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[XS1M12MA230K](#)

[XS1M18PA370B](#)

[XS1M30MA230K](#)

[XS1M18KP340](#)

EN

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DE

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Cette fiche technique est
présentée par le fabricant

Proximity Sensors

File 9006



Schneider Electric Brands

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Proximity Sensors

Inductive Sensors

Interpretation of Catalog Numbers

Proximity Sensors		Example													
		X	S	8	C	1	A	1	P	A	L	2			
Inductive Sensor															
TYPE															
Cylindrical Optimum				5											
Cylindrical Universal				6											
Optimum Rectangular				7											
Universal Rectangular				8											
Application Specific				9											
FORMAT OR MODE															
Rectangular 8x8x20					J	1									
Rectangular 8x15x32					F	1									
Rectangular 13x26x26					E	1									
Rectangular 15x40x40					C	1									
Rectangular 26x80x80					D	1									
Cylindrical smooth 4mm					L	4									
Cylindrical 5mm					0	5									
Cylindrical smooth 6mm					L	6									
Cylindrical 8mm					0	8									
Cylindrical 12mm					1	2									
Cylindrical 18mm					1	8									
Cylindrical 30mm					3	0									
FAMILY TYPE OR MATERIAL															
Applications								1...9							
Plastic								A							
Metal								B							
Stainless Steel								S							
APPLICATION															
Operating Mode								1...9							
Food & Beverage								A							
Namur								E							
Ferrous only								F							
Light industry								L							
Ferrous/Non-ferrous								M							
Non-ferrous only								N							
Speed Control								R							
Serdac								S							
Weld Field Immune								W							
OUTPUTS															
DC 3 wire PNP									P						
DC 3 wire NPN									N						
DC 3 wire PNP/NPN									K						
DC 2 wire (3/4)									D						
DC 2 wire automobile (1/4)									C						
DC analog output									A						
AC 2 wire									F						
AC/DC 2 wire									M						
AC/DC 2 wire SCP protect									S						
AC/DC relay output									R						
BUS									B						
FUNCTION															
Analog 0...10mA										1					
Analog 4...20mA										2					
N.O.										A					
N.C.										B					
N.O. + N.C.										C					
Programmable/wiring										P					
Programmable										S					
CABLING OR CONNECTION															
M8X1 Nano (S)											M	8			
M12x1 Micro (D)											M	1	2		
7/8 16UN Mini (A)											U	7	8		
1/2 20 UNF Micro (K)											U	2	0		
Cable 0.1m											L	0	1		
Cable 2m											L	2			
Cable 5m											L	5			
Cable 10m											L	1	0		
M12 micro on0.1m pigtail											L	0	1	M	1
PG 16 cable gland											T	1	6		2

Proximity Sensors

Inductive Sensors

Interpretation of Catalog Numbers

NOTE: This table is intended to understand catalog number designations. It is NOT to be used to create numbers which may not exist. Consult your local field office

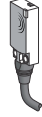
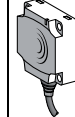
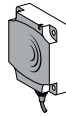
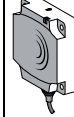
Rectangular Example	X	S	7	C	4	0	P	C	4	4	0	R30	H*
SENSOR TYPE													
Self Contained Component	X												
SENSING TECHNOLOGY	Z												
Inductive Proximity		S											
Capacitive Proximity		T											
BODY STYLE													
Miniature			5										
Shielded			7										
Non-Shielded			8										
Block Style			D										
FAMILY TYPE													
Limit Switch Style - Plastic Body				C									
Compact Block				G									
Sub Compact Block				H									
Miniature				L									
Cubic				T									
MANUFACTURING CODES					.	.							
OUTPUT TYPE													
NPN							N	P					
PNP							P	P					
AC/DC Universal							M	A					
2 wire N.O./N.C.							D	P					
NPN N.O.+N.C.							N	C					
PNP N.O.+N.C.							P	C					
MANUFACTURING CODES									.	.	.		
SUFFIX													
2 Meter Cable or Conduit Opening												Blank	
Micro Connector -- DC												D	
Alternate Frequency												F	
Micro Connector -- AC/DC												K	
5 Meter Cable												L2	
10 Meter Cable												L10	
Mini Connector, Normally Open												R30	
Mini Connector, Normally Closed												R31	
Nano Connector -- DC												S	
Bulk Pack												TQ	

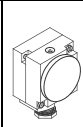
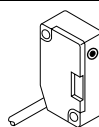
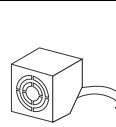
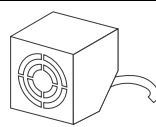
* H suffix, which MAY appear on device or carton label, is for manufacturing purposes only. It designates compliance with specific national standards. EX: H7 = UL and CSA approval, 0.5" conduit opening (where applicable). H suffixes should not be used when ordering (except when non US standards are required)

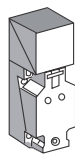
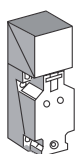
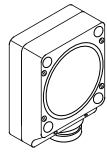
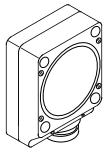
Tubular Example	X	S	1	M	1	8	P	A	3	7	0	D
SENSOR TYPE												
Self Contained	X											
SENSING TECHNOLOGY												
Inductive Proximity		S										
Capacitive Proximity		T										
BODY TYPE												
Shielded -- Metal Body			1									
Non-shielded -- Metal Body			2									
Non-shielded -- Plastic Body			4									
TYPE OF ENCLOSURE OR FAMILY												
Economy D				D								
Standard Length -- Threaded Metal CaseM				M								
Short Length -- Threaded Metal CaseN				N								
Unthreaded Metal CaseL				L								
Threaded Plastic CaseP				P								
BARREL DIAMETER												
4mm Diameter					0	4						
5mm Diameter					0	5						
6mm Diameter					0	6						
8mm Diameter					0	8						
12mm Diameter					1	2						
18mm Diameter					1	8						
30mm Diameter					3	0						
32mm Diameter					3	2						
MODEL TYPE												
Analogue							AB					
DC PNP							P					
DC NPN							N					
DC PNP/NPN, N.O./N.C. (Selectable)							K					
DC 2 Wire							D					
AC/DC 2 Wire (Universal)							M					
OUTPUT MODE												
N.O. (Normally Open)								A				
N.C. (Normally Closed)								B				
N.O. + N.C. Complementary								C				
N.O. or N.C. Selectable								P				
MANUFACTURING CODES									.	.	.	
CONNECTORS												
Nano (M8) DC OnlyS												S
Micro DC OnlyD												D
Micro AC OnlyK												K
Mini AC or DCA												A
Micro DC PigtailLD												LD
Mini AC or DC PigtailLA												LA
EXTENDED CABLE LENGTH												
5 Meter CableL1												L1
10 Meter CableL2												L2

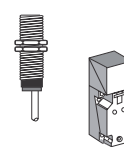
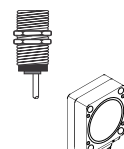
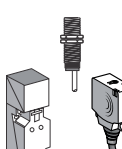
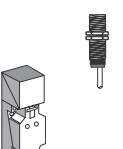
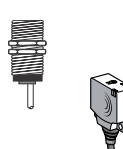
Proximity Sensors Selection Guide Rectangular



Description	Plastic Shielded Fixed and Adjustable sensing Range							
	Fixed Sensing Range					Auto Adaptable Adjustable Sensing Range		
	XS7					XS8		
								
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	10 - 36 V	10 - 36 V	10 - 36 V	10 - 36 V	10 - 36 V	10 - 36 V	10 - 36 V
Maximum Load	100 mA	100 mA	100 mA	100 mA	100 mA	100 mA	200 mA	200 mA
DC 2 wire	10 - 36 V	10 - 36 V	10 - 36 V	10 - 36 V	10 - 36 V	—	—	—
Maximum Load	100 mA	100 mA	100 mA	100 mA	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	IP68	IP68	IP68	IP68	IP68	IP68	IP68
Connector Version	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67
Connection								
Cable	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	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)	-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)	-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		Plastic Classic Rectangular Shielded & Non-shielded					
		Miniature	Compact				
		XS5L	XSB; XS7,8H; XS7,8G; XS7,8T				
							
Size (mm)		8x43	50x76	10x28	26x40	26x26	40x40
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
Maximum Load		–	–	–	200 mA	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	–	–
Dimension (mm)	Cable	43x8x8	–	28x10x16	40x12x26	26x26x26	40x40x40
	Connector	49x8x8	76x50x41	–	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')	–	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')
Connector		M8	U78	–	M8	M12	M12
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)	-13°F to +158°F (-25°C to +70°C)
Page Number		266	272	268	270	274	274

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)
Page Number	276	278	280	282

Description	Cylindrical, Rectangular Application Specific						
	Selective F,NF, N&NF	WFI	Namur	Analog	Capacitive	Magnet Actuated	Rotation Control
							
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)
Page Number	260	286	290	214, 292	294	302	216, 284

Proximity Sensors Selection Guide Cylindrical



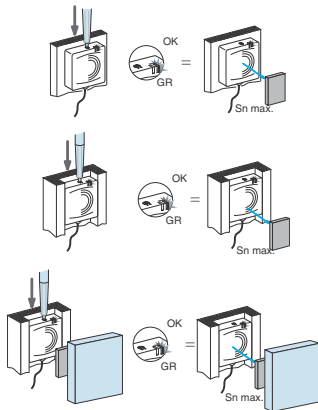
Description		Metal Fully Shielded Fixed Sensing Range								Metal Fully Shielded/Non-Shielded	
		Standard Sensing Range				Extended Sensing Range				Auto Adaptable Adjustable Range	
		XS5				XS6				XS6	
Diameter (mm)		Ø 8	Ø 12	Ø 18	Ø 30	Ø 8	Ø 12	Ø 18	Ø 30	Ø 12	Ø 18
Nominal Sensing Distance Sn (mm)		1.5	2	5	10	2.5	4	8	15	4	8
		15									
Supply (Voltage Limits)											
DC 3 wire		10 - 36 V	10 - 36 V	10 - 36 V	10 - 36 V	10 - 58 V	10 - 58 V	10 - 58 V	10 - 58 V	10 - 36 V	10 - 36 V
Maximum Load		200 mA	200 mA	200 mA	200 mA	200 mA	200 mA	200 mA	200 mA	100 mA	100 mA
Dimension (mm)	Cable	M8x33	M12x33	M18x36.5	M30x40.6	M8x50	M12x50	M18x60	M18x60	—	—
	Connector	M8x42	M12x48	M18x48.6	M30x50.7	M8x61	M12x61	M18x72.2	M30x72.2	M12x50	M18x60
DC 2 wire		10 - 58 V	10 - 58 V	10 - 58 V	10 - 58 V	—	—	—	—	—	—
Maximum Load		100 mA	100 mA	100 mA	100 mA	—	—	—	—	—	—
Dimension (mm)	Cable	M8x50	M12x50	M18x52.5	M30x50	—	—	—	—	—	—
	Connector	M8x61	M12x61	M18x64.6	M30x64.2	—	—	—	—	—	—
DC 4 wire		—	—	—	—	—	—	—	—	—	—
Maximum Load		—	—	—	—	—	—	—	—	—	—
Dimension (mm)	Cable	—	—	—	—	—	—	—	—	—	—
	Connector	—	—	—	—	—	—	—	—	—	—
AC/DC 2 wire		—	—	—	—	20 - 264 V	20 - 264 V	20 - 264 V	20 - 264 V	—	—
Maximum Load		—	—	—	—	100 mA	100 mA	100 mA	100 mA	—	—
Dimension (mm)	Cable	—	—	—	—	—	M12x50	M18x60	M30x60	—	—
	Connector	—	—	—	—	—	M12x61	M18x72.2	M30x72.2	—	—
Enclosure Rating											
Cable		IP67	IP68	IP68	IP68	IP67	IP68	IP68	IP68	—	—
Connector		IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67
Connection											
Cable Version		2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	—	—
Connector Version		M8	M12	M12	M12	M8	M12/U20	M12/U20	M12/U20	—	—
Operating 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)	-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)
Page Number		212	212	212	212	210	210	210	210	210	210

Description	Plastic Unshielded				Metal Shielded/Non-Shielded Fixed Sensing Range						
	Standard Sensing Range				Standard Sensing Range (Classic)				Nominal Range, Miniature		
	XS4.P				XS1, 2M (N)				XS1, 2 L(N)		
											
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 Sensing Distance Shielded Sn (mm)	—	—	—	—	1.5	2	5	10	1	1	1.5
Nominal Sensing Distance Unshielded Sn (mm)	2.5	4	8	15	2.5	4	8	15	—	—	2.5
Supply (Voltage Limits)											
DC 3 wire	10 – 38 V	10 – 38 V	10 – 38 V	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 Load	200 mA	200 mA	200 mA	200 mA	100 mA	200 mA	200 mA	200 mA	100 mA	100 mA	200 mA
Dimension (mm)	Cable	M8x33	M12x33	M18x33	M30x40	M8x50	M12x50	M18x60	M30x60	M4x29	M6.5x33
	Connector	M8x45	M12x45	M18x45	M30x50	M8x61	M12x61	M18x70	M30x70	M4x41	M6.5x45
DC 2 wire	—	—	—	—	10 – 58 V	10 – 58 V	10 – 58 V	10 – 58 V	—	—	—
Maximum Load	—	—	—	—	100 mA	100 mA	100 mA	100 mA	—	—	—
Dimension (mm)	Cable	—	—	—	—	—	—	—	—	—	—
	Connector	—	—	—	—	—	—	—	—	—	—
DC 4 wire	10 – 38 V	10 – 38 V	10 – 38 V	10 – 38 V	—	—	—	—	—	—	10 – 38 V
Maximum Load	200 mA	200 mA	200 mA	200 mA	—	—	—	—	—	—	200 mA
Dimension (mm)	Cable	M8x50	M12x50	M18x60	M30x60	—	—	—	—	—	M6.5x50
	Connector	M8x61	M12x61	M18x70	M30x70	—	—	—	—	—	—
AC/DC 2 wire	20 - 264 V	20 - 264 V	20 - 264 V	20 - 264 V	20 - 264 V	20 - 264 V	20 - 264 V	20 - 264 V	—	—	—
Maximum Load	100 mA	200 mA	200 mA	200 mA	100 mA	200 mA	200 mA	200 mA	—	—	—
Dimension (mm)	Cable	M8x50	M12x50	M18x60	M30x60	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	—	—
	Connector	M8x61	M12x61	M18x70	M30x70	U20	U20	U20/U78	U20/U78	—	—
Enclosure Rating											
Cable	IP67	IP68	IP68	IP68	IP67	IP68	IP68	IP68	IP67	IP67	IP67
Connector	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67	IP67
Connection											
Cable	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')	2 m (6.6')
Connector	M8 / U20	M12/U20	M12/U20	M12/U20	M12/U20	M12/U20	M12/U20	M12/U20	M8	M8	M8/M12
Operating 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 +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)
Page Number	226	236	240	248	224	232	240	248	218	220	222

OSICONCEPT™ Proximity Sensors

XS Inductive Sensors

Auto-Adaptable Technology



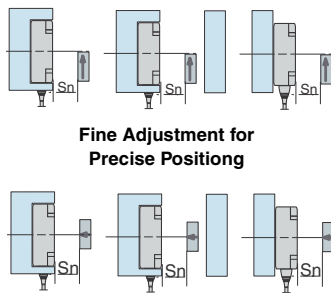
Principle of Operation

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**

**Fine Adjustment for
Frontal Target Motion**

Fine Adjustment for Precise Positioning

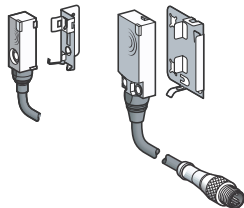
The simple process of pressing the self-teach button with the target located in the precise position (lateral movement) across the detector sensing face. This adjustment will only allow the sensor output to change state when the object reaches the precise position in the sensors field.

