See p. 518 for matching connector cables. 3

For AC devices without SCP, see p. 298 for protective fuses. \*

## **Minimum Mounting Clearances**





# **Proximity Sensors XSB Rectangular, Inductive Sensors** Compact Block, AC and DC; Plug-in

#### Wiring







Specifications
----------------

3			Mechanical			
ector	Cable		Usable sensing range*		0-20 mm (.78")	
$\mathcal{D}_1$	Blue	BU –	Standard temperature range		-13° F to +158° F (-25	° C to +70° C)
	Brown	BN +		• NEMA Type	3, 4, 6, 13	
2	Black	BK Output	Enclosure rating	• IEC Type	IP67	
ire DC			Vibration resistance	•	25 G, amplitude ± 2 m	m, f = 10-55 Hz
1 □	+		Shock resistance		50 G for 11 ms	
			Standard target size (steel)		3" x 3" (75 x 75 mm)	
NO 4			Differential		Max. 20%	
	-		Repeatability		Max. 5%	
			Radio Frequency Immunity (RFI)		Standard	
			Cable		Screw terminals, #16A	WG
3			Electrical		AC Models	DC Models
NO			Voltage drop (across switch)		9.5 V	7 V
4	L2		Inrush current (inductive @ 20mS)		.9 A	-
1 🗆	L1		Minimum load current		20 mA	1.5 mA
F-U-			Power supply current (no load)		-	10 mA
NC	12		On delay (max.)		10 ms	0.4 ms
-			Off delay (max.)		10 ms	1 ms
			Power-up delay (max.)		150 ms	1.2 ms
			Reverse polarity protection		-	Standard
			Agency Listings	E 164353 CCN NRKH	<ul> <li>FM: J.I. OROH9.AX</li> <li>03 (3610, 3611)</li> </ul>	CE
		Nc	■ Excent XSBN25122 ★ Exc 17 12 12 LF 59€ 7, 19 Options		W	uot
Λn	nl	icat	t t nde t np reture ange ▲		2100	עיזייא 🗌
<b>M</b>			to +185° F (+85° C)	A 1988 A 1999		TT
			to -40° F ( )° C)			TF

t nde t np rature ange 🔺		
o +185° F (+85° C)		
o -40° F )° C	تالتطها	

Ex: XSB C<sup>r</sup> Ti Control Contro

## **Replacement modules**

Description	Output Mode	Voltage Range	Leakage Current	Catalog Number
AC models				
Base receptacle	-	-	-	ZSBZ21
Switch body	N.O.	93-132 Vac	1.7 mA	ZSBA25513
Switch body	N.C.	93-132 Vac	1.7 mA	ZSBA25523
Switch body	N.O.	93-132 Vac	4.5 mA	ZSBA25911
Switch body	N.C.	93-132 Vac	4.5 mA	ZSBA25921
DC models				•
Base receptacle	-	-	-	ZSBZ22
Switch body	N.O.	12-58 Vac	-	ZSBC25710

Refer to p. 351 for target material correction coefficient Km.

Connector Cables (A or R3 suffix)

XSZCA901Y Mini Conn., 3 pin, 2 m, straight

XSZCA911Y Mini Conn., 3 pin, 2 m, 90°

For additional cable options and lengths see p. 518

# Proximity Sensors XS Inductive Sensors Cubic Block Style, 26 x 26 mm and 40 x 40 mm Square, DC





Ø4.2

LED

28

Ø5.3

30.18

.ED

Ø5.3x8

Ø5.

Ø5.3x8

1.18 30

.57

2.09

1.73 44

> 2.16 55

.<u>57</u> 40

84

43

- Features
- Compact cubed body style in rugged PBT plastic
- Flush and Non-flush mountable
- Comparable sensing distance to Limit Switch style in half the body size
- Mounting bracket included with each sensor
- Elbow bracket provides interchangeability with Limit Switch style sensor, and enables multiple positioning of sensing face
- Molded cable or molded cable with Micro connector pigtail at 0.8 m or 0.15 m length

Description	Nominal Sensing Distance	Circuit Type	Output Mode	Voltage Range	Voltage Drop Max.	Load Current Max.	Operating Frequency Max.	Catalog Numbe
26 mm x 2	6 mm							
DC, Flush MC	Duntable							
2 Meter (6') C								
26 x 26	10 mm	2 wire	N.O.	12-48 Vdc	5.2 V	100 mA	100 Hz	XS/12DA210
26 x 26	10 mm	PNP	N.O. + N.C.	12-48 Vdc	2 V	200 mA	1000 Hz	XS/12PC440
26 x 26	10 mm	NPN	N.O. + N.C.	12-48 Vdc	2 V	200 mA	1000 Hz	XS/12NC440
0.8 m (2.6 ft)	Pigtail with	4 Pin Mic	ro Connecto	or 🔺		1	1	
26 x 26	10 mm	2 wire	N.O.	12-48 Vdc	5.2 V	100 mA	100 Hz	XS7T2DA214LD
26 x 26	10 mm	PNP	N.O. + N.C.	12-48 Vdc	2 V	200 mA	1000 Hz	XS7T2PC440LD
26 x 26	10 mm	NPN	N.O. + N.C.	12-48 Vdc	2 V	200 mA	1000 Hz	XS7T2NC440LD
0.15 m (5.9 ft	) Pigtail wit	n 4 Pin M	ICRO Connect	or 🔺				
26 x 26	10 mm	2 wire	N.O.	12-48 Vdc	5.2 V	100 mA	100 Hz	XS7T2DA214LD0
DC, Non-Flue	sh Mountab	le						
2 Meter (6') C	able ▲							
26 x 26	15 mm	PNP	N.O. + N.C.	12-48 Vdc	2 V	200 mA	500 Hz	XS8T2PC440
26 x 26	15 mm	NPN	N.O. + N.C.	12-48 Vdc	2 V	200 mA	500 Hz	XS8T2NC440
0.8 m (2.6 ft)	Pigtail with	4 Pin Mic	ro Connecto	or ▲				
26 x 26	15 mm	PNP	N.O. + N.C.	12-48 Vdc	2 V	200 mA	500 Hz	XS8T2PC440LD
26 x 26	15 mm	NPN	N.O. + N.C.	12-48 Vdc	2 V	200 mA	500 Hz	XS8T2NC440LD
40 mm x 4	0 mm							
DC, Flush we								
2 Meter (6') C				10.10.11	5.01/	1.00	150.11	VOTION
40 x 40	15 mm	2 wire	N.O.	12-48 Vdc	5.2 V	100 mA	150 Hz	XS7T4DA210
40 x 40	15 mm	PNP	N.O. + N.C.	12-48 Vdc	2 V	200 mA	1000 Hz	XS/14PC440
40 x 40	15 mm	NPN	N.O. + N.C.	12-48 Vdc	2 V	200 mA	1000 Hz	XS7T4NC440
0.8 m (2.6 ft)	Pigtail with	4 Pin Mic	ro Connecto	or 🔺				
40 x 40	15 mm	2 wire	N.O.	12-48 Vdc	5.2 V	100 mA	150 Hz	XS7T4DA214LD
40 x 40	15 mm	PNP	N.O. + N.C.	12-48 Vdc	2 V	200 mA	1000 Hz	XS7T4PC440LD
40 x 40	15 mm	NPN	N.O. + N.C.	12-48 Vdc	2 V	200 mA	1000 Hz	XS7T4NC440LD
0.15 m (5.9 ft	) Pigtail wit	h 4 Pin M	icro Connect	or 🔺				
40 x 40	15 mm	2 wire	N.O.	12-48 Vdc	5.2 V	100 mA	150 Hz	XS7T4DA214LD0
DC, Non-Flus	sh Mountab	le						
2 Meter (6') C	able 🔺							
40 x 40	20 mm	PNP	N.O. + N.C.	12-48 Vdc	2 V	200 mA	1000 Hz	XS8T4PC440
40 x 40	20 mm	NPN	N.O. + N.C.	12-48 Vdc	2 V	200 mA	1000 Hz	XS8T4NC440
0.8 m (2.6 ft)	Pigtail with	4 Pin Mic	ro Connecto	or ▲		1		
40 x 40	20 mm	PNP	N.O. + N.C.	12-48 Vdc	2 V	200 mA	1000 Hz	XS8T4PC440LD
10 x 10	20 mm	NPN	NO + NC	12-48 Vdc	2 V	200 mA	1000 Hz	XS8T4NC440LD

Dual Dimensions inches

	E1		E2 E3			D1		Н	Н	
	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
XS7T2 Shielded	0.98	25	4.32	110	1.18	30	1.02	26	0	0
XS7T4 Non-shielded	1.57	40	4.71	120	1.77	45	1.57	40	0	0
XS7T4 Shielded	1.49	38	4.72	120	1.77	45	3.07	78	1.02	26
XS8T4 Non-shielded	2.36	60	6.29	160	2.36	60	4.72	120	1.57	40



• See p. 518 for matching connector cables Minimum Mounting Clearances



Mounted in a Metal Support

274 ·



Cable

Blue

Brown Black

BU – BN + BK Output

# Proximity Sensors XS Inductive Sensors Cubic Block Style, 26 x 26 mm and 40 x 40 mm Square, DC

## Wiring

# Connector



#### 2 Wire

	BN/1	+/-
$\vee$	BU/4	-/-

Mechanical						
Hashla Canaina Danas +	XS7T2	0-8 mm (.32")				
Usable Sensing Range *	XS8T2	0–12 mm (.47")				
Temperature Range		-13° to 158° F (-2	5° to 70° C)			
Factoria Dation	NEMA Type	1, 4X, 12				
Enclosure Rating	IEC Туре	IP67 (connector v	ersion depends on con	nector)		
Vibration		25 G, amplitude =	=/-2 mm, f = 10-55 Hz			
Shock Resistance		50 G for 11 ms				
Differential (% of Sr)		20%				
Repeatability (% of Sr)		3%				
LED Indicator Type		Yes, located at ca	ble			
Enclosure Material		Plastic				
Wiring		20 AWG (0.5 mm <sup>2</sup> ), PvR cable				
Electrical		2 wire	3 wire	4 wire		
Voltage Range		12-48 Vdc	12-48 Vdc	12-48 Vdc		
Voltage Limit (Including Ripple)		10-58 Vdc	10-58 Vdc	10-58 Vdc		
Voltage Drop		5.2 V	2 V	5.2 V		
(max.) Leakage (Residual) Curren	nt-Open State	0.7 mA	0.1 mA	0.1 mA		
Current Consumption		10 mA	10 mA	10 mA		
Power-up Delay (max.)		5 ms	5 ms	7 ms		
On Delay (max.)		2 ms	0.3 ms	0.3 ms		
Off Delay (max.)		5 ms	0.7 ms	0.7 ms		
Protostivo Circuitar	Short Circuit Protection	Yes	Yes	Yes		
Protective Circuitry	Overload Protection	Yes	Yes	Yes		
Agency Listings	E 164869 CCN NBKH	CR 44087 Class 321	1.03 <b>C F</b>			

★ Refer to p. 351 for target material correction coefficient Km.

## **Mounting options**

Specifications





#### Connector Cables (M12 or D suffix)

XSZCD101Y	Micro Conn., 4 pin, 2 m, straight

XSZCD111Y Micro Conn., 4 pin, 2 m, 90°

For additional cable options and lengths see p. 518

# Proximity Sensors XS7/8C Limit Switch Type, Inductive Sensors 5 Position Turret Head, Plastic AC/DC, DC or AC

Sensing head turns to accommodate 5 different sensing positions



Proximity Sensors

Dual Dimensions inches

Standard limit switch housing inductive proximity sensors for industrial applications.

#### Features:

- PBT plastic body with stainless steel screws for corrosive environments.
- Plug-in design for ease in replacement.
- 5 position turret head for reduced inventory.
- 0.5" NPT conduit entrance with many wiring and connecting options.
- Radio Frequency Immunity (RFI) standard.
- · PLC compatible.
- 2 LED system on selected models indicates ON/OFF, POWER ON.
- · DC versions work with unfiltered power supply
- · Noise and transient protection
- Reverse polarity protection (DC models)
- Excellent resistance to aggressive environments (dripping corrosive fluids, submersion in water).
- Universal AC/DC 2 wire
- Longest extended range using the standard dimensions
- UL listed, CSA certified and CE mark

0	0	Voltage	Range	Maximum	Residual	Our constitue of		Ostalaa	
Circuit	Output			Load	(leakage)	Operating	LED/SCP*	Catalog	
iype wode	AC	DC	Current	current	Frequency		Number		
Shielded									
15mm (.59") sensing range universal, AC/DC									
2 wire	N.O./N.C.	24-240 V	24-210 V	300 mA/200 mA	0.5 mA at 24 V 1.5 mA at 120 V	25/50 Hz	Yes/No	XS7C40MP230	
15mm (.59	") sensing ra	ange, DC							
2 wire	N.O.	-	12-48 V	100 mA	0.5 mA	1500 Hz	Yes/Yes	XS7C40DA210	
2 wire	N.O./N.C.	-	12-48 V	100 mA	0.5 mA	1500 Hz	Yes/Yes	XS7C40DP210	
PNP I	N.O. + N.C.	-	12-48 V	200 mA	-	1000 Hz	2/Yes	XS7C40PC440	
NPN I	N.O. + N.C.	-	12-48 V	200 mA	-	1000 Hz	2/Yes	XS7C40NC440	
20mm (.79	") extended	range, DO	C 3 wire						
PNP I	N.O. + N.C.	-	12-48 V	200 mA	-	1000 Hz	2/Yes	XS7C40PC449	
NPN	N.O. + N.C.	-	12-48 V	200 mA	-	1000 Hz	2/Yes	XS7C40NC449	
15mm (.59	") sensing ra	ange, AC							
2 wire	N.O./N.C.	24-240 V	-	500 mA	1.5 mA	25 Hz	Yes/No	XS7C40FP260	
Non-shi	elded				•	•			
20mm (.79	") sensing ra	ange univ	versal, AC	C/DC					
2 wire	N.O./N.C.	24-240 V	24-210 V	300 mA/200 mA	0.5 mA at 24 V 1.5 mA at 120 V	25/50 Hz	Yes/No	XS8C40MP230	
20mm (.79	") sensing ra	ange, DC			•	•			
2 wire	N.O.	-	12-48 V	100 mA	0.6mA	150 Hz	Yes/No	XS8C40DA210	
2 wire	N.O./N.C.	-	12-48 V	100 mA	0.6mA	150 Hz	Yes/No	XS8C40DP210	
PNP I	N.O. + N.C.	-	12-48 V	200 mA	-	1000 Hz	2/Yes	XS8C40PC440	
NPN I	N.O. + N.C.	-	12-48 V	200 mA	-	1000 Hz	2/Yes	XS8C40NC440	
40mm (1.6	") extended	range, DO	C 3 wire						
PNP I	N.O. + N.C.	-	12-48 V	200 mA	-	500 Hz	2/Yes	XS8C40PC449	
NPN	N.O. + N.C.	-	12-48 V	200 mA	-	500 Hz	2/Yes	XS8C40NC449	
20mm (.79	") sensing ra	ange, AC							
2 wire	N.O./N.C.	24-240 V	-	500 mA	1.5 mA	25 Hz	Yes/No	XS8C40FP260	
20mm (.79	") sensing ra	ange, AC	Model w	ith Timer (1-20s	5)	•	•	•	
2 wiro		24-240 V	-	350 mA	2.0 mA (B)	13 Hz	Yes/No	XSCT023319	

★ For devices without SCP, an 0.8A quick blow fuse wired in series is recommended, see p. 298 for protective fuses.

20 ≤ Vdc 58 IEC 60947-5-2 Utilization category DC-13: Vdc > IEC 60947-5-2 Utilization category DC-12

## Minimum Mounting Clearances (mm/inches)





# Proximity Sensors XS7/8C Limit Switch Type, Inductive Sensors 5 Position Turret Head, Plastic AC/DC, DC or AC

## Wiring





R5

K30/K31 R30/R31 Cable

Blue BU – Brown BN + Black BK Output

2 wire DC Non Polarized

## 4 wire DC NO/NC



#### 2 wire AC



## NO/NC Selector Jumper



Mechanical									
Usable sensing	Shielded	0-12 mm (.47")							
range *	Non-shielded	0-16 (63")							
Standard temperature	e range	-13° F to +158° F (-25° C to +70° C)							
Enclosure rating	NEMA Type	4, 6P, 12 (UL test per	nding)						
Enclosure raling	CENELEC Type	IP67	IP67						
En els sums mosterial	Body & sensing face	PBT							
Enclosure material	Screws	Stainless Steel							
Vibration resistance	IEC 60068.2.6	25 G, amplitude at 5	5 Hz, f = 10-55 H	Z					
Shock resistance	IEC 60068.2.27	50 G duration 11 ms							
Standard target size	Shielded	45 x 45 mm (1.8" x 1	.8")						
(steel)	Non-shielded	60 x 60 mm (2.4" x 2	.4")						
Differential		Max. 20%							
Repeatability		Max. 3%							
Radio Frequency Imn	nunity (RFI)	Standard							
Cable		Screw terminals							
			DC Models						
Electrical		AC Models	2 wire	4 wire	AC/DC Models				
Voltage range		24-240 V 50/60 Hz	12-48 V	12-48 V	24-240 Vac 50/60 Hz 24-210 Vdc				
Voltage limit (includin	g ripple)	20-264 V 50/60 Hz	10-58 V	10-58 V	20-264 Vac/dc				
Voltage drop (across	switch) closed state	5.5 V	4 V	2 V	5.5 V				
Minimum load current	t	5 mA	1.5 mA	-	5 mA				
Maximum load curren	ıt	500 mA	100 mA	100 mA	300 mA/200 mA				
Inrush		2A★	-	-	2 A★				
Current consumption	(no load)	-	-	10 mA	-				
On delay (max.)		30 ms	2 ms	0.3 ms	30 ms				
	Shielded	20 ms	5 ms	0.7 ms	20 ms				
Oli delay (max.)	Non-shielded	20 ms	7 ms	0.7 ms	20 ms				
Power-up delay (max	.)	120 ms	5 ms	5 ms	120 ms				
Protective circuit	ry								
Short circuit protectio	n	Optional ★							
Overload protection		Yes							
Radio frequency immunity (RFI)		IEC 61000-4-3 Level 3							
Electrostatic; Transier	nts; Impulse	IEC 61000-4-2 Level	4; IEC 61000-4-3	3 Level 3; IEC 60947.5.	2 Level 3				
Reverse polarity prote	ection DC Versions	Yes							
Agency Listings		E 164869 CCN NRKH	CR 440 Class 3	<sup>87</sup> 211 03 <b>CE</b>					
<ul> <li>See page 351 for</li> </ul>	r target material correction	ve coefficient km							

Without overload or SCP, an 0.8 A quick blow fuse wired in series is recommended, see page 298 for protective fuses.

## Options

Specifications

Description	Suffix		
Extended temperature range	+185° F (+85° C)	TT	
Extended temperature range	-40° F (-40° C)	TF	
3 pin mini style connector	Normally open	R30	
3 pin mini style connector	Normally closed	R31	
5 pin mini style connector	·	R5	
3 pin micro stye connector	AC only, wired Normally open	K30	
3 pin micro style connector	AC only, wired Normally closed	K31	

#### Connector Cables (R3, R5 or K suffix)

XSZCK101Y	Micro Conn., 3 pin, 2 m, straight
XSZCK111Y	Micro Conn., 3 pin, 2 m, 90°
XSZCA901Y	Mini Conn., 3 pin, 2 m, straight
XSZCA911Y	Mini Conn., 3 pin, 2 m, 90°
XSZCA1501Y	Mini Conn., 5 pin, 2 m, straight

XSZCA1511Y Mini Conn., 5 pin, 2 m, 90°

For additional cable options and lengths see p. 518

# Proximity Sensors XS Inductive Sensors Limit Switch Body, 5 Position Turret Head, DC IQ Prox™

🛱 Telemecanique



(1) Output LED (Yellow) (2) Power/Teach LED (Green) (3) 1/2" NPT conduit opening (4) Two elongated mounting holes: 0.21" x 0.28" (5.3 mm x 7 mm)

Dual Dimensions inches

## Features:

Microprocessor based, self-teaching Proximity Switch adjusts to its environment on command, suppressing any metal background, then detecting the target it was taught to identify. (*See Illustration*).

- · Can be recessed mounted in metal without interference with sensing field
- Long range sensing 0.98" (25 mm)
- · Plastic Limit Switch plug-in body style with 5 position turret head
- Two LEDs: (1) power supply and terminal mode (flashes in learning mode when sensor is learning its environment), (2) output
- 24 Vdc, complementary PNP and NPN type output
- UL Listed, CSA Certified, CE Mark

## **Illustrations:**



1. Sensor can be flush mounted, non-flush mounted or recessed mounted. A metal background can be placed in immediate proximity of the sensor.



3. Green LED flashes when sensor is learning its environment and target, then becomes steady when sensor is set.



2. To set up, activate "teach" mode. When no target is present, sensor will learn the environment. Then, pass target in front of the sensor in the usual way.



4. The newly programmed sensor will recognize the target and provide output.

Sensing Distance	Circuit Type	Output Mode	Connection	Catalog Number
25 mm	PNP	N.O.	Screw Terminal	XS8C40PAA40
25 mm	NPN	N.O.	Screw Terminal	XS8C40NAA40

## Minimum Mounting Clearances (mm/inches) Side by side Face to face





XSC8C40•AA40 e: 80/3.15





# Proximity Sensors XS Inductive Sensors Limit Switch Body, 5 Position Turret Head, DC IQ Prox™

## Wiring

## 3-wire DC, NO output





XS8C40•AA40

## Specifications

Mechanical				
Temperature Range	Operating Storage	-13 ° F to 158 ° F (-25 ° C to 70 ° C) -13 ° F to 158 ° F (-25 ° C to 70 ° C)		
Epologuro Poting	NEMA Type	4, 4X, 6, 6P, 12,		
Enclosure Rating	IEC Type	IEC IP67 per IEC 60529		
Enclosure Material	Case	PBT		
Vibration resistance	(IEC 60068-2-6)	25 G, amplitude at 55 Hz, f = 10 - 55 Hz		
Shock resistance	(IEC 60068-2-27)	50 G, duration 11 ms		
Differential (max.)	(% of Sr.)	15%		
Repeatability (max.)	(% of Sr.)	3%		
		Power/Teach (green)		
LED Indicator type		Output (yellow)		
Connection		Screw Terminal		
Electrical				
Voltage Limit (including ripple)		19 - 30 Vdc		
Voltage Drop (across switch) closed stat	e (max.)	2 V		
Current consumption (no load) (max.)		20 mA		
Load Current (max.)		200 mA		
Operating frequency (max.)		600 Hz		
On delay (max.)		1 ms		
Off delay (max.)		1 ms		
Power-up delay (max.)		250 ms		
Short circuit protection		Yes		
Overload protection		Yes		
Reverse polarity protection		Yes		
Agency Listings	E 164869 CCN NRKH	CR 44087 Class 3211 03		

## Activating self-teaching mode

Option 1 by external contact Option 2 internally (repositioning of jumper)





When in the self-teaching mode, the green LED (status) flashes rapidly.

As objects pass through the detection zone, the sensor memorizes the two opposing thresholds in relation to its environment. When the self-teaching is complete, the green LED ceases to flash and maintains a steady light. The yellow LED indicates output.

# Proximity Sensors XSD Rectangular, Inductive Sensors Long Range Block, AC and DC – Plug-in



4 x dia. 5.5 mm

Unshielded



Dual Dimensions inches

#### Features

Rectangular low profile switch 3.5" square by 1.63" high (88.4 x 41.4 mm) designed for very demanding industrial applications.