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

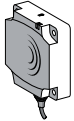
A full line of support brackets allows for simple and fast installation or maintenance. No tools are necessary, simple clips and the sensor is fixed in position and ready for operation. Brackets available for all sizes J, F, E, C, D in flat and 90°.

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



OSICONCEPT™ Proximity Sensors XS Inductive Sensors Auto-Adaptable 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 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

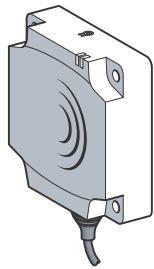
Cylindrical

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

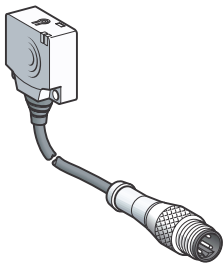
OSICONCEPT™ Proximity Sensors

XS8 Auto-Adaptable Inductive Sensor

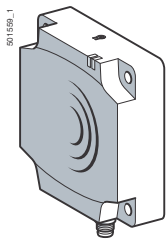
Flat Rectangular, DC and AC/DC



XS8 •1A1....L2



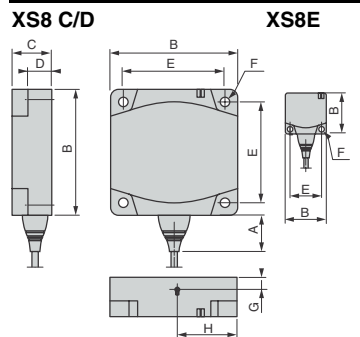
XS8 E1A1..M8



XS8 E1A1...M8

XS8 C1A1...M8

Dimensions



	A L2	A M12	B	C	D	E	F	G	H
E	0.55 (14)	0.4 (11)	1.0 (26)	0.5 (13)	0.3 (8.8)	0.8 (20)	0.1 (3.5)	0.26 (6.8)	0.25 (6.6)
C	0.55 (14)	0.4 (11)	1.6 (40)	0.6 (15)	0.4 (9.8)	1.3 (33)	0.1 (4.5)	0.32 (8.3)	0.53 (13.6)
D	0.9 (23)	0.5 (14)	3.1 (80)	1.0 (26)	0.6 (16)	2.5 (65)	0.2 (5.5)	0.33 (8.5)	1.5 (37.8)

inches (mm)

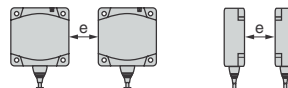
Features:

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

Nominal Sensing Distance	Circuit Type	Output Mode	Voltage Range	Load Current Maximum	Operating Frequency	Catalog Number
DC						
Size E (13x26x26 mm) 2 m (6.6') cable ▲						
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 mm) M8 connector						
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 mm) M12 pigtail, 0.1 m						
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 mm) 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 mm) M8 connector						
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 mm) M12 pigtail, 0.1 m						
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 mm) 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 mm) M12 connector						
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 mm) 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 mm) U20 pigtail, 0.1 m						
15mm	2 wire	N.O.*	24-240 Vac/24-210 Vdc	5 – 200 mA	1000/50 Hz	XS8E1A1MAL01U20
Size C (15x40x40 mm) 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 mm) U20 pigtail, 0.1 m						
25mm	2 wire	N.O.*	24-240 Vac/24-210 Vdc	5 – 300 mA	1000/50 Hz	XS8C1A1MAL01U20
Size D (26x80x80 mm) 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 mm) U20 connector						
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)



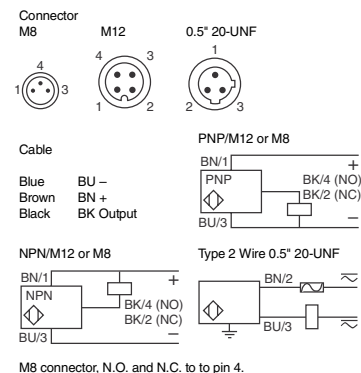
	Side by Side		Face to Face	
XS8E	e ≥ 1.6 (40)	e ≥ 5.9 (150)	e ≥ 3.1 (80)	e ≥ 11.8 (300)
XS8C	e ≥ 2.4 (60)	e ≥ 4.9 (125)	e ≥ 4.7 (120)	e ≥ 9.8 (250)
XS8D	e ≥ 7.9 (200)	e ≥ 23.6 (600)	e ≥ 15.7 (400)	

OSICONCEPT™ Proximity Sensors

XS8 Auto-Adaptable Inductive Sensor

Flat Rectangular, DC and AC/DC

Wiring



Specifications

Mechanical		Shielded	Non-shielded
Fine Detection Zone	XS8E	5 – 10 mm	5 – 15 mm
	XS8C	8 – 15 mm	8 – 25 mm
	XS8D	20 – 40 mm	20 – 60 mm
Sn	XS8E	0 – 10 mm	0 – 15 mm
	XS8C	0 – 15 mm	0 – 25 mm
	XS8D	0 – 40 mm	0 – 60 mm
Temperature Range	Storage	-40 ° to +185 ° F (-40 ° to +85 ° C)	
	Operation	-13 ° to +158 ° F (-25 ° to +70 ° C)	
Enclosure Rating	NEMA Type	1, 4X, 12	
	IEC Type	IP68 cable version / IP67 connector 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%	
LED Indicator	Output	Yellow	
	Power & Teach	Green	
Enclosure material		PBT	
Cable		PVR 3x0.34mm ²	
Connector		M8 Nano 3pin, M12 Micro 4pin, U20 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
Load Current Maximum	XS8E	5...200 mA	100 mA
	XS8C	DC:5...300 mA/AC:5...260 mA	200 mA
	XS8D	DC:5...300 mA/AC:5...260 mA	200 mA
(max.) Leakage (Residual) Current-open state		1.5 mA	–
Current consumption		–	10 mA
Power up Delay (max.)	XS8E	10 ms	5 ms
	XS8C	10 ms	5 ms
	XS8D	15 ms	10 ms
On Delay (max.)	XS8E	0.3 ms	0.3 ms
	XS8C	0.3 ms	0.3 ms
	XS8D	0.3 ms	0.3 ms
Off Delay (max.)	XS8E	0.7 ms	0.7 ms
	XS8C	0.7 ms	0.7 ms
	XS8D	5 ms	5 ms
Protective Circuitry	Short Circuit Protection	No	Yes
	Overload Protection	No	Yes
Agency Listings		UL	CSA CE

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

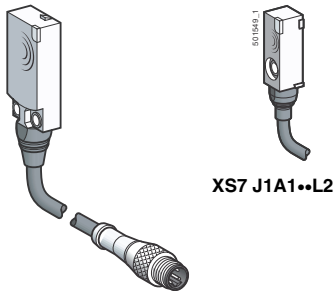
XSZCS101	Nano Conn., 3 pin, 2 m, straight
XSZCS111	Nano Conn., 3 pin, 2 m, 90°
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°
XSZCK101Y	Micro Conn., 3 pin, 2 m, straight
XSZCK111Y	Micro Conn., 3 pin, 2 m, 90°

For additional cable options and lengths see p. 518

Proximity Sensors

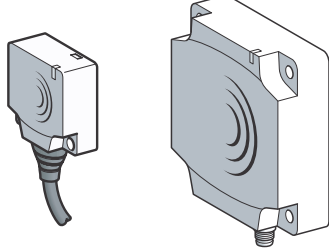
XS7 Inductive Sensor

Flat Rectangular, DC



XS7 J1A1••L2

XS7 FA1••L01M8



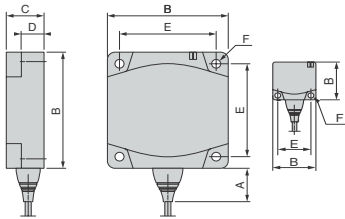
XS7 1A1••L2

XS7 D1A1••M12

Dimensions

XS7 C/D

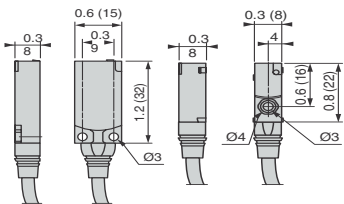
XS7E



	A L2	A M12	B	C	D	E	F
XS7 E	0.55 (14)	0.4 (11)	1.0 (26)	0.5 (13)	0.3 (8.8)	0.8 (20)	0.1 (3.5)
XS7 C	0.55 (14)	0.4 (11)	1.6 (40)	0.6 (15)	0.4 (9.8)	1.3 (33)	0.1 (4.5)
XS7 D	0.9 (23)	0.5 (14)	3.1 (80)	1.0 (26)	0.6 (16)	2.5 (65)	0.2 (5.5)

XS7 F

XS7J



inches (mm)

Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

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 Distance	Circuit Type	Output Mode	Voltage Range	Load Current Maximum	Operating Frequency	Catalog Number
Size J (8x8x22 mm) 2 m (6.6') cable ▲						
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						
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') cable ▲						
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) M8 pigtail, 0.1 m						
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) 2m (6.6') cable ▲						
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) M8 connector						
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 pigtail, 0.1 m ◆						
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 m (6.6') cable ▲						
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 connector						
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 ◆						
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 m (6.6') cable ▲						
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 connector						
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 closed (N.C.) version change the A to B, example: XS718B1PAL2 to XS718B1PBL2.

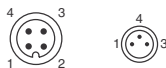
◆ 0.8m and 0.15m pigtail length available on 2 wire E and C.

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

Wiring

XS7E, XS7C, XS7D

Connector
M12



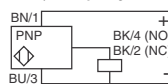
M8



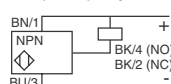
Cable

Blue BU –
Brown BN +
Black BK Output

PNP/M12 or M8

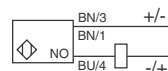


NPN/M12 or M8

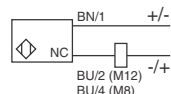


M8 connector, N.O. and N.C. to pin 4.

2 Wire N.O.



2 Wire N.C.



Connector M8

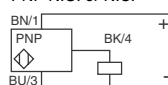


Cable

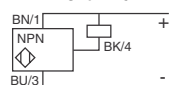
Blue BU –
Brown BN +
Black BK Output

XS7J, XS7F

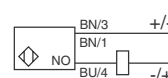
PNP N.O. or N.C.



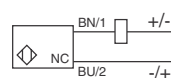
NPN N.O. or N.C.



2 Wire N.O.



2 Wire N.C.



Specifications

Mechanical			
Usable Sensing Range	XS7J	0 – 2 mm	
	XS7F	0 – 4 mm	
	XS7E	0 – 8 mm	
	XS7C	0 – 12 mm	
	XS7D	0 – 32 mm	
Temperature Range	Storage	-40 ° to +185 ° F (-40 ° to +85 ° C)	
	Operational	-13 ° to +158 ° F (-25 ° to +70 ° C)	
Enclosure Rating	NEMA Type	1,4X,12	
	IEC Type	IP68 Cable version / IP67 Connector 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%	
LED Indicator		Yellow output	
Enclosure Material		PBT	
Cable		PVR, 3x0.34mm ²	
Connector		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
Power up Delay (max.)	XS7J	10 ms	5 ms
	XS7F	5 ms	5 ms
	XS7E	5 ms	10 ms
	XS7C	5 ms	5 ms
	XS7D	10 ms	30 ms
On Delay (max.)	XS7J	0.5 ms	0.1 ms
	XS7F	0.5ms	0.1 ms
	XS7E	0.3 ms	2 ms
	XS7C	0.3 ms	2 ms
	XS7D	10 ms	5 ms
Off Delay (max.)	XS7J	1 ms	0.1 ms
	XS7F	5 ms	0.1 ms
	XS7E	0.7 ms	6 ms
	XS7C	0.7 ms	5 ms
	XS7D	10 ms	15 ms
Protective Circuitry	Short Circuit Protection	Yes	Yes
	Overload Protection	Yes	Yes
Agency Listings	 E164869 CCN NRKH  		

Minimum Mounting Clearances (mm)

	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 ≥ 0.08 (2)
XS7C	e ≥ 0.4 (10)	e ≥ 2.4 (60)	e ≥ 0.6 (15)	XS7F	e ≥ 0.8(020)	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)

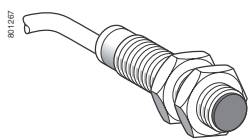
XSZCS101	Nano Conn., 3 pin, 2 m, straight
XSZCS111	Nano Conn., 3 pin, 2 m, 90°
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°

For additional cable options and lengths see p. 518

OSICONCEPT™ Proximity Sensors

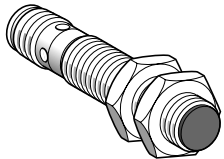
XS6 Extended Range and Auto-Adaptable Inductive Sensor

Metal Tubular, DC and AC/DC



XS6 ••B1••L2

thread
M8x1



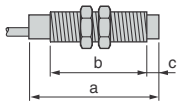
XS6 ••B1••M12

thread
M12x1

thread
M18x1

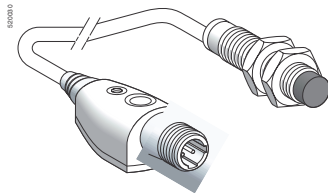
thread
M30x1.5

Dimensions



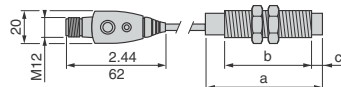
	Cable		Connector	
	a	b	a	b
Ø 8	1.9 (50)	1.6 (42)	2.4 (61)	1.6 (40)
Ø 12	1.9 (50)	1.6 (42)	2.4 (61)	1.6 (42)
Ø 18	2.3 (60)	0.09 (51)	2.8 (72.2)	2.0 (51)
Ø 30	2.3 (60)	0.09 (51)	2.8 (72.2)	2.0 (51)

inches (mm)



XS6••B2••L01M12

Dimensions



	Connector M12		
	a	b	c
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)

Dual Dimensions inches
mm

Features:

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

- Increased sensing range, fully shielded
- 2 wire AC/DC and 3 wire DC
- Normally Open or Normally Closed outputs available
- Cable and connector versions
- PNP or NPN, DC
- Self-Teach available on 12-30mm versions

Nominal Sensing Distance	Circuit Type	Output Mode	Voltage Range	Load Current Max.	Operating Frequency		Catalog Number
					DC	AC	
8 mm Diameter, 2 m (6.6') cable ▲							
2.5 mm	PNP	N.O. ★	12-48 Vdc	200 mA	5000 Hz	–	XS608B1PAL2
2.5 mm	NPN	N.O. ★	12-48 Vdc	200 mA	5000 Hz	–	XS608B1NAL2
8 mm Diameter, M12 connector							
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 ▲							
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 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 ▲							
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 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') cable ▲							
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 version◆ (Auto-Adaptable)							
12 mm Diameter, M12 connector pigtail 0.1m							
5 mm	PNP	N.O. ★	12-24 Vdc	100 mA	1000 Hz	–	XS612B2PAL01M12
5 mm	NPN	N.O. ★	12-24 Vdc	100 mA	1000 Hz	–	XS612B2NAL01M12
18 mm Diameter, M12 connector pigtail 0.1m							
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 connector pigtail 0.1m							
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	–	XS630B2NAL01M12

★ To order a normally closed (N.C.) version change the A to B, example: XS518B1PAL2 to XS518B1PBL2.

◆ Self-teach version only

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

Minimum Mounting Clearances " (mm)

Auto-Adaptable



	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)

Extended Range



	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	e ≥ 0.2 (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)

OSICONCEPT™ Proximity Sensors

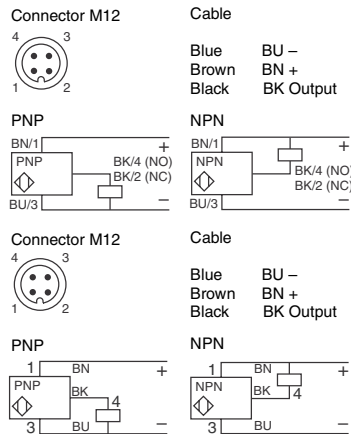
XS6 Extended Range and Auto-Adaptable Inductive Sensor

Metal Tubular, DC and AC/DC

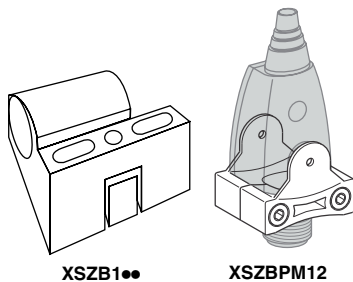
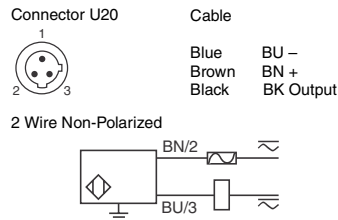
Specifications

Wiring

3 Wire Selectable



2 Wire AC/DC



XSZB100

XSZBPM12

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

Mechanical		Extended Range	Auto-Adaptable	
			Shielded	Non-shielded
Fine Detection Zone	08 mm	0 – 2 mm	–	–
	12 mm	0 – 3.2 mm	1.7 - 3.4 mm	1.7 - 5 mm
	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
Sn	12 mm	–	0 - 3.4 mm	0 - 5 mm
	18 mm	–	0 – 6 mm	0 – 9 mm
	30 mm	–	0 – 12 mm	0 – 18 mm
Temperature Range	Storage	-40 ° to +185 ° F (-40 ° to +85 ° C)		
	Operation	-13 ° to +158 ° F (-25 ° to +70 ° C)		
Enclosure Rating	NEMA Type	3,4X,6P,12,13		
	IEC Type	IP68 cable versions (IP67 connector versions)		
Enclosure Material	Case	Nickel Plated Brass		
	Face	PBT		
Max. Tightening Torque	08 mm	9 N•m (6.7 lb-ft)		
	12 mm	15 N•m (11 lb-ft)		
	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%		
LED Indicator	Power & Teach	–		Green
	Output	Yellow		
Cable		PVR 3x0.34 mm 2/PVR2x0.5 mm ²		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 ripple)		20-264 Vac/dc	10 – 58 Vdc	10 – 36 Vdc
Voltage Drop		5.5 V	2 V	2 V
(max.) Leakage (Residual) Current-open state		0.8 mA	–	–
Current consumption		–	10 mA	10 mA
Maximum Current Limit		AC: 5...300 mA / DC: 5...200 mA	200 mA	100 mA
Power up Delay (max.)		20 ms-12 mm / 25 ms-18/30 mm	5 ms	5ms
On Delay (max.)	08mm	–	0.2 ms	–
	12mm	0.5 ms	0.2 ms	0.3 ms
	18mm	0.5 ms	0.3 ms	0.3 ms
	30mm	0.5 ms	0.6 ms	0.3 ms
Off Delay (max.)	08mm	–	0.2 ms	–
	12mm	0.2 ms	0.2 ms	0.7 ms
	18mm	0.5 ms	0.7 ms	0.7 ms
	30mm	2 ms	1.4 ms	0.7 ms
Maximum Operating Frequency	08mm	–	2500 Hz	–
	12mm	AC: 25 Hz / DC: 1000 Hz	2500 Hz	1000 Hz
	18mm	AC: 25 Hz / DC: 1000 Hz	1000 Hz	1000 Hz
	30mm	AC: 25 Hz / DC: 500 Hz	500 Hz	1000 Hz
Protective Circuitry	Short Circuit Protection	No	Yes	Yes
	Overload Protection	Yes	Yes	Yes
	Reverse Polarity Protection	Yes	Yes	Yes
Agency Listings		  		

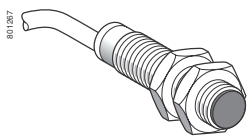
Accessories

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

Proximity Sensors

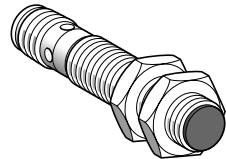
XS5 Inductive Sensor

Metal Tubular, DC



XS5 ..B1..L2

thread
M8x1



XS5 ..B1..M12

thread
M18x1

thread
M30x1.5

Features:

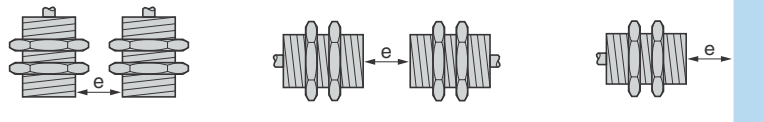
Complete range of cylindrical proximity sensors dedicated to OEM's and their applications.

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

Nominal Sensing Distance	Circuit Type	Output Mode	Voltage Range	Load Current Maximum	Operating Frequency	Catalog Number
8 mm Diameter, 2 m (6.6') cable ▲						
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 m (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, M12 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 m (6.6') cable ▲						
5 mm	2 wire	N.O. ★	12-48 Vdc	1.5-100 mA	3000 Hz	XS518B1DAL2
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
18 mm Diameter, M12 connector						
5 mm	2 wire	N.O. ★	12-48 Vdc	1.5-100 mA	3000 Hz	XS518B1DAM12
5 mm	PNP	N.O. ★	12-24 Vdc	200 mA	2000 Hz	XS518B1PAM12
5 mm	NPN	N.O. ★	12-24 Vdc	200 mA	2000 Hz	XS518B1NAM12
30 mm Diameter, 2 m (6.6') cable ▲						
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, M12 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
10 mm	NPN	N.O. ★	12-24 Vdc	200 mA	1000 Hz	XS530B1NAM12

- ★ To order a normally closed (N.C.) version change the A to B, example: XS518B1PAL2 to XS518B1PBL2.
 ▲ 5m cable length available with L5 suffix / 10m cable length available with L10 suffix.

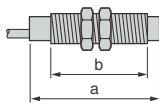
Minimum Mounting Clearances (mm)



	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)

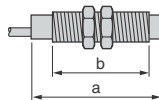
Dimensions

2 Wire



	Cable		Connector	
	a	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



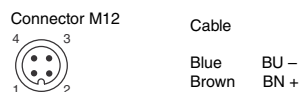
	Cable		Connector	
	a	b	a	b
Ø 8	1.3 (33)	1.0 (25)	1.6 (42)	1.0 (26)
Ø 12	1.3 (33)	1.0 (25)	1.9 (48)	1.1 (29)
Ø 18	1.4 (36.5)	1.1 (28)	1.9 (48.6)	1.1 (28)
Ø 30	1.6 (40.6)	1.2 (32)	2.0 (50.7)	1.3 (32)

inches (mm)

Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

Wiring

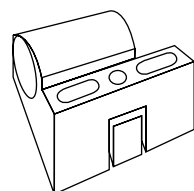
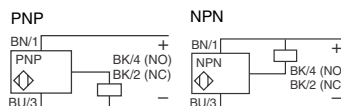
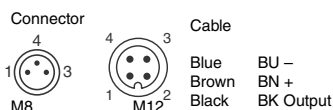
2 Wire



2 Wire Non Polarized



3 Wire



XSZB100

Specifications

Mechanical			
Usable Sensing Range	08mm	0 – 1.2 mm	
	12mm	0 – 1.6 mm	
	18mm	0 – 4 mm	
	30mm	0 – 8 mm	
Temperature Range	Storage	-40 ° to +185 ° F (-40 ° to +85 ° C)	
	Operation	-13 ° to +158 ° F (-25 ° to +70 ° C)	
Enclosure Rating	NEMA Type	3,4X,6P,12,13	
	IEC Type	IP68 cable version (except 8mm and connector version: IP67)	
Enclosure Material	Case	Nickel Plated Brass	
	Face	PBT	
Max. Tightening Torque	08mm	5 N•m (3.7 lb-ft)	
	12mm	6 N•m (4.4 lb-ft)	
	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 ²	PVR 3x0.34 mm ²
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		1.5 ... 100 mA	200 mA
(max.) Leakage (Residual) Current-open state		0.5mA	–
Current consumption		–	10 mA
Power up Delay (max.)		5 ms	5 ms
On Delay (max.)	08mm	0.2 ms	0.1 ms
	12mm	0.2 ms	0.1 ms
	18mm	0.2 ms	0.15 ms
	30mm	0.3 ms	0.2 ms
Off Delay (max.)	08mm	0.2 ms	0.1 ms
	12mm	0.2 ms	0.1 ms
	18mm	0.2 ms	0.35 ms
	30mm	0.3 ms	0.7 ms
Protective Circuitry	Short Circuit Protection	Yes	Yes
	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	 UL	 CSA	 CE

Accessories

Description	Catalog Numbers
8mm tubular mounting bracket	XSZB108
12mm tubular mounting bracket	XSZB112
18mm tubular mounting bracket	XSZB118
30mm tubular mounting bracket	XSZB130

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

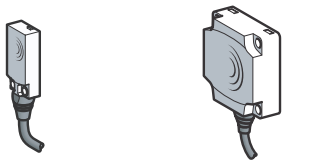
XSZCS101	Nano Conn., 3 pin, 2 m, straight
XSZCS111	Nano Conn., 3 pin, 2 m, 90°
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°

For additional cable options and lengths see p. 518

OSICONCEPT™ Proximity Sensors

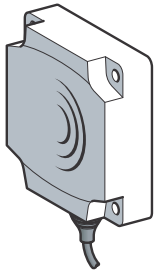
XS9 Application Specific Inductive Sensor

Flat Rectangular Analog Output, DC



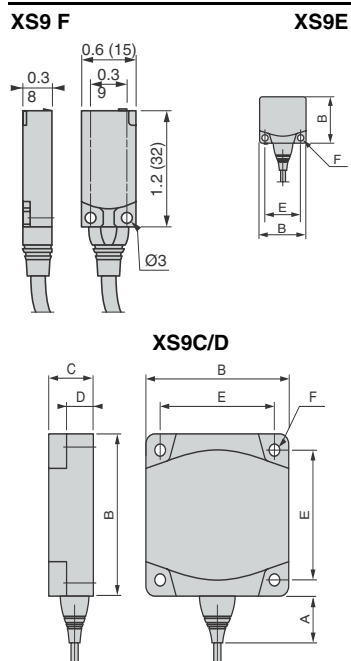
XS9F111●●●L2

XS9E111●●●L2



XS9D111●●●L2

Dimensions



	A L2	A M12	B	C	D	E	F
E	0.55 (14)	—	1.0 (26)	0.5 (13)	0.3 (8.8)	0.8 (20)	0.1 (3.5)
C	0.55 (14)	—	1.6 (40)	0.6 (15)	0.4 (9.8)	1.3 (33)	0.1 (4.5)
D	0.9 (23)	0.5 (14)	3.1 (80)	1.0 (26)	0.6 (16)	2.5 (65)	0.2 (5.5)

inches (mm)

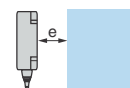
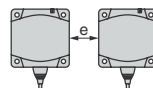
Features:

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

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) M8 connector pigtail 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 pigtail 0.1 m					
10 mm	3 wire	12-24 Vdc	1-10 V	1000 Hz	XS9E111A1L01M12
10 mm	3 wire	12-24 Vdc	4-20 mA	1000 Hz	XS9E111A2L01M12
Size C (15x40x40) 2 m (6.6') cable ▲					
15 mm	3 wire	12-24 Vdc	1-10 V	1000 Hz	XS9C111A1L2
15 mm	3 wire	12-24 Vdc	4-20 mA	1000 Hz	XS9C111A2L2
Size C (15x40x40) M12 connector pigtail 0.1 m					
15 mm	3 wire	12-24 Vdc	1-10 V	1000 Hz	XS9C111A1L01M12
15 mm	3 wire	12-24 Vdc	4-20 mA	1000 Hz	XS9C111A2L01M12
Size D (26x80x80) 2 m (6.6') cable ▲					
40 mm	3 wire	12-24 Vdc	1-10 V	100 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	3 wire	12-24 Vdc	4-20 mA	100 Hz	XS9D111A2M12