- Housings: Plastic (thermoplastic polyester)
- LED indicators: target sensed, power on and short circuit (selected models)
- · Timer model available for jamming applications
- Plug-in modular design
- Radio Frequency Immunity (RFI)
- Short circuit protection (SCP) (selected models)
- Alternate frequency models for side by side mounting (selected models)
- DC models: complementary outputs (PNP or NPN)
- AC models: selectable normally open (N.O.) or normally closed (N.C.)
- UL Listed, CSA Certified and CE marked

## 40 mm (1.57") Sensing Range, Shielded

Circuit	Output	Voltage	Max	Residual	Operating		Catalog
Type Mode	Pango A	Load	(Leakage)	Frequency	LED/SCP*	Numbor	
iype Mode	nange 🗕	Loau	Current	Maximum		Number	
DC Mode	el, Screw Termi	nals					
2 wire	N.O.	12-48 V	100 mA	0.5 mA	180 Hz	Yes	XSDC407138
40 mm	(1.57") Sens	sing Rang	e, Non-shi	elded		÷	
DC Mode	el, Screw Termi	nals					
2 wire	N.O.	12-48 V	100 mA	0.5 mA	180 Hz	Yes/Yes	XSDC407139
PNP	N.O. + N.C.	12-48 V	200 mA	-	50 Hz	Yes/Yes	XSDH407339†
NPN	N.O. + N.C.	12-48 V	200 mA	-	50 Hz	Yes/Yes	XSDJ407339†
AC Mode	I, Screw Termi	nals	•	•	•	•	
2 wire	N.O.,N.C.	24-240 V	500 mA	1.5 mA (P) ■	10 Hz	Yes/No	XSDA400519†
2 wire	N.O.,N.C.	24-240 V	500 mA	1.5 mA (P) ■	10 Hz	3♦/Yes	XSDA405539†
AC Mode	I Mini Style Co	nnector, 3 Pi	ns o	•		•	•
2 wire	N.O.,N.C.	24-240 V	500 mA	1.5 mA (P) ■	10 Hz	Yes/No	XSDA400519R3
2 wire	N.O.,N.C.	24-240 V	500 mA	1.5 mA (P) ■	10 Hz	3♦/Yes	XSDA405539R3
AC Mode	I with Timer			•		•	
2 wire	N.O.,N.C.	24-240 V	500 mA	3.5 mA (R) ■	10 Hz	Yes/No	XSDT023319
50 mm	(2") Sensine	g Range, S	Shielded				-
AC/DC M	odel, Screw Te	rminals					
					r		
Quuiro		24 240 1/	5-100 mA DC	1.7mA at 120V	10 11-	2 A/Voo	VCDME00E20
2 wire	N.O./N.C.	24-240 V	5-100 mA DC 5-500 mA AC	1.7mA at 120V 3 mA at 240V ●	10 Hz	3♦/Yes	XSDM500538
<sup>2 wire</sup> 50 mm	N.O./N.C. (2") Sensing	24-240 V g Range, I	5-100 mA DC 5-500 mA AC Non-shield	1.7mA at 120V 3 mA at 240V ● ed	10 Hz	3♦/Yes	XSDM500538
2 wire 50 mm DC Mode	N.O./N.C. (2") Sensing I, Screw Termi	24-240 V g Range, I nals	5-100 mA DC 5-500 mA AC Non-shield	1.7mA at 120V 3 mA at 240V ● ed	10 Hz	3♦/Yes	XSDM500538
2 wire 50 mm DC Mode 2 wire	N.O./N.C. (2") Sensing el, Screw Termi N.O.	24-240 V g Range, I nals 12-48 V	5-100 mA DC 5-500 mA AC Non-shield	1.7mA at 120V 3 mA at 240V ● ed	10 Hz 180 Hz	3♦/Yes Yes/Yes	XSDM500538 XSDC507139
2 wire 50 mm DC Mode 2 wire AC Mode	N.O./N.C. (2 <sup>ii</sup> ) Sensing el, Screw Termin N.O. el, Screw Termin	24-240 V g Range, I nals 12-48 V nals	5-100 mA DC 5-500 mA AC Non-shield 100 mA	1.7mA at 120V 3 mA at 240V • ed	10 Hz 180 Hz	3•/Yes Yes/Yes	XSDM500538 XSDC507139
2 wire 50 mm DC Mode 2 wire AC Mode 2 wire	N.O./N.C. (2") Sensing el, Screw Termin N.O. el, Screw Termin N.O./N.C.	24-240 V g Range, I nals 12-48 V nals 24-240 V	5-100 mA DC 5-500 mA AC Non-shield 100 mA	1.7mA at 120V 3 mA at 240V • ed 0.5 mA	10 Hz 180 Hz 10 Hz	3•/Yes Yes/Yes	XSDM500538 XSDC507139 XSDA500519
2 wire 50 mm DC Mode 2 wire AC Mode 2 wire 2 wire 2 wire	N.O./N.C. (2") Sensing el, Screw Termin N.O. el, Screw Termin N.O./N.C. N.O./N.C.	24-240 V g Range, I nals 12-48 V nals 24-240 V 24-240 V	5-100 mA DC 5-500 mA AC Non-shield 100 mA 500 mA	1.7mA at 120V 3 mA at 240V • ed 0.5 mA 1.5 mA 1.5 mA	10 Hz 180 Hz 10 Hz 10 Hz	3♦/Yes Yes/Yes Yes/No 3♦/Yes	XSDM500538 XSDC507139 XSDA500519 XSDA505539
2 wire 50 mm DC Mode 2 wire AC Mode 2 wire 2 wire 2 wire AC Mode	N.O./N.C. (2") Sensing el, Screw Termin N.O. el, Screw Termin N.O./N.C. N.O./N.C. N.O./N.C. N.O./N.C.	24-240 V g Range, I nals 12-48 V nals 24-240 V 24-240 V 24-240 V nnector, 3 Pi	5-100 mA DC 5-500 mA AC <b>Von-shield</b> 100 mA 500 mA 500 mA <b>ns o</b>	1.7mA at 120V 3 mA at 240V • ed 0.5 mA 1.5 mA 1.5 mA	10 Hz 180 Hz 10 Hz 10 Hz	3•/Yes Yes/Yes Yes/No 3•/Yes	XSDM500538 XSDC507139 XSDA500519 XSDA505539
2 wire 50 mm DC Mode 2 wire 2 wire 2 wire 2 wire AC Mode 2 wire 2 wire 2 wire	N.O./N.C. (2") Sensing el, Screw Termin N.O./N.C. N.O./N.C. H Mini Style Co N.O./N.C.	24-240 V g Range, I nals 12-48 V nals 24-240 V 24-240 V nnector, 3 Pi 24-240 V	5-100 mA DC 5-500 mA AC <b>Non-shield</b> 100 mA 500 mA 500 mA <b>ns o</b> 500 mA	1.7mA at 120V 3 mA at 240V • ed 0.5 mA 1.5 mA 1.5 mA 1.5 mA	10 Hz 180 Hz 10 Hz 10 Hz 10 Hz	3¢/Yes Yes/Yes Yes/No 3¢/Yes Yes/No	XSDM500538 XSDC507139 XSDA500519 XSDA500519Rt

PLC applications: P= PLC compatible. R= Bleeder resistor needed.

+ Also available with alternate frequency. Add F to catalog number. No additional charge.

1 LED for power ON, 1 LED for output ON, 1 LED for SCP triggered.

Mating connector see p. 518.

★ For devices without SCP, see p. 298 for protective fuses.

## Minimum Mounting Clearances (Except XSDM500538) (mm/inches)





# Proximity Sensors XSD Rectangular, Inductive Sensors Long Range Block, AC and DC – Plug-in

## Wiring



#### Brown BN + Black BK Output

BU –

3 wire DC, NO/NC



#### 2 wire DC, non polarized



# 2 wire AC and AC/DC, programmable NO/NC



## Specifications

Mechanical									
Usable Sensing Range★		24-48 mm (0.94" - 1.89")							
Standard Temperature Range		-13° F to +158° F (-25° C to +70° C)							
	NEMA Type	3,4 X (indoor),12,13							
Enclosure Rating	IEC Type	IP67							
Vibration Resistance		25 G, amplitude ± 2 m	m, f =10-55 Hz						
Shock Resistance		50 G for 11 ms							
Standard Target Size	(Mild Steel)	120 x 120 mm (4.7" x 4	4.7")						
Differential		Maximum 20%							
Repeatability		Maximum 5%							
Cable, PVC		Screw Maximum, #16	Screw Maximum, #16 AWG						
Electrical		DC Models							
		AC Models	2 wire	4 wire	AC/DC Models				
Voltage range max. (i	ncluding ripple)	20-264 V	10-58 V	10-58 V	20-264 V				
Voltage Drop (Across	Switch)	5.5 V★	4 V	1.8 V	6 V				
Inrush Current (Induc	tive @ 20mS)	2 A	-	-	2 A				
Minimum Load Curre	nt	5 mA	1.5 mA	-	5 mA				
Current consumption	(No Load)	-	-	10 mA	-				
On Delay (max.)		30 ms	0.2 ms	10 ms	40 ms				
Off Delay (max.)		20 ms	3 ms	10 ms	60 ms				
Power-up Delay (max.)		120 ms	5 ms	10 ms	100 ms				
Reverse Polarity Protection		-	Standard	Standard	-				
Radio Frequency Imn	nunity (RFI)	4 cm (1.6") Minimum fi	rom antenna						
Agency Listings		E 164353 ■ CCN NRKH	LR 44087 * Class 3211 03	FM: J.I. OROH9.AX (3610, 3611)	CE				

#### $\bigstar$ Timer model voltage drop is 4.5 V.

Description	Suffix
Extended Temperature Rangea	Sullix
to +185° F (85° C) (▼ Not Available on AC Models with SCP)	тт
to -40° F (-40° C)	TF

Ex: XSD605539 TTR3

## **Replacement Modules**

Description	Catalog Number
DC 2 Wire	
Base Receptacle, N.O. Contact	ZSDZ03
N.O. Contact Switch	ZSDC607139
Base Receptacle, N.O./N.C.	ZSDZ02
N.O./N.C. Contact Switch	ZSDC607319
DC 3 Wire	
Base Receptacle	ZSDZ02
PNP Switch	ZSDH607339
NPN Switch	ZSDJ607339
AC 2 Wire	
Base Receptacle	ZSDZ01
1 LED, N.O. SCP Switch	ZSDA600519
3 LED, SCP Switch	ZSDA605539
AC/DC	ZSDM600539

▼ Refer to p. 351 for target material correction coefficient Km.

## Connector Cables (A or R3 suffix)

XSZCA901Y Mini Conn., 3 pin, 2 m, straight

XSZCA911Y Mini Conn., 3 pin, 2 m, 90°

For additional cable options and lengths see p. 518

# **Proximity Sensors XSD Rectangular, Inductive Sensors** Long Range Block, AC and DC; Adjustable Sensing Range





## Features:

Rectangular low profile switch 3.5" square by 1.63" high (88.4 x 41.4 mm) designed for very demanding industrial applications. Especially recommended for long sensing range applications with metal in the background.

- Housings: Plastic (thermoplastic polyester)
- Adjustable sensing range (30 to 60mm); sensitivity can be decreased below the maximum usable sensing distance (48mm) to cancel the metal background influence (20 turn potentiometer under the front plastic cap). For fixed long sensing distance, see page 280.
- LED indicators: target sensed, power on and short circuit (selected models)
- Plug-in modular design ٠
- AC/DC model available •
- Radio Frequency Immunity (RFI) ٠
- Short Circuit Protection (SCP) (selected models) ٠
- 1/2" NPT conduit entrance
- Protected, captive saddle clamp terminals in ready-to-wire position
- DC models: complementary outputs PNP or NPN •
- AC models: programmable output N.O./N.C.
- UL Listed and CSA Certified

NOTE: Sensors are delivered and adjusted from the factory for maximum sensing distance. Do not attempt to increase the sensing distance above the factory setting; sensor behavior becomes unpredictable.

#### 30-60 mm (2.36") sensing range, Non-shielded

Circuit Type	Output Mode	Voltage Range	Max. Load	Residual (leakage) Current Max	Operating Frequency Maximum	LED/SCP★	Catalog Number
DC mod	el, 2 and 3 wi	re screw termir	nals	•	•	•	
2 wire	N.O.	12-48 V	100 mA	0.8 mA	20 Hz	Yes/Yes	XSDC607139
2 wire	N.O.,N.C.	12-48 V	100 mA	0.8 mA	20 Hz	Yes/No	XSDC607319
PNP	N.O.,N.C.	12-48 V	200 mA	-	50 Hz	Yes/Yes	XSDH607339
NPN	N.O.,N.C.	12-48 V	200 mA	-	50 Hz	Yes/Yes	XSDJ607339
AC mode	el, screw term	ninals					
2 wire	N.O./N.C.	24-240 V	500 mA	1.7 mA ②	10 Hz	Yes/No	XSDA600519
2 wire	N.O./N.C.	43-132 V	500 mA	1.7 mA ②	10 Hz	33/Yes	XSDA605539
AC and I	OC models, s	crew terminals					
0		24-240 Vac	500 mA	1.7 mA @ 120 V ② ■			
2 wire	N.O./N.C.	24-210 Vdc	100 mA	115 V	10 Hz	33/Yes	XSDM600539
AC and A	C/DC model	s, mini style re	ceptacle, 3	pins	•		
2 wire	N.O./N.C.	24-240 V	500 mA	1.7 mA ②	10 Hz	Yes/No	XSDA600519R3
2 wire	N.O./N.C.	93-132 V	500 mA	1.7 mA ②	10 Hz	33/Yes	XSDA605539R3
Quuine		24-240 Vac	500 mA	1.7 mA ②			
2 wire	N.O./N.C.	24-210 Vdc	100 mA	1.7 mA @ 120 V ② ■	10 Hz	33/Yes	XSDM600539R3
② PLC c ③ 1 LED ■ < 1 m.	ompatible. for power OUT A @ 24 V, < 3 m	and 1 LED for outp A @ 240 V	out ON, 1 LED	for SCP triggered.			

- ★ For devices without SCP, see p. 298 for protective fuses.
- Minimum Mounting Clearances (mm/inches)



XSD30-60

e: not recommended

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# Proximity Sensors XSD Rectangular, Inductive Sensors Long Range Block, AC and DC; Adjustable Sensing Range

#### Wiring



Cable Blue BU – Brown BN + Black BK Output



#### 2 wire DC, non polarized



# 2 wire AC, programmable NO/NC



Mechanical						
Usable sensing range ★ 24-48 mm (0.94" - 1.89		.89")				
Standard temperatur	e range	-13° F to +158° F (-2	25° C to +70° C)			
	NEMA Type	3, 4, 6, 12, 13				
Enclosure rating	IEC Type	IP67				
Vibration resistance		25 G, amplitude ± 2	mm, f = 10-55 Hz			
Shock resistance		50 G for 11 ms				
Standard target size	(mild steel)	120 x 120mm (4.7" >	( 4.7")			
Differential		Max. 20%				
Repeatability		Max. 5%				
Cable, PVC		Screw terminals, #16	6 AWG			
Electrical			DC Models			
		AC Models	2 wire, N.O.	2 wire, N.O./N.C.	4 wire	Models
Voltage range (includ	ling ripple)	20-264 V	10-58 V	10-58 V	10-58 V	20-264 V
Voltage drop (across	switch)	4.5 V	4 V	7 V	1.8 V	6 V
Inrush current (induc	tive @ 20mS)	2 A	_	-	-	2 A
Minimum load currer	ıt	5 mA	-	1.5 V	-	5 mA
Current consumption	(no load)	-	10 mA	-	10 mA	-
On delay (max.)		30 ms	5 ms	5 ms	10 ms	40 ms
Off delay (max.)		20 ms	40 ms	25 ms	10 ms	60 ms
Power-up delay (max	(.)	120 ms	75 ms	30 ms	10 ms	100 ms
Reverse polarity prot	ection	-	Standard	Standard	Standard	-
Radio Frequency Im	munity (RFI)	4 cm (1.6") Minimum	from antenna	•	•	•
Agency Listings		E 164353 CCN NRKH	LR 44087 ★ Class 3211 03	FM: J.I. OROF (3610, 3611)	19.AX	CE

# Options

Specifications

Description	Suffix
Extended temperature range ★	Sumx
to +185° F (85° C) (★ Not available on AC models with SCP)	TT
to -40° F (-40° C)	TF

Ex: XSD605539 TTR3

## **Replacement modules**

Description	Catalog Number
DC 2 wire	·
Base receptacle, N.O. contact	ZSDZ03
N.O. contact switch	ZSDC607139
Base receptacle, N.O./N.C.	ZSDZ02
N.O./N.C. contact switch	ZSDC607319
DC 3 wire	
Base receptacle	ZSDZ02
PNP switch	ZSDH607339
NPN switch	ZSDJ607339
AC 2 wire	
Base receptacle	ZSDZ01
1 LED, N.O. SCP switch	ZSDA600519
3 LED, SCP switch	ZSDA605539
AC/DC	ZSDM600539

★ Refer to page 351 for target material correction coefficient Km.

## Connector Cables (A or R3 suffix)

XSZCA901Y Mini Conn., 3 pin, 2 m, straight

XSZCA911Y Mini Conn., 3 pin, 2 m, 90°

For additional cable options and lengths see p. 518

# Proximity Sensors XSAV Tubular, Inductive Sensors 30mm Diameter, Motion Detection, DC or AC/DC



Dual Dimensions inches

The XSAV is a self-contained device used to detect and send output alarms for machinery under speed or zero-speed conditions, as well as early jamming detection. The early detection of the under speed condition is useful in reducing downtime due to jamming or transmission failure. especially in the cases of medium and large motors.

Telemecanique

The zero speed condition is used extensively for safety interlocking applications, including: conveyors, pumps, mixers, centrifugal separators, elevators, saws, and crushers.

As long as the speed (number of pulses/min.) is above the threshold level – adjustable via 25 turn potentiometer within the threshold range – the output circuit assumes its closed state. When the actual speed falls below the threshold level – the output circuit assumes its open state. To preserve the start up delay, the switch should be reset by removing and reapplying the power supply.

When the line voltage is initially applied, the output automatically assumes its closed state for the duration of the start-up delay. This allows the mechanical assembly to overcome inertia and reach its nominal speed, greatly simplifying the interlocking circuit. After the start-up delay, the switch will perform as described above.

Care should be taken not to exceed the maximum frequency rating above which the sensor cannot detect the target and therefore assumes "zero speed" condition.

## Features:

- Universal AC/DC versions
- AC/DC models are PLC compatible
- · Linear speed threshold adjustment
- Two adjustment ranges: 6 150 pulses/min. for zero-speed, 120 3,000 pulses/min. for jamming detection
- · Built-in fixed power-up delay to overcome start-up inertia
- Radio frequency immunity (RFI)
- · Reverse polarity protection on DC models
- Noise and transient protection
- · Overload and short circuit protection (SCP) on DC models
- LED indicators for switch in "closed" state
- 25-turn potentiometer provides fine adjustment of the under speed threshold

Circuit Type	Max. Load	Residual (Leakage)	Threshold Range (Pulse/Min.)	Max. Frequency (Pulse/Min.)	Start-up Delay ③	LED/SCP ▲	Catalog Number
30mm	Diameter, 10mr	n sensing I	range, Shie	lded, 2m ca	able	-	•
DC mod	lels, 10-58 Vdc (inclu	iding ripple)					
PNP	200 mA	0	6-150	6000	9 sec.	Yes/Yes	XSAV11373
PNP	200 mA	0	6-150	6000	3 sec.	Yes/Yes	XSAV31373
PNP	200 mA	0	120-3000	48000	9 sec.	Yes/Yes	XSAV12373
PNP	200 mA	0	120-3000	48000	3 sec.	Yes/Yes	XSAV32373
AC/DC r	nodels, 20-264 Vac/c	lc		•			
2 wires	0.35 A Vac/0.2 A Vdc	1.5 mA (P)★	6-150	6000	9 sec.	Yes/No	XSAV11801
2 wires	0.35 A Vac/0.2 A Vdc	1.5 mA (P)★	6-150	6000	0 sec.	Yes/No	XSAV01801
2 wires	0.35 A Vac/0.2 A D Vdc	1.5 mA (P)★	120-3000	48000	9 sec.	Yes/No	XSAV12801
2 wires	0.35 A Vac/0.2 A Vdc	1.5 mA (P)★	120-3000	48000	0 sec.	Yes/No	XSAV02801

Minimum Mounting Clearances (mm/inches)



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# Proximity Sensors XSAV Tubular, Inductive Sensors 30mm Diameter, Motion Detection, DC or AC/DC

#### Wiring









XSZB130



## Specifications

Mechanical					
	0.7" (18 mm)	0-0.15" (0-4 mm)			
Usable sensing range*	1.18" (30 mm)	031" (0-8 mm)			
Standard temperature range	Standard temperature range				
	NEMA Type	1, 3, 4, 6, 12, 13			
	ІЕС Туре	IP67			
Vibration resistance		25 G, amplitude ± 2 r	nm, f =10-55 Hz		
Shock resistance		50 G duration 11 ms			
Standard target size (steel)	0.7" (18mm) diameter	0.7" x 0.7" (18mm x 1	0.7" x 0.7" (18mm x 18mm)		
	1.18" (30mm) diameter	1.18" x 1.18" (30mm	1.18" x 1.18" (30mm x 30mm)		
Repeatability (% of Sr)		3%			
Differential (hysteresis)		5-15% of pre-set frequency			
Cable PvR		20 AWG			
Electrical		AC/DC	DC		
Voltage drop (across switch) max.		5.7 V	1.8 Vdc		
Inrush current (inductive @ 20 ms)		2 A	-		
Minimum load current		5 mA	-		
Current Consumption (no load)		-	15 mA		
	XSAV1 models	9 sec. ±20% + 1/Fr ①			
Start-up delay (max.)	XSAV3 models	3 sec. ±20% + 1/Fr ①	)		
	XSAV0 models	0 sec.			
Agency Listings	CE				

① 1/Fr in the start up delay formula is the actual preset frequency adjusted via potentiometer. (1/Fr is not significant if threshold is above 60 pulses/min.).

Refer to page 351 for target material correction coefficient Km.

## Options

Description		Suffix	
Extended temperature range (only one option per device)	to +185° F (+85° C)	Π	
	to -40° F (-40° C)	TF	
5 meter cable length		L05	
10 meter cable length		L10	

Ex: XSAV11373 TT L05

## Accessories

Description	Catalog Number
Metal locknuts (1 pair included)	XSZE130
Mounting bracket, 90° steel	9006PA30
Mounting bracket, plastic	XSZB130
0.5" NPT conduit adapter	7427

#### **Application Notes:**

The number of targets is determined knowing that the actual number of pulses per minute n, is n=mN where m is the number of targets and N the speed in rpm.

This number (n) should be within the operating frequency range given in the selection table. For reasons of mechanical balance, even numbers are recommended (2, 4, 6 etc.).

#### Frequency threshold adjustment:

As long as the speed (number of pulses/min.) is above the threshold level – adjustable via 25 turn potentiometer within the threshold range – the output circuit assumes its closed state. When the actual speed falls below the threshold level, the output circuit assumes its open state. To preserve the start-up delay, the switch should be reset by removing and reapplying the power supply.

When the line voltage is initially applied, the output automatically assumes its closed state for the duration of the start-up delay. This allows the mechanical assembly to overcome inertia and reach its nominal speed, greatly simplifying the interlocking circuit. After the start-up delay, the switch will perform as described above.

Care should be taken not to exceed the maximum frequency rating above which the sensor cannot detect the target, therefore, assuming zero speed condition.

Accessories..... page 298

# Proximity Sensors XS Tubular Inductive Sensors Weld Field Immune, DC





## Dimensions

Proximity Sensors

- a = Overall Length (mm)
- b = Threaded Section (mm)
- c = for Non-shielded Sensors (mm)



	а	b	С
XS1M12	2.3" (60)	1.6" (40)	0
XS2M12	2.3" (60)	1.5" (38)	0.16" (4)
XS1M18	2.3" (60)	1.6" (40)	0
XS1M30	2.3" (60)	1.6" (40)	0

Features	
----------	--

Industrial welding processes create fields of electromagnetic "noise" which can interfere with the magnetic fields of inductive proximity sensors. Standard proximity sensors can be falsely triggered when near to these fields. WFI sensors allow uninterrupted performance when placed extremely close to the conductor carrying the welding current.

- The body styles are cylindrical in 0.47", 0.7" and 1.18" (12, 18 and 30 mm) diameters.
- Enclosure material is brass coated in Teflon<sup>®</sup> to prevent slag (molten bits of metal) from sticking to sensing face, reducing the possibility of false triggering.
- Available in Micro connector versions.\*
- Mounting nuts included.

Circuit Type	Output Mode	Voltage Range	Voltage Drop Maximum	Load Current Maximum	Operating Frequency Maximum	Catalog Number		
12 mm Shielded, DC with Micro Connector $\star$ , Nominal Sensing Distance–2 mm								
PNP	N.O.	10 to 36 Vdc	2.5 V	250 mA	1000 Hz	XS1M12PAW01D		
12 mm Non-shielded, DC with Micro Connector ★, Nominal Sensing Distance-4 mm								
PNP	N.O.	10 to 36 Vdc	2.5 V	250 mA	1000 Hz	XS2M12PAW01D		
18 mm S	hielded, D	OC with Micro C	Connector 🗙, Noi	minal Sensing Di	stance–5 mm			
PNP	N.O.	10 to 36 Vdc	2.5 V	250 mA	500 Hz	XS1M18PAW01D		
30 mm Shielded, DC with Micro Connector ★, Nominal Sensing Distance–10 mm								
PNP	N.O.	10 to 36 Vdc	2.5 V	250 mA	250 Hz	XS1M30PAW01D		

See p. 518 for matching connector cables.

The formula below shows the relationship between distance (r [mm]) and electromagnetic flux density (B[MT]).

B [mT] =	0.2xl [A]	B [mT] =	Electromagnetic Flux Density
	r [mm]	I[A] =	Welding Current
		r [mm] =	Distance

## **Minimum Mounting Clearances**



	Side by Side e		Face to Face e		Facing a Metal Object e		Mounted in Metal			
							d		h	
	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
XS1M12	0	0	0.27	7	0.24	6	0.47	12	0	0
XS2M12	0.59	15	0.27	7	0.43	11	1.42	36	0.31	8
XS1M18	0	0	0.63	16	0.35	9	0.71	18	0	0
XS1M30	0	0	0.79	20	0.79	20	1.18	30	0	0



# Proximity Sensors XS Tubular Inductive Sensors Weld Field Immune, DC

## Wiring





Mechanical		XS1M12	XS2I012	XS1M18	XS1M30		
Usable Sensing Range ★		1.6 mm	3.2 mm	4 mm	8 mm		
Temperature Range		13° F to +158° F (-25° C to +70° C)					
Epologuro Boting	NEMA Type	3, 4, 6, 12, 13, 4X I	3, 4, 6, 12, 13, 4X Indoor				
Enclosule Rating	IEC Type	IP67 (or depending	on connector)				
Tightening torque (max.)		15 N•m 11.1 (lb-ft)	15 N•m 11.1 (lb-ft)	35 N•m 26 (lb-ft)	50 N•m 37 (lb-ft)		
Vibration		25 G Amplitude +/-	2 mm f = 10-55 Hz				
Shock Resistance		50 G for 11 ms					
Differential (% of Sr)		20%					
Repeatability (% of Sr)		3%					
LED Indicator Type		4 LED windows at	90 degrees				
Enclosure Material		Brass with Teflon coating					
Electrical							
Voltage Range		12 to 24 Vdc					
Voltage Limit (Including R	ipple)	10 to 36 Vdc					
Current Consumption (ma	ax.) (No Load)	15 mA					
max. Leakage (Residual)	Current-Open State	-					
Power-up Delay (max.)		10 ms	10 ms	10 ms	10 ms		
On Delay (Maximum)		0.1 ms	0.2 ms	0.2 ms	0.7 ms		
Off Delay (max.)		0.4 ms	0.4 ms	0.6 ms	5 ms		
Short Circuit Protection		Yes					
Protective Circuitry	Overload Protection	Yes					
Reverse Polarity Protection		Yes					
Agency Listings E 164869 CCN NRKH		LR 702985 Class 3211	03	CE			

★ Refer to page 351 for target material correction coefficient Km.

## Accessories

Specifications

Description	For Sensor Diameter	Catalog Number
	0.47" (12 mm)	XSZB112
	0.47" (12 mm)	9006PA12
Mounting Prockets	0.7" (18 mm)	XSZB118
Mounting Brackets	0.7" (18 mm)	9006PA18
	1.18" (30 mm)	XSZB130
	1.18" (30 mm)	9006PA30
	0.47" (12 mm)	XSZE112
Mounting Nuts	0.7" (18 mm)	XSZE118
	1.18" (30 mm)	XSZE130







Connector Cables (M12 or D suffix)

XSZCD101Y Micro Conn., 4 pin, 2 m, straight

XSZCD111Y Micro Conn., 4 pin, 2 m, 90°

For additional cable options and lengths see p. 518 Accessories ...... page 298, 316

# **Proximity Sensors** XS Rectangular, Inductive Sensors Weld Field Immune, AC and DC







XSE

Dual Dimensions inches

Features:

Compact rectangular inductive proximity sensors for demanding applications including welding and machine tools.

- · Housings XSB: Plastic (thermoplastic polyester) XSE: Plastic (fiber glass reinforced polyamide); screw terminal models can be offered also in slag resistant thermoset plastic
- XSE models can be flush mounted in metal Plug-in version for XSB Screw terminals, PVC cable, mini style receptacle connections depending on the model • Weld Field Immunity (WFI) on most models • Radio Frequency Immunity (RFI)
- Noise and transient protection Reverse polarity protection (DC models) Selected models • are offered with short circuit protection (SCP) and overload protection • UL Recognized and CSA Certified • Factory Mutual approved for non- incendive application, NAMUR sensors approved for intrinsically safe applications.