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

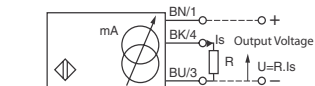
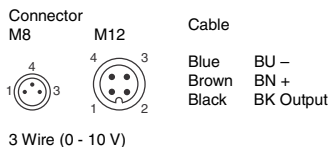
Minimum Mounting Clearances " (mm)



	Side by Side	Face to Face	Face to Metal Object
XS9F	e ≥ 0.08 (2)	e ≥ 0.47 (12)	e ≥ 0.12 (3)
XS9E	e ≥ 0.16 (4)	e ≥ 0.9 (24)	e ≥ 0.23 (6)
XS9C	e ≥ 0.40 (10)	e ≥ 2.3 (60)	e ≥ 0.6 (15)
XS9D	e ≥ 0.8 (20)	e ≥ 4.7 (120)	e ≥ 1.2 (30)

Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

Wiring



Specifications

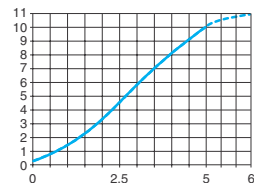
Mechanical		
Usable Sensing Range	XS9F	1...5 mm
	XS9E	1...10 mm
	XS9C	2...15 mm
	XS9D	5...40 mm
Temperature Range	Storage	-40 ° to +185 ° F (-40 ° to +85 ° C)
	Operation	-13 ° to +158 ° F (-25 ° to +70 ° C)
Enclosure Rating	NEMA Type	1, 4X (indoor only) 12
	IEC Type	IP68 cable version / IP67 connector version
Vibration		25 g, amplitude +/- 2 mm (f=10 to 55 Hz)
Shock		50 g, duration 11 ms
Enclosure material		PBT
Cable		PVR 3x0.34 mm ²
Connector		M8 Nano conn. 3 pin / M12 Micro conn. 4 pin
Electrical		
2 wire DC		
Voltage Range		12 - 24 Vdc
Voltage Limit (including ripple)		10 - 36 Vdc
Max. output current drift with the rated operating temperature		<10%
Linearity error		+/- 5%
Protective Circuitry	Short Circuit Protection	Yes
	Overload Protection	Yes
Agency Listings		UL SF CE

Output Curves

0 to 10 V

XS9F11

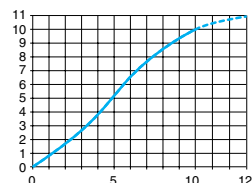
Sn = 1 ... 5 mm



Distance in mm.

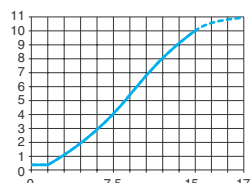
XS9E

Sn = 1 ... 10 mm



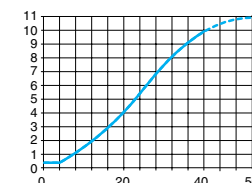
XS9C

Sn = 2 ... 15 mm



XS9D

Sn = 5 ... 40 mm



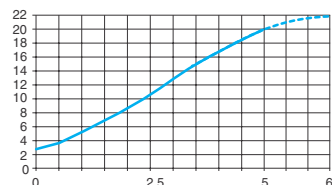
Output Current		Resistance	Output Voltage	Resistance
12 V	0 ... 10 mA	$R \leq 560 \Omega$	0 - 10 V	Indeterminate
24 V	0 ... 10 mA	$R \leq 1500 \Omega$	0 - 10 V	$R = 1000 \Omega$

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

4 to 20 mA

XS9F11

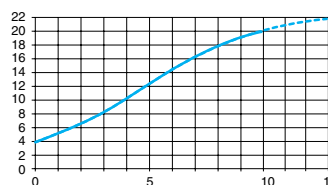
Sn = 1 ... 5 mm



Distance in mm.

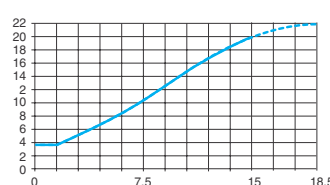
XS9E

Sn = 1 ... 10 mm



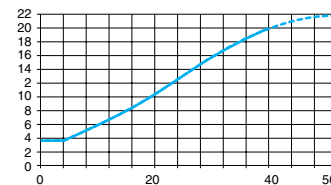
XS9C

Sn = 2 ... 15 mm



XS9D

Sn = 5 ... 40 mm



Output Current		Resistance
12 V	4 ... 20 mA	$R \leq 82 \Omega$
24 V	4 ... 20 mA	$R \leq 560 \Omega$

Note: Ensure a minimum of 10 V between the (+) positive 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

OSICONCEPT™ 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.
 2. 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 $1000 - 1000 \times 0.3 = 700$ rotations/min.
Thresholds of -20%, -11% and -6% can be obtained by pressing the self-teaching button.

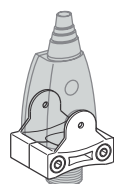
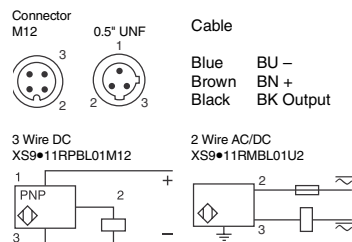
Nominal Sensing Distance	Circuit Type	Threshold Range (Pulse/Min.)	Voltage Range	Load Current Maximum	Maximum Frequency (Pulse/Min.)	Start-up Delay	Catalog Number
Size E (13x26x26 mm) M12 pigtail, 0.1 m							
10 mm	PNP	6-6000	12-24 Vdc	100 mA	48000	9 sec.	XS9E11RPB1L01M12
Size E (13x26x26 mm) U20 pigtail, 0.1 m							
10 mm	2 wire	6-6000	24-240 Vac/ 24-210 Vdc	5...100 mA	48000	9 sec.	XS9E11RMB3L01U20
Size C (15x40x40 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	5...200 mA AC 5...300 mA DC	48000	9 sec.	XS9C11RMB3L01U20

OSICONCEPT™ Proximity Sensors

XS9 Application Specific Inductive Sensor

Flat Rectangular Motion Detection, DC and AC/DC

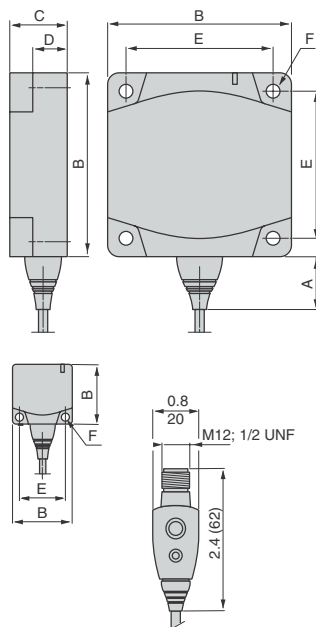
Wiring



XSZBPM12

Dimensions

XS9 E/C



	A	B	C	D		
E	0.55 (14)	1.0 (26)	0.5 (13)	0.3 (8.8)	0.8 (20)	0.1 (3.5)
C	0.55 (14)	1.6 (40)	0.6 (15)	0.4 (9.8)	1.3 (33)	0.1 (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

Specifications

Mechanical		
Usable Sensing Range	XS9E	0 – 8 mm
	XS9C	0 – 12 mm
Temperature Range	Storage	-40 ° to +185 ° F (-40 ° to +85 ° C)
	Operation	-13 ° to +158 ° F (-25 ° to +70 ° C)
Enclosure Rating	NEMA Type	1, 4X, 12
	IEC Type	IP67
Vibration	25 g, amplitude +/-2 mm (f=10 to 55 Hz)	
Shock Resistance	50 g, duration 11 ms	
LED Indicator	Output	Yellow
	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) Current-open state	1.5 mA	–
Current consumption	–	10 mA
	XS9E	100 mA
Load Current Maximum	XS9C	200 mA
	–	5...100 mA
Max. Frequency (Pulse/Min.)	48000	
Start up delay (max.)	XS9E	9 seconds + 1/Fr ★
	XS9C	9 seconds + 1/Fr ★
Protection Circuitry	Overload Protection	– Yes
	Short Circuit Protection	– Yes
Agency Listings		

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

Accessories

Description	Catalog Number
Teach connector mounting bracket	XSZBPM12

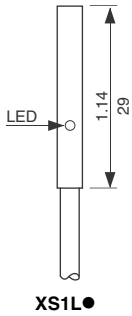
Minimum Mounting Clearances (mm)

	Side by Side	Face to Face
XS9E	e ≥ 1.6 (40)	e ≥ 3.1 (80)
XS9C	e ≥ 2.4 (60)	e ≥ 4.7 (120)

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
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Nickel plated brass case

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, connector - 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 steel case

Shielded, 2 m (6.6') cable

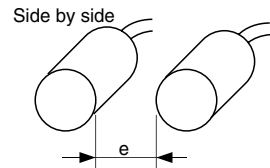
0.8 mm	PNP	5-24 V	N.O.	5000 Hz	—	XS1L04PA311
0.8 mm	NPN	5-24 V	N.O.	5000 Hz	—	XS1L04NA311

Shielded, connector - 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

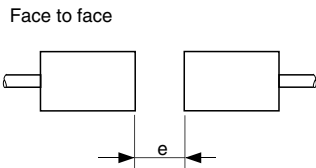
★ To order a normally closed (N.C.) version, change the **A** to **B**, example: XS1L04PA310 to XS1L04PB310.

Minimum Mounting Clearances (mm/inches)

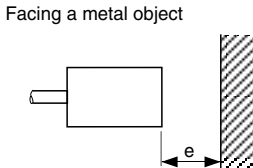


XS1 Shielded

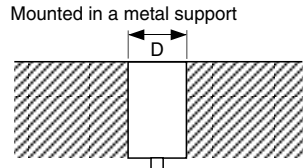
e: 2/.08



e: 12/.47



e: 3/.12



D: 4/.16

Wiring

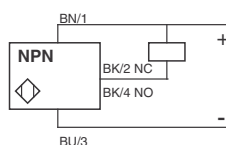
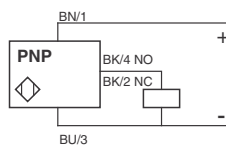
Connector M8



Cable

Blue BU –
Brown BN +
Black BK Output

3 wire NO or NC
wire color/connector pin



Specifications

Mechanical		
Usable sensing range	Shielded Brass case	0 to 0.8 mm
	Stainless Steel Case	0 to 0.64 mm
Standard temperature range	-25° C to +70° C (-13° F to +158° F)	
Enclosure rating - cable (for connector, see p. 518)	NEMA Type	3, 4X, 6P, 12, 13
	CENELEC Type	IP67
Enclosure material	Brass case	Nickel plated Brass
	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 ²), 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	
Protective circuitry	Short circuit protection	Yes
	Overload	Yes
	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	 E164869 CCN NRKH	 CR 44087 Class 3211 03
		

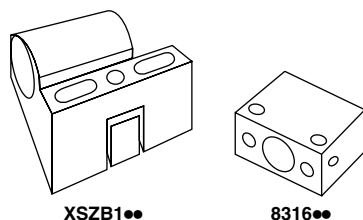
Options

Description	Suffix	
Extended temperature range (cable type only)	Down to -40° C (-40° F)	TF
Extended cable length	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.



Connector Cables (M8 or S suffix)

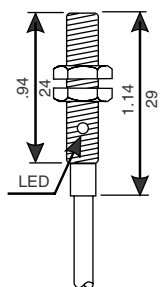
XSZCS101	Nano Conn., 3 pin, 2 m, straight
XSZCS111	Nano Conn., 3 pin, 2 m, 90°

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

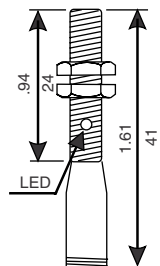
Proximity Sensors

XS Tubular, Inductive Sensors

5 mm Diameter, DC; Economy Short Length



thread
M5x0.5



Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

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
- Metal mounting nuts included, die cast zinc
- 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 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

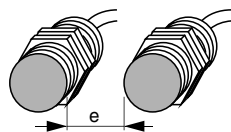
Shielded, connector - nano style

0.8 mm	PNP	5-24 V	N.O.	5000 Hz	1 thru 8	XS1N05PA311S
0.8 mm	NPN	5-24 V	N.O.	5000 Hz	1 thru 8	XS1N05NA311S

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

Minimum Mounting Clearances (mm/inches)

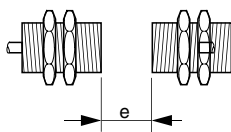
Side by side



XS1 Shielded

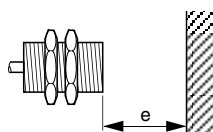
e: 2/.08

Face to face



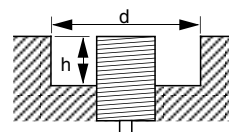
e: 12/.47

Facing a metal object



e: 3/.12

Mounting in a metal support

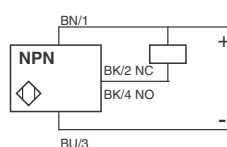
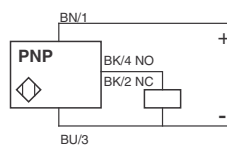


D: 5/.20

Wiring



3 wire NO or NC
wire color/connector pin



Specifications

Mechanical		
Usable sensing range	Shielded Brass case	0 to 0.8 mm
	Stainless steel case	0 to 0.64 mm
Standard temperature range		-25° C to +70° C (-13° F to +158° F)
Enclosure rating - cable (for connector, see p. 518)	NEMA Type	3, 4X, 6P, 12, 13
	IEC Type	IP67
Enclosure material	Brass case	Nickel plated Brass
	Stainless steel case	Stainless steel
	Sensing face	PBT
Max. tightening torque	Brass	1.6 N•m (1.2 lb-ft)
	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 ²), 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
Protective Circuitry	Short circuit protection	Yes
	Overload	Yes
	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	 E164869 CCN NRKH  CR 44087 Class 3211 03	