Output Mode/ Sensing Face (XSE)	Voltage Range	Max. Load Current	Residual (leakage) Current	Operating Frequency	Housing	LED/SCP★/ WFI	Catalog Number

XSB 13mm (.511") sensing range, Non-shielded

	· · · /		<b>J</b> • 7				
AC, 2 wir	re, p . 1-i , s~~~	w ormi al , ,	. רג Censi g	GA			
N.O.	3- 2	150 n 🔪	I.5 mA 🚬 🖉	Hz Hz	rolyester	Yes/No/Yes	XSBA105112
N.C.	93-132 V	150 mA	4.5 mA (R) ①	10 Hz	Polyester	Yes/No/Yes	XSBA105212
AC, 2 ir	e plua-in mini	style . nn 💈	∵r, ``s n ir	221	17010	IS	
N.O.	7 7 55 13.7/7	1	5 .A R) D	512-	Poiyester	Yes/No/Yes	XSBA105112A
N.C.	93-132 V	150 mA	5 mA (R) ①	10 Hz	Polyester	Yes/No/Yes	XSBA105212A
AC, 2 wir	e, non plug-i 🦙	と ヽ/ ノ) abie,	nd ens ig *	n			
N.O.	93-132 V		MA MA	01:	lyester ار F	Yes/No/Yes	XSBA105112C
N.C.	93-132 V	150 mA	4.5 mA (R) ①	10 Hz	Polyester	Yes/Nc Yes	SbA1 5212C
4 C, ? wir	e, non lug,	nini stvl≏ co	ירי cthr, החיינייו	ing \star 💧			
N D.	93 32 \	50 nA	4. m (i 🐨	0 Hz	Poly	res/NO/Yes	XSBA10511' A
N.D. 5 5	JJ-132 V	150 mA	4.5 mA (R) ①	10 Hz	Polyester	Yes/No/Yes	XSBA105212R
DC, 2 wir	e, plug-in, not \	WFI	• • • •	•	<b>I</b>	•	

250 Hz

80 mA 1.2 mA Polyester No/No/No XSE 10mm (.393") sensing range, Shielded, DC models, 2 wire, N.O.

2m(6') ca	able						
End	12-48 V	100 mA	0.5 mA	1000 Hz	Polyamide	Yes/Yes/Yes	XSEC1071300
Side	12-48 V	100 mA	0.5 mA	1000 Hz	Polyamide	Yes/Yes/Yes	XSEC1071330
Screw te	rminals						
End	12-48 V	100 mA	0.5 mA	1000 Hz	Polyamide	Yes/Yes/Yes	XSEC107130
Side	12-48 V	100 mA	0.5 mA	1000 Hz	Polyamide	Yes/Yes/Yes	XSEC107133
Sealed c	able (.8m - 2.6')	), with pig-tail	ed mini style	connector			
End	12-48 V	100 mA	0.5 mA	1000 Hz	Polyamide	Yes/Yes/Yes	XSEC1071302
Side	12-48 V	100 mA	0.5 mA	1000 Hz	Polyamide	Yes/Yes/Yes	XSEC1071332
End	12-48 V	100 mA	0.5 mA	1000 Hz	Polyamide	Yes/Yes/Yes	XSEC1072301
Side	12-48 V	100 mA	0.5 mA	1000 Hz	Polyamide	Yes/Yes/Yes	XSEC1072331
Sealed c	able (.8m - 2.6')	), with pig-tail	ed micro style	e connector			
End	12-48 V	100 mA	0.5 mA	1000 Hz	Polyamide	Yes/Yes/Yes	XSEC1071301
Side	12-48 V	100 mA	0.5 mA	1000 Hz	Polyamide	Yes/Yes/Yes	XSEC1071331

For side sensing, change last numeric digit as follows; Front: 1; Right: 3; Left: 4. Ex: XSB A105114C for left sensing. \*

PLC Applications: 1

N.O

R = Bleeder resistor needed.

12-48 V

P = PLC compatible

For devices without SCP, see p. 298 for protective fuses.

XSBC10710



Cable

Blue

BU –

BN + BK Output

# Proximity Sensors XS Rectangular, Inductive Sensors Weld Field Immune, AC and DC

## Wiring









## XSE 2 wire type DC



meenamea								
Usable sensing range * Standard temperature range		0-9 mm (.35") for XSB	0-9 mm (.35") for XSB					
		0-8 mm (.31') for XSE	0-8 mm (.31') for XSE					
		-13° F to +158° F (-25°	C to +70° C)					
	NEMA Type	3, 4, 6, 12, 13	3, 4, 6, 12, 13					
Enclosure rating	IEC Type	IP67	IP67					
Vibration resistance		25 G, amplitude ± 2 mm	n, f =10-55 Hz					
Shock resistance		50 G for 11 ms						
Oten de rel terre et eine (e	4 I)	40 x 40 mm (1.6" x 1.6'	) for XSB					
Standard target size (s	steel)	30 x 30 mm (1.18" x 1.	18") for XSE					
Differential		Max. 20%						
Repeatability		Max. 5%	Max. 5%					
Radio Frequency Immunity (RFI)		Standard	Standard					
Cabla		Screw terminals, #16 A	Screw terminals, #16 AWG					
Cable		PvR, #20 AWG	PvR, #20 AWG					
Ele states el			DC Models					
Electrical		AC MODEIS	XSB	XSE				
Voltage drop (across s	witch)	9.5 V	7 V	4 V				
Inrush current (inductiv	ve @ 20 mS)	0.9 A	-	-				
Minimum load current		30 mA	1.5 mA	1.5 mA				
On delay (max.)		40 ms	.4 ms	12 ms				
Off delay (max.)		30 ms	1 ms	3 ms				
Power-up delay (max.)		80 ms	1.2 ms	16 ms				
Reverse polarity protection		-	Standard	Standard				
Weld field immunity		100 mT						
Agency Listings	E 164353 ■ CCN NRKH	LR 44087 Class 3211 03	FM: J.I. OROH9.AX (3610, 3611)	( )				

\* Refer to p. 351 for target material correction coefficient Km.

## Options

Specifications

Mechanical

Description	Suffix					
Extended temperature range						
to +185° F(+85° C)	TT					
to -40° F(-40° C)	TF					
5 meter (16') cable length	L05					

#### Accessories

XSE mounting brackets	Catalog Number
Flat	XSEZ01
90°	XSEZ02

#### Plug-in models - replacement modules, AC models

Base receptacle	AC	ZSBZ11
AC, N.O.	Plug in switch	ZSBA105112
AC, N.C.	Plug in switch	ZSBA105212
Base receptacle	DC	ZSBZ12
DC, N.O.	Plug in switch	ZSBC10710

## Minimum Mounting Clearances (mm/inches)



#### Connector Cables (A or R3 suffix)

XSZCA901Y	Mini Conn., 3 pin, 2 m, straight

XSZCA911Y Mini Conn., 3 pin, 2 m, 90°

For additional cable options and lengths see p. 518

# Proximity Sensors Inductive Sensors; NAMUR, 2 Wire DC For use with an intrinsically safe barrier relay when used in hazardous locations



## **Principle of operation**

2 wire NAMUR proximity sensors are characterized by the fact that their current consumption is changed by the presence of a metal object within the sensing zone.

They differ from a standard sensor by the absence of an output circuit. All the processing is carried out by the associated amplifier or solid state system to which it is connected.

The mode of operation is analogous to an N.C. contact:

- no object present: sensor is in the conducting state
- object present: sensor is in the non-conducting state

## Factory Mutual System

Approved for Div I, II hazardous location with NY2 safe barrier relay.

## Cylindrical type

Barrel Diameter	Barrel Type	Nominal Sensing Distance *	Operating Zone	Operating Frequency	Catalog Number				
Nickel plated	Nickel plated brass case								
Shielded, 2 m	(6.6') cable								
4 mm	smooth	0.03" (0.8 mm)	0-0.02" (0-0.6 mm)	1500 Hz	XSLN08122				
5 mm	threaded	0.03" (0.8 mm)	0-0.02" (0-0.6 mm)	1500 Hz	XSMN08122				
6.5 mm	smooth	0.04" (1 mm)	0-0.03" (0-0.8 mm)	1500 Hz	XSLN01122				
8 mm	threaded	0.06" (1.5 mm)	0-0.03" (0-0.8 mm)	1500 Hz	XSAN01122				
Plastic case									
Shielded, 2 m	(6.6') cable								
8 mm	threaded	0.06" (1.5 mm)	0-0.05" (0-1.2 mm)	1000 Hz	XSPN01122				
12 mm	threaded	0.08" (2 mm)	0-0.06" (0-1.6 mm)	800 Hz	XSPN02122				
18 mm	threaded	0.2" (5 mm)(	0-0.16" (0-4.0 mm)	500 Hz	XSPN05122				
30 mm	threaded	0.4" (10 mm)	0-0.31" (0-8.0 mm)	300 Hz	XSPN10122				
Non-shielded, 2n	n (6.6') cable	·	•	•	·				
12 mm	threaded	0.16" (4 mm)	0-0.12" (0- 3.2 mm)	400 Hz	XSPN04122				
18 mm	threaded	0.31" (8 mm)	0-0.25" (0- 6.4 mm)	300 Hz	XSPN08122				
30 mm	threaded	0.6" (15 mm)	0-0.47" (0-12.0 mm)	200 Hz	XSPN15122				

#### Plastic block type

Enclosure Style	Nominal Sensing Distance *	Operating Zone	Operating Frequency	Catalog Number					
Shielded, terminal connect	Shielded, terminal connections								
Limit switch style	0.6" (15 mm)	0-0.47" (0-12.0 mm)	100 Hz	XSCN151229					
Non-shielded, terminal con	nections								
Compact rectangular	0.5" (13 mm)	0-0.35" (0- 9.0 mm)	250 Hz	XSBN10122					
Block style	1.0" (25 mm)	0-0.8" (0-20.0 mm)	250 Hz	XSBN25122					
Block style - extended range	1.6" (40 mm)	0-1.25" (0-32.0 mm)	25 Hz	XSDN501229					

# Applications

## Intrinsically safe applications (hazardous area).

When used in these applications, it is imperative that (NAMUR) sensors be used only with an NY2 intrinsically safe relay/amplifier, or a suitably approved, compatible solid state system. Example: Painting line in car assembly plant.



Refer to page 351 for target material correction coefficient Km.

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# Proximity Sensors Inductive Sensors; NAMUR, 2 Wire DC relay when used in bazardous locations

# For use with an intrinsically safe barrier relay when used in hazardous locations

#### Specifications

Mechanical					
		operation	-25° C to +70° C (-13° F to +158° F)		
Standard temperature range		storage	-40° C to +80° C (-40° F to +176° F)		
		4mm & 5mm	1, 3, 4, 13		
Enclosure rating	NEWA Type	all others	3, 4, 6, 12, 13		
5		4mm & 5mm	IP64		
	IEC Type	all others	IP67		
Repeatability (% of Sr)			5% or less		
Cable 2 wire			22 AWG (0.11 mm <sup>2</sup> ), PvR		
Electrical			·		
Voltage range			7 to 12 Vdc		
Current consumption from sup	ply		Sensor activated (target present) = 1 mA or less;		
8.2 V (internal resistance: abo	ut 1 KΩ)		Sensor not activated (target absent) = 3 mA or more; Switching point defined for usable sensing distance and standard metal target: 1.65 mA		
Maximum line resistance			Between sensor and amplifier: 50 ohms		
Apparent sensing capacitance *			280 nF maximum		
Apparent sensing inductance *			220 micro H maximum		
Agency Listings CE St Class 3218 06			FM: J.I. OROH9.AX (3610, 3611)		

Association with an NY2 power supply/relay amplifier unit

Consider for intrinsically safe systems.

## **NAMUR Sensors**

DC 2 wire, N.C. M: Metal case - P: Plastic case.

4mm unthreaded	M5x0.5	6.5mm unthreaded	M8x1	M8x1	M12x1	Ν	V18x1
30	•	40 × 1.57					43.5
Metal	Metal	Metal	Metal	Plastic	Plastic	F	Plastic
XSLN08122	XSMN08122	XSLN01122	XSAN01122	XSPN01122	XSPN02122	XSF	PN05122
M30x1.5	Dimensions		Sensors n	ot suitable for flush mountin	ıg in metal		
42 42	page 292	M12x1	M18x1	M30x1.5	Dimensions page 288	Dimensions page 272	Dimensions page 280
Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic
XSPN10122	XSCN151229	XSPN04122	XSPN08122	XSPN15122	XSBN10122	XSBN25122	XSDN501229

Non-intrinsically safe applications (normal safe zone). connected to a solid state input (e.g.: TSX PLC input card, TSX DET 466)



# **Proximity Sensors XS Inductive Sensors** Analog Output, DC

#### Dimensions:

a = overall length (mm) b = threaded section (mm) c = for non-shielded sensors (mm)

# thread M12x1 M18x1 M30x1 δ



12 mm	Metal	1.9" (50)	1.6" (42)	0
	Plastic	1.9" (50)	1.6" (42)	0
18 mm	Metal	1.9" (50)	1.6" (42)	0
	Plastic	1.6" (40.6)	1.0" (26)	8
30 mm	Metal	1.9" (50)	1.6" (42)	0
	Plastic	2.07" (52.6)	1.2" (32)	0.5" (13)



Proximity Sensors



Dual Dimensions inches mm

## Features:

- · DC output current is directly proportional to the target distance
- Three body styles: tubular, limit switch style (with 5 position turret head), block style ٠
- Both metal and plastic enclosures available •

Two types of output: • 3 wire: 0 - 10 mA, 0 - 16 mA 2 wire: 4 - 20 mA, 4 - 14 mA

Nominal Sensing Distance	Enclosure Style	Enclosure Material	Voltage Range Max.	Circuit Type	Output Current	Operating Frequency Max.	Catalog Number		
12 mm Diam	12 mm Diameter - 2 meter cable								
0.0 0 mm	Shielded	Motol	04 Vda	2 wire	4 - 20 mA	1500 H-	VC1M10AB100		
0.2 - 2 11111	Silleided	weta	24 VUC	3 wire	0 - 16 mA	1500 HZ	ASTWITZADTZU		
0.1.4 mm	Non Shielded	Plaatia	04 Vda	2 wire	4 - 20 mA	1500 H-	VC4D104 D100		
0.4 - 4 11111	Non-Shielded	Flastic	24 Vuc	3 wire	0 - 16 mA	1300112	X34F 12AD 120		
04-4 mm	Non-Shielded	Plastic	24-48 Vdc	2 wire	4 - 14 mA	1500 Hz	XS/P12AB110		
0.4 - 4 11111	Non-Shielded	Flastic	24-40 Vuc	3 wire	0 - 10 mA	1300112	X34F12AD110		
18 mm Diam	eter - 2 meter	cable							
0.5 5	Chielded	Matal	04.)/de	2 wire	4 - 20 mA	500 H-7	VC1M10AD100		
0.5 - 5 mm	Shielded	wetai	24 Vuc	3 wire	0 - 16 mA	500 HZ	ASTIVITOAD 120		
0.0 0 mm	Nen Chielded	Diantia	04.)/de	2 wire	4 - 20 mA	500 Hz	VC4D104D100		
0.0 - 0 11111	Non-Shielded	Flaslic	24 Vuc	3 wire	0 - 16 mA		A34F 10AD 120		
0.0 0 mm	Non Shielded	Plaatia	04.49.Vdo	2 wire	4 - 14 mA	500 11-	VC4D10AD110		
0.8 - 8 mm	Non-Shielded	Plaslic	24-48 Vuc	3 wire	0 - 10 mA	500 HZ	A54F 10AD110		
30 mm Diam	eter - 2 meter	cable		•	•		•		
1 10 mm	Chielded	Matal	041/4	2 wire	4 - 20 mA	200 11-	VC1M20A D100		
1 - 10 11111	Silleided	weta	24 VUC	3 wire	0 - 16 mA	300 HZ	ASTNISUAD 120		
1.E. 1.E. mm	Non Shielded	Plaatia	04 Vda	2 wire	4 - 20 mA	200 H-	VC4D20A D120		
1.5 - 15 mm	Non-Silieided	Flaslic	24 VUC	3 wire	0 - 16 mA	300 HZ	A34F30AB120		
1.E. 1.E. mm	Non Shielded	Plaatia	04.49.Vdo	2 wire	4 - 14 mA	200 H-	VC4D20AD110		
1.5 - 15 mm	Non-Silieided	Flaslic	24-46 VUC	3 wire	0 - 10 mA	300 HZ	A34F30AB110		
Limit Switch	Style - 2 mete	r cable							
0 00 mm	Nen Chielded	Diantia	04.40.1/da	2 wire	4 - 14 mA	co 11-	XCCU207620		
2 - 20 mm	Non-Shielded	Plastic	24-48 Vac	3 wire	0 - 10 mA	60 HZ	XSCH207629		
0 00 mm	Nen Chielded	Diantia	04.)/de	2 wire	4 - 20 mA	co 11-	VCCUDDDCDD		
2 - 20 mm	Non-Shielded	Plaslic	24 Vuc	3 wire	0 - 16 mA	00 HZ	X5CH203629		
Block Style -	2 meter cable	•	•						
6 60 mm	New Chields d	Diantia	04.40.1/da	2 wire	4 - 14 mA	50.11-	VCDU607600		
o - 60 mm	NON-Shielded	Plastic	24-48 Vdc	3 wire	0 - 10 mA	50 Hz	XSDH607629		
6 60 mm	Non Shielded	Plaatia	04 Vda	2 wire	4 - 20 mA				
0-0011111	Non-Shielded	FIDSUC	24 VUC	3 wire	0 - 16 mA	30 FIZ	A3DH003029		

## Minimum Mounting Clearances (mm/inches)

Side by side	Face to	face	Facing a metal object	st	Mounting in a metal support
Side by side	Face to face		Side by side		Face to face
	<u>−−−−</u> + <u></u>				e e
	Side by side	Face to face	Facing a metal object	Mounted in meta	
12 mm Shielded	e: 4 mm (0.16")	e: 24 mm (0.94")	e: 6 mm (0.24")	d: 12 mm (0.47")	h: 0 mm (0")

	Side by side	Face to face	Facing a metal object	Mounted in metal	
12 mm Shielded	e: 4 mm (0.16")	e: 24 mm (0.94")	e: 6 mm (0.24")	d: 12 mm (0.47")	h: 0 mm (0")
12 mm Non-shielded, 24 V	e: 16 mm (0.63")	e: 48 mm (1.89")	e: 12 mm (0.47")	d: 36 mm (1.42")	h: 8 mm (0.31")
12 mm Non-shielded, 48 V	e: 16 mm (0.63")	e: 48 mm (1.89")	e: 12 mm (0.47")	d: 36 mm (1.42")	h: 8 mm (0.31")
18 mm Shielded	e: 10 mm (0.39")	e: 60 mm (2.36")	e: 15 mm (0.59")	d: 18 mm (0.71")	h: 0 mm (0")
18 mm Non-shielded, 24 V	e: 32 mm (1.26")	e: 96 mm (3.78")	e: 24 mm (0.94")	d: 54 mm (2.12")	h: 16 mm (0.63")
18 mm Non-shielded, 48 V	e: 32 mm (1.26")	e: 96 mm (3.78")	e: 24 mm (0.94")	d: 54 mm (2.12")	h: 16 mm (0.63")
30 mm Shielded	e: 20 mm (0.79")	e: 120 mm (4.72")	e: 30 mm (1.18")	d: 30 mm (1.18")	h: 0 mm (0")
30 mm Non-shielded, 24 V	e: 60 mm (2.36")	e: 180 mm (7.08")	e: 45 mm (1.77")	d: 90 mm (3.54")	h: 30 mm (1.18")
30 mm Non-shielded, 48 V	e: 60 mm (2.36")	e: 180 mm (7.08")	e: 45 mm (1.77")	d: 90 mm (3.54")	h: 30 mm (1.18")
Limit switch style	e: 80 mm (3.15")	e: 160 mm (6.30")			
Block style	e: 300 mm (11.81")	not recommended			

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# **Proximity Sensors XS Inductive Sensors** Analog Output, DC

#### Wiring

Output current

sensor output

24 V

48 V

0 to 10 mA

0 to 16 mA

0 to 10 mA  $\leq$  4200  $\Omega$ Ensure a minimum of 5 V between the + and



Value of R (R = load

impedance)

 $\leq$  1800  $\Omega$ 

 $\leq$  1125  $\Omega$ 

#### Specifications

Mechanical					
Temperature range		-13° F to +158° F (-25° C to +70° C)			
Enclosure rating		IEC Type IP67			
		Metal	Plastic		
Tightoning torque (may)	12mm	6 N•m 4.5 (lb-ft)	2 N•m 1.5 (lb-ft)		
rightening torque (max.)	18mm	15 N•m 11.1 (lb-ft)	5 N•m 3.7 (lb-ft)		
	30mm	40 N•m 29.5 (lb-ft)	20 N•m 14.7 (lb-ft)		
Epolosuro matorial		Metal			
		Plastic			
Wiring	Tubular	22 AWG (0.34 mm <sup>2</sup> ), PvR			
wining	Limit Switch/Block style	Screw term. 16 AWG(1.5 mm <sup>2</sup> )			
General Characteristics					
		XS1000120, XS4000120: 15 - 38 Vdc			
Valtage limit (including vighta)		XS1000110, XS4000110: 15 - 58 Vdc			
voltage limit (including ripple)		XSCH207000, XSDH607000: 19 - 58 Vdc			
		XSCH203000, XSDH603000: 19 - 30 Vdc			
Current consumption (no load)		4 mA			
Max. Output current drift with the	rated operating temperature	10%			
Power Supply Current (no load)		4 mA			
Repeat Accuracy		+ - 1%			
Linearity error		+ - 4%			
	Short circuit protection	yes			
Protective Circuitry	Overload protection	yes			
	Reverse polarity protection	yes			
Agency Listings (XS1, XS4) E 164869 CC (XSC, XSD) E 164353 CC		CN NRKH CN NKCR	LR 44087 Class 3211 03		

## Output Curves 4 to 20 mA, 2 wire connection (cylindrical models)



## Output Curves 0 to 10 mA, 3-wire connection, (cylindrical models)



# **Proximity Sensors XT Capacitive Sensors** 12mm, 18mm, 30mm, 32mm and Limit Switch Style; AC and DC





XT1/4 Threaded









#### Features

Capacitive proximity sensors are ideal for sensing non-metal objects or for level control of fluids and granular material. A special wall mounting bracket has been designed to replace thick or metal walls the sensor is not capable of penetrating. The actual sensing range varies widely depending on the target material and environmental conditions (humidity, dust, etc.).

An internal compensation electrode is incorporated to suppress the effects of material deposits on the sensor's face. The threshold level is adjustable via a 20 turn potentiometer (except 12mm) located at the rear of the switch. This adjustment can be used to zero out the presence of a plastic tube allowing the switch to sense "through" a bulk material or liquid level.

Other features include: metal housing: nickel plated brass, plastic housing: PBT; can be flush mounted in metal (except XT4); LED indication for output in closed state; mounting nuts included for threaded models; mounting bracket included for non-threaded versions, well mounting brackets are optional; sensitivity adjustment tool included; UL & CSA; CE mark.

Nominal Sensing	AC or	Output Mode	Circuit	Voltage Bange	Operating	Catalog Number	
Distance	DC	output mode	Туре	voltage Hange	Frequency	edulog Humber	
12 mm diameter, 2m (6.6') cable, Non Adjustment							
Flush Mountable	Threaded	Metal Case					
2 mm	DC	N.O.	PNP	12 – 24 V	100 Hz	XT1M12PA372	
2 mm	DC	N.C.	PNP	12 – 24 V	100 Hz	XT1M12PB372	
2 mm	DC	N.O.	NPN	12 – 24 V	100 Hz	XT1M12NA372	
18 mm diamete	r, 2m (6	6.6') cable, wi	th Sensitiv	vity Adjustme	nt		
Flush Mountable	Threaded	Metal Case					
5 mm	AC	N.O.	2 wire	24 – 240 V	25 Hz	XT1M18FA262	
5 mm	AC	N.C.	2 wire	24 – 240 V	25 Hz	XT1M18FB262	
5 mm	DC	N.O.	PNP	12 – 24V	100 Hz	XT1M18PA372	
5 mm	DC	N.C.	PNP	12 – 24V	100 Hz	XT1M18PB372	
5 mm	DC	N.O.	NPN	12 – 24V	100 Hz	XT1M18NA372	
Non-Flush Mountab	le Thre	aded Plastic Cas	e	•	•		
8 mm	AC	N.O.	2 wire	24 – 240 V	25 Hz	XT4P18FA262	
8 mm	DC	N.O.	PNP	12 – 24V	100 Hz	XT4P18PA372	
8 mm	DC	N.O.	NPN	12 – 24V	100 Hz	XT4P18NA372	
30 mm diamete	r, 2m (6	.6') cable, wi	th Sensitiv	vity Adjustme	nt		
Flush Mountable	Threaded	Metal Case					
10 mm	AC	N.O.	2 wire	24 – 240 V	25 Hz	XT1M30FA262	
10 mm	AC	N.C.	2 wire	24 – 240 V	25 Hz	XT1M30FB262	
10 mm	DC	N.O.	PNP	12 – 24V	100 Hz	XT1M30PA372	
10 mm	DC	N.C.	PNP	12 – 24V	100 Hz	XT1M30PB372	
10 mm	DC	N.O.	NPN	12 – 24V	100 Hz	XT1M30NA372	
Non-Flush Mountab	le Thre	aded Plastic Cas	e		•	•	
15 mm	AC	N.O.	2 wire	24 – 240 V	25 Hz	XT4P30FA262	
15 mm	AC	N.C.	2 wire	24 – 240 V	25 Hz	XT4P30FB262	
15 mm	DC	N.O.	PNP	12 – 24V	100 Hz	XT4P30PA372	
15 mm	DC	N.O.	NPN	12 – 24V	100 Hz	XT4P30NA372	
32 mm diamete	r, 2m (6	.6') cable, wi	th Sensitiv	vity Adjustme	nt		
Flush Mountable	Smooth F	Plastic Case					
15 mm	AC	N.O.	2 wire	110 – 220 V	10 Hz	XT1L32FA262	
15 mm	AC	N.C.	2 wire	110 – 220 V	10 Hz	XT1L32FB262	
Non-Flush Mountab	le Smo	oth Plastic Case		•	•	1	
20 mm	AC	N.O.	2 wire	110 – 220 V	10 Hz	XT4L32FA262	
20 mm	AC	N.C.	2 wire	110 – 220 V	10 Hz	XT4L32FB262	
Limit Switch St	vle, 0.5	" NPT, with S	ensitivity	Adjustment			
Flush Mountable	Plastic Ca	ise	,	•			
15 mm	AC	N.O. or N.C.	2 wire	24 – 240 V	25 Hz	XT7C40FP262	
15 mm	DC	N.O. / N.C.	PNP	12 – 24V	100 Hz	XT7C40PC440	
15 mm	DC	N.O. / N.C.	NPN	12 – 24V	100 Hz	XT7C40NC440	
Sensitivity Adjustment							
		1 2 1		0 Adjustment usin	a ooroudrivor		

2 Adjustment using screwdriver

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2-wire AC, N.O. or N.C. output XT1L32F●262, XT4L32F●262

3-wire DC, N.O. or N.C. output XT1M12F●A372, XT1M12PB372

BK /4 (NO) BK /2 (NC)

L1

\_ L2

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# **Proximity Sensors XT Capacitive Sensors** 12mm, 18mm, 30mm, 32mm and Limit Switch Style; AC and DC

## Specifications

Mechanical							
Standard Temperature Range	-13° F to +158° F (-25° C to +70° C)						
Fraise Patien	NEMA Type 4, 4X, 6, 6P, 12, 13 (Ex		xcept Smooth Case 4, 4X, 6, 12)				
Enclosure Rating	IEC Type	IP67 (Except Smooth					
Differential (%of Sr.)	20%						
Repeatability (% of Sr.)	10%						
Electrical		AC Models (All)	Smooth	DC Models			
Voltage Range		24 – 240 V	110 – 220 V	12 – 24 V			
Voltage Limit		20 – 264 V	90 – 250 V	10 – 38 V			
Voltage Drop (across switch) Closed Stat	e	5.5 V	9 V	2 V			
Minimum Load Current		5 mA	15 mA	0 mA			
Maximum L and Current	Tubular	300 mA	250 mA (Ue=110V*)	300 mA			
Maximum Load Current	Limit Switch	350 mA	-	200 mA			
Current Consumption @ No Load		-	-	10 mA			
Residual Leakage Current		1.5 mA at 120V	7 mA	-			
On Delay Max	Tubular	50 ms	50 ms	5 ms			
Off Delay Max	Limit Switch	20 ms	-	5 ms			
Off Dolou Max	Tubular	50 ms	15 ms	5 ms			
Oli Delay Max.	Limit Switch	30 ms	-	5 ms			
Bower up Delay Max	Tubular	300 ms	300 ms	30 ms			
Fower-up Delay Max.	Limit Switch	150 ms	-	30 ms			
	Electrostatic Discharges						
Brotactive Circuitry	Radio Magnetic Fields		IEC 60047 5 2 and NE	MAICS & Dort 4			
Fiblective Circuity	Fast Transients		1EC 00947-5-2 and NE	LIVIA 103 5, Fait 4			
	Impulse Voltage		1				
Agency Listings	E 164869 CCN NRKH		LR 44087 Class 3211 03				

\* Maximum load current 150mA when Ue=220V.

The operating distance of the sensor is related to the dielectric constant ( $\epsilon \Upsilon$ ) of the object material to be detected. The higher the value of  $\epsilon \Upsilon$ , the easier it will be for the object to be detected.

NOTE: This product should not be used in an environment with dew or condensation

The Usable Sensing Distance depends on the object material: Su = Sn x Fc Su = Usable Sensing Distance; Sn = Nominal Sensing Distance; Fc = Correction Coefficient for the object material Example: Sensor XT1M30PA372 used to detect a rubber object Sn = 10 mm, Fc = 0.3 Usable Sensing Distance Su = 10 mm x 0.3 = 3 mm

M	ar	-	
Material	13	FC	Material
Acetone	20	0.8	Paper
Air	1	0	Paraffin
Alcohol	24	0.85	Petrol
Ammonia	15-25	0.75-0.85	Plexiglass
Cement (powder)	4	0.35	Polyester r
Cereals	3-5	0.3-0.4	Polystyren
Damp wood	10-30	0.7-0.9	Porcelain
Dry wood	2-7	0.2-0.6	Powered N
Ethylene glycol	38	0.95	Rubber
Epoxy resin	4	0.36	Salt
Flour	2.5-3	0.2-0.3	Sand
Glass	3-10	0.3-0.7	Sugar
Marble	6-7	0.5-0.6	Teflon
Mica	6-7	0.5-0.6	Vaseline
Nylon	4-5	0.3-0.4	Water
Oil	2.2	0.2	

Material	εr	Fc	
Paper	2-4	0.2-0.3	
Paraffin	2-2.5	0.2	
Petrol	2.2	0.2	
Plexiglass	3.2	0.3	
Polyester resin	2.8-8	0.2-0.6	
Polystyrene	3	0.3	
Porcelain	5-7	0.4-0.5	
Powered Milk	3.5-4	0.3-0.4	
Rubber	2.5-3	0.3	
Salt	6	0.5	
Sand	3-5	0.3-0.4	
Sugar	3	0.3	
Teflon	2	0.2	
Vaseline	2-3	0.2-0.3	
Water	80	1	

## Accessories

9006PA••

	Size	Description	Catalog Number
	18mm	Plastic mounting nuts	XSZE218
	18mm	Metal mounting nuts	XSZE118
	18mm	Plastic mounting bracket	XSZB118
-	18mm	Metal mounting bracket	9006PA18
	30mm	Plastic mounting nuts	XSZE230
	30mm	Metal mounting nuts	XSZE130
	30mm	Plastic mounting bracket	XSZB130
	30mm	Metal mounting bracket	9006PA30
	30mm	Well mounting bracket	XTAZ30
¥TA73	32mm	Well mounting bracket	XTAZ32
AIALU	32mm	Surface mounting bracket	XUZB32

|

GR/YW

Wiring



2-wire AC, programmable N.O. or N.C. output depending on position of jumper XT7C40FP262







XSZB1 ••

XSZE•••

e: 0

e: 0

e: 40/1.57

e: 60/2.36

e: 60/2.36

e: 40/1.57



d: 30/1.18 h:0

d: 18/.71 h: 0

d: 32/1.26 h:0 x: 2/.07

d: 90/3.54 h: 20/.79

d: 96/3.78 h: 25/.98

## Minimum Mounting Clearances

30 mm

32 mm

18 mm

30 mm

32 mm



e: 60/2.36

e: 100/3.94

e: 50/1.97

e: 80/3.15

e: 100/3.94

e: 120/4.72

e: 60/2.36

e: 100/3.93

e: 80/3.15

e: 100/3.94

e: 100/3.94

XT1

XT4

Flush Mountable

Non-Flush Mountable

XT7 Limit Switch Style



# Proximity Sensors XT Capacitive Sensors 12mm, 18mm, 30mm, 32mm and Limit Switch Style; AC and DC

Dimensions (mm/in.)



# Accessories Dimensions (mm/in.)





#### 9006PA • •



						_		<u> </u>		-		-		_			-			,				4
Type		4		•	ļ		L	,						2			,	J	r	`	L	-	N	/1
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
PA30	2.54	67	2.56	65	1.39	35	1.99	51	0.39	10	1.28	33	1.97	50	0.21	5	2.05	52	1.20	31	0.08	2	0.98	25
PA18	2.05	52	1.97	50	0.98	25	1.60	41	0.39	10	0.98	25	1.38	35	0.21	5	1.65	42	0.73	19	0.08	2	0.79	20
PA12	1.38	35	1.57	40	069	18	1.20	31	0.39	10	069	18	0.98	25	0.21	5	1.28	33	0.49	13	0.08	2	0.71	18

# Proximity Sensors XS Inductive Sensors Mounting Accessories







**Proximity Sensors** 





XSZE



XSZP1••



XSZB•00

## **Protective fuses**

For AC and AC/DC proximity sensors which do not incorporate overload and short circuit protection, the use of a "quick- blow" fuse connected in series with the sensor is recommended.

Description		Catalog Number
0.6A "quick-blow" cartridge fuse (5x20) (XSB proximity sensors) (Use with 9080 IEC 5 X 20 fuse block - See Digest 172, page 22-17)	Sold in lots of 10	XUZE06
0.8A "quick-blow" cartridge fuse (5x20) (XS dia. 8, 12, 18, 30, and XSD proximity sensors) (Use with 9080 IEC 5 X 20 fuse block - See Digest 172, page 22-17)	Sold in lots of 10	XUZE08

## Mounting brackets

Description	Sensor Diameter	For use with	Catalog Number
	4 unthreaded	XS1L04	XSZB104
	5 (M5 x 0.5)	XS1N05	XSZB105
	6.5 unthreaded	XS1/XS2 L06	XSZB165
	8 (M8 x 1)	XS1/XS2/XS4	XSZB108
Cylindrical inductive proximity sensors	12 (M12 x 1)	XS1/XS2/XS4	XSZB112 9006PA12
	18 (M18 x 1)	XS1/XS2/XS4	XSZB118 9006PA18
	30 (M30 x 1.5)	XS1/XS2/XS4	XSZB130 9006PA30
	4mm	XS1L04	831604
Zinc die cast	5mm	XS1L05	831605
for cylindrical	6mm	XS1/XS2 L06	831606
4-12 mm dia.	8mm	XS1/XS2/XS4	831608
	12mm	XS1/XS2/XS4	831612
Matal plata bracket	Straight	XSE	XSEZ01
vietal plate bracket	Right angled	XSE	XSEZ02

## Mounting nuts

Description	Sensor Diameter	For use with	Catalog Number
	5 (M5 x 0.5)	XS1N05	XSZE105
2 Zamac nuts, nickel and	8 (M8 x 1)	XS1/XS2	XSZE108
chromium plated	12 (M12 x1)	XS1/XS2	XSZE112
with 2 lock washers	18 (M18 x 1)	XS1/XS2	XSZE118
	30 (M30 x 1.5)	XS1/XS2	XSZE130
	8 (M8 x 1)	XS4	XSZE208
2 Plantia puta	12 (M12 x1)	XS4	XSZE212
2 Flastic fluts	18 (M18 x 1)	XS4	XSZE218
	30 (M30 x 1.5)	XS4	XSZE230
Ctaiplage steel	12 (M12 x1)	XS1/XS2	XSZE312
mounting nuts	18 (M18 x 1)	XS1/XS2	XSZE318
mounting hato	30 (M30 x 1.5)	XS1/XS2	XSZE330
	8 (M8x1)	XS1/XS2	XSZE908
Stainless steel	12 (M12 x1)	XS1/XS2	XSZE912
locknut washers	18 (M18 x 1)	XS1/XS2	XSZE918
	30 (M30 x 1.5)	XS1/XS2	XSZE930
Dratastive cable and	12	XS1/XS2/XS4	XSZP112
(CNOMO type)	18	XS1/XS2/XS4	XSZP118
(0.10.10 ()pc)	30	XS1/XS2/XS4	XSZP130
	-	XS•J	XSZBJ00
	-	XS•F	XSZBF00
Flat mounting plate	-	XS•E	XSZBE00
	-	XS•C	XSZBC00
	-	XS•D	XSZBD00
	-	XS•J	XSZBJ90
	-	XS•F	XSZBF90
90° Angle flat mounting plat	-	XS•E	XSZBE90
	-	XS•C	XSZBC90
	-	XS•D	XSZBD90
	-	XS•E	XSZBE10
Substitution mounting bracket	-	XS•C	XSZBC10
	-	XS•D	XSZBD10
	-	XS•E	XSZEE10
Protective cover	-	XS•C	XSZEC10
	-	XS•D	XSZED10



# **Proximity Sensors XS Inductive Sensors Mounting Accessories, Dimensions**

# Mounting brackets





XSEZ01

XSEZ02

		d1		d2		2		h		c		<u>ہ</u>		h		
Sensors	Brackets	u.	u 1		u2		~		~		C .					
		IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm	
4mm Unthreaded	XSZB104	.15	4													÷
5mm	XSZB105	.19	5													
6.5 mm Unthreaded	XSZB165			.25	6.5	.78	19.9	.55	14.0	.57	14.5	.29	7.5	.49	12.5	
8mm	XSZB108			.31	8.0	.78	19.9	.55	14.0	.57	14.5	.29	7.5	.49	12.5	1.97
12mm	XSZB112			.47	12.0	.86	21.9	.63	16.0	.57	14.5	.33	8.5	.21	15.5	50
18mm	XSZB118			.70	18.0	1.00	26.0	.86	22.0	.61	15.7	.45	11.5	.79	20.1	25
30mm	XSZB130			1.18	30.0	1.53	39.0	1.40	35.5	.85	21.7	.72	18.5	1.20	31.0	



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6

.625



.625

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**Approximate Dimensions** 9006PA••



Dual Dimensions inches mm

Tuno	Α		В		С		D		E		F		G		н		J		к		L		М	
Type	IN	mm																						
PA30	2.64	67	2.56	65	1.39	35	1.99	51	0.39	10	1.28	33	1.97	50	0.21	5	2.05	52	1.20	31	0.08	2	0.98	25
PA18	2.05	52	1.97	50	0.97	25	1.60	41	0.39	10	0.98	25	1.38	35	0.21	5	1.65	42	0.73	19	0.08	2	0.79	20
PA12	1.38	35	1.57	40	0.69	18	1.20	31	0.39	10	0.69	18	0.98	25	0.21	5	1.28	33	0.49	13	80.0	3	0.71	18

# Proximity Sensors XS Inductive Sensors Mounting Accessories, Dimensions





# Proximity Sensors XS Inductive Sensors Mounting Accessories, Dimensions





Dual Dimensions inches mm

# Proximity Sensors SG Magnet Actuated Sensors Surface Mounted Style



Surface mounted magnet actuated sensors for industrial applications.

- · Sensing is independent of magnet polarity
- Typical applications: security systems (gate interlocks), high speed rotational counting, identification of metal bins with magnet coded "labels", sensing through non magnetic walls, etc.

## Features:

- · Housing; aluminum, plastic (PBT) for SG08168 and SG28195
- · Completely epoxy encapsulated
- Very fast response time (reed output only)
- PLC compatible AC models (triac output)
- High transients protection (AC models)
- No bouncing.

## Magnet actuated proximity sensors

Circovit	AC rating	gs		DC ratin	gs		Laskana	Dim.	Wining	Catalan		
Туре	VA (max.)	Volts †	Current (max.)	VA (max.)	Volts (max.)	Current (max.)	Leakage (mA)	Fig. No.	Fig.	Number		
Reed outp	ut - DC o	nly										
N.O.	-	-	-	10	200	0.5 A	0	1	А	SGA8016		
N.O.	-	-	-	10	200	0.5 A	0	2	A	SGA8031		
Reed outp	ut - DC o	nly - built	-in resistor pro	tection								
N.O.	-	-	-	10	200	0.5 A	0	1	А	SGA8182		
Reed outp	Reed output - DC only - High temperature -40° F to 300° F											
N.O.	-	-	-	10	200	0.5 A	0	1	А	SGA8053		
Reed outp	out - AC ai	nd DC - b	uilt-in RC prote	ction								
N.C.	3	130	0.25 A	3	100	0.25 A	6 (R) ①	2	В	SGB8175		
N.O.	10	130	0.5 A	10	200	0.5 A	6 (R) ①	2	A	SGA8176		
N.O.	10	130	0.5 A	10	200	0.5 A	6 (R) 1	1	A	SGA8177		
Triac outp	ut - AC or	nly (induc	tive PLC)									
N.O.	240	120	2.0 A	-	-	-	1.7 (P) ①	3	A	SG08168 *		
N.O./N.C.	50	240	0.5 A	-	-	-	1.7 (P) ①	3	С	SG28195 ★		
N.O.	50	130	0.5 A	-	_	_	1.7 (P) ①	1	A	SG08239		

① PLC applications:

P = PLC compatible.

R = Bleeder resistor required.

For reed output: max. voltage. For triac output: nominal voltage.

★ UL Recognized

## Magnet actuators

		Sensing distance		Catalog
		All 3	SG2 8195	Number
Tubular		1.3" (33mm)	1" (25.4mm)	7046
Flat bracket, center	South pole	0.7" (17.7mm)	0.4" (10mm)	7093
Flat bracket, side	South pole	0.5" (12.7mm)	0.2" (5mm)	7063
90° bracket	South pole	0.5" (12.7mm)	0.2" (5mm)	7062
Block type		0.5" (12.7mm)	0.2" (5mm)	7099
Flexible tape 1' long		0.3" (7.6mm)	0.2" (5mm)	7096

③ All block sensors except SG28195.



# Proximity Sensors SG Magnet Actuated Sensors Surface Mounted Style

## Wiring

Figure A (N/O)



Figure B (N/C)



## Figure C (N/O or N/C)



## Specifications

Mechanical						
Standard temperature range	-40° F to +140° F (-40° C to +60° C) (to 300	0° F for SGA 8053)				
Enclosure ratings (NEMA) Type	1, 4, 13					
Vibration resistance	20 G (10 to 2000 Hz)					
Shock resistance	50 G for 11 mS					
Differential	Max. 75%					
Repeatability	0.003"					
Electrical	AC (triac)	DC				
Voltage drop (across switch)	2 V	0 V (IR for SGA8182) ①				
Minimum load current	15 mA	-				
On delay (ms)	1 ms	0.75 ms				
Off delay (ms)	8 ms	0.75 ms				
Cable 3'	#22 AWG vinyl except SGO8168: #16 AWG	SJTO, 2 individual Teflon #22 AWG for SGA8053				
Agency Listings	E 42259 CCN NKCR2 (SGO8168 and SG28195 only)					

① Voltage drop = IR where I= load current, R = 150  $\Omega$ 

#### Options

	Cable Type	Suffix
2 meters (6') of individual wires	Teflon (SGA8053)	L02
5 meters (16') of individual wires	Teflon (SGA8053)	L05
E motoro (16)) of coblo	Vinyl	L05
Sinelers (10) of cable	SJTO (SGO8168)	L05
10 meters (33') of cable, (for triac and models with built	Vinyl	L10
in resistor)	SJTO (SGO8168)	L10

Ex: SGO8168L05

## Dimensions



# **Proximity Sensors SG Magnet Actuated Sensors Limit Switch Style**



Non plug-in

Limit switch style magnet actuated proximity sensors for heavy duty industrial applications.

- · Sensing is independent of magnet polarity
- Typical applications: security systems (gate interlocks), high speed rotational countings, identification.

## Features:

- · Housing; zinc die-cast
- · Completely epoxy encapsulated
- · Plug in models for fast replacement
- Very fast response time (reed output only)
- PLC compatible AC models
- · High transient protection
- · Overload and short protection (transistor models)
- No bouncing
- 0.5" NPT conduit entrance.
- UL recognized (except where indicated).

Circuit Type	AC ratings (inductive or resistive)			VA	DC ratings (resistive only)		Leakage	Dim.	Wiring	Catalog
	VA (max.)	Volts (nom.)	Current (max.)	(max.)	Volts (max.)	Current (max.)	(mA)	No.	Fig.	Number
AC triac o	output, no	on plug-ir	1							
N.O.	360	120	3.0A	-	-	-	1.7 (P)▲	1	А	SG08003
N.C.	360	120	3.0A	-	-	-	1.7 (P)▲	1	В	SG18004
Non plug	-in with li	ght indic	ator							
N.O.	360	120	3.0A	-	-	-	1.7 (P)▲	1	А	SG0L8003
N.C.	360	120	3.0A	-	-	-	1.7 (P)▲	1	В	SG1L8004
DC, trans	istor out	out, non p	olug-in							
N.O.	-	-	-	7.5	30	0.25 A	0	1	D	SG08079
N.C.	-	-	-	7.5	30	0.25 A	0	1	E	SG18056
Reed out	put, non	plug-in (A	C model has b	uilt-in su	rge RC p	rotection)	)			
N.O.	-	-	-	10	200	0.5 A	0	1	А	SGA8005
N.O.	15	120	1.0A	15	250	1.0 A	6 (R)▲	1	А	SGA8040
N.O./N.C.	-	-	-	3	200	0.25 A	0	1	С	SGC8027
N.O./N.C.	-	-	-	20	500	1.5 A	0	3	С	SGC8025

(P)=PLC compatible. (R) Bleeder resistor required for PLC compatibility.

## Magnet actuators (See page 310) inches (mm)

		То		Sensing distance			Catalog	
		all others	8079	8040	8027	8025	Number	
Tubular		1.3" (33)	1.2" (30.5)	0.8" (20.3)	0.9" (23)	1" (25.4)	7046	
Flat bracket, center	South pole	0.7" (17.7)	0.5" (12.7)	0.4" (10.1)	0.4" (10.1)	0.4" (10.1)	7093	
Flat bracket, side	South pole	0.5" (12.7)	0.4" (10.0)	0.2" (5.1)	0.2" (5.1)	0.2" (5.1)	7063	
90° bracket	South pole	0.5" (12.7)	0.4" (10.1)	0.2" (5.1)	0.2" (5.1)	0.2" (5.1)	7062	
Block type		0.5" (12.7)	0.2" (5.1)	0.2" (5.1)	0.3" (7.6)	0.2" (5.1)	7099	
Flexible type - 1' long		0.3"(7.6)	0.1" (2.5)	-	0.2" (5.1)	0.1" (2.5)	7096	

\* All sensors except the ones tabulated separately at right.


## **Proximity Sensors SG Magnet Actuated Sensors Limit Switch Style**

#### Wiring





Figure C



Terminal strip marked: NO-COM-NC

Figure D



SG18056 is normally closed. Connect red terminal (+) to power source. Connect minus (-) terminal to load. Housing must be connected to minus.

#### Figure E



Specification	s
---------------	---

General characteristics								
Tomporatura ranga		-40° F to 140° F (-40° C to 60° C)						
Temperature range		-40° F to 125° F (-40° 0	C to 52° C) for tr	ansistor models				
Enclosure ratings	NEMA Type	1,4,13						
Vibration resistance		20G (10 to 2000Hz)						
Shock resistance		50G for 11ms						
Differential		Max. 75%						
Repeatability		0.003"						
	AC triac	Transistor	Reed					
Voltage drop (across switch)	2 V	-	-					
Minimum load current (max.)	15 mA	-	-					
			SGA8005	SGA8040	SGS8027	SGC8025		
On delay (max.)	1 ms	0.75 ms	0.75	2 ms	1 ms N.O./ 1.5 ms N.C.	2 ms N.O./ 4 ms N.C.		
Off delay (max.)		0.75 ms	0.75	2 ms	11 msN.O. 1.5 ms N.C.	2 msN.O./ 4 ms N.C.		
Cable - screw terminals	#16 AWG							
Agency Listings except where noted	E 42259 CCN NK	CR2						

#### **Options - triac models only**

Description	Fig.	Suffix adder
3' 16-3 SJTO vinyl cable, epoxy sealed	A,B	320
3' 16-3 SJTO vinyl cable, cord connector	A,B	321
3' 16-4 SJTO vinyl cable, epoxy sealed	C,D,E	420
3 pin mini style receptacle ①		347

See p. 518 for matching connector cables. 1

#### Dimensions





1.75

44

## Proximity Sensors SG Magnet Actuated Sensors Tubular Style

2.25

31.25

G

1.00

25

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SGA8189 (Brass)

Figure 1

SGA8057 (Aluminum)

SGC8058 (PVC)

SGA8072 (PVC)

1"-14 UNS -2A 4 Thread



Proximity Sensors

Figure 2 SGA8179 SGA8180 SGC8181



Figure 3 SGA8038

Tubular magnet actuated proximity sensors for heavy duty applications such as: high speed rotational counting, identification of metal bins with magnet coded "labels" sensing through non-magnetic walls, etc.

• Sensing is independent of magnet polarity

Features:

- Housings Aluminum SGA8057; Plastic PVC SGC8058, SGA8072, SGA8039; Polymide SGA8179, SGA8180, SGA8181
- Completely epoxy encapsulated
- High transient protection
- Threaded and smooth housings
- High voltage versions
- SPST and SPDT models
- No bouncing.
- UL recognized (except where noted with \*).

Circuit type	AC ratings (inductive or resistive)			DC ratings (resistive only)			Leakage	Dim.	Wiring	Catalog
	VA (max.)	Volts nominal	Current (max.)	VA (max.)	Volts (max.)	Current (max.)	(mA)	No.	Fig.	Number
Reed outp	out AC & DC	switching (	Built-in RC	protecti	on), thre	aded.	•		•	•
N.O.	15	120	1.0 A	12	48	0.25 A	6 ②	1	А	SGA8057
N.O./N.C.	15	120	1.0 A	15	100	1.0 A	6 ②	1	С	SGC8058
N.O.	15	120	1.0 A	15	250	1.0 A	6 ②	1	A	SGA8072
N.O.	25	480	1.0 A	25	480	1.0 A	.16	2	A	SGA8179 ★
Reed outp	out - DC, thr	eaded, resis	stor built-in	for long	cable ru	ins 3				-
N.O.	-	-	-	10	200	0.5 A	0	2	A	SGA8180 *
N.O./N.C.	-	-	-	3	100	0.25 A	0	2	С	SGC8181 *
Reed outp	out - AC & D	C (built-in F	C protectio	n), smoo	oth					
1 N.O.	15	120	1.0 A	15	250	1.0 A	6 ②	3	A	SGA8038 *

2 Bleeder resistor required for PLC AC switching compatibility.

3 150  $\Omega$  for SGA8180 and 470  $\Omega$  for SGC8181.

★ Not UL

#### Magnet actuators (See page 310)

Description		Sensing distance *	SGA8180	Catalog Number
Tubular		0.8" (20.3)	1.3" (33)	7046
Flat bracket, center	South pole	0.4" (10.1)	0.7" (17.8)	7093
Flat bracket, side	South pole	0.2" (5.1)	0.2" (5.1)	7063
90° bracket	South pole	0.2" (5.1)	0.2" (5.1)	7062
Block type		0.2" (5.1)	0.2" (5.1)	7099
Flexible tape - 1' long		0.1" (2.5)	0.1" (2.5)	7096

All except SGA8180 tabulated at right.

Dual Dimensions inches mm







## Proximity Sensors SG Magnet Actuated Sensors Tubular Style

#### Wiring

Figure A



#### Figure C SGC8058 & SGC8181 Black – Com Blue – N.O. Brown – N.C.



#### Specifications

General characteristics						
Temperature range	-40° F - 140° F (-40° C to 60° C)					
Enclosure ratings NEMA Type	1,4,13					
Vibration resistance	20G (10 to 1000Hz)					
Shock resistance	50G for 11mS					
Differential	Max. 75% (except SGA8179 = 1.06" max.)					
Repeatability	Max. 0.003"					
	Reed AC & DC	SGA8180 Built in resistor (DC)	SGC8181 Built in resistor (DC)			
Voltage drop ①	25 mV	IxR	IxR			
On delay (max.)	2 mS	0.75 ms	2.5 ms N.O. 3.5 ms N.C.			
Coble 2	22-2 vinyl: SGA8038, 8180; 23-2	vinyl SGC 8181;				
Cable, S	16-2 SJTO: SGA8057, 8072. SO (	cable for SGA8179				
Agency Listings except where noted	E 42259 CCN NKCR2					

 $\textcircled{0} \qquad \text{Voltage drop = IR, where I is load current and R built-in resistor.}$ 

#### Options

Description	Suffix	
5 meters (16') of cable	Vinyl	L05
	SJTO (8057, 8072, 8179)	L05
10 meters (33') of cable	Vinyl	L10
(for models with built in resistor)	SJTO (8057, 8072, 8179)	L10

## Proximity Sensors SG Magnet Actuated Sensors Maintained Contact



98 98 19 4 203 dia. thru mig holes 1.44 36

#### **Figure 1** SGA8018 SGO8026 SGO8110 SGO8141

**Maintained contact model -** A highly reliable magnet actuated proximity limit switch designed to maintain contact for high speed stacker cranes, slow down and memory applications. Eliminates camming required for mechanically operated limit switches. **Maintains the information even if power is down**.