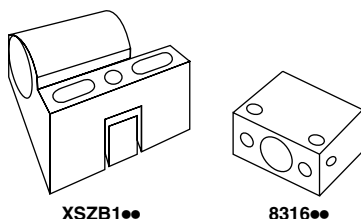
Options

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



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
Accessories..... page 298

Proximity Sensors

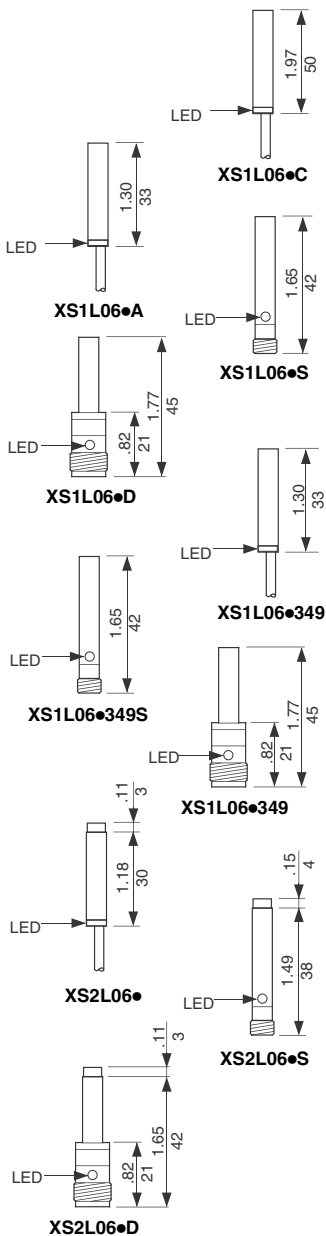
XS Tubular, Inductive Sensors

6.5 mm Diameter, DC; Economy, Short Length, Smooth Barrel



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



Dual Dimensions inches
mm

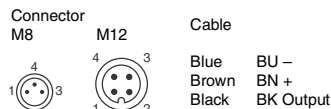
Nominal Sensing Distance	Circuit Type	Voltage Range	Output Mode	Operating Frequency	Indicator LED (see next page)	Mating Connector (see p. 518)	Catalog Number
Stainless steel case							
Shielded, 2 m (6.6') cable							
1.5 mm	PNP	12-24 V	N.O. ★	5000 Hz	A	—	XS1L06PA340
1.5 mm	NPN	12-24 V	N.O. ★	5000 Hz	A	—	XS1L06NA340
1.5 mm	PNP	12-24 V	N.O.+N.C.	5000 Hz	A	—	XS1L06PC410
1.5 mm	NPN	12-24 V	N.O.+N.C.	5000 Hz	A	—	XS1L06NC410
Shielded, connector - nano style							
1.5 mm	PNP	12-24 V	N.O. ★	5000 Hz	B	1 thru 8	XS1L06PA340S
1.5 mm	NPN	12-24 V	N.O. ★	5000 Hz	B	1 thru 8	XS1L06NA340S
Shielded, connector - micro style							
1.5 mm	PNP	12-24 V	N.O.	5000 Hz	B	11,12,13,15,16	XS1L06PA340D
1.5 mm	NPN	12-24 V	N.O.	5000 Hz	B	11,12,14,15,16	XS1L06NA340D
Nickel plated brass case							
Shielded◆, EXTENDED RANGE 2m (6.6') cable							
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	—	XS1L06NA349
Shielded◆, EXTENDED RANGE connector - nano style							
2.5 mm	PNP	12-24 V	N.O.	2500 Hz	B	1 thru 8	XS1L06PA349S
2.5 mm	NPN	12-24 V	N.O.	2500 Hz	B	1 thru 8	XS1L06NA349S
Shielded◆, EXTENDED RANGE connector - micro style							
2.5 mm	PNP	12-24 V	N.O.	2500 Hz	B	11,12,13,15,16	XS1L06PA349D
2.5 mm	NPN	12-24 V	N.O.	2500 Hz	B	11,12,14,15,16	XS1L06NA349D
Stainless steel case							
Non-shielded, 2 m (6.6') cable							
2.5 mm	PNP	12-24 V	N.O.	5000 Hz	A	—	XS2L06PA340
2.5 mm	NPN	12-24 V	N.O.	5000 Hz	A	—	XS2L06NA340
Non-shielded, connector - nano style							
2.5 mm	PNP	12-24 V	N.O.	5000 Hz	B	1 thru 8	XS2L06PA340S
2.5 mm	NPN	12-24 V	N.O.	5000 Hz	B	1 thru 8	XS2L06NA340S
Non-shielded, connector - micro style DC							
2.5 mm	PNP	12-24 V	N.O.	5000 Hz	B	11,12,13,15,16	XS2L06PA340D
2.5 mm	NPN	12-24 V	N.O.	5000 Hz	B	11,12,14,15,16	XS2L06NA340D
2.5 mm	PNP	12-24 V	N.O.+N.C.	5000 Hz	B	11,12,13,15,16	XS2L06PC410D
2.5 mm	NPN	12-24 V	N.O.+N.C.	5000 Hz	B	11,12,14,15,16	XS2L06NC410D

- ★ To order a normally closed (N.C.) version, change **A** to **B**, example; XS1L06PA340 to XS1L06PB340.
◆ See dimension x below.

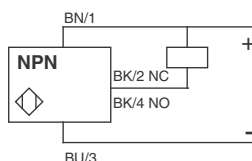
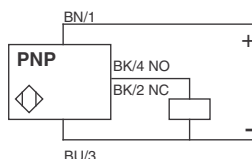
Minimum Mounting Clearances (mm/inches)

	Side to side	Face to face	Facing a metal object	Mounted in a metal support	Mounted in a metal support
XS1 Shielded	e: 3/12	e: 18/71	e: 4.5/17	D: 19.5/77, H: 5/20	
XS1 Extended range	e: 5/20	e: 30/1.18	e: 7.5/30		
XS2 Non-shielded	e: 10/39	e: 30/1.18	e: 7.5/30		
				D: 6.5/26; x: 0/0 D: 10/39; x: 1.6 /06	

Wiring

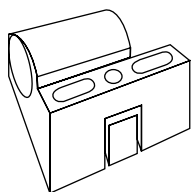
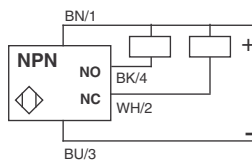
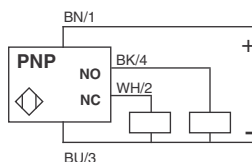


3 wire NO or NC
wire color/ connector pin

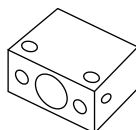


M8 connector, N.O. and N.C. to pin 4.

4 wire NO + NC



XSZB100



831600

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

Specifications

Mechanical			
Usable sensing range	Shielded	Standard Range	0 to 1.2 mm
		Extended Range	0 to 2 mm
	Non-shielded		0 to 2 mm
Standard temperature range		Standard Range	-25° C to +70° C (-13° F to +158° F)
		Extended Range	-25° C to 50° C (13° F to 122° F)
Enclosure rating - cable (for connector see p. 518)	NEMA Type	3, 4X, 6P, 12, 13	
	IEC Type	IP67	
Enclosure material	Case	Nickel plated Brass	
	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%	
LED indicator type	A	360° ring LED: Shows output status	
	B	One LED visible from 4 quadrants: Shows output status	
Cable	3 wire	27 AWG (0.11mm ²), PvR	
	4 wire (N.O. + N.C.)	28 AWG (0.08mm ²), 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	
On delay (max.)		Standard Range	0.1 ms
		Extended Range	.2 ms
Off delay (max.)		Standard Range	0.1 ms
		Extended Range	.2 ms
Power-up delay (max.)		5 ms	
Protective circuitry	Short circuit protection	Yes	
	Overload	Yes	
	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	 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
Extended cable length	16.4 ft. (5 meter) cable	L1
	32.8 ft. (10 meter) cable	L2

Accessories

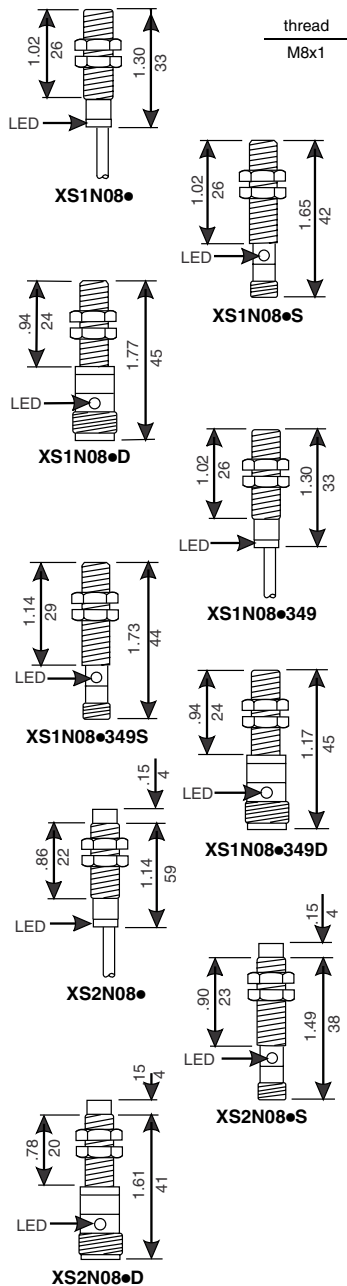
Description	Catalog Number
Mounting bracket, plastic	XSZB165
Mounting bracket, diecast zinc	831606

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

Proximity Sensors

XS Tubular, Inductive Sensors

8 mm Diameter, DC; Economy Short Length



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

Nominal Sensing Distance	Circuit Type	Voltage Range	Output Mode	Operating Frequency	Indicator LED (see next page)	Mating Connector Style (See p. 518)	Catalog Number
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	—	XS1N08NA340
Shielded, connector - nano style							
1.5 mm	PNP	12-24 V	N.O. *	5000 Hz	B	1 thru 8	XS1N08PA340S
1.5 mm	NPN	12-24 V	N.O. *	5000 Hz	B	1 thru 8	XS1N08NA340S
Shielded, connector - micro style							
1.5 mm	PNP	12-24 V	N.O. *	5000 Hz	B	11,12,13,15,16	XS1N08PA340D
1.5 mm	NPN	12-24 V	N.O. *	5000 Hz	B	11,12,14,15,16	XS1N08NA340D
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	—	XS1N08NA349
Shielded, ♦ EXTENDED RANGE connector - nano style							
2.5 mm	PNP	12-24 V	N.O. *	2500 Hz	B	1 thru 8	XS1N08PA349S
2.5 mm	NPN	12-24 V	N.O. *	2500 Hz	B	1 thru 8	XS1N08NA349S
Shielded, ♦ EXTENDED RANGE connector - micro style DC							
2.5 mm	PNP	12-24 V	N.O. *	2500 Hz	B	11,12,13,15,16	XS1N08PA349D
2.5 mm	NPN	12-24 V	N.O. *	2500 Hz	B	11,12,14,15,16	XS1N08NA349D
Non-shielded, 2 m (6.6') cable							
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	XS2N08PA340S
2.5 mm	NPN	12-24 V	N.O.	5000 Hz	B	1 thru 8	XS2N08NA340S
Non-shielded, connector - micro style							
2.5 mm	PNP	12-24 V	N.O.	5000 Hz	B	11,12,13,15,16	XS2N08PA340D
2.5 mm	NPN	12-24 V	N.O.	5000 Hz	B	11,12,14,15,16	XS2N08NA340D

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

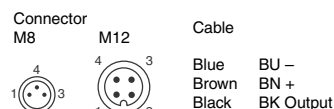
♦ See dimension x below.

Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

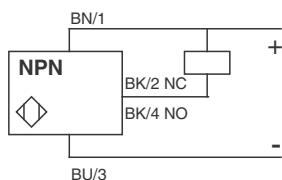
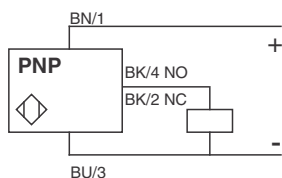
Minimum Mounting Clearances (mm/inches)

	Side by side	Face to face	Facing a metal object	Mounting in a metal support	Mounted in a metal support
XS1 Shielded	e: 3/12	e: 18/71	e: 4.5/18	D: 8/31, H: 0	x: 0/0
XS1 Extended range	e: 5/20	e: 30/1.18	e: 7.5/30	D: 10/39, H: 1.6/06	D: 8/31, x: 1.6/06
XS2 Non-shielded	e: 10/39	e: 30/1.18	e: 7.5/30	D: 24/94, H: 5/20	

Wiring



3 wire NO or NC
wire color/ connector pin



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

Specifications

Mechanical			
Usable sensing range	Shielded	Standard Range	0 to 1.2 mm
		Extended Range	0 to 2 mm
	Non-shielded		0 to 2 mm
Standard temperature range		Standard Range	-25° C to +70° C (-13° F to +158° F)
		Extended Range	-25° C to 50° C (-13° F to 122° F)
Enclosure rating - cable (see page 518)	NEMA Type		3, 4X, 6P, 12, 13
	IEC Type		IP67
Enclosure material	Case		Nickel plated Brass
	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		360° ring LED: Shows output status
	B		One LED visible from 4 quadrants: Shows output status
Cable	3 wire		27 AWG (0.11mm ²), 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 load)			10 mA
On delay (max.)		Standard Range	0.1 ms
		Extended Range	.2 ms
Off delay (max.)		Standard Range	0.1 ms
		Extended Range	.2 ms
Power-up delay (max.)		Standard/Extended Range	5 ms
Protective circuitry	Short circuit protection		Yes
	Overload		Yes
	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 Extended Range: IEC 61000-4-4 L3
	Reverse polarity protection		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
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	XSZE108
Mounting bracket, plastic	XSZB108
Mounting bracket, diecast zinc	8316 08

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

Connector Cables

(M8 or S suffix; M12 or D suffix)

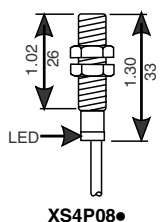
XSZCS101	Nano Conn., 3 pin, 2 m, straight
XSZCS111	Nano Conn., 3 pin, 2 m, 90°
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°