Movement of an N or S pole of a magnet actuator past the "blue dot" sensitive area within the specified range along the switch will change the contact position from open to closed. Once latched, the movement of the same magnetic pole in the opposite direction or the movement of the opposite magnetic pole in the same direction will unlatch the switch.

#### Features:

- Housing zinc die cast
- PLC compatibility
- · High transient protection
- · No bouncing
- 0.5" NPT conduit entrance
- UL recognized.
- · CSA certified.

NOTE: If during this procedure the switch closes and then opens again (pulses), reverse the polarity of the magnet and repeat above procedure. If desired direction of operation is opposite to that established above, reverse polarity of the magnet.

Circuit Type	AC ratings (inductive or resistive)		DC ratings (resistive only)			Leakage	Wiring	Catalog	
	VA (max.)	Volts (nom.)	Current (max.)	VA (max.)	Volts (max.)	Current (max.)	(mA)	Fig.	Number
Reed, DC									
1 N.O.	-	-	-	15	250	1.0 A	0	А	SGA8018
Triac, AC									
1 N.O.	360	120	3.0 A	-	-	-	1.7	А	SGO8026
Triac, AC low temperature: -30° F to 85° F									
1 N.O.	360	120	3.0 A	-	-	-	1.7	В	SGO8110

#### Magnet actuators (see page 310)

Description		Sensing Distance	Catalog Number
Tubular		1.3"	7046
Flat bracket, contex	South pole	1.0"	7093
Fial bracket, center	North pole	1.0"	7547
<b>-</b>	South pole	0.7"	7063
Fial Diackel, Side	North pole	0.7"	70631
00° hreeket	South pole	0.7"	7062
90° bracket	North pole	0.7"	70621
Block type		0.5"	7099
Flexible tape - 1" long		0.5"	7096

Dual Dimensions inches mm

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## Proximity Sensors SG Magnet Actuated Sensors Maintained Contact

#### Wiring

## Specifications

### Figure A



Figure B



Mechanical +32° F to 140° F (0° C to 60° C) Temperature range +30° F to 85° F (-35° C to 30° C) for SGO8110 Enclosure ratings NEMA Type 1, 4, 13 Vibration resistance 20 G (10 to 2000 Hz) Shock resistance 50 G @ 11 ms Differential Max. 50% Max. 0.003" Repeatability Electrical Reed Triac Voltage drop 3 V Minimum load current (mA) 15 mA On delay mS 2 ms 2 ms Off delay mS 2 ms 2 ms #16 AWG Cable - screw terminals E 42259 CCN NKCR2 LR 25490 Class 3211 03 Agency Listings

Connect terminal 3 (heater) to line (L2) for operation below  $+32^{\circ}F$ .

## Proximity Sensors SG Magnet Actuated Sensors Magnet Actuators







**Proximity Sensors** 





#### Features:

- Industrial grade magnet recommended for magnet actuated proximity sensors.
- Alnico is used as magnet material for all rigid models.
- Kevlar is used for the flexible magnetic tape.
- The rigid models are already mounted on several types of standard brackets for convenience (except the tubular "high power" version).
- Both South and North Poles are accessible and marked. The South Pole version is the standard. North Pole versions may be required in conjunction with the maintained magnetic switch (see page 308).
- For comparison an average magnetic strength rating is listed below. Measurements were made with a Gaussmeter at 0.13" from the sensing surface.

Description		Magnetic Strength	Catalog Number
Tubular		700 Gauss	7046
Elet brooket, contor	South pole	330 Gauss	7093
Fial Diackel, certier	North pole	330 Gauss	7547
<b>F</b> 1 (1) (1) (1)	South pole	240 Gauss	7063
Fial bracket, side	North pole	240 Gauss	70631
00° brocket	South pole	260 Gauss	7062
90° bracket	North pole	260 Gauss	70621
Block type		340 Gauss	7099
Flexible tape	1' long	180 Gauss	7096*

For longer tape specify total length in feet. Example: 70966 = 6 feet.



## **Proximity Sensors SG Magnet Actuated Sensors Magnet Actuators**

## Magnet actuator dimensions

Tubular magnet actuator 7046

3.0 76 15 s Ν +



Magnet actuator 7062 (south pole) Magnet actuator 70621 (north pole)

Magnetic actuator 7063 (south pole) Magnet actuator 70631 (north pole)



Block type magnet actuator 7099





Flexible magnetic tape 7096 1 foot



Dual Dimensions inches

## Proximity Sensors ST Grounded Probe Switch



terminal

The touch switch is a highly reliable AC solid state presence sensor designed for precise conductivity sensing. Applications include high temperature environment, light conductive, aggressive mechanical and chemical environments that targets positive end-point sensing. All models have a visible neon pilot light to indicate operation of the switch.

#### Features

- Housings zinc die cast
- Solid state no moving parts
- 115 Vac completely self-contained
- Probes up to 10 feet long
- High current output no relay required for most applications
- Fast response no warm-up time
- 0.5" NPT conduit entrance
- UL Recognized

#### Operation

The switch is actuated when a conductive path between probe terminal and ground (1  $M_{\Omega}$  or less) is established. The electrical contact to ground operates the switching thyristor. Internal RC snubber and varistor provide effective protection from typical transients. Normal open models have a 10 millisecond (maximum) turn on time. Different off delay times are offered in order that the design engineer may compensate for relay chatter when the probe is subjected to "bounce" from irregular contact with the grounded metal point of contact.

NOTE: For isolated circuits where the ground is not common - the switch ground terminal should be connected to the neutral. The metal target to be detected by the probe should then be wired also to the neutral.

#### **Probe characteristics**

The probe terminal is an 8-32 stud protruding from the center of the head. Extensions may be any **electrically conductive wire** or material suitably **insulated from grounded** surface and **limited in length to 10** feet or less.

- Open voltage: 12 Vdc
- Peak current: 1 mA

#### Switch models

Cinevit	Veltere	Current	Leakage	0.7	0#	Catalog			
type	(nominal)	load (max.)	current (max.)	delay	delay	Number			
Terminal screws									
N.O.	120 Vac	3 Amp	1.7 mA	10 ms	100 ms	STO8164			
N.C.	120 Vac	3 Amp	1.7 mA	100 ms	30m s	ST18165			
N.O.	120 Vac	3 Amp	1.7 mA	10 ms	400 ms	STO8166			
N.O.	120 Vac	3 Amp	1.7 mA	10 ms	20 ms	STO8167			
Pre wired wi	ith 3 feet of cable	)							
N.O.	120 Vac	3 Amp	1.7 mA	10 ms	100 ms	STO8001			
N.C.	120 Vac	3 Amp	1.7 mA	100 ms	30 ms	ST18002			
N.O.	120 Vac	3 Amp	1.7 mA	10 ms	400 ms	STO8036			
N.O.	120 Vac	3 Amp	1.7 mA	10 ms	20 ms	STO8042			

--





## Proximity Sensors ST Grounded Probe Switch

#### Wiring

Cable wiring



Target connected to ground

#### Terminal strip wiring

L1	1	2	2 3	3 4	4	L2
ho hc	t busin	g	Ne US	ot ed	LOA neut	D- tral

Target connected to ground Housing must be grounded for proper operation.

Model ST switches may be wired in series or parallel. Connect red lead to black lead of other switch (terminal 4 to terminal 1 of other switch) for series operation. The voltage drop across each switch (in the closed state) does not exceed 2 volts AC.

#### Specifications

General characteristics						
Temperature range		-40° F to 158° F (-40° C to 70° C)				
Enclosure ratings	NEMA Type	1, 4, 13				
Voltage drop		2 V				
Inrush current maximum		10 Amp				
Minimum load current		15 mA				
Power supply current (no load)		30 mA				
Cable		3' 16-4 SJTO or terminal screws #16 AWG				

10/02

## Proximity Sensors XS7V Magnetic Cylinder Position Sensors Rectangular, Compact; DC





#### Description

Detects the magnet installed on the piston through a non-ferrous cylinder wall. Universal mounting provided by clamp style and strap style mounting. Fast troubleshooting aided by output LED. Trouble-free operation insured by extensive protective circuitry. Connector versions.

Circuit type	Nominal Sensing Range *	Output mode	Load current maximum	Voltage maximum	Mating connector style	Catalog Number
2m Cable			-	-		
PNP	3.5 mm	N.O.	100 mA	10-30 Vdc	-	XS7V12PA332
NPN	3.5 mm	N.O.	100 mA	10-30 Vdc	-	XS7V12NA332
Connector	- Nano style	-	-	-		
PNP	3.5 mm	N.O.	100 mA	10-30 Vdc	1 thru 8	XS7V12PA332S
NPN	3.5 mm	N.O.	100 mA	10-30 Vdc	1 thru 8	XS7V12NA332S
★ At 11m <sup>-</sup>	Г.					•

✤ AUTIIII.

#### **Application Information**

The XS7V sensors detect the magnetic field generated by a magnet. The sensors are mounted in general on the cylinder. The magnets are mounted on the end of the piston and influence the sensor through a non-ferrous cylinder wall (i.e. aluminum). The sensors can be mounted anywhere along the cylinder using mounting accessories such as the ones shown on the next page.

Cylinder Diameter		Active Tr CA1	Active Travel CA1		Travel C1		Hysteresis H	
IN	mm	IN	mm	IN	mm	IN	mm	
0.39	10	0.28	7.2	0.13	3.25	0.028	0.70	
0.47	12	0.31	7.8	0.14	3.45	0.028	0.70	
0.63	16	0.33	8.5	0.15	3.80	0.035	0.90	
0.79	20	0.37	9.3	0.17	4.20	0.035	0.90	
0.98	25	0.40	10.2	0.18	4.60	0.039	1.00	
1.26	32	0.43	11	0.20	5.00	0.039	1.00	
1.57	40	0.47	12	0.22	5.50	0.039	1.00	
1.97	50	0.47	12	0.22	5.50	0.039	1.00	
2.48	63	0.55	14	0.26	6.50	0.039	1.00	
3.15	80	0.63	16	0.30	7.50	0.039	1.00	
3.94	100	0.71	18	0.33	8.50	0.039	1.00	





Dual Dimensions inches

Nano style connector



## Proximity Sensors XS7V Magnetic Cylinder Position Sensors Rectangular, Compact; DC

#### Wiring

#### 3 wire, PNP



3 wire, NPN

BN/1	
NPN	
$\Diamond$	BK/4 (NO)
BU/3	



Stainless Steel Mounting Collar



Mounting Bracket for Cylinder Rods

#### Specifications

Mechanical		
Sensing range @ 11 mT		0 to 3.5mm
Standard Temperature range	Operating	-10° C to 60° C (+ 14° F to + 140° F)
Standard Temperature range	Storage	-40° C to + 70° C (-40° F to + 158° F)
Enclosure rating	NEMA Type	
Enclosure rating	IEC Type	IP67
Enclosure material		Plastic
Repeatability	0.1 mm	
Electrical		
Voltage range		12 to 24 Vdc
Voltage limit (including ripple)		10 to 30 Vdc
Voltage drop (across switch), closed state		0.5 V
Maximum load current		100 mA
Current consumption (no load)		30m A
Actuation speed (max.)		10 ms
Response time		3 ms

## Options

Description	Suffix	
Extended coble length	5 meter cable	L1
Extended cable length	10 meter cable	L2

#### Accessories

Description	Cylinder Diameter mm/in	Catalog Number	Sold in Lots of
Stainless steel mounting collar	10 / 0.39	XSZB210	5
Stainless steel mounting collar	12 / 0.47	XSZB212	5
Stainless steel mounting collar	16 / 0.63	XSZB216	5
Stainless steel mounting collar	20 / 0.79	XSZB220	5
Stainless steel mounting collar	25 / 0.98	XSZB225	5
Mounting bracket (for cylinder rods)	32 / 1.26 to 40 / 1.57	XSZB240	1
Mounting bracket (for cylinder rods)	50 / 1.97 to 63 / 2.48	XSZB263	1
Mounting bracket (for cylinder rods)	80 / 3.15 to 100 / 3.94	XSZB200	1

## Proximity Sensors Inductive Sensor Accessories Conduit Adapters for Tubular Sensors





- Features:
- Available for 12, 18 and 30mm tubular sensors
- 1/2" 14 NPT Inside Thread
- Nickel Plated Brass

Tube Diameter	Tube Thread Size	Dimensions (mm)	Catalog Number
12mm (0.47)	M12 x 1	$\begin{array}{c} \begin{array}{c} \begin{array}{c} 49.8 \\ 16.7 \\ (0.66) \end{array} \end{array} \\ \begin{array}{c} 0 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\ 1 \\$	XSZCAR12
18mm (0.71)	M18 x 1	9.65 (0.66) (1.00) (1.0	XSZCAR18
30mm (1.18)	M30 x 1.5		XSZCAR30





XSZEN••

XSZENN••

Telemecanique

#### Features:

- · Shielded and non-shielded caps available
- · Different versions available (beveled or non-beveled)
- · Provides sensor face protection with no effect in operation

#### Description

Protection in harsh applications, helps to prevent abrasions, cracks, and other possible damage to the sensors face. Available in many different materials Ceramic, Delrin (Acetal), and Teflon. Provide your sensor with protection and a longer life without the additional charge of a stainless steel face option.

#### Beveled caps (30 ° chamfer)

Α	В	С	D	E	Catalog Number				
8 mm Diameter s	hielded			•	•				
5.1 (0.20)	15.1 (0.59)	0.38 (0.15)	7.00 (0.28)	-	XSZEN08				
12 mm Diameter	12 mm Diameter shielded								
6.2 (0.26)	24.1 (0.95)	0.76 (0.03)	12.2 (0.48)	-	XSZEN12				
18 mm Diameter	shielded								
8.2 (0.32)	31.2 (1.23)	0.76 (0.03)	17.0 (0.67)	-	XSZEN18				
30 mm Diameter	shielded								
7.6 (0.30)	44.5 (1.75)	1.01 (0.04)	29.0 (1.19)	-	XSZEN30				
8 mm Diameter n	on-shielded								
5.1 (0.20)	14.1 (0.56)	0.38 (0.15)	7.00 (2.76)	9.60 (0.37)	XSZENN08				
12 mm Diameter	non-shielded								
6.5 (0.26)	22.9 (0.90)	0.76 (0.03)	12.9 (0.51)	17.3 (0.68)	XSZENN12				
18 mm Diameter non-shielded									
8.2 (0.32)	34.0 (1.34)	0.76 (0.03)	16.6 (0.65)	17.8 (0.70)	XSZENN18				
30 mm Diameter non-shielded									
7.5 (0.30)	44.5 (1.75)	1.01 (0.04)	30.0 (1.18)	22.8 (0.90)	XSZENN30				

#### Non-beveled caps

Α	В	С	Catalog Number			
12 mm Diameter shi	elded	·				
8.90 (0.35)	16.1 (0.63)	1.26 (0.05)	XSZSC12C			
8.90 (0.35)	16.1 (0.63)	0.76 (0.03)	XSZSC12D			
8.90 (0.35)	16.1 (0.63)	0.76 (0.03)	XSZSC12T			
12 mm Diameter nor	n-shielded					
15.2 (0.60)	16.1 (0.63)	0.76 (0.03)	XSZSC12ND			
15.2 (0.60)	16.1 (0.63)	0.76 (0.03)	XSZSC12NT			
18 mm Diameter shi	elded					
8.80 (0.35)	24.4 (0.96)	1.27 (0.05)	XSZSC18D			
8.80 (0.35)	24.4 (0.96)	1.27 (0.05)	XSZSC18T			
18 mm Diameter nor	n-shielded					
18.0 (0.59)	24.4 (0.96)	1.27 (0.05)	XSZSC18ND			
18.0 (0.59)	24.4 (0.96)	1.27 (0.05)	XSZSC18NT			

Dual Dimensions inches

C

XSZSC

## Proximity Sensors Inductive Sensor Accessories Plunger Screw Adapters



#### Features

- Accepts 8, 12, or 18mm shielded sensor
- Heat-treated alloy steel construction
- Rugged stop with solid state output

#### Description

Plunger Screw Adapters provide the ability for a shielded inductive proximity sensor to be used as a mechanical stop switch. Helps to solve many applications that require precise end of travel signals, or a hard stop. Spring requires 252g (9oz) to actuate sensor.

Α	в	с	D	E (Dia.)	F	G	Impact Force (Max.)	Catalog Number	
8 mm Diameter Shielded Sensors									
M8x1	25.0 (1.00)	M8x1	3.16 (0.12)	5.84 (0.23)	6.26 (0.24)	11.0 (0.43)	2000 N (450 lb-ft)	XSZB0825	
M8x1	50.0 (2.00)	M8x1	3.16 (0.12)	5.84 (0.23)	6.26 (0.24)	11.0 (0.43)	2000 N (450 lb-ft)	XSZB0850	
12 mm Di	ameter Shie	elded Sens	ors						
M12x1	25.0 (1.00)	M12x1	4.32 (0.17)	9.40 (0.37)	4.22 (0.17)	15.7 (0.62)	20,500 N (4608 lb-ft)	XSZB1225	
M12x1	50.0 (2.00)	M12x1	4.32 (0.17)	9.40 (0.37)	4.22 (0.17)	15.7 (0.62)	20,500 N (4608 lb-ft)	XSZB1250	
M12x1	75.0 (3.00)	M12x1	4.32 (0.17)	9.40 (0.37)	4.22 (0.17)	15.7 (0.62)	20,500 N (4608 lb-ft)	XSZB1275	
M12x1	100 (4.00)	M12x1	4.32 (0.17)	9.40 (0.37)	4.22 (0.17)	15.7 (0.62)	20,500 N (4608 lb-ft)	XSZB1210	
18 mm Di	ameter Shie	elded Sens	ors				•		
M18x1	25.0 (1.00)	M18x1	4.32 (0.17)	14.2 (0.56)	4.22 (0.17)	22.1 (0.87)	45,000 N (10,115lbft)	XSZB1825	
M18x1	50.0 (2.00)	M18x1	4.32 (0.17)	14.2 (0.56)	4.22 (0.17)	22.1 (0.87)	45,000 N (10,115lbft)	XSZB1850	
M18x1	75.0 (3.00)	M18x1	4.32 (0.17)	14.2 (0.56)	4.22 (0.17)	22.1 (0.87)	45,000 N (10,115lbft)	XSZB1875	
M18x1	100 (4.00)	M18x1	4.32 (0.17)	14.2 (0.56)	4.22 (0.17)	22.1 (0.87)	45,000 N (10,115lbft)	XSZB1810	









#### Features:

- · Accepts any 8 or 12mm shielded sensor
- Accurate and compact switching in confined areas
- Large variety of stand probe lengths and diameters

#### Description

Proximity Probe is a spring loaded actuator designed to work with 8mm or 12mm cylindrical inductive proximity sensors. The probe and sensor combination offers increased flexibility in applications that require tight positioning.

Α	В	С	D	E (Dia.)	F	Catalog Number
8 mm Diamete	r Shielded Sens	or				
75.6 (2.98)	25.0 (1.00)	M8 x 1 to depth of 21.8 (0.86)	M8 x 1	3.18 (.125)	11.1 (.436)	XSZPP0825
99.6 (3.92)	50.0 (2.00)	M8 x 1 to depth of 21.8 (0.86)	M8 x 1	3.18 (.125)	11.1 (.436)	XSZPP0850
126 (4.96)	75.0 (3.00)	M8 x 1 to depth of 21.8 (0.86)	M8 x 1	3.18 (.125)	11.1 (.436)	XSZPP0875
150 (5.91)	100 (4.00)	M8 x 1 to depth of 21.8 (0.86)	M8 x 1	3.18 (.125)	11.1 (.436)	XSZPP0810
12 mm Diamete	er Shielded Sen	isor				
75.6 (2.98)	25.0(1.00)	M12 x 1 to depth of 18.0 (0.71)	M12 x 1	6.35 (0.25)	15.8 (.623)	XSZPP1225
99.6 (3.92)	50.0 (2.00)	M12 x 1 to depth of 18.0 (0.71)	M12 x 1	6.35 (0.25)	15.8 (.623)	XSZPP1250
126 (4.96)	75.0 (3.00)	M12 x 1 to depth of 18.0 (0.71)	M12 x 1	6.35 (0.25)	15.8 (.623)	XSZPP1275
150 (5.91)	100 (4.00)	M12 x 1 to depth of 18.0 (0.71)	M12 x 1	6.35 (0.25)	15.8 (.623)	XSZPP1210



## Proximity Sensors Inductive Sensor Accessories Quick Change Mounting Tube





#### Features:

- Quick change mounting available for 8,12,18 and 30mm sensors
- Short and Long barrel lengths available
- One time adjustment, makes sensor replacement easy and quick
- · Provide protection to sensor from impact and damage
- Teflon caps available for quick change mounts (shown below)

#### Description

Provides time savings in maintenance of sensors, helps prevent downtime. An internal shoulder stop and a collet-style locknut precisely holds the sensor. This helps to maintain a precise sensing distance and reduces the required expertise needed during sensor installation.

Shielded Senso 2.4 (1.28)	ors	•							
2.4 (1.28)			8 mm Diameter Shielded Sensors						
. ,	17.5 (0.69)	M12x1	3.85 (0.15)	16.9 (0.67)	XSZQT08				
8.0 (1.90)	34.0 (1.34)	M12x1	3.85 (0.15)	16.9 (0.67)	XSZQTL08				
Shielded Sens	sors								
3.7 (1.34)	19.5 (0.77)	M16.5x1.5	4.01 (0.16)	21.8 (0.86)	XSZQT12				
4.8 (1.76)	30.0 (1.18)	M16.5x1.5	4.01 (0.16)	21.8 (0.86)	XSZQTL12				
Shielded Sens	sor								
8.5 (1.52)	20.0 (0.79)	M24 x 1.5	4.95 (0.19)	30.0 (1.18)	XSZQT18				
8.0 (2.28)	40.0 (1.57)	M24 x 1.5	4.95 (0.19)	30.0 (1.18)	XSZQTL18				
Shielded Sens	sors								
5.0 (1.50)	20.0 (0.79)	M36 x 1.5	6.13 (0.24)	41.0 (1.61)	XSZQT30				
8.0 (2.28	40.0 (1.57)	M36 x 1.5	6.13 (0.24)	41.0 (1.61)	XSZQTL30				
	.0 (1.90)         Shielded Sens         .7 (1.34)         .8 (1.76)         Shielded Sens         .5 (1.52)         .0 (2.28)         Shielded Sens         .0 (1.50)         .0 (2.28	.0 (1.90)         34.0 (1.34)           Shielded Sensors           .7 (1.34)         19.5 (0.77)           .8 (1.76)         30.0 (1.18)           Shielded Sensors           .5 (1.52)         20.0 (0.79)           .0 (2.28)         40.0 (1.57)           Shielded Sensors           .0 (1.50)         20.0 (0.79)           .0 (2.28)         40.0 (1.57)	34.0 (1.34)         M12x1           Shielded Sensors         M16.5x1.5           1.7 (1.34)         19.5 (0.77)         M16.5x1.5           .8 (1.76)         30.0 (1.18)         M16.5x1.5           Shielded Sensor         Shielded Sensor         M16.5x1.5           Shielded Sensor         Shielded Sensor         M24 x 1.5           .0 (2.28)         40.0 (1.57)         M24 x 1.5           Shielded Sensor         Shielded Sensor         M36 x 1.5           .0 (1.50)         20.0 (0.79)         M36 x 1.5	1.0 (1.90)         34.0 (1.34)         M12x1         3.85 (0.15)           Shielded Sensors           1.7 (1.34)         19.5 (0.77)         M16.5x1.5         4.01 (0.16)           .8 (1.76)         30.0 (1.18)         M16.5x1.5         4.01 (0.16)           Shielded Sensors           1.5 (1.52)         20.0 (0.79)         M24 x 1.5         4.95 (0.19)           .0 (2.28)         40.0 (1.57)         M24 x 1.5         4.95 (0.19)           Shielded Sensors           col (1.50)         20.0 (0.79)         M26 x 1.5         6.13 (0.24)           .0 (2.28)         40.0 (1.57)         M36 x 1.5         6.13 (0.24)	1.0 (1.90)         34.0 (1.34)         M12x1         3.85 (0.15)         16.9 (0.67)           Shielded Sensors           1.7 (1.34)         19.5 (0.77)         M16.5x1.5         4.01 (0.16)         21.8 (0.86)           .8 (1.76)         30.0 (1.18)         M16.5x1.5         4.01 (0.16)         21.8 (0.86)           Shielded Sensor           Shielded Sensor				



#### Teflon Caps for Quick change mounting tubes

Α	В	С	D	Catalog Number
8.84 (0.35)	14.8 (0.59)	0.76 (0.03)	M12x1	XSZQTC08
7.24 (0.29)	19.9 (0.75)	0.76 (0.03	M16x1	XSZQTC12
9.00 (0.35)	28.7 (1.13)	0.76 (0.03	M24x1.5	XSZQTC18
9.00 (0.35)	41.4 (1.63)	1.26 (0.05)	M36x1.5	XSZQTC30



320





Telemecanique

#### Features:

- · Accepts 8, 12, 18 & 30mm shielded or non-shielded sensors
- · Sensors become unaffected by accidental impact
- Shielded and Non-shielded caps available, see page 313.

#### Description

Spring loaded sensor mount for tubular body styles provides impact protection for the sensor in the case of target over travel. The mount is designed to be threaded onto a tubular sensor and held in place by using one of the mounting nuts provided with the sensor. Caps are available to help protect the face of the sensor from lateral and axial impacts, see page 313.

A Inside Thread	B Outside Thread	C Maximum	D Across Flats	E Maximum Over travel	F	G	Catalog Number
8 mm Diamet	er Sensors			over traver			
M8 x 1	M16 x 1.5	12.2 (.481)	22.2 (.875)	9.22 (.363)	22.0 (.867)	3.10 (.155)	XSZSN08
12 mm Diame	eter Sensors						
M12 x 1	M18 x 1	10.0 (.394)	23.9 (.943)	12.1 (.476)	21.3 (.840)	3.94 (.156)	XSZSN12LP
M12 x 1	M22 x 1.5	11.5 (.454)	28.4 (1.12)	10.5 (.413)	22.1 (.871)	3.88 (.153)	XSZSN12
18 mm Diame	eter Sensors			•	•	•	
M18 x 1	M30 x 1.5	16.1 (.634)	34.8 (1.37)	13.3 (.523)	29.7 (1.17)	5.08 (0.20)	XSZSN18
30 mm Diameter Sensors							
M30 x 1.5	M47 x 1.5	24.6 (.972)	50.8 (2.00)	15.6 (.615)	37.0 (1.37)	4.98 (.196)	XSZSN30



## **Proximity Sensors** Flat Inductive Sensing Curves

#### Shielded

**Proximity Sensors** 







mm -15 -10 -5 0 5 10 15 20mm



	Target size	Usable range	
	mm	mm	
XS7J1A1D	5 x 5 x 1	02	

\_\_\_\_\_ pick up points

	Target size	Usable range	
	mm	mm	
XS7F1A1D	5 x 5 x 1	04	

\_\_\_\_\_ pick up points

	Target size	Usable range
	mm	mm
XS7E1A1D	8 x 8 x 1	08
XS7E1A1C	8 x 8 x 1	08

\_\_\_\_\_ pick up points

	Target size	Usable range
	mm	mm
XS7C1A1D	18 x 18 x 1	0 12
XS7C1A1C	18 x 18 x 1	012

\_\_\_\_\_ pick up points

	Target size	Usable range
	mm	mm
XS7D1A1D	30 x 30 x 1	032
XS7D1A1C	30 x 30 x 1	032

\_\_\_\_\_ pick up points



Shielded



### Non-Shielded and Extended Range





## **Proximity Sensors Block Type Inductive Sensing Curves**





Old Design	New Design	Old Design	New Design	Old Design	New Design
8 mm Cylindrical		XS1N08PA349L2	XS608B1PAL10	XS1M12KP340D	XS508B1NBM8
XS1M08DA210	XS508B1DAL2	XS1N08PA349S	XS608B1PAM12	XS1M12KP340L1	XS508B1PAL5
XS1M08DA210D	XS508B1DAM12	XS1N08PB340	XS508B1PBL2	XS1M12KP340L1	XS508B1PBL5
XS1M08DA210L1	XS508B1DAL5	XS1N08PB340D	XS508B1PBM8	XS1M12KP340L1	XS508B1NAL5
XS1M08DA210L2	XS508B1DAL10	XS1N08PB340L1	XS508B1PBL5	XS1M12KP340L1	XS508B1NBL5
XS1M08DA210LD	XS508B1DAL08M12	XS1N08PB340S	XS508B1PBM8	XS1M12KP340L2	XS508B1PAL10
XS1M08DB210	XS508B1DBL2	XS1N08PB349	XS608B1PBL2	XS1M12KP340L2	XS508B1PBL10
XS1M08DB210D	XS508B1DBM12	XS1N08PB349D	XS608B1PBM12	XS1M12KP340L2	XS508B1NAL10
XS1M08DB210L1	XS508B1DBL5	XS1N08PB349L1	XS608B1PBL5	XS1M12KP340L2	XS508B1NBL10
XS1M08NA370	XS608B1NAL2	XS1N08PB349L2	XS608B1PBL10	XS1M12NA370	XS612B1NAL2
XS1M08NA370D	XS608B1NAM12	XS1N08PB349S	XS608B1PBM12	XS1M12NA370D	XS612B1NAM12
XS1M08NA370L1	XS608B1NAL5	XS2M08NA340	XS608B1NAL2	XS1M12NA370L1	XS612B1NAL5
XS1M08NB370	XS608B1NBL2	XS2M08NC410	XS608B1NAL2	XS1M12NA370L2	XS612B1NAL10
XS1M08NB370D	XS608B1NBM12	XS2M08NC410	XS608B1NBL2	XS1M12NA370S	XS612B1NAM12
XS1M08NC410	XS508B1NAL2	XS2M08NC410D	XS608B1NAM12	XS1M12NB370	XS612B1NBL2
XS1M08NC410	XS508B1NBL2	XS2M08NC410D	XS608B1NBM12	XS1M12NB370D	XS612B1NBM12
XS1M08NC410D	XS508B1NAM8	XS2M08PC410	XS608B1PAL2	XS1M12PA370	XS612B1PAL2
XS1M08NC410D	XS508B1NBM8	XS2M08PC410	XS608B1PBL2	XS1M12PA370D	XS612B1PAM12
XS1M08PA370	XS608B1PAL2	XS2M08PC410D	XS608B1PAM12	XS1M12PA370L1	XS612B1PAL5
XS1M08PA370D	XS608B1PAM12	XS2M08PC410D	XS608B1PBM12	XS1M12PA370L2	XS612B1PAL10
XS1M08PA370L1	XS608B1PAL5	XS2N08NA340	XS608B1NAL2	XS1M12PB370	XS612B1PBL2
XS1M08PA370L2	XS608B1PAL10	XS2N08NA340D	XS608B1NAM8	XS1M12PB370D	XS612B1PBM12
XS1M08PA370LD	XS608B1PAL08M12	XS2N08NA340L1	XS608B1NAL5	XS1M12PB370L1	XS612B1PBL5
XS1M08PA370S	XS608B1PAM12	XS2N08NA340S	XS608B1NAM8	XS1N12NA340	XS512B1NAL2
XS1M08PB370	XS608B1PBL2	XS2N08NB340	XS608B1NBL2	XS1N12NA340D	XS512B1NAM12
XS1M08PB370D	XS608B1PBM12	XS2N08PA340	XS608B1PAL2	XS1N12NA340L1	XS512B1NAL5
XS1M08PB370L1	XS608B1PBL5	XS2N08PA340D	XS608B1PAM8	XS1N12NA349	XS612B1NAL2
XS1M08PB370L2	XS608B1PBL10	XS2N08PA340L1	XS608B1PAL5	XS1N12NA349D	XS612B1NAM12
XS1M08PC410	XS508B1PAL2	XS2N08PA340L2	XS608B1PAL10	XS1N12NA349L1	XS612B1NAL5
XS1M08PC410	XS508B1PBL2	XS2N08PA340S	XS608B1PAM8	XS1N12NA349L2	XS612B1NAL10
XS1M08PC410D	XS508B1PAM8	XS2N08PB340	XS608B1PBL2	XS1N12NB340	XS512B1NBL2
XS1M08PC410D	XS508B1PBM8	XS2N08PB340D	XS608B1PBM8	XS1N12NB340D	XS512B1NBM12
XS1N08NA340D	XS508B1NAM8	XS2N08PB340S	XS608B1PBM8	XS1N12NB349	XS612B1NBL2
XS1N08NA340L1	XS508B1NAL5	XS3P08NA340	XS508B1NAL2	XS1N12NB349D	XS612B1NBM12
XS1N08NA340L2	XS508B1NAL10	XS3P08NA340D	XS508B1NAM8	XS1N12NB349L2	XS612B1NBL10
XS1N08NA340S	XS508B1NAM8	XS3P08NA370	XS608B1NAL2	XS1N12NC410	XS512B1NAL2
XS1N08NA349	XS608B1NAL2	XS3P08PA340	XS508B1PAL2	XS1N12NC410	XS512B1NBL2
XS1N08NA349D	XS608B1NAM12	XS3P08PA340D	XS508B1PAM12	XS1N12NC410D	XS512B1NBM12
XS1N08NA349L1	XS608B1NAL5	XS3P08PA340L1	XS508B1PAL5	XS1N12NC410D	XS512B1NAM12
XS1N08NA349S	XS608B1NAM12	XS3P08PA370	XS608B1PAL2	XS1N12NC410L1	XS512B1NAL5
XS1N08NB340	XS508B1NBL2	12 mm Cylindrical —		XS1N12NC410L1	XS512B1NBL5
XS1N08NB340D	XS508B1NBM8	XS1M12DA210	XS512B1DAL2	XS1N12PA340	XS512B1PAL2
XS1N08NB340S	XS508B1NBM8	XS1M12DA210D	XS512B1DAM12	XS1N12PA340D	XS512B1PAM12
XS1N08NB349	XS608B1NBL2	XS1M12DA210L1	XS512B1DAL5	XS1N12PA340L1	XS512B1PAL5
XS1N08NB349D	XS608B1NBM12	XS1M12DA210L2	XS512B1DAL10	XS1N12PA340L2	XS512B1PAL10
XS1N08NB349S	XS608B1NBM12	XS1M12DB210	XS512B1DBL2	XS1N12PA340S	XS512B1PAM12
XS1N08PA340	XS508B1PAL2	XS1M12DB210D	XS512B1DBM12	XS1N12PA349	XS612B1PAL2
XS1N08PA340D	XS508B1PAM8	XS1M12DB210L1	XS512B1DBL5	XS1N12PA349D	XS612B1PAM12
XS1N08PA340L1	XS508B1PAL5	XS1M12KP340	XS508B1PAL2	XS1N12PA349L1	XS612B1PAL5
XS1N08PA340L2	XS508B1PAL10	XS1M12KP340	XS508B1PBL2	XS1N12PA349L2	XS612B1PAL10
XS1N08PA340LD	XS508B1PAL08M12	XS1M12KP340	XS508B1NAL2	XS1N12PA349S	XS612B1PAM12
XS1N08PA340S	XS508B1PAM8	XS1M12KP340	XS508B1NBL2	XS1N12PB340	XS512B1PBL2
XS1N08PA349	XS608B1PAL2	XS1M12KP340D	XS508B1PAM8	XS1N12PB340D	XS512B1PBM12
XS1N08PA349D	XS608B1PAM12	XS1M12KP340D	XS508B1PBM8	XS1N12PB349	XS612B1PBL2
XS1N08PA349L1	XS608B1PAL5	XS1M12KP340D	XS508B1NAM8	XS1N12PB349D	XS612B1PBM12

Old Design	New Design	Old Design	New Design	Old Design	New Design
XS1N12PB349L1	XS612B1PBL5	XS2N12PA340	XS612B1PAL2	XS1M18NA370C	XS618B1NAM12
XS1N12PB349L2	XS612B1PBL10	XS2N12PA340D	XS612B1PAM12	XS1M18NA370D	XS618B1NAM12
XS1N12PB349S	XS612B1PBM12	XS2N12PA340L1	XS612B1PAL5	XS1M18NA370L1	XS618B1NAL5
XS1N12PC410	XS512B1PAL2	XS2N12PA340L2	XS612B1PAL10	XS1M18NA370L2	XS618B1NAL10
XS1N12PC410	XS512B1PBL2	XS2N12PB340	XS612B1PBL2	XS1M18NB370	XS618B1NBL2
XS1N12PC410D	XS512B1PAM12	XS2N12PB340D	XS612B1PBM12	XS1M18NB370C	XS618B1NBM12
XS1N12PC410D	XS512B1PBM12	XS2N12PC410	XS612B1PAL2	XS1M18NB370D	XS618B1NBM12
XS1N12PC410L1	XS512B1PAL5	XS2N12PC410	XS612B1PBL2	XS1M18NB370L1	XS618B1NBL5
XS1N12PC410L1	XS512B1PBL5	XS2N12PC410D	XS612B1PAM12	XS1M18NB370L2	XS618B1NBL10
XS1N12PC410L2	XS512B1PAL10	XS2N12PC410D	XS612B1PBM12	XS1M18PA370	XS618B1PAL2
XS1N12PC410L2	XS512B1PBL10	XS2N12PC410L1	XS612B1PAL5	XS1M18PA370A	XS618B1PAM12
XS1N12PC419D	XS612B1PAM12	XS2N12PC410L1	XS612B1PBL5	XS1M18PA370B	XS618B1PAM12
XS1N12PC419D	XS612B1PBM12	XS2N12PC410L2	XS612B1PAL10	XS1M18PA370C	XS618B1PAM12
XS2M12KP340	XS612B1PAL2	XS2N12PC410L2	XS612B1PBL10	XS1M18PA370D	XS618B1PAM12
XS2M12KP340	XS612B1PBL2	XS3P12NA340	XS512B1NAL2	XS1M18PA370E	XS618B1PAM12
XS2M12KP340	XS612B1NAL2	XS3P12NA340D	XS512B1NAM12	XS1M18PA370G	XS618B1PAM12
XS2M12KP340	XS612B1NBL2	XS3P12NA370	XS612B1NAL2	XS1M18PA370L1	XS618B1PAL5
XS2M12KP340D	XS612B1PAM12	XS3P12PA340	XS512B1PAL2	XS1M18PA370L2	XS618B1PAL10
XS2M12KP340D	XS612B1PBM12	XS3P12PA340D	XS512B1PAM12	XS1M18PA370T	XS618B1PAL2T
XS2M12KP340D	XS612B1NAM12	XS3P12PA340L1	XS512B1PAL5	XS1M18PB370	XS618B1PBL2
XS2M12KP340D	XS612B1NBM12	XS3P12PA370	XS612B1PAL2	XS1M18PB370A	XS618B1PBM12
XS2M12KP340L1	XS612B1PAL5	XS3P12PA370L1	XS612B1PAL5	XS1M18PB370B	XS618B1PBM12
XS2M12KP340L1	XS612B1PBL5	18 mm Cylindrical —	•	XS1M18PB370C	XS618B1PBM12
XS2M12KP340L1	XS612B1NAL5	XS1M18DA210	XS518B1DAL2	XS1M18PB370D	XS618B1PBM12
XS2M12KP340L1	XS612B1NBL5	XS1M18DA210B	XS518B1DAM12	XS1M18PB370G	XS618B1PBM12
XS2M12KP340L2	XS612B1PAL10	XS1M18DA210C	XS518B1DAM12	XS1M18PB370L1	XS618B1PAL5
XS2M12KP340L2	XS612B1PBL10	XS1M18DA210D	XS518B1DAM12	XS1M18PB370L2	XS618B1PAL10
XS2M12KP340L2	XS612B1NAL10	XS1M18DA210G	XS518B1DAM12	XS1N18NA340	XS518B1NAL2
XS2M12KP340L2	XS612B1NBL10	XS1M18DA210L1	XS518B1DAL5	XS1N18NA340D	XS518B1NAM12
XS2M12NA370	XS612B1NAL2	XS1M18DA210L2	XS518B1DAL10	XS1N18NA340L1	XS518B1NAL5
XS2M12NA370D	XS612B1NAM12	XS1M18DA210LD	XS518B1DAL08M12	XS1N18NA340L2	XS618B1NAL10
XS2M12NA370L1	XS612B1NAL5	XS1M18DA214D	XS518B1CAM12	XS1N18NA349	XS618B1NAL2
XS2M12NB370	XS612B1NBL2	XS1M18DA214LD	XS518B1CAL08M12	XS1N18NA349D	XS618B1NAM12
XS2M12NB370D	XS612B1NBM12	XS1M18DB210	XS518B1DBL2	XS1N18NA349L1	XS618B1NAL5
XS2M12PA370	XS612B1PAL2	XS1M18DB210B	XS518B1DBM12	XS1N18NB340	XS518B1NBL2
XS2M12PA370D	XS612B1PAM12	XS1M18DB210D	XS518B1DBM12	XS1N18NB340D	XS518B1NBM12
XS2M12PA370L1	XS612B1PAL5	XS1M18KP340	XS518B1PAL2	XS1N18NB349	XS618B1NBL2
XS2M12PA370L2	XS612B1PAL10	XS1M18KP340	XS518B1PBL2	XS1N18NB349D	XS618B1NBM12
XS2M12PB370	XS612B1PBL2	XS1M18KP340	XS518B1NAL2	XS1N18NC410	XS518B1NAL2
XS2M12PB370D	XS612B1PBM12	XS1M18KP340	XS518B1NBL2	XS1N18NC410	XS518B1NBL2
XS2M12PB370S	XS612B1PBM12	XS1M18KP340D	XS518B1PAM12	XS1N18NC410D	XS518B1NAM12
XS2M12PC410D	XS612B1PAM12	XS1M18KP340D	XS518B1PBM12	XS1N18NC410D	XS518B1NBM12
XS2M12PC410D	XS612B1PBM12	XS1M18KP340D	XS518B1NAM12	XS1N18NC410L1	XS518B1NAL5
XS2N12NA340	XS612B1NAL2	XS1M18KP340D	XS518B1NBM12	XS1N18NC410L1	XS518B1NBL5
XS2N12NA340D	XS612B1NAM12	XS1M18KP340L1	XS518B1PAL5	XS1N18PA340	XS518B1PAL2
XS2N12NA340L1	XS612B1NAL5	XS1M18KP340L1	XS518B1PBL5	XS1N18PA340D	XS518B1PAM12
XS2N12NA340L2	XS612B1NAL10	XS1M18KP340L1	XS518B1NAL5	XS1N18PA340L1	XS518B1PAL5
XS2N12NB340	XS612B1NBL2	XS1M18KP340L1	XS518B1NBL5	XS1N18PA340L2	XS518B1PAL10
XS2N12NB340D	XS612B1NBM12	XS1M18KP340L2	XS518B1PAL10	XS1N18PA349	XS618B1PAL2
XS2N12NC410	XS612B1NAL2	XS1M18KP340L2	XS518B1PBL10	XS1N18PA349D	XS618B1PAM12
XS2N12NC410	XS612B1NBL2	XS1M18KP340L2	XS518B1NAL10	XS1N18PA349L1	XS618B1PAL5
XS2N12NC410D	XS612B1NAM12	XS1M18KP340L2	XS518B1NBL10	XS1N18PA349L2	XS618B1PAL10
XS2N12NC410D	XS612B1NBM12	XS1M18NA370	XS618B1NAL2	XS1N18PA349S	XS618B1PAM12
XS2N12NC410L1	XS612B1NAL5	XS1M18NA370A	XS618B1NAM12	XS1N18PB340	XS518B1PBL2
XS2N12NC410L1	XS612B1NBL5	XS1M18NA370B	XS618B1NAM12	XS1N18PB340D	XS518B1PBM12



Old Design	New Design	Old Design	New Design	Old Design	New Design
XS1N18PB340L2	XS518B1PBL10	XS2N18NC410	XS618B1NBL2	XS1M30NA370	XS630B1NAL2
XS1N18PB349	XS618B1PBL2	XS2N18NC410D	XS618B1NAM12	XS1M30NA370B	XS630B1NAM12
XS1N18PB349D	XS618B1PBM12	XS2N18NC410D	XS618B1NBM12	XS1M30NA370C	XS630B1NAM12
XS1N18PB349L1	XS618B1PBL5	XS2N18PA340	XS618B1PAL2	XS1M30NA370D	XS630B1NAM12
XS1N18PB349L2	XS618B1PBL10	XS2N18PA340D	XS618B1PAM12	XS1M30NA370G	XS630B1NAM12
XS1N18PB349S	XS618B1PBM12	XS2N18PA340L1	XS618B1PAL5	XS1M30NA370L1	XS630B1NAL5
XS1N18PC410	XS518B1PAL2	XS2N18PA340L2	XS618B1PAL10	XS1M30NA370L2	XS630B1NAL10
XS1N18PC410	XS518B1PBL2	XS2N18PB340	XS618B1PBL2	XS1M30NA370T	XS630B1NAL2T
XS1N18PC410D	XS518B1PAM12	XS2N18PB340D	XS618B1PBM12	XS1M30NB370	XS630B1NBL2
XS1N18PC410D	XS518B1PBM12	XS2N18PC410	XS618B1PAL2	XS1M30NB370B	XS630B1NBM12
XS1N18PC410L1	XS518B1PAL5	XS2N18PC410	XS618B1PBL2	XS1M30NB370D	XS630B1NBM12
XS1N18PC410L1	XS518B1PBL5	XS2N18PC410D	XS618B1PAM12	XS1M30PA349C	XS630B1PAM12
XS1N18PC410P	XS518B1PAL10	XS2N18PC410D	XS618B1PBM12	XS1M30PA349D	XS630B1PAM12
XS1N18PC410P	XS518B1PBL10	XS2N18PC410L1	XS618B1PAL5	XS1M30PA370	XS630B1PAL2
XS2M18KP340	XS618B1PAL2	XS2N18PC410L1	XS618B1PBL5	XS1M30PA370A	XS630B1PAM12
XS2M18KP340	XS618B1PBL2	XS3P18NA340	XS518B1NAL2	XS1M30PA370B	XS630B1PAM12
XS2M18KP340	XS618B1NAL2	XS3P18NA340D	XS518B1NAM12	XS1M30PA370C	XS630B1PAM12
XS2M18KP340	XS618B1NBL2	XS3P18NA370	XS618B1NAL2	XS1M30PA370D	XS630B1PAM12
XS2M18KP340D	XS618B1PAM12	XS3P18PA340	XS518B1PAL2	XS1M30PA370G	XS630B1PAM12
XS2M18KP340D	XS618B1PBM12	XS3P18PA340D	XS518B1PAM12	XS1M30PA370L1	XS630B1PAL5
XS2M18KP340D	XS618B1NAM12	XS3P18PA340L1	XS518B1PAL5	XS1M30PA370L2	XS630B1PAL10
XS2M18KP340D	XS618B1NBM12	XS3P18PA370	XS618B1PAL2	XS1M30PA370T	XS630B1PAL2T
XS2M18KP340L1	XS618B1PAL5	30 mm Cylindrical <del></del>		XS1M30PB370	XS630B1PBL2
XS2M18KP340L1	XS618B1PBL5	XS1M30DA210	XS530B1DAL2	XS1M30PB370B	XS630B1PBM12
XS2M18KP340L1	XS618B1NAL5	XS1M30DA210B	XS530B1DAM12	XS1M30PB370C	XS630B1PBM12
XS2M18KP340L1	XS618B1NBL5	XS1M30DA210C	XS530B1DAM12	XS1M30PB370D	XS630B1PBM12
XS2M18KP340L2	XS618B1PAL10	XS1M30DA210D	XS530B1DAM12	XS1M30PB370G	XS630B1PBM12
XS2M18KP340L2	XS618B1PBL10	XS1M30DA210G	XS530B1DAM12	XS1M30PB370L1	XS630B1PBL5
XS2M18KP340L2	XS618B1NAL10	XS1M30DA210L1	XS530B1DAL5	XS1M30PB370L2	XS630B1PBL10
XS2M18KP340L2	XS618B1NBL10	XS1M30DA210L2	XS530B1DAL10	XS1N30NA340	XS530B1NAL2
XS2M18NA370	XS618B1NAL2	XS1M30DA210LA	XS530B1DAM12	XS1N30NA340D	XS530B1NAM12
XS2M18NA370C	XS618B1NAM12	XS1M30DA210LD	XS530B1DAM12	XS1N30NA349	XS630B1NAL2
XS2M18NA370D	XS618B1NAM12	XS1M30DB210	XS530B1DBL2	XS1N30NA349D	XS630B1NAM12
XS2M18NA370L1	XS618B1NAL5	XS1M30DB210B	XS530B1DBM12	XS1N30NA349L1	XS630B1NAL5
XS2M18NA370L2	XS618B1NAL10	XS1M30DB210D	XS530B1DBM12	XS1N30NA349L2	XS630B1NAL10
XS2M18NA370T	XS618B1NAM12T	XS1M30KP340	XS530B1PAL2	XS1N30NB340	XS530B1NBL2
XS2M18NB370	XS618B1NBL2	XS1M30KP340	XS530B1PBL2	XS1N30NB349	XS630B1NBL2
XS2M18NB370D	XS618B1NBM12	XS1M30KP340	XS530B1NAL2	XS1N30NB349D	XS630B1NBM12
XS2M18PA370	XS618B1PAL2	XS1M30KP340	XS530B1NBL2	XS1N30NC410	XS530B1NAL2
XS2M18PA370C	XS618B1PAM12	XS1M30KP340D	XS530B1PAM12	XS1N30NC410	XS530B1NBL2
XS2M18PA370D	XS618B1PAM12	XS1M30KP340D	XS308B1PBM12	XS1N30NC410D	XS530B1NAM12
XS2M18PA370G	XS618B1PAM12	XS1M30KP340D	XS530B1NAM12	XS1N30NC410D	XS530B1NBM12
XS2M18PA370L1	XS618B1PAL5	XS1M30KP340D	XS530B1NBM12	XS1N30PA340	XS530B1PAL2
XS2M18PA370L2	XS618B1PAL10	XS1M30KP340L1	XS530B1PAL5	XS1N30PA340D	XS530B1PAM12
XS2M18PA370T	XS618B1PAL2T	XS1M30KP340L1	XS530B1PBL5	XS1N30PA340L1	XS530B1PAL5
XS2M18PB370	XS618B1PBL2	XS1M30KP340L1	XS530B1NAL5	XS1N30PA340L2	XS530B1PAL10
XS2M18PB370C	XS618B1PBM12	XS1M30KP340L1	XS530B1NBL6	XS1N30PA349	XS630B1PAL2
XS2M18PB370D	XS618B1PBM12	XS1M30KP340L2	XS530B1PAL10	XS1N30PA349D	XS630B1PAM12
XS2M18PB370G	XS618B1PBM12	XS1M30KP340L2	XS530B1PBL10	XS1N30PA349L1	XS630B1PAL5
XS2M18PB370L1	XS618B1PBL5	XS1M30KP340L2	XS530B1NAL10	XS1N30PA349L2	XS630B1PAL10
XS2M18PB370L2	XS618B1PBL10	XS1M30KP340L2	XS530B1NBL10	XS1N30PA349S	XS630B1PAM12
XS2N18NA340	XS618B1NAL2	XS1M30KP370	XS630B1PAL2	XS1N30PB340	XS530B1PBL2
XS2N18NA340D	XS618B1NAM12	XS1M30KP370	XS630B1PBL2	XS1N30PB340D	XS530B1PBM12
XS2N18NA340L1	XS618B1NAL5	XS1M30KP370	XS630B1NAL2	XS1N30PB349	XS630B1PBL2
XS2N18NC410	XS618B1NAL2	XS1M30KP370	XS630B1NBL2	XS1N30PB349D	XS630B1PBM12