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

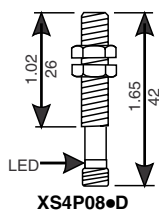
Proximity Sensors

XS Tubular, Inductive Sensors

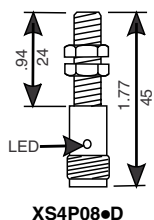
8 mm Diameter, DC; Economy Short Length, Non-corrosive



XS4P08•



XS4P08•D



XS4P08•D

Features

- 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-shielded, 2 m (6.6') cable							
2.5 mm	PNP	12-24 V	N.O. ★	5000 Hz	A	—	XS4P08PA340
2.5 mm	NPN	12-24 V	N.O. ★	5000 Hz	A	—	XS4P08NA340
Non-shielded, connector - nano style							
2.5 mm	PNP	12-24 V	N.O.	5000 Hz	A	1 thru 8	XS4P08PA340S
2.5 mm	NPN	12-24 V	N.O.	5000 Hz	A	1 thru 8	XS4P08NA340S
Non-shielded, connector - micro style							
2.5 mm	PNP	12-24 V	N.O.	5000 Hz	B	11,12,13,15,16	XS4P08PA340D
2.5 mm	NPN	12-24 V	N.O.	5000 Hz	B	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)

Side by side	Face to face	Facing a metal object	Mounting in a metal support
XS4 Non-shielded e: 10/.39	e: 30/1.18	e: 7.5/.30	D: 24/.94, H: 5/.20

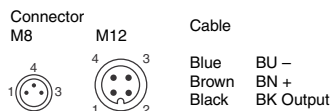
Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

Proximity Sensors

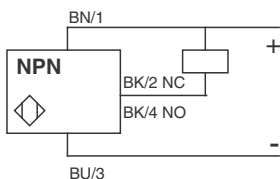
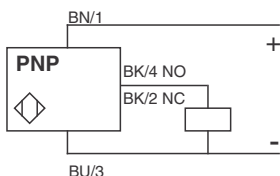
XS Tubular, Inductive Sensors

8 mm Diameter, DC; Economy Short Length, Non-corrosive

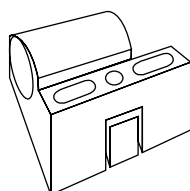
Wiring



3 wire NO or NC
wire color/ connector pin



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



XSZB100

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 (for connector, see page 518)	NEMA Type	3, 4X, 6P, 12, 13
	IEC Type	IP67
Enclosure material	Case	PBT
	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%
LED indicator type	A	360° ring LED: Shows output status
	B	One LED visible from 4 quadrants: Shows output status
Cable	3 wire	27 AWG (0.11mm ²), 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
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
Protective circuitry	Short circuit protection	Yes
	Overload	Yes
	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	UL E164869 CCN NRKH	CSA CR 44087 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
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)

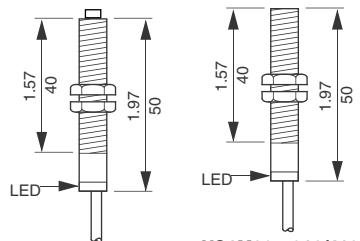
XSZCS101	Nano Conn., 3 pin, 2 m, straight
XSZCS111	Nano Conn., 3 pin, 2 m, 90°
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°

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

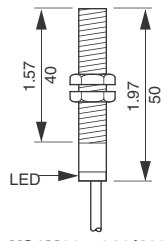
Proximity Sensors

XS Tubular, Inductive Sensors

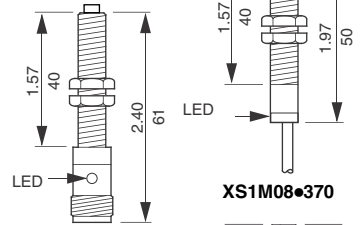
8 mm Diameter, DC; Universal Standard Length



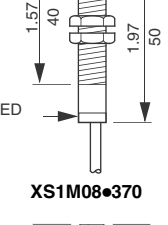
XS2M08PC410
XS2M08NC410



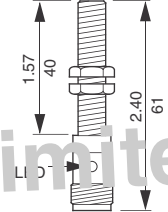
XS1M08DA210/410



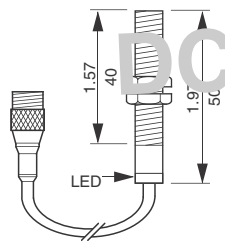
XS2M08PC410D
XS2M08NC410D



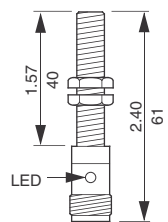
XS1M08DA370



XS1M08DA210D/410D



XSM08DA210LD



XS1M08DA370D

Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

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
- Worry-free replacement: standard length, extended temperature and supply voltage range, improved enclosure rating
- 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	Output Mode ★	Voltage Range	Max. Load	Operating Frequency	Indicator LED ①	Mating Connector Style (see p. 518)	Catalog Number
--------------------------	--------------	---------------	---------------	-----------	---------------------	-----------------	-------------------------------------	----------------

Stainless steel case

Shielded, 2m (6.6') cable

1.5 mm	2-wire	N.O. ★	12-24 V	1-100 mA	4000 Hz	A	–	XS1M08DA210
1.5 mm	2-wire	N.C. ★	12-24 V	1-100 mA	4000 Hz	A	–	XS1M08PA370
1.5 mm	PNP	N.O. ★	12-48 V	200 mA	5000 Hz	A	–	XS1M08NA370
1.5 mm	PNP	N.O.	12-48 V	200 mA	5000 Hz	A	–	XS1M08PA371③

Shielded, connector - micro style

1.5 mm	2-wire	N.O. ★	12-48 V	1.5-100 mA	4000 Hz	B	11,12,15,16	XS1M08DA210D
1.5 mm	2-wire	N.O. ★	12-48 V	1.5-100 mA	4000 Hz	A	11,12,15,16	XS1M08DA210LD②
1.5 mm	PNP	N.O. ★	12-48 V	200 mA	5000 Hz	A	11,12,15,16	XS1M08PA370D
1.5 mm	PNP	N.O. ★	12-48 V	200 mA	5000 Hz	A	11,12,15,16	XS1M08NA370D
1.5 mm	2-wire	N.C. ★	12-48 V	1.5-100 mA	4000 Hz	A	11,12,15,16	XS1M08DA214LD②

Plastic case

Non-shielded, 2m (6.6') cable

2.5 mm	PNP	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	–	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	–	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	–	XS1M08PC410
1.5 mm	NPN	N.O.+N.C.	12-24 V	200 mA	5000 Hz	A	–	XS1M08NC410

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
1.5 mm	NPN	N.O.+N.C.	12-24 V	200 mA	5000 Hz	B	11,12,15,16	XS1M08NC410D

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	NPN	N.O.+N.C.	12-24 V	200 mA	5000 Hz	A	–	XS2M08NC410

Non-shielded, connector - micro style

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	XS2M08NC410D

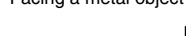
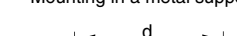
① See next page under specifications for LED function.

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

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)

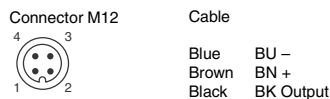
Side by side	Face to face	Facing a metal object	Mounting in a metal support
			
XS1Shielded XS2/XS4 Non-shielded	e:3/11 e:10/39	e:18/71 e:30/1.18	e:4.5/18 e:7.5/30
			D:8/31, H:0/0 D:24/94, H:5/20

Proximity Sensors

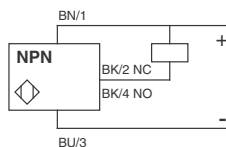
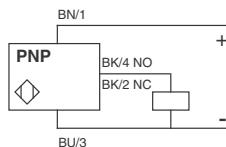
XS Tubular, Inductive Sensors

8 mm Diameter, DC; Universal Standard Length

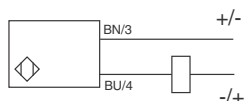
Wiring



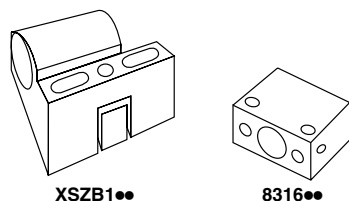
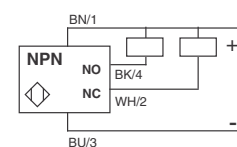
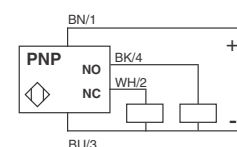
3 wire NO or NC
wire color/connector pin



2 wire, non-polarized



4 wire NO + NC



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, 317

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 (for connector, see page 518)	NEMA Type	3, 4X, 6P, 12, 13
	IEC Type	IP67
Enclosure material	Stainless Steel case	stainless steel
	Nickel plated Brass	Case: Nickel plated Brass Sensing face: PBT
	Plastic	PBT
Max. tightening torque	Stainless Steel	9 N•m (6.7 lb-ft)
	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 indicator type	A	360° ring LED: Shows output status
	B	One LED visible from 4 quadrants: Shows output status
Cable	2 or 3 wire	27AWG (0.11 mm ²), 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 switch), closed state	2 wire	4 V
	3 wire	2 V
Maximum load current	2 wire	1.5-100 mA
	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
On delay (max.)	2 wire	0.2 ms
	3 wire	0.1 ms
Off delay (max.)	2 wire	0.2 ms
	3 wire	0.1 ms
Power-up delay (max.)	2 wire	5 ms
	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	UL E164869 CCN NRKH	CSA CR 44087 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

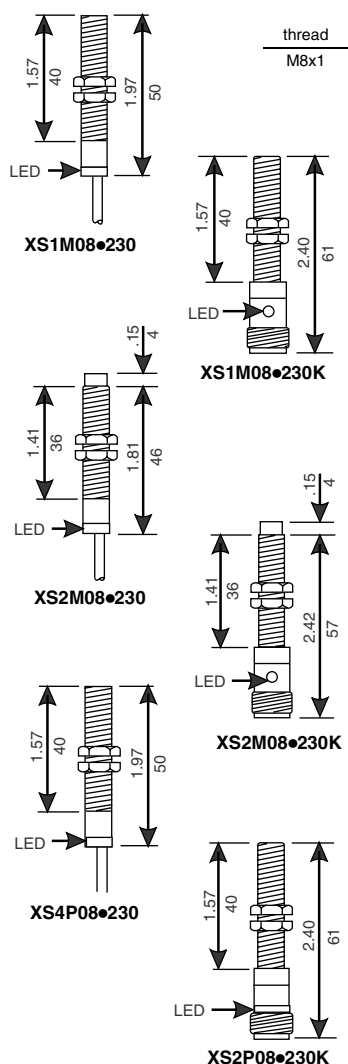
Description	Catalog Number
Plastic mounting nuts	XSZE208
Metal mounting nuts and lock washers	XSZE108
Mounting bracket, plastic	XSZB108
Mounting bracket, diecast zinc	8316 08
Stainless steel mounting nuts	XSZE208
Stainless steel lock washers	XSZE908

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

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.
- 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

Nominal Sensing Distance	Output Mode	Voltage Range		Operating Frequency		Indicator LED (see next page)	Mating Connector Style (see p. 518)	Catalog Number
		AC	DC	AC	DC			
Nickel plated brass case								
Shielded, 2m (6.6') cable								
1.5 mm	N.O. ★	24-240 V	24-210 V	25 Hz	4000 Hz	A	—	XS1M08MA230
Shielded, connector - micro style AC								
1.5 mm	N.O. ★	24-240 V	24-210 V	25 Hz	4000 Hz	B	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	B	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

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

Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

Minimum Mounting Clearances (mm/inches)

Side by side	Face to face	Facing a metal object	Mounting in a metal support
XS1 Shielded XS2/XS4 Non-shielded			
e:3/12 e:10/39	e:18/71 e:30/1.18	e:4.5/18 e:7.5/30	D:8/31, H:0/0 D:24/94, H:5/20

Proximity Sensors

XS Tubular, Inductive Sensors

8 mm Diameter, AC/DC; Universal Standard Length

Wiring

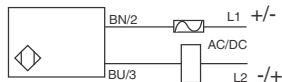
Connector 0.5" 20-UNF



Cable

Blue BU -
Brown BN +
Black BK Output

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



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 (for connector, see page 518)	NEMA Type	3, 4X, 6P, 12, 13
	IEC Type	IP67
Enclosure material	Nickel plated brass	Case: Nickel plated Brass Sensing face: PBT
	Plastic	PBT
Tightening torque (max.)	Nickel plated brass	9 N•m (79.6 lb-ft)
	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%
LED indicator type	A	360° ring LED: Shows output status
	B	One LED visible from 4 quadrants: Shows output status
Cable	2 wire	27 AWG (0.11 mm ²), 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 ≤ Vdc ≤ 58 IEC 60947-5-2 Utilization category DC-13 Vdc > 58 IEC 60947-5-2 Utilization category DC-12
Residual (leakage) current, open state	24 Vac/Vdc	0.8 mA
	120 Vac/Vdc	1.5 mA
On delay (max.)		.2 ms
Off delay (max.)		.2 ms
Power-up delay (max.)		40 ms
Protective circuitry	Short circuit protection	No★
	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	UL E164869 CCN NRKH	CSA CR 44087 Class 3211 03
	CE	

Options

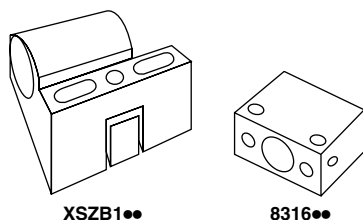
Description	Suffix	
Extended temperature range (cable type only)	Down to -40° C (-40° F)	TF
Extended cable length	16.4 ft. (5 meter) cable	L1
	32.8 ft. (10 meter) cable	L2

Accessories

Description	Catalog Number
Plastic mounting nuts	XSZE208
Metal mounting lock nuts	XSZE108
Mounting bracket, plastic	XSZB108
Mounting bracket, diecast zinc	831608

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

★ See p. 298 for protective fuses.