Old Design	New Design	Old Design	New Design	Old Design	New Design
XS1N30PB349L1	XS630B1PBL5	XS2N30PB340D	XS630B1PBM12	XS1M18MA230B	XS618B1MAU20
XS1N30PB349L2	XS630B1PBL10	XS2N30PC410	XS630B1PAL2	XS1M18MA230C	XS618B1MAU20
XS1N30PC410	XS530B1PAL2	XS2N30PC410	XS630B1PBL2	XS1M18MA230G	XS618B1MAU20
XS1N30PC410	XS530B1PBL2	XS2N30PC410D	XS630B1PAM12	XS1M18MA230K	XS618B1MAU20
XS1N30PC410D	XS530B1PAM12	XS2N30PC410D	XS630B1PBM12	XS1M18MA230L1	XS618B1MAL5
XS1N30PC410D	XS530B1PBM12	XS2N30PC410L1	XS630B1PAL5	XS1M18MA230L2	XS618B1MAL10
XS1N30PC410L1	XS530B1PAL5	XS2N30PC410L1	XS630B1PBL5	XS1M18MA230T	XS618B1MAL2T
XS1N30PC410L1	XS530B1PBL5	XS3P30NA340	XS530B1NAL2	XS1M18MA239	XS618B1MAL2
XS1N30PC410L2	XS530B1PAL10	XS3P30NA340D	XS530B1NAM12	XS1M18MA239A	XS618B1MAU20
XS1N30PC410L2	XS530B1PBL10	XS3P30NA370	XS630B1NAL2	XS1M18MA239K	XS618B1MAU20
XS2M30KP340	XS630B1PAL2	XS3P30PA340	XS530B1PAL2	XS1M18MA250	XS618B1MAL2
XS2M30KP340	XS630B1PAL2	XS3P30PA340D	XS530B1PAM12	XS1M18MA250A	XS618B1MAU20
XS2M30KP340	XS630B1PAL2	XS3P30PA340L1	XS530B1PAL5	XS1M18MA250H4	XS618B1MAL2
XS2M30KP340	XS630B1PAL2	XS3P30PA340L2	XS530B1PAL10	XS1M18MA250K	XS618B1MAU20
XS2M30KP340D	XS630B1PAM12	XS3P30PA370	XS630B1PAL2	XS1M18MA250KH4	XS618B1MAU20
XS2M30KP340D	XS630B1PAM12	XS3P30PA370L1	XS630B1PAL5	XS1M18MA250L1	XS618B1MAL5
XS2M30KP340D	XS630B1PAM12	XS3P30PA370L2	XS630B1PAL10	XS1M18MA250L2	XS618B1MAL10
XS2M30KP340D	XS630B1PAM12	12 mm Cylindrical $\sim$		XS1M18MB230	XS618B1MBL2
XS2M30KP340L1	XS630B1PAL5	XS1M12MA230	XS612B1MAL2	XS1M18MB230A	XS618B1MBU20
XS2M30KP340L1	XS630B1PAL5	XS1M12MA230K	XS612B1MAU20	XS1M18MB230B	XS618B1MBU20
XS2M30KP340L1	XS630B1PAL5	XS1M12MA230L1	XS612B1MAL5	XS1M18MB230C	XS618B1MBU20
XS2M30KP340L1	XS630B1PAL5	XS1M12MA230L2	XS612B1MAL10	XS1M18MB230G	XS618B1MBU20
XS2M30KP340L2	XS630B1PAL10	XS1M12MA239	XS612B1MAL2	XS1M18MB230K	XS618B1MBU20
XS2M30KP340L2	XS630B1PAL10	XS1M12MA239K	XS612B1MAU20	XS1M18MB230L1	XS618B1MBL5
XS2M30KP340L2	XS630B1PAL10	XS1M12MA250	XS612B1MAL2	XS1M18MB230L2	XS618B1MBL10
XS2M30KP340L2	XS630B1PAL10	XS1M12MA250K	XS612B1MAU20	XS1M18MB250	XS618B1MBL2
XS2M30NA370	XS630B1NAL2	XS1M12MA250L1	XS612B1MAL5	XS1M18MB250A	XS618B1MBU20
XS2M30NA370D	XS630B1NAM12	XS1M12MA250L2	XS612B1MAL 10	XS1M18MB250K	XS618B1MBU20
XS2M30NA370L1	XS630B1NAL5	XS1M12MB230	XS612B1MBL2	XS1M18MB250I 1	XS618B1MBL5
XS2M30NB370	XS630B1NBL2	XS1M12MB230K	XS612B1MBU20	XS1M18MB250L2	XS618B1MBL10
XS2M30NB370D	XS630B1NBM12	XS1M12MB230I 1	XS612B1MBL5	XS2M18DA210L2	XS612B1MAL10
XS2M30PA370	XS630B1PAL2	XS1M12MB230L2	XS612B1MBL10	XS2M18MA230	XS618B1MAL2
XS2M30PA370C	XS630B1PAM12	XS1M12MB250	XS612B1MBL2	XS2M18MA230A	XS618B1MAU20
XS2M30PA370D	XS630B1PAM12	XS2M12MA230	XS612B1MAL2	XS2M18MA230C	XS618B1MAU20
XS2M30PA370G	XS630B1PAM12	XS2M12MA230K	XS612B1MAU20	XS2M18MA230G	XS618B1MAU20
XS2M30PA370L1	XS630B1PAL5	XS2M12MA230L1	XS612B1MAL5	XS2M18MA230K	XS618B1MAU20
XS2M30PA370L2	XS630B1PAL10	XS2M12MA230L2	XS612B1MAL 10	XS2M18MA230I 1	XS618B1MAL5
XS2M30PA370T	XS630B1PAL2T	XS2M12MA250	XS612B1MAL2	XS2M18MA230L2	XS618B1MAL10
XS2M30PB370	XS630B1PBL2	XS2M12MA250K	XS612B1MAU20	XS2M18MA230T	XS618B1MAL2T
XS2M30PB370C	XS630B1PBM12	XS2M12MA250L1	XS612B1MAL5	XS2M18MA250	XS618B1MAL2
XS2M30PB370D	XS630B1PBM12	XS2M12MA250L2	XS612B1MAL10	XS2M18MA250A	XS618B1MAU20
XS2M30PB370L1	XS630B1PBL5	XS2M12MB230	XS612B1MBL2	XS2M18MA250K	XS618B1MAU20
XS2M30PB370L2	XS630B1PBL10	XS2M12MB230K	XS612B1MBU20	XS2M18MA250I 1	XS618B1MAL5
XS2N30NA340	XS630B1NAL2	XS2M12MB230I 1	XS612B1MBL5	XS2M18MA250L2	XS618B1MAL10
XS2N30NA340D	XS630B1NAM12	XS2M12MB230L2	XS612B1MBL10	XS2M18MB230	XS618B1MBL2
XS2N30NB340	XS630B1NBL2	XS2M12MB250	XS612B1MBL 2	XS2M18MB230A	XS618B1MBU20
XS2N30NC410	XS630B1NAL2	XS2M12MB250L1	XS612B1MBL5	XS2M18MB230C	XS618B1MBU20
XS2N30NC410	XS630B1NBL2	XS2M12MB250L2	XS612B1MBL10	XS2M18MB230G	XS618B1MBU20
XS2N30NC410D	XS630B1NAM12	XS3P12MA230	XS612B1MAL2	XS2M18MB230K	XS618B1MBU20
XS2N30NC410D	XS630B1NBM12	XS3P12MA230K	XS612B1MAU20	XS2M18MB230L1	XS618B1MBL5
XS2N30PA340	XS630B1PAL2	XS3P12MA230L1	XS612B1MAL 5	XS2M18MB230L2	XS618B1MBI 10
	XS630B1PAM12	XS3P12MR230	XS612B1MRI 2	XS2M18MR250	XS618B1MBL 2
XS2NS0PASADI 1	X5630B1DAL5	18 mm Cylindrical		XS2M18MB250A	YS618B1MBL2
	VeconD1DAL 10		VCC10D1MALO		Vector1MDU20
	AS030D IPALIU		ASUIODIWALZ		ASO IOD I MIDUZU
NOLINOUL DOHO	A00000 IF DL2	AG HVI I OIVIAZOUA	A0010D1WA020	VOTINI DIVIDZOULI	AGO TOD TWIDEJ

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Old Design	New Design	Old Design	New Design	Old Design	New Design
XS2M18MB250L2	XS618B1MBL10	XS2M30MB230	XS630B1MBL2	XS7C40DP210TF	XS7C1A1DAM8 + XSZBC10
XS3P18MA230	XS618B1MAL2	XS2M30MB230A	XS630B1MBU20	XS7C40DP210TF	XS7C1A1DBM8 + XSZBC10
XS3P18MA230A	XS618B1MAU20	XS2M30MB230C	XS630B1MBU20	XS7C40KPM40	XS9C11MPAM8 + XSZBC10
XS3P18MA230K	XS618B1MAU20	XS2M30MB230G	XS630B1MBU20	XS7C40KPM40	XS9C11MPBM8 + XSZBC10
XS3P18MA230L1	XS618B1MAL5	XS2M30MB230K	XS630B1MBU20	XS7C40KPM40	XS9C11MNAM8 + XSZBC10
XS3P18MA230L2	XS618B1MAL10	XS2M30MB230L1	XS630B1MBL5	XS7C40KPM40	XS9C11MPBM8 + XSZBC10
XS3P18MB230	XS618B1MBL2	XS2M30MB230L2	XS630B1MBL10	XS7C40KPM40H29	XS9C11MPAM8 + XSZBC10
XS3P18MB230A	XS618B1MBU20	XS2M30MB250	XS630B1MBL2	XS7C40KPM40H29	XS9C11MPBM8 + XSZBC10
XS3P18MB230K	XS618B1MBU20	XS2M30MB250K	XS630B1MBU20	XS7C40KPM40H29	XS9C11MNAM8 + XSZBC10
XS3P18MB230L1	XS618B1MBL5	XS2M30MB250L1	XS630B1MBL5	XS7C40KPM40H29	XS9C11MPBM8 + XSZBC10
30 mm Cylindrical $\sim$		XS3P30MA230	XS630B1MAL2	XS7C40KPM40H7	XS9C11MPAM8 + XSZBC10
XS1M30MA230	XS630B1MAL2	XS3P30MA230A	XS630B1MAU20	XS7C40KPM40H7	XS9C11MPBM8 + XSZBC10
XS1M30MA230A	XS630B1MAU20	XS3P30MA230K	XS630B1MAU20	XS7C40KPM40H7	XS9C11MNAM8 + XSZBC10
XS1M30MA230B	XS630B1MAU20	XS3P30MA230L1	XS630B1MAL5	XS7C40KPM40H7	XS9C11MPBM8 + XSZBC10
XS1M30MA230C	XS630B1MAU20	XS3P30MA230L2	XS630B1MAL10	XS7C40NC440	XS7C1A1NAM8 + XSZBC10
XS1M30MA230G	XS630B1MAU20	XS3P30MB230	XS630B1MBL2	XS7C40NC440	XS7C1A1NBM8 + XSZBC10
XS1M30MA230K	XS630B1MAU20	XS3P30MB230A	XS630B1MBU20	XS7C40NC440D	XS7C1A1NAM8 + XSZBC10
XS1M30MA230L1	XS630B1MAL5	XS3P30MB230K	XS630B1MBU20	XS7C40NC440D	XS7C1A1NBM8 + XSZBC10
XS1M30MA230L2	XS630B1MAL10	XS3P30MB230L1	XS630B1MBL5	XS7C40NC440H29	XS7C1A1NAM8 + XSZBC10
XS1M30MA230T	XS630B1MAL2T	XSC Rectangular $\sim$		XS7C40NC440H29	XS7C1A1NBM8 + XSZBC10
XS1M30MA239	XS630B1MAL2	XSCA150549	XS8C1A1MAL01U20 + XSZBC10	XS7C40NC449	XS8C1A1NAM8 + XSZBC10
XS1M30MA239A	XS630B1MAU20	XSCA150549	XS8C1A1MBL01U20 + XSZBC10	XS7C40NC449	XS8C1A1NBM8 + XSZBC10
XS1M30MA250	XS630B1MAL2	XSD Rectangular $\sim$		XS7C40NC449H29	XS8C1A1NAM8 + XSZBC10
XS1M30MA250A	XS630B1MAU20	XSDA400519	XS8D1A1MAU20 + XSZBD10	XS7C40NC449H29	XS8C1A1NBM8 + XSZBC10
XS1M30MA250AH4	XS630B1MAU20	XSDA400519	XS8D1A1MBU20 + XSZBD10	XS7C40PC440	XS7C1A1PAM8 + XSZBC10
XS1M30MA250H4	XS630B1MAL2	XSDA400519H7	XS8D1A1MAU20 + XSZBD10	XS7C40PC440	XS7C1A1PBM8 + XSZBC10
XS1M30MA250K	XS630B1MAU20	XSDA400519H7	XS8D1A1MBU20 + XSZBD10	XS7C40PC440D	XS7C1A1PAM8 + XSZBC10
XS1M30MA250KH4	XS630B1MAU20	XSDA500519	XS8D1A1MAU20 + XSZBD10	XS7C40PC440D	XS7C1A1PBM8 + XSZBC10
XS1M30MA250L1	XS630B1MAL5	XSDA500519	XS8D1A1MBU20 + XSZBD10	XS7C40PC440H29	XS7C1A1PAM8 + XSZBC10
XS1M30MA250L2	XS630B1MAL10	XSDA500519H7	XS8D1A1MAU20 + XSZBD10	XS7C40PC440H29	XS7C1A1PBM8 + XSZBC10
XS1M30MB230	XS630B1MBL2	XSDA500519H7	XS8D1A1MBU20 + XSZBD10	XS7C40PC440H7	XS7C1A1PAM8 + XSZBC10
XS1M30MB230A	XS630B1MBU20	XSDA505539H4	XS8D1A1MAU20 + XSZBD10	XS7C40PC440H7	XS7C1A1PBM8 + XSZBC10
XS1M30MB230B	XS630B1MBU20	XSDA505539H4	XS8D1A1MBU20 + XSZBD10	XS7C40PC449	XS8C1A1PAM8 + XSZBC10
XS1M30MB230C	XS630B1MBU20	XSDA600519	XS8D1A1MAU20 + XSZBD10	XS7C40PC449	XS8C1A1PBM8 + XSZBC10
XS1M30MB230G	XS630B1MBU20	XSDA600519	XS8D1A1MBU20 + XSZBD10	XS7C40PC449H29	XS8C1A1PAM8 + XSZBC10
XS1M30MB230K	XS630B1MBU20	XSDA600519H7	XS8D1A1MAU20 + XSZBD10	XS7C40PC449H29	XS8C1A1PBM8 + XSZBC10
XS1M30MB230L1	XS630B1MBL5	XSDA600519H7	XS8D1A1MBU20 + XSZBD10	XS7C40PC449H7	XS8C1A1PAM8 + XSZBC10
XS1M30MB230L2	XS630B1MBL10	XSDM500538	XS8D1A1MAU20 + XSZBD10	XS7C40PC449H7	XS8C1A1PBM8 + XSZBC10
XS1M30MB250	XS630B1MBL2	XSDM500538	XS8D1A1MBU20 + XSZBD10	XS7T2DA210	XS7E1A1DAL2 + XSZBE10
XS1M30MB250A	XS630B1MBU20	XSDM600539	XS8D1A1MAU20 + XSZBD10	XS7T2DA214LD	XS7E1A1CAL08M12 + XSZBE10
XS1M30MB250K	XS630B1MBU20	XSDM600539	XS8D1A1MBU20 + XSZBD10	XS7T2DA214LD01	XS7E1A1CAL01M12 + XSZBE10
XS1M30MB250L1	XS630B1MBL5	XSDM600539H7	XS8D1A1MAU20 + XSZBD10	XS7T2NC440	XS7E1A1NAL2 + XSZBE10
XS1M30MB250L2	XS630B1MBL10	XSDM600539H7	XS8D1A1MBU20 + XSZBD10	XS7T2NC440	XS7E1A1NBL2 + XSZBE10
XS2M30MA230	XS630B1MAL2	XS7 Rectangular —		XS7T2NC440LD	XS7E1A1NAL01M12 + XSZBE10
XS2M30MA230A	XS630B1MAU20	XS7C40DA210	XS7C1A1DAM8 + XSZBC10	XS7T2NC440LD	XS7E1A1NBL01M12 + XSZBE10
XS2M30MA230C	XS630B1MAU20	XS7C40DA210A	XS7C1A1DAM8 + XSZBC10	XS7T2PC440	XS7E1A1PAL2 + XSZBE10
XS2M30MA230G	XS630B1MAU20	XS7C40DA214D	XS7C1A1CAL08M12 + XSZBC10	XS7T2PC440	XS7E1A1PBL2 + XSZBE10
XS2M30MA230K	XS630B1MAU20	XS7C40DP210	XS7C1A1DAM8 + XSZBC10	XS7T2PC440LD	XS7E1A1PAL08M12 + XSZBE10
XS2M30MA230L1	XS630B1MAL5	XS7C40DP210	XS7C1A1DBM8 + XSZBC10	XS7T2PC440LD	XS7E1A1PBL08M12 + XSZBE10
XS2M30MA230L2	XS630B1MAL10	XS7C40DP210H29	XS7C1A1DAM8 + XSZBC10	XS7T4DA210	XS7C1A1DAL2 + XSZBC10
XS2M30MA230T	XS630B1MAL2T	XS7C40DP210H29	XS7C1A1DBM8 + XSZBC10	XS7T4DA214LD	XS7C1A1CAL08M12 + XSZBC10
X52M30MA250	XS630B1MAL2	XS7C40DP210H7	XS/C1A1DAM8 + XSZBC10	XS/I4DA214LD01	XS/C1A1CAL01M12 + XSZBC10
XS2M30MA250K	X5030B1MAU20	X57C40DP210H7	XS/CIAIDBM8 + XSZBC10	X5/14NC440	XS/CIAINAL2 + XSZBC10
x52M30MA250L1	X5030B1MAL5	X5/C40DP21011	XS/CIAIDAM8 + XSZBC10	X5/14NC440	X5/CTAINBL2 + XSZBC10
A521030101A250L2	AS030BTMAL10	X370400P21011	AS/CTATUBINS + XSZBCT0	72/14NC440LD	AS/CTATNALUTM12 + XSZBC10

Old Design	New Design	Old Design	New Design	Old Design	New Design
XS7T4NC440LD	XS7C1A1NBL01M12 + XSZBC10	XS7 Rectangular $\sim$		XS8C40MP230H7	XS8C1A1MAL01U20 + XSZBC10
XS7T4PC440	XS7C1A1PAL2 + XSZBC10	XS7C40DA210	XS8C1A1MAL01U20 + XSZBC10	XS8C40MP230H7	XS8C1A1MBL01U20 + XSZBC10
XS7T4PC440	XS7C1A1PBL2 + XSZBC10	XS7C40DA210A	XS8C1A1MAL01U20 + XSZBC10	XSD Rectangular	
XS7T4PC440LD	XS7C1A1PAL01M12 + XSZBC10	XS7C40DP210	XS8C1A1MAL01U20 + XSZBC10	XSDC407138	XS7D1A1DAM12 + XSZBD10
XS7T4PC440LD	XS7C1A1PBL01M12 + XSZBC10	XS7C40DP210	XS8C1A1MBL01U20 + XSZBC10	XSDC407139	XS7D1A1DAM12 + XSZBD10
XS8 Rectangular		XS7C40DP210H29	XS8C1A1MAL01U20 + XSZBC10	XSDC407139D4	XS7D1A1DAM12 + XSZBD10
XS8C40DA210	XS7C1A1DAL01M12 + XSZBC10	XS7C40DP210H29	XS8C1A1MBL01U20 + XSZBC10	XSDC407139H7	XS7D1A1DAM12 + XSZBD10
XS8C40DP210	XS8C1A1DAM8 + XSZBC10	XS7C40DP210H7	XS8C1A1MAL01U20 + XSZBC10	XSDC407139LD	XS7D1A1DAM12 + XSZBD10
XS8C40DP210	XS8C1A1DBM8 + XSZBC10	XS7C40DP210H7	XS8C1A1MBL01U20 + XSZBC10	XSDC407139LD01	XS7D1A1DAM12 + XSZBD10
XS8C40DP210H29	XS8C1A1DAM8 + XSZBC10	XS7C40DP210TT	XS8C1A1MAL01U20 + XSZBC10	XSDC507139	XS7D1A1DAM12 + XSZBD10
XS8C40DP210H29	XS8C1A1DBM8 + XSZBC10	XS7C40DP210TT	XS8C1A1MBL01U20 + XSZBC10	XSDC607139	XS7D1A1DAM12 + XSZBD10
XS8C40DP210H7	XS8C1A1DAM8 + XSZBC10	XS7C40DP210TF	XS8C1A1MAL01U20 + XSZBC10	XSDC607139H7	XS7D1A1DAM12 + XSZBD10
XS8C40DP210H7	XS8C1A1DBM8 + XSZBC10	XS7C40DP210TF	XS8C1A1MBL01U20 + XSZBC10	XSDC607139LD	XS7D1A1DAM12 + XSZBD10
XS8C40NC440	XS8C1A1NAM8 + XSZBC10	XS7C40FP260	XS8C1A1MAL01U20 + XSZBC10	XSDC607139LD01	XS7D1A1DAM12 + XSZBD10
XS8C40NC440	XS8C1A1NBM8 + XSZBC10	XS7C40FP260	XS8C1A1MBL01U20 + XSZBC10	XSDC607319	XS7D1A1DAM12 + XSZBD10
XS8C40NC440H29	XS8C1A1NAM8 + XSZBC10	XS7C40FP260A	XS8C1A1MAL01U20 + XSZBC10	XSDC607319	XS7D1A1DBM12 + XSZBD10
XS8C40NC440H29	XS8C1A1NBM8 + XSZBC10	XS7C40FP260A	XS8C1A1MBL01U20 + XSZBC10	XSDH407339	XS8D1A1PAM12 + XSZBD10
XS8C40NC449	XS8C1A1NAM8 + XSZBC10	XS7C40FP260H29	XS8C1A1MAL01U20 + XSZBC10	XSDH407339	XS8D1A1PBM12 + XSZBD10
XS8C40NC449	XS8C1A1NBM8 + XSZBC10	XS7C40FP260H29	XS8C1A1MBL01U20 + XSZBC10	XSDH407339H7	XS8D1A1PAM12 + XSZBD10
XS8C40NC449H29	XS8C1A1NAM8 + XSZBC10	XS7C40FP260H7	XS8C1A1MAL01U20 + XSZBC10	XSDH407339H7	XS8D1A1PBM12 + XSZBD10
XS8C40NC449H29	XS8C1A1NBM8 + XSZBC10	XS7C40FP260H7	XS8C1A1MBL01U20 + XSZBC10	XSDH607339	XS8D1A1PAM12 + XSZBD10
XS8C40NC449H7	XS8C1A1NAM8 + XSZBC10	XS7C40FP260TF	XS8C1A1MAL01U20 + XSZBC10	XSDH607339	XS8D1A1PBM12 + XSZBD10
XS8C40NC449H7	XS8C1A1NBM8 + XSZBC10	XS7C40FP260TF	XS8C1A1MBL01U20 + XSZBC10	XSDH607339H7	XS8D1A1PAM12 + XSZBD10
XS8C40PC440	XS8C1A1PAM8 + XSZBC10	XS7C40FP260TT	XS8C1A1MAL01U20 + XSZBC10	XSDH607339H7	XS8D1A1PBM12 + XSZBD10
XS8C40PC440	XS8C1A1PBM8 + XSZBC10	XS7C40FP260TT	XS8C1A1MBL01U20 + XSZBC10	XSDH607339TF	XS8D1A1PAM12 + XSZBD10
XS8C40PC440D	XS8C1A1PAL01M12 + XSZBC10	XS7C40MP230	XS8C1A1MAL01U20 + XSZBC10	XSDH607339TF	XS8D1A1PBM12 + XSZBD10
XS8C40PC440D	XS8C1A1PAL01M12 + XSZBC10	XS7C40MP230	XS8C1A1MBL01U20 + XSZBC10	XSDJ407339	XS8D1A1NAM12 + XSZBD10
XS8C40PC440H29	XS8C1A1PAM8 + XSZBC10	XS7C40MP230A	XS8C1A1MAL01U20 + XSZBC10	XSDJ407339	XS8D1A1NBM12 + XSZBD10
XS8C40PC440H29	XS8C1A1PBM8 + XSZBC10	XS7C40MP230A	XS8C1A1MBL01U20 + XSZBC10	XSDJ407339H7	XS8D1A1NAM12 + XSZBD10
XS8C40PC440H7	XS8C1A1PAM8 + XSZBC10	XS7C40MP230H29	XS8C1A1MAL01U20 + XSZBC10	XSDJ407339H7	XS8D1A1NBM12 + XSZBD10
XS8C40PC440H7	XS8C1A1PBM8 + XSZBC10	XS7C40MP230H29	XS8C1A1MBL01U20 + XSZBC10	XSDJ607339	XS8D1A1NAM12 + XSZBD10
XS8C40PC449	XS8C1A1PAM8 + XSZBC10	XS7C40MP230H7	XS8C1A1MAL01U20 + XSZBC10	XSDJ607339	XS8D1A1NBM12 + XSZBD10
XS8C40PC449	XS8C1A1PBM8 + XSZBC10	XS7C40MP230H7	XS8C1A1MBL01U20 + XSZBC10	XSDJ607339H7	XS8D1A1NAM12 + XSZBD10
XS8C40PC449D	XS8C1A1PAL01M12 + XSZBC10	XS7C40MP230TF	XS8C1A1MAL01U20 + XSZBC10	XSDJ607339H7	XS8D1A1NBM12 + XSZBD10
XS8C40PC449D	XS8C1A1PAL01M12 + XSZBC10	XS7C40MP230TF	XS8C1A1MBL01U20 + XSZBC10	XSE Rectangular	
XS8C40PC449H29	XS8C1A1PAM8 + XSZBC10	XS7C40MP230TT	XS8C1A1MAL01U20 + XSZBC10	XSEC107130	XS7E1A1DAL01M12 + XSZBE10
XS8C40PC449H29	XS8C1A1PBM8 + XSZBC10	XS7C40MP230TT	XS8C1A1MBL01U20 + XSZBC10	XSEC1071300	XS7E1A1DAL2 + XSZBE10
XS8C40PC449H7	XS8C1A1PAM8 + XSZBC10	XS8 Rectangular $\sim$		XSEC1071300L05	XS7E1A1DAL01M12 + XSZBE10
XS8C40PC449H7	XS8C1A1PBM8 + XSZBC10	XS8C40DA210	XS8C1A1MAL01U20 + XSZBC10	XSEC1071301	XS7E1A1DAL01M12 + XSZBE10
XS8T2NC440	XS8E1A1NAL2 + XSZBE10	XS8C40DP210	XS8C1A1MAL01U20 + XSZBC10	XSEC1071302	XS7E1A1DAL01M12 + XSZBE10
XS8T2NC440	XS8E1A1NBL2 + XSZBE10	XS8C40DP210	XS8C1A1MBL01U20 + XSZBC10	XSEC1071304	XS7E1A1DAL01M12 + XSZBE10
XS8T2NC440LD	XS8E1A1NAL01M12 + XSZBE10	XS8C40DP210H29	XS8C1A1MAL01U20 + XSZBC10	XSEC107130D4	XS7E1A1DAL01M12 + XSZBE10
XS8T2NC440LD	XS8E1A1NBL01M12 + XSZBE10	XS8C40DP210H29	XS8C1A1MBL01U20 + XSZBC10	XSEC107130H7	XS7E1A1DAL01M12 + XSZBE10
XS8T2PC440	XS8E1A1PAL2 + XSZBE10	XS8C40DP210H7	XS8C1A1MAL01U20 + XSZBC10	XSEC107133	XS7E1A1DAL01M12 + XSZBE10
XS8T2PC440	XS8E1A1PBL2 + XSZBE10	XS8C40DP210H7	XS8C1A1MBL01U20 + XSZBC10	XSEC1071330	XS7E1A1DAL2 + XSZBE10
XS8T2PC440LD	XS8E1A1PAL01M12 + XSZBE10	XS8C40FP260	XS8C1A1MAL01U20 + XSZBC10	XSEC1071331	XS7E1A1DAL01M12 + XSZBE10
XS8T2PC440LD	XS8E1A1PBL01M12 + XSZBE10	XS8C40FP260	XS8C1A1MBL01U20 + XSZBC10	XSEC1071332	XS7E1A1DAL01M12 + XSZBE10
XS8T4NC440	XS8C1A1NAL2 + XSZBC10	XS8C40FP260H29	XS8C1A1MAL01U20 + XSZBC10	XSEC1071334	XS7E1A1DAL01M12 + XSZBE10
XS8T4NC440	XS8C1A1NBL2 + XSZBC10	XS8C40FP260H29	XS8C1A1MBL01U20 + XSZBC10	XSEC107133D4	XS7E1A1DAL01M12 + XSZBE10
XS8T4NC440LD	XS8C1A1NAL01M12 + XSZBC10	XS8C40MP230	XS8C1A1MAL01U20 + XSZBC10	XSEC107230	XS7E1A1DBM12 + XSZBE10
XS8T4NC440LD	XS8C1A1NBL01M12 + XSZBC10	XS8C40MP230	XS8C1A1MBL01U20 + XSZBC10	XSEC1072301	XS7E1A1DBL01M12 + XSZBE10
XS814PC440	XS8C1A1PAL2 + XSZBC10	XS8C40MP230	XS8C1A1MAL01U20 + XSZBC10	XSEC107233	XS/E1A1DBM12 + XSZBE10
XS8T4PC440	XS8C1A1PBL2 + XSZBC10	XS8C40MP230	XS8C1A1MAL01U20 + XSZBC10	XSEC1072331	XS7E1A1DBL08M12 + XSZBE10
XS8T4PC440LD	XS8C1A1PAL01M12 + XSZBC10	XS8C40MP230H29	XS8C1A1MAL01U20 + XSZBC10	XSEC1571300	XS7E1A1DAL2 + XSZBE10
X5814PC440LD	XS8C1A1PBL01M12 + XSZBC10	X58C40MP230H29	XS8C1A1MBL01U20 + XSZBC10	XSEC1571330	XS/E1A1DAL2 + XSZBE10



Old Design	New Design	Old Design	New Design	Old Design	New Design
XSC Rectangular $\sim$					
XSCA150549	XS8C1A1MAL01U20 + XSZBC10				
XSCA150549	XS8C1A1MBL01U20 + XSZBC10				
XSD Rectangular $ \sim $					
XSDA400519	XS8D1A1MAU20 + XSZBD10				
XSDA400519	XS8D1A1MBU20 + XSZBD10				
XSDA400519H7	XS8D1A1MAU20 + XSZBD10				
XSDA400519H7	XS8D1A1MBU20 + XSZBD10				
XSDA500519	XS8D1A1MAU20 + XSZBD10				
XSDA500519	XS8D1A1MBU20 + XSZBD10				
XSDA500519H7	XS8D1A1MAU20 + XSZBD10				
XSDA500519H7	XS8D1A1MBU20 + XSZBD10				
XSDA505539H4	XS8D1A1MAU20 + XSZBD10				
XSDA505539H4	XS8D1A1MBU20 + XSZBD10				
XSDA600519	XS8D1A1MAU20 + XSZBD10				
XSDA600519	XS8D1A1MBU20 + XSZBD10				
XSDA600519H7	XS6D1A1MAU20 + XS2DD10				
XSDA00031907	YS8D1A1M0U20 + X52DU10				
XSDM500538	XS8D1A1MBU20 + XS2BD10				
XSDM600539	XS8D1A1MAU20 + XSZBD10				
XSDM600539	XS8D1A1MBU20 + XSZBD10				
XSDM600539H7	XS8D1A1MAU20 + XSZBD10				
XSDM600539H7	XS8D1A1MBU20 + XSZBD10				

Obsolete Part Number	Replaced by Part Number
AC	AC/DC
XS1M12FA260	XS1M12MA230
XS1M12FA260K	XS1M12MA230K
XS1M12FB260	XS1M12MB230
XS1M12FB260K	XS1M12MB230K
XS1M18FA260	XS1M18MA230
XS1M18FA260A	XS1M18MA230A
XS1M18FA260K	XS1M18MA230K
XS1M18FB260	XS1M18MB230
XS1M18FB260A	XS1M18MB230A
XS1M18FB260K	XS1M18MB230K
XS1M30FA260	XS1M30MA230
XS1M30FA260A	XS1M30MA230A
XS1M30FA260K	XS1M30MA230K
XS1M30FB260	XS1M30MB230
XS1M30FB260A	XS1M30MB230A
XS1M30FB260K	XS1M30MB230K
XS2M12FA260	XS2M12MA230
XS2M12FA260K	XS2M12MA230K
XS2M12FB260	XS2M12MB230
XS2M12FB260K	XS2M12MB230K
XS2M18FA260	XS2M18MA230
XS2M18FA260A	XS2M18MA230A
XS2W18FA260K	XS2M10MA230K
X52M18FB280	XS2W18WB230
XS2M10FB200A	XS2M18MB230A
XS2M101 D2000	XS2M10MD230K
XS2M30FA260A	XS2M30MA230A
XS2M30FA260K	XS2M30MA230K
XS2M30EB260	XS2M30MB230
XS2M30FB260A	XS2M30MB230A
XS2M30FB260K	XS2M30MB230K
XS3P12FA260	XS3P12MA230
XS3P12FA260K	XS3P12MA230K
XS3P12FB260	XS3P12MB230
XS3P12FB260K	XS3P12MB230K
XS3P18FA260	XS3P18MA230
XS3P18FA260A	XS3P18MA230A
XS3P18FA260K	XS3P18MA230K
XS3P18FB260	XS3P18MB230
XS3P18FB260A	XS3P18MB230A
XS3P18FB260K	XS3P18MB230K
XS3P30FA260	XS3P30MA230
XS3P30FA260A	XS3P30MA230A
XS3P30FA260K	XS3P30MA230K
XS3P30FB260	XS3P30MB230
XS3P30FB260A	XS3P30MB230A
XS3P30FB260K	XS3P30MB230K
XS4P12FA260	XS4P12MA230
XS4P12FA260K	XS4P12MA230K
XS4P12FB260	XS4P12MB230
XS4P12FD260K	X54P12MB230K
X34F 10FA200	X54F10WA230
XS4P18FA260K	XS4P18MA230K
XS4P18FR260	XS4P18MB230
XS4P18FB260A	XS4P18MB230A
XS4P18FB260K	XS4P18MB230K
X\$4P30FA260	XS4P30MA230
XS4P30FA260A	XS4P30MA230A
XS4P30FA260K	XS4P30MA230K
XS4P30FB260	XS4P30MB230
XS4P30FB260A	XS4P30MB230A
XS4P30EB260K	XS4P30MB230K

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## Proximity Sensors What is a Proximity Sensor?

It is an important component in an automation control system.

It transmits information relating to the operating conditions of a machine to the logic processing system:

- Presence, passage, flow of parts
- End of travel
- Rotation and counting.

Essentially, it is a **non-contact part presence** detector.





# Principle of operation





An inductive proximity sensor is essentially comprised of an oscillator whose windings constitute the sensing face. An electromagnetic field is generated in front of these windings.

When a metal object is placed within this field, the resulting currents induced into the target form an additional load, and the oscillations cease.

This causes the output driver to operate, producing an ON or OFF output signal.



# Capacitive Detects any material Affected by environment: humidity, dust, etc. Best for: bulk material liquids targets behind a separation will

# Principle of operation





An capacitive proximity sensor is basically comprised of an oscillator whose capacitors constitute the sensing face.

When a conducting or insulating material with a permittivity greater than air is placed within this field, it modifies the coupling capacitance and causes oscillations.

This actuates the output driver, and, depending on the model, an ON or OFF output signal is produced.

## Proximity Sensors Detection Stage







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## Proximity Sensors Output Stage Parameters

## AC or AC/DC sensors for AC circuits

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

Power supply

# **Sensors for DC circuits**

Where a DC supply is available, check that the voltage limits of the sensor, including ripple, are compatible with the supply used.

If an AC supply is available, a suitable DC power supply must be selected. A simple one has a transformer, a rectifier, and a smoothing capacitor.



Where voltage is derived from a single phase AC supply, it must be rectified and filtered to ensure that:

- The peak voltage of the DC supply is lower than the maximum operating voltage of the sensor, peak voltage = rated voltage Ve x √2.
- The minimum voltage of the DC supply is greater than the minimum voltage rating of the sensor, given that  $\Delta V = (I \ x \ t) \div C$ .
  - $\Delta V$  = maximum ripple: 10% (V)
  - i = anticipated load current (mA)
  - t = period of 1 cycle (8.8 m sec. full wave rectified 60 Hz frequency voltage)
  - $C = capacitance (\mu F)$

As a general rule, use a transformer with a lower secondary voltage (Ue) than the required DC voltage (U).

Example: 18 Vac to obtain 24 Vdc 35 Vac to obtain 48 Vdc

Mount a filtering capacitor of minimum 400  $\mu F$  per sensor or 2000  $\mu F$  for each ampere of load current required.

NOTE: Tubular 3 wire DC universal models (10-58 V), 3 wire DC XSF models, and all AC/DC models can be supplied from full-wave rectified non-filtered (no capacitor C in the diagram above) power supplies.

Output signal

# 2 Wire type









2 wire sensors are wired in series with the load to be switched.

They are subject to:

- a residual current (leakage current) in the open state
- a voltage drop in the closed state

For the AC and AC/DC versions, certain models are protected against short-circuits. Refer to the product characteristics.

# Advantages

- They can be wired in the same way as mechanical limit switches.
- For the DC and AC/DC versions, they can be connected to either positive (PNP) or negative (NPN) logic inputs.
- Polarity insensitive versions, no risk of incorrect connection.
- AC/DC versions, reduces stock requirements



Check the possible effects of residual current and voltage drop on the input device controlled (pick-up and drop-out thresholds).

Output signal





The sensors in this category have:

- · 2 wires for the power supply
- 1 wire for the output signal

NOTE: Some models include an additional wire for a complementary output 4 wire type, N.O. + N.C. The technology is still 3 wires.

They are protected against reverse supply polarity and against overloads and short-circuit of the load. For the DC version, there are two types of sensor:

- Basic sensor
  - PNP model, switching the positive side to the load (sourcing)
  - NPN model, switching the negative side to the load (sinking)
- Universal DC sensors

A single universal sensor, depending on the wiring connections can perform any of the following 4 functions: PNP/N.O., PNP/N.C., NPN/N.O., NPN/N.C.

# Advantages

- · Best switching characteristics: no residual current, low voltage drop, fast
- N.O. + N.C. versions
- Universal versions, reduces stock requirements

## But

Requires the use of a specialized sensor (PNP or NPN, function of the load connection, to negative or positive, respectively) or a selectable universal type.
# Analog type







These proximity sensors convert the approach of a metal target towards the sensing face into a current output signal which is proportional to the distance between the target and the sensing face.

#### Two models:

	Advantage
<i>single voltage:</i> Output:	24 Vdc 0 - 16 mA with 3 wire connection 4 - 20 mA with 2 wire connection
<i>dual voltage:</i> Output:	24/48 Vdc 0 - 10 mA with 3 wire connection 4 - 14 mA with 2 wire connection

- Output signal proportional to the distance.
- Two or three wire connection using the same device.

### Namur type

# Output signal



Namur type proximity sensors (DIN 19234) are electronic sensors in which the current consumption varies when a metal object approaches.

Their operating principle, together with their compact size, enables them to be used in a large number of applications:

- Intrinsically safe (hazardous environments, i.e. explosive). Sensors are used with NY2 intrinsically safe relay/amplifier or equivalent, approved intrinsically safe solid state input.
- Non-intrinsically safe (normal, safe zone). NAMUR sensors associated with a power supply and amplifier unit or equivalent solid state input.



- Can work in hazardous environments.
- Basic product, without amplifier.
- Compact size.

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Method of connection







Flexibility: user selects type and length of cable.

## Note

In practice, the preceding information enables the selection and installation of a proximity sensor for applications having normal operating conditions. The following pages contain details for applications which need more specific information.

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The XS sensors are tested according to IEC 60947.5.2 standard (similar to the proposed new NEMA ICS 5-4-1999x standard).



### Temperature Chemicals

**Temperature:** where sensors are used outside the ranges shown, reliable operation cannot be assured and permanent damage could result.

Standard length tubular sensors have a very large temperature range: -25° C to 80° C.

NOTE: For extended temperature range, consult factory.

**Chemicals:** due to the very wide range of chemicals which are found in modern industry, it is very difficult to give general guidelines on sensor applications.

To ensure lasting efficient operation, it is essential that the chemicals coming in contact with the sensors will not affect their housings and, in doing so, prevent their reliable operation.

# The XS1/XS2 M series is particularly well adapted to the severe environment, such as machine tool applications.

NOTE: The cables used conform to standard NFC 32 206 and to recommendations CNOMO E03-40-150 N. They are UL Listed and CSA Certified.

#### The series XS4P plastic cylindrical proximity sensors as well as the stainless steel XS1/ XS2 sensors exhibit excellent overall resistance to:

- Chemical products, such as salts, halophytic and aromatic oils, petrols, acids, and diluted bases. For acids, ketones, and phenols, preliminary test should be made according to the nature and concentration of the liquid.
- Agriculture and food industry products, such as animal and vegetable based food products (vegetable oils, animal fat, fruit juice, dairy proteins, etc...).

NOTE: For specific details, please consult factory. Have the following information available when making the inquiry:

- type of substance
- concentration
- maximum temperature
- specific sensor(s) part numbers considered for the application

Shocks – Vibrations

#### Shocks

• The sensors are tested according to IEC 60068.2.27, 50g, duration 11 m sec.

#### Vibrations

- The sensors are tested according to IEC 60068.2.6, amplitude  $\pm$  2 mm, F = 10-55 Hz, 25g to 55 Hz.

#### **Degrees of protection**

- IP67 protection against the effects of immersion, tested according to IEC 60529. Sensor immersed for 30 minutes in 1 meter of water.
- UL Listed: typical NEMA 4X, 6P, 12. No deterioration in either operating or insulation characteristics.
- IP68 protection against effects of prolonged immersion: the test conditions are subject to agreement between the manufacturer and user.
   Telemecanique selected machine tool applications or other machines frequently drenched in cutting fluids. IP68 means, in this case, cutting oil proof, a degree of protection requiring a superior encapsulation technology. Extensive testing is performed—1500 hours immersion in fluid at 70° C.



#### Nominal (or rated) sensing distance Sn:

The rated operating distance for which the sensor is designed. It does not take into account manufacturing tolerances, or any change in supply voltage, temperature, etc... during operation. Used for selection and base for exact calculations.

#### **Real sensing distance Sr:**

The real sensing distance is measured at rated voltage (Un) and at the rated ambient temperature (Tn). It must be between 90% and 110% of the real sensing distance:  $0.9Sn \le Sr \le 1.1Sn$ .

#### Usable sensing distance Su:

The usable sensing distance is measured at the limits of the permissible variations of the ambient temperature (Ta) and the supply voltage (Ub). It must be between 90% and 110% of the real sensing distance:  $0.9Sr \le Su \le 1.1Sr$ .

Operating zone Sa (usable sensing range):

The operating zone is between 0 and 81% of the nominal sensing distance Sn:

 $0 \le Sa \le 0.81Sn$ 

This is the operating zone of the sensor and corresponds to the area within which detection of the **standard metal target is certain** whatever the variations in voltage or temperature.

This is the **maximum** sensing distance **the designer should consider** for all applications. Correction factors should be considered only when conditions preclude the use of the standard target in the operating temperature and voltage range.

#### Proximity Sensors Definition of Terms



#### Differential travel: (hysteresis) H:

The distance between the pick-up point as the standard metal target frontally approaches the sensor, and the drop-out point as it moves away. Expressed as a percentage of the real sensing distance Sr.

#### Repeat accuracy (repeatability) R:

The repeatability of the sensing distance, between successive operations. Readings are taken over a period of time while the sensor is subjected to environmental extremes, e.g. 8 hour cycle between 10 and 30° C, with supply voltage variation  $\pm$  5% of nominal. Expressed as a percentage of the real sensing distance Sr. Important parameter for positioning applications.







#### **Class 2 material - Double isolation**

The symbol represents electrical insulation conforming to IEC 60536 class 2. It means that all live parts are isolated inside the housing and touching any exterior exposed metal is harmless. No groundings required.



International symbol for proximity switches.

#### **Proximity Sensors Definition of Terms**







The maximum number of targets a proximity sensor can detect in a second, under standard test conditions (standard EN50018, IEC 60947.5.2). Do not use for selection or design purposes unless the geometry of the application is identical with the one in the picture.

**Proximity Sensors** 

Maximum operating

frequency



#### ON delay Ra:

The period between the detection of the target and the subsequent change in its output state. This design parameter determines the relationship between the speed of travel and the size of the target.

#### OFF delay Rr:

The period between the exit of the target from the sensor's operating zone and the subsequent change in its output state. This design parameter limits the interval between successive targets.





In practice, most targets are generally made of steel and are of a size, equal to or greater than the sensing face of the sensor. Where this is the case, use the sensing distance values given in the characteristics for the particular sensor. To calculate the precise sensing distance for specific applications, the following parameters, which affect the sensing distance, must be taken into account.







#### Target material correction coefficient Km

Target	Stainless Steel			Mild Steel	Brass	Aluminum	Copper
Material	Magn.	Type 316	Type 304	A37	UZ33	AU4G	CU
Km	1.00	0.70	0.30	1.00	0.37	0.35	0.30



Special case of a very thin target object made of non-ferrous material. Application tip: Aluminum foil on a nonmetallic surface makes an excellent target.

Theoretical calculation

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#### **Proximity Sensors** Mechanical Installation

- Patented design
- No adjustment replacement



Indexed mounting bracket XSZB

• Insert the sensor in the bracket until it butts against the stop.

• Secure the sensor using V screw.



STEP 1

- Adjust the sensor/bracket combination to assure detection.
- Secure the combination using F screws.



- If for any reason adjustment or replacement is necessary:
  - Unscrewscrew V
  - Butt the new sensor against the stop. Once screw V has been tightened, the new sensor will be indexed in the same position as the old one. No adjustment is necessary.

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Note: these functions are similar to those of a block type sensor







NOTE: For shorter distances, **alternate frequency** models are required. Call factory for availability.

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### Suitable for flush mounting in metal







Any metal within the immediate vicinity of a proximity sensor distorts the magnetic field around the sensing face. The clearance distances shown above are given for a simplified installation arrangement and would result in the increase of the sensing distance of less than 5%.

#### Proximity Sensors Mounting Tips



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Depending on the application, the adjustment of the operating distance is carried out:

- · either by moving the mounting bracket
- or by adjusting the target

Rb

V supply

PLC

Sensor

Rin

In order for a solid state, 2 wire, AC sensor to be directly compatible with a PLC, two conditions have to be met:

1. Leakage current: (I off) less than 1.7 mA (Off state)

2. Load current: greater than the sensor minimum load current (ON state). Typical PLC input currents (load current, I load) are 12-16 mA. Typical values for PLC input resistance (Rin) are: 7.5-10 kΩ.

For sensors which do not meet both of the requirements, a Bleeder Resistor (Rb) has to be wired in parallel with the load.

For each of the two situations, the Bleeder Resistor parameters have to be calculated as shown below. The smaller value should be selected for the application.

1. Rb =	<u>Rin x</u> I off (Rin)	<u>Vo Max</u> <u>*</u> Pb = <u>Vs</u> <sup>2</sup> ) – Vo max Rb
Where:	Vo max Rin Vs Pb	<ul> <li>= PLC input maximum OFF voltage (20-40 Vac)</li> <li>= PLC input resistance</li> <li>= Line voltage</li> <li>= Minimum Bleeder Resistor power rating</li> </ul>
Example:		

I off = 3.5 mA Vo max = 20 V Rin  $= 6.5 \ k\Omega$ 

Typical examples for Telemecanique TSX DET input modules:

For I off = 3.5 mA For I off = 7 mA	<b>TSX DET 1604</b> 47 kΩ/0.5 W 4.7 kΩ/3 W	<b>TSX DET 0804</b> — 12 kΩ/1.5 W
2. Rb = $\frac{\text{Rin x Vo Max}}{\text{I off (Rin)} - \text{Vo max}} $ *	$Pb = \frac{Vs^2}{Rb}$	

Example:

min	= 30 mA
Vs	= 120 V
Rin	$= 7 k\Omega$

Typical examples using TSX programmable controllers:

Typical examples using TSA programmable controllers.				
	<i>TSX DET 1604</i>	TSX DET 0804		
For I min = 20 mA	64 kΩ/0.5 W	24 kΩ/1 W		
For I min = 30 mA	8.7 kΩ/2 W	8.7 kΩ/2 W		

NOTE: All DC 3 wire sensors are PLC compatible.



#### The following points should be considered:

1. When in the open state, each sensor will share the supply voltage:

voltage across the sensor =

V supply n° proximity sensors

V sensor and V supply must fall within the sensor's voltage range.

- 2. If a sensor is OFF, it will be supplied with nearly all the supply voltage.
- 3. When all sensors are ON, a small voltage drop is present across each sensor; the resultant loss of voltage at the load will be the sum of the individual voltage drops, and the load voltage should be selected accordingly.
- 4. Series connection is only possible for sensors with a wide voltage range.
- Example: Four sensors rated at 24-240 Vac can be wired in series at 120 V because even at 90%, V supply = 108 V. When all sensors are OFF, each will see 108/4 = 27 V, which is higher than the minimum voltage rating of the switch (24 V).





#### The following points should be considered:

- 1. Sensor 1, when conducting its load current, will also carry the leakage currents of all other sensors.
- 2. Each sensor, when conducting, will produce a voltage drop of 2.6 V, maximum. The load voltage should be selected accordingly.
- 3. Sensor 2 is powered only when Sensor 1 turns ON. Only after its power-up delay will Sensor 2 be able to function properly. This delay should be taken into consideration when speed is a factor.
- 4. Use of "flywheel" diodes is recommended where an inductive load is being switched.



# Wiring proximity sensors in series with mechanical contact devices

#### The following points should be considered:

- 1. When the mechanical contact is open, the sensor is not supplied.
- When the contact closes, the proximity sensor will not operate until a certain time "T" has elapsed, corresponding to the **power-up delay**. Please refer to details of individuals sensor characteristics

# Wiring several sensors in parallel 2 wire type

The use of proximity sensors wired in parallel either between themselves or together with mechanical contacts is not recommended.

When one of the sensors is in the ON state, the sensor in parallel is "shorted out" and thus no longer supplied.

As the first unit passes into the OFF state, the second sensor will become energized and will be subject to its power-up delay. This configuration is used where the sensors are working alternately.

When the sensors are OFF, the sum of the leakage currents must be less than the holding current of the load.



# Precautions

#### Length of the cable

No restrictions up to 660 feet (200 meters) or up to a line capacitance of 0.1  $\mu$ F. It is important to take into account voltage drop on the line over 660 feet (200 meters).

The XS models are immune to electrical interference encountered in normal industrial conditions.

Where extreme electrical noise conditions could occur (large motors, spot welders, etc.) it may be advisable to protect against transients in the following ways:

Suppress interference at source, limit the length of the cables, separate power and control wiring from each other, ensure that the logic systems contain input transient suppression means and use twisted pair and shielded cables.



\* Use of individual cables is recommended if long lengths are involved.

Precautions



If the load consists of an incandescent lamp, the cold state resistance can be ten times lower than the hot state resistance. This can cause very high current levels on switching



An XS proximity sensor cannot be connected directly to an AC supply source. This would result in immediate destruction of the sensor and considerable danger to the operator (except short circuit protected switches)



Install a pre-heat resistance in parallel with the proximity sensor.

$$R = \frac{V}{P}^2 \times 10$$

Electrical connections to be avoided

V= supply voltage P= power of lamp



A suitable load (see product data) must be connected in series with the proximity sensor.

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	Possible cause	Remedial action
Problems The sensor's output will not change state when a metal target is moved within its operating zone.	Output failure, or the short circuit protection has operated.	<ul> <li>Check that the sensor is the correct one for the supply being used.</li> <li>Check the load current.</li> <li>Characteristics: <ul> <li>If load current is greater than the max. rated current, a relay should be interposed between the sensor and the load.</li> <li>If load current is lower than the nominal rated current, check for wiring faults which could have caused a short circuit. In any case, a fast-blow fuse should be wired in series with the sensor (AC).</li> <li>For a tubular sensor, if the sensor is</li> </ul> </li> </ul>
False or erratic operation with or without the presence of the target object.	Wiring error Supply problems Transients	<ul> <li>brand new, check the mounting torque.</li> <li>Check the wiring.</li> <li>Check voltage range.</li> <li>Check that the supply voltage falls within the operating limits of the sensor in question. Remember that with a rectified supply: Vpeak = Vrms x √2</li> <li>Install transient suppressors across potential sources (coils, arcing contactors)</li> </ul>
	Influence of surrounding metal	Refer to the instruction sheet supplied     with the sensor
	Effect of interference on the supply lines	<ul> <li>Ensure that any DC supplies when derived from rectified AC, are correctly filtered (C ≥ 400 µf)</li> <li>Ensure that AC power cables are run separately from low level DC cables.</li> <li>Where very long distances are involved, use suitable cable:</li> <li>shielded and/or twisted pair</li> <li>suitable wire gage</li> <li>Position the sensor as far away as possible from any source of interference.</li> </ul>
	Response time of the sensor too long for the particular target.	Check suitability of the sensor for the target; choose a sensor with a faster response time or use a longer target
	Effects of high temperature	• Eliminate sources of radiated heat, or protect the housing with a heat shield.

		Cylindrical		Block type		
		Form A		Form C		Form D
	Cenelec standards	EN 50008 (NFC 63-076) DC 3 or 4 terminals EN 50040 (NFC 63-071) DC 2 terminals EN 50036 (NFC 63-081) AC terminals		EN 50025 (NFC 63-077) DC 3 or 4 terminals EN 50037 (NFC 63-082) AC 2 terminals		EN 50026 (NFC 63-078) DC 3 or 4 terminals EN 50038 (NFC 63-083) AC 2 terminals
		EN 50010 (NFC 63-07 EN 50032 (NFC 63-07 EN 50040 (NFC 63-07 Series XS1/XS2 N, XS1/XS2 standard, (ISO 9000 Self-Cel	′5) ′9) ′4) 2 M, 1	Determinati distance an Definitions, Connection XS4 P also conform to the ation, NEMA project ICS 5	ion of d ope class n ider requir -4-199	sensing erating frequencies sification, description ntification ements of IEC 60947.5.2
	Approvals			<b>F 71</b> U		
		XS1 / XS2 L/N XS1 / XS2 M				• -
<b>SP</b>	File LR46094 + LR44087 class 321103	XSB				$\bullet$ $\bullet$
<b>9</b> ] (U <sub>L</sub> )	File E39291 guide NKCR2 File E39281 guide NKCR	XS7 / 8 XSD XSE				• - • - • •
•	Standard version approved pending Special North American	XSG XS5 XS6				 • -
FM	version (1/2" NPT cable entry, UL label, etc.) Intrinsically safe applications	XS7 XS8				• — • — • —
$\checkmark$		XS9		► — ●		• -