Connector Cables (U20 or K suffix)

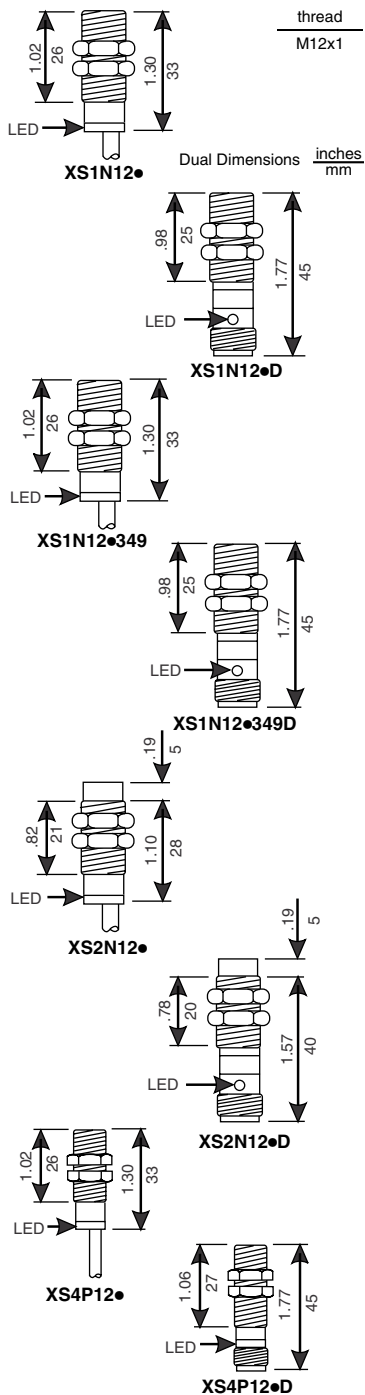
XSZCK101Y	Micro Conn., 3 pin, 2 m, straight
XSZCK111Y	Micro Conn., 3 pin, 2 m, 90°

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

Proximity Sensors

XS Tubular, Inductive Sensors

12 mm Diameter, DC; Economy Short Length



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 lock nuts 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	Operating Frequency	Indicator LED (see next page)	Mating Connector Style (see p. 518)	Catalog Number
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Nickel plated brass case

Shielded, 2 m (6.6') cable

2 mm	PNP	12-24 V	N.O. ★	5000 Hz	A	—	XS1N12PA340
2 mm	NPN	12-24 V	N.O. ★	5000 Hz	A	—	XS1N12NA340
2 mm	PNP	12-24 V	N.O. + N.C.	5000 Hz	A	—	XS1N12PC410
2 mm	NPN	12-24 V	N.O. + N.C.	5000 Hz	A	—	XS1N12NC410

Shielded, connector - micro style

2 mm	PNP	12-24 V	N.O.	5000 Hz	B	11,12,13,15,16	XS1N12PA340D
2 mm	NPN	12-24 V	N.O.	5000 Hz	B	11,12,14,15,16	XS1N12NA340D
2 mm	PNP	12-24 V	N.O. + N.C.	5000 Hz	B	11,12,13,15,16	XS1N12PC410D
2 mm	NPN	12-24 V	N.O. + N.C.	5000 Hz	B	11,12,14,15,16	XS1N12NC410D

Shielded, EXTENDED RANGE 2 m (6.6') cable

4 mm	PNP	12-24 V	N.O. ★	2500 Hz	A	—	XS1N12PA349
4 mm	NPN	12-24 V	N.O. ★	2500 Hz	A	—	XS1N12NA349

Shielded, EXTENDED RANGE connector - micro style DC

4 mm	PNP	12-24 V	N.O. ★	2500 Hz	B	11,12,13,15,16	XS1N12PA349D
4 mm	NPN	12-24 V	N.O. ★	2500 Hz	B	11,12,14,15,16	XS1N12NA349D

Non-shielded, 2 m (6.6') cable

4 mm	PNP	12-24 V	N.O.	5000 Hz	A	—	XS2N12PA340
4 mm	NPN	12-24 V	N.O.	5000 Hz	A	—	XS2N12NA340
4 mm	PNP	12-24 V	N.O. + N.C.	5000 Hz	A	—	XS2N12PC410
4 mm	NPN	12-24 V	N.O. + N.C.	5000 Hz	A	—	XS2N12NC410

Non-shielded, connector - micro style DC

4 mm	PNP	12-24 V	N.O. ★	5000 Hz	B	11,12,13,15,16	XS2N12PA340D
4 mm	NPN	12-24 V	N.O. ★	5000 Hz	B	11,12,14,15,16	XS2N12NA340D
4 mm	PNP	12-24 V	N.O. + N.C.	5000 Hz	B	11,12,13,15,16	XS2N12PC410D
4 mm	NPN	12-24 V	N.O. + N.C.	5000 Hz	B	11,12,14,15,16	XS2N12NC410D

Plastic case

Non-shielded, 2 m (6.6') cable

4 mm	PNP	12-24 V	N.O. ★	5000 Hz	A	—	XS4P12PA340
4 mm	NPN	12-24 V	N.O. ★	5000 Hz	A	—	XS4P12NA340
4 mm	PNP	12-24 V	N.O. + N.C.	5000 Hz	A	—	XS4P12PC410
4 mm	NPN	12-24 V	N.O. + N.C.	5000 Hz	A	—	XS4P12NC410

Non-shielded, connector - micro style DC

4 mm	PNP	12-24 V	N.O. ★	5000 Hz	A	11,12,13,15,16	XS4P12PA340D
4 mm	NPN	12-24 V	N.O. ★	5000 Hz	A	11,12,14,15,16	XS4P12NA340D
4 mm	PNP	12-24 V	N.O. + N.C.	5000 Hz	A	11,12,13,15,16	XS4P12PC410D
4 mm	NPN	12-24 V	N.O. + N.C.	5000 Hz	A	11,12,14,15,16	XS4P12NC410D

◆ See X dimension below.

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

Minimum Mounting Clearances (mm/inches)

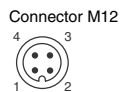
Side by side	Face to face	Facing a metal object	Mounting in a metal support	Mounted in a metal support
XS1 Shielded e: 4/16	e: 24/94	e: 6/24	D: 12/47	x: 0/0
XS1 Extended range e: 8/31	e: 48/1.89	e: 12/47	D: 12/47	D: 12/47, x: 2.4/09
XS2/XS4 Non-shielded e: 16/63	e: 48/1.89	e: 12/47	D: 36/1.42, H: 8/31	D: 12/47, x: 2.4/09

Proximity Sensors

XS Tubular, Inductive Sensors

12 mm Diameter, DC; Economy Short Length

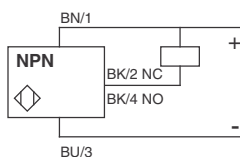
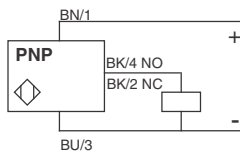
Wiring



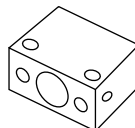
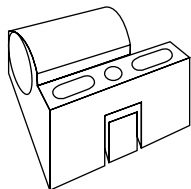
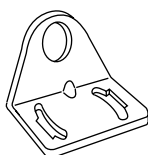
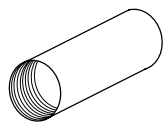
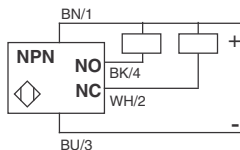
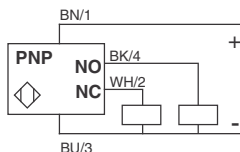
Cable

Blue BU –
Brown BN +
Black BK Output

3 wire NO or NC
wire color/connecter pin



4 wire NO + NC



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

Specifications

Mechanical			
Usable sensing range	Shielded	Standard Range	0 to 1.6 mm
	Non-shielded	Extended Range	0 to 3.2 mm
Standard temperature range	Ni plated brass		-25° C to +70° C (-13° F to +158° F)
	Plastic		-25° C to +80° C (-13° F to +176° F)
Extended range			-25° C to +50° C (-13° F to +122° F)
Enclosure rating - cable (for connector see page 518)	Nickel plated brass	NEMA Type	3, 4X, 6P, 12, 13
	Plastic case	IEC Type	IP67
Enclosure material	Nickel plated brass	NEMA Type	3, 4X, 6P, 12, 13
	Plastic case	IEC Type	IP68
Enclosure material	Nickel plated brass	Case	Nickel plated brass
	Plastic case	Sensing face	PBT
Tightening torque (max.)	Nickel plated brass		6 N•m (4.4 lb-ft)
	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
	B		One LED visible from 4 quadrants: Shows output status
Cable	3 wire		22 AWG (0.34 mm ²), PvR
	4 wire (N.O. + N.C.)		21 AWG (0.22 mm ²), PvR
Electrical			
Voltage range – nominal			12 to 24 Vdc
Voltage limit (including ripple)			10 to 38 Vdc
Voltage drop (across switch), closed state			2V
Maximum load current			200 mA
Current consumption (no load)			10 mA
On delay (max.)	Standard Range		0.1 ms
	Extended Range		0.2 ms
Off delay (max.)	Standard Range		0.1 ms
	Extended Range		0.2 ms
Power-up delay (max.)	Standard/Extended Range		5 ms
Protective circuitry	Short circuit protection		Yes
	Overload		Yes
	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	 E164869 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

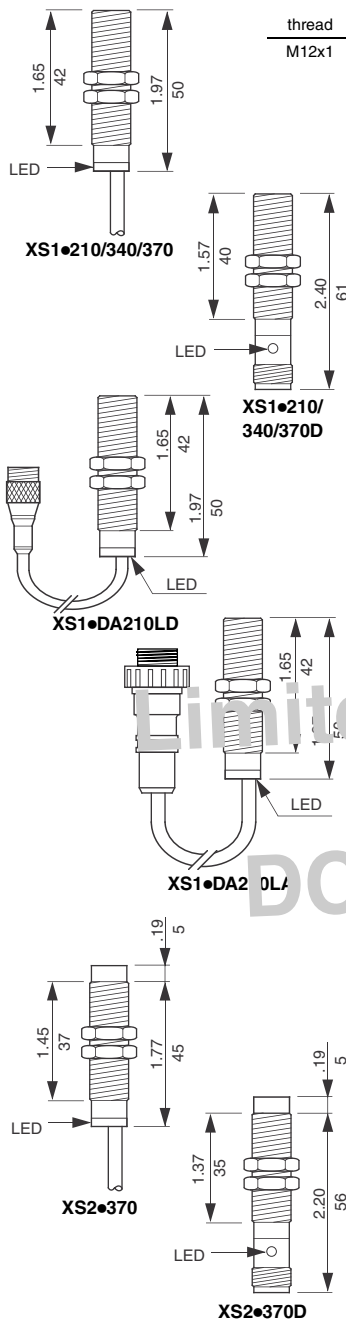
Description	Catalog Number
Plastic mounting nuts	XSZE212
Metal mounting nuts	XSZE112
Mounting bracket 90° steel	9006PA12
Mounting bracket, plastic	XSZB112
Mounting bracket, diecast zinc	831612
0.5" NPT conduit adapter length: 2" (50.8mm)	Aluminum 74281

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

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
- 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) 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
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Nickel plated brass case

Shielded, 2 m (6.6') cable

2 mm	2-wire	12-48 V	N.O. ★	1.5-100 mA	5000 Hz	A	—	XS1M12DA210
2 mm	PNP	12-48 V	N.O. ★	200 mA	5000 Hz	A	—	XS1M12PA370
2 mm	NPN	12-48 V	N.O. ★	200 mA	5000 Hz	A	—	XS1M12NA370
2 mm	PNP/NPN	12-24 V	N.O./N.C.	200 mA	5000 Hz	A	—	XS1M12KP340

Shielded, connector - micro style DC

2 mm	2-wire	12-48 V	N.O. ★	5-100 mA	4000 Hz	B	11,12,15,16	XS1M12DA210D
2 mm	PNP	12-48 V	N.O. ★	100 mA	4000 Hz	A	11,12,15,16	XS1M12PA370D
2 mm	NPN	12-48 V	N.O. ★	200 mA	5000 Hz	B	11,12,14,15,16	XS1M12NA370D
2 mm	PNP/NPN	12-24 V	N.O./N.C.	200 mA	5000 Hz	B	11,12,15,16	XS1M12KP340D

Shielded, connector - micro style DC - 0.8 m (2.6 ft) pigtail

2 mm	2-wire	12-48 V	N.O. ★	1.5-100 mA	4000 Hz	A	9,10,11,12,15,16	XS1M12DA210LD
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Shielded, connector - mini style - 0.8 m (2.6 ft) pigtail

2 mm	2-wire	12-48 V	N.O. ★	1.5-100 mA	4000 Hz	A	21,22	XS1M12DA210LA
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Non-shielded, 2 m (6.6') cable

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	12-24 V	N.O./N.C.	200 mA	5000 Hz	A	—	XS2M12KP340

Non-shielded, connector - micro style D

4 mm	PNP	12-48 V	N.O. ★	200 mA	5000 Hz	B	11,12,13,15,16	XS2M12PA370D
4 mm	NPN	12-48 V	N.O. ★	200 mA	5000 Hz	B	11,12,14,15,16	XS2M12NA370D
4 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	5000 Hz	B	11,12,15,16	XS2M12KP340D

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

① See next page under specifications for LED function.

Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

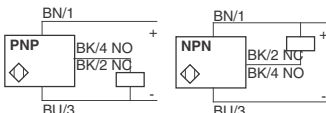
Minimum Mounting Clearances (mm/inches)

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

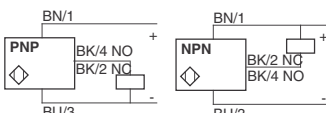
Wiring



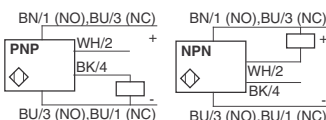
Wire color/connector pin 3 wire NO or NC



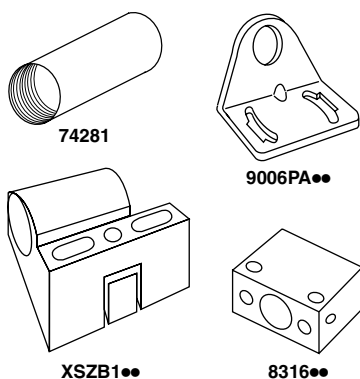
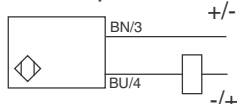
3 wire, selectable PNP/NPN, NO/NC



4 wire, programmable, NO or NC output



2 wire non-polarized



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
XSZCA111Y	Micro Conn., 3 pin, 2 m, 90°

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

Specifications

Mechanical		
Usable 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 (for connector, see p. 518)	NEMA Type	3, 4X, 6P, 12, 13
	IEC Type	IP68 – cutting oil proof
Enclosure material	Nickel plated brass	Case Sensing face
		Nickel plated Brass PBT
Tightening torque (max.)	Nickel plated brass	15 N•m (11 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
	B	One LED visible from 4 quadrants: Shows output status
Cable	2 or 3 wire	22 AWG (0.34 mm ²), PvR
Electrical		
Voltage range – nominal		Std 12 to 48 Vdc KP Models 12 to 24 Vdc
Voltage limit (including ripple)		10 to 58 Vdc 10 to 38 Vdc
Voltage drop (across switch), closed state	3 wire	2 V
	2 wire	4 V
Minimum load current	2 wire	1.5 mA
Maximum load current	2 wire	100 mA
	3 wire	200 mA
Current consumption (no load)	2 wire	–
	3 wire	10 mA
Residual (leakage) current, open state	2 wire	0.5 mA
On delay (max.)	2 wire	0.2 ms
	3 wire	0.1 ms
Off delay (max.)	2 wire	0.2 ms
	3 wire	0.1 ms
Power-up delay (max.)	2 wire	5 ms
	3 wire	5 ms
Protective circuitry	Short circuit protection	Yes
	Overload	Yes
	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 61000-4-4 L3; 60947.5.2 L3 3 wire: IEC 61000-4-2 L2; IEC 61000-4-4 L3; 60947.5.2 L3
	Reverse polarity protection	Yes
Agency Listings	UL E164869 CCN NRKH	CR 44087 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

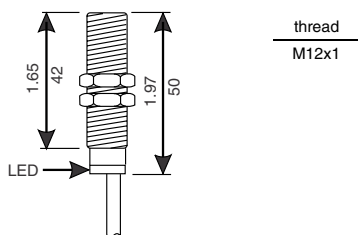
Description	Catalog Number
Plastic mounting nuts	XSZE212
Metal mounting lock nuts	XSZE112
Mounting bracket, 90° steel	9006PA12
Mounting bracket, plastic	XSZB112
Mounting bracket, diecast zinc	831612
0.5" NPT conduit adapter length 2" (50.8mm)	Aluminum 74281

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

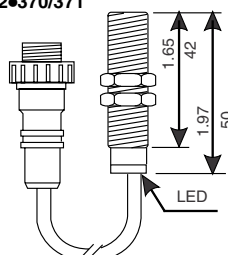
Proximity Sensors

XS Tubular, Inductive Sensors

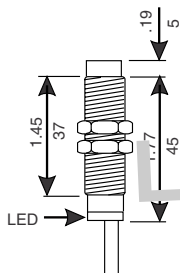
12 mm Diameter, DC; Universal Standard Length, Non-corrosive



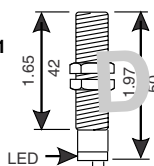
XS1M12•370/371



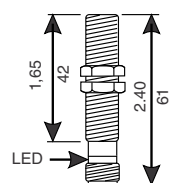
XS1M12DA211LA



XS2M12•370/371



XS1P12•370



XS4P12•370D

Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

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) 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 Sensing Distance	Circuit Type	Voltage Range	Output Mode	Max. Load	Operating Frequency	Indicator LED ①	Mating Connector Style (see p. 31)	Catalog Number
Stainless steel case								
Shielded, 2m (6.6') cable								
2 mm	2-wire	12-48 V	N.O.	1.5-100 mA	4000 Hz	A	—	XS1M12DA211
2 mm	PNP	12-48 V	N.O.	200 mA	5000 Hz	A	—	XS1M12PA371
2 mm	NPN	12-48 V	N.O.	200 mA	5000 Hz	A	—	XS1M12NA371
Shielded, connector - mini style / LC - 0.8 m (2.6 ft) pigtail								
2 mm	2-wire	12-48 V	N.O.	1.5-100 mA	4000 Hz	A	2-22	XS1M12DA211LA
Non-shielded, 2m (6.6') 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 case

Non-shielded, 2m (6.6') 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-shielded, connector - micro style DC

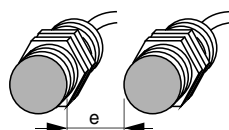
4 mm	PNP	12-48 V	N.O.★	200 mA	5000 Hz	A	11,12,13,15,16	XS4P12PA370D
4 mm	NPN	12-48 V	N.O.★	200 mA	5000 Hz	A	11,12,14,15,16	XS4P12NA370D
4 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	5000 Hz	A	11,12,15,16	XS4P12KP340D

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

① See next page under specifications for LED function.

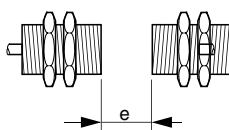
Minimum Mounting Clearances (mm/inches)

Side by side



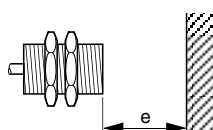
XS1 Shielded e: 4/.16
XS2/XS4 Non-shielded e: 16/.63

Face to face



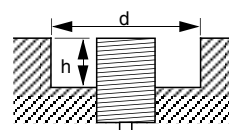
e: 24/.94
e: 48/1.89

Facing a metal object



e: 6/.24
e: 12/.47

Mounting in a metal support

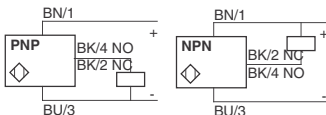


D: 12/.47, H: 0/0
D: 36/1.42, H: 8/.31

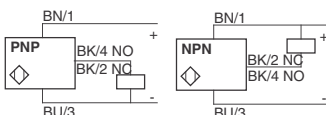
Wiring



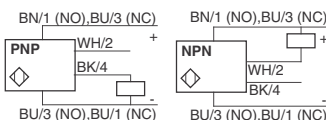
Wire color/connector pin 3 wire NO or NC



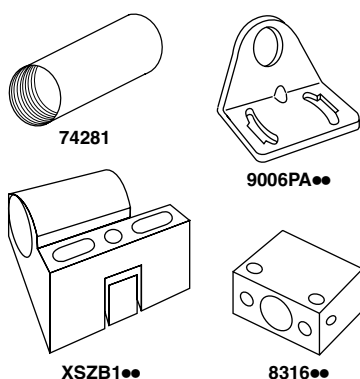
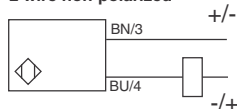
3 wire, selectable PNP/NPN, NO/NC



4 wire, programmable, NO or NC output



2 wire non-polarized



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. 518
Accessories page 298, 316

Specifications

Mechanical		
Usable 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 (for connector, see p. 518)	NEMA Type	3, 4X, 6P, 12, 13
	IEC Type	IP68
Enclosure material	Stainless steel case	#303 Stainless steel
	Sensing face	PBT
Tightening torque (max.)	Stainless steel	30 N•m (22 lb-ft)
	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 ²), PvR
Electrical		Standard
Voltage range – nominal		12 to 48 Vdc
Voltage limit (including ripple)		10 to 58 Vdc
Voltage drop (across switch), closed state	3 wire	2 V
	2 wire	4 V
Minimum load current	2 wire	1.5 mA
	3 wire	100 mA
Maximum load current	2 wire	200 mA
	3 wire	2.6V
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
Off delay (max.)	3 wire	0.1 ms
	2 wire	5 ms
Power-up delay (max.)	3 wire	5 ms
	2 wire	5 ms
Protective circuitry	Short circuit protection	Yes
	Overload	Yes
	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 61000-4-4 L3; 60947.5.2 L3 3 wire: IEC 61000-4-2 L2; IEC 61000-4-4 L3; 60947.5.2 L3
	Reverse polarity protection	Yes
Agency Listings		 E164869 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
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.

Proximity Sensors

XS Tubular, Inductive Sensors

12 mm Diameter, AC/DC; Universal Standard Length



Features

- 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 Distance	AC or AC/DC	Output Mode ★	Voltage Range		Operating Frequency		SCP	Indicator LED ①	Mating Connector Style (see p. 518)	Catalog Number
			AC	DC	AC	DC				

Nickel plated brass case

Shielded, 2 m (6.6') cable

2 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	4000 Hz	no	A	—	XS1M12MA230
2 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	4000 Hz	yes	A	—	XS1M12MA250

Shielded, connector - micro style AC

2 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	4000 Hz	no	B	17,18	XS1M12MA230K
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Non-shielded, 2 m (6.6') cable

4 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	no	A	—	XS2M12MA230
4 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	yes	A	—	XS2M12MA250

Non-shielded, connector - micro style AC

4 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	no	B	17,18	XS2M12MA230K
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Plastic case

Non-shielded, 2 m (6.6') cable

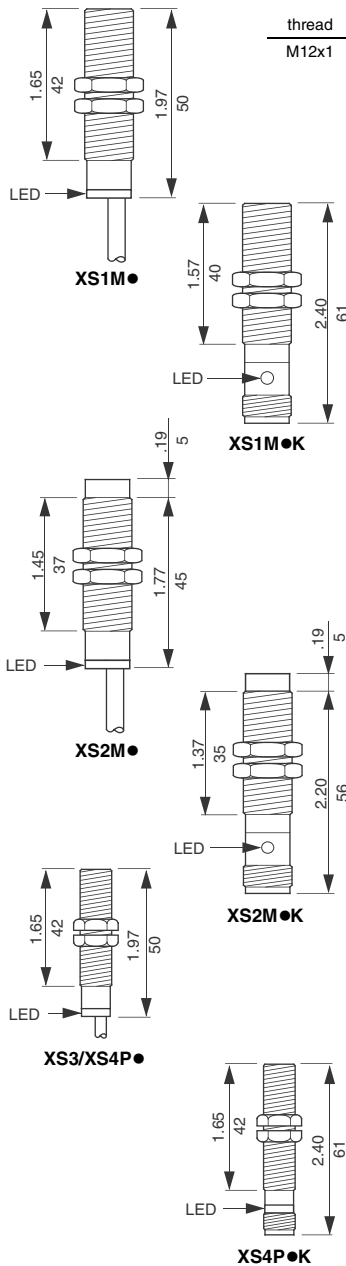
4 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	4000 Hz	no	A	—	XS4P12MA230
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Non-shielded, connector - micro style

4 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	no	A	17,18	XS4P12MA230K
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★ 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.

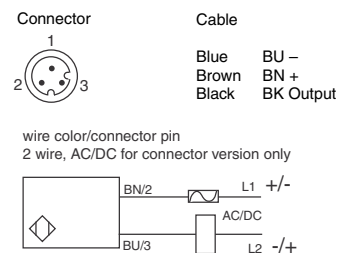


Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

Minimum Mounting Clearances (mm/inches)

Side by side	Face to face	Facing a metal object	Mounting in a metal support
XS1 Shielded XS2/XS4 Non-shielded e: 4/.16 e: 16/.63	e: 24/.94 e: 48/1.89	e: 6/.24 e: 12/.47	D: 12/.47, H: 0/0 D: 36/1.42, H: 8/.31

Wiring



Specifications

Mechanical		
Usable 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 (for connector, see p. 518)	NEMA Type	3, 4X, 6P, 12, 13
	IEC Type	IP68
Enclosure material	Nickel plated brass case	Nickel plated Brass
	Sensing face	PBT
	Plastic case	PBT
Tightening torque (max.)	Nickel plated brass	15 N•m (11 lb-ft)
	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
	B	One LED visible from 4 quadrants: Shows output status
Cable	2 wire	22 AWG (0.34 mm ²), 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		200 mA 20 ≤ Vdc ≤ 58 IEC 60947-5-2 Utilization category DC-13 Vdc > 58 IEC 60947-5-2 Utilization category DC-12
Residual (leakage) current, open state		0.6 mA
On delay (max.)		0.2 ms
Off delay (max.)		0.2 ms
Power-up delay (max.)	Without SCP	40 ms
	With SCP	70 ms
Protective circuitry		
Short circuit protection		Optional▲
Overload		Yes
Radio frequency immunity (RFI)		IEC 61000-4-3 Level 3
Electrostatic; transients; impulse (L - level number)		IEC 61000-4-2 L4; IEC 61000-4-4 L4; 60947.5.2 L3
Agency Listings		 E164869 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
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)	Aluminum 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)

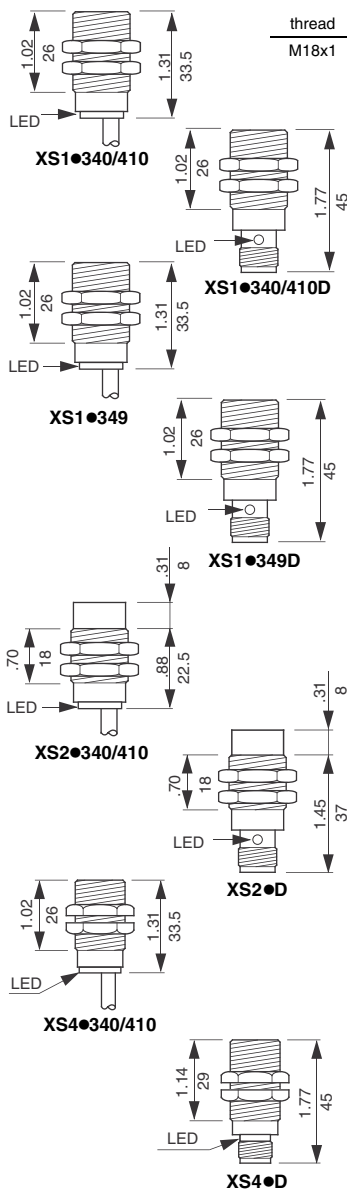
XSZCK101Y	Micro Conn., 3 pin, 2 m, straight
XSZCK111Y	Micro Conn., 3 pin, 2 m, 90°

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

Proximity Sensors

XS Tubular, Inductive Sensors

18 mm Diameter, DC; Economy Short Length



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 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	Operating Frequency	Indicator LED ①	Mating Connector Style (see p. 518)	Catalog Number
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Nickel plated brass case

Shielded, 2 m (6.6') cable

5 mm	PNP	10-38 V	N.O. ★	2000 Hz	A	—	XS1N18PA340
5 mm	NPN	10-38 V	N.O. ★	2000 Hz	A	—	XS1N18NA340
5 mm	PNP	10-38 V	N.O. + N.C.	2000 Hz	A	—	XS1N18PC410
5 mm	NPN	10-38 V	N.O. + N.C.	2000 Hz	A	—	XS1N18NC410

Shielded, connector - micro style DC

5 mm	PNP	10-38 V	N.O.	2000 Hz	B	11,12,13,15,16	XS1N18PA340D
5 mm	NPN	10-38 V	N.O.	2000 Hz	B	11,12,14,15,16	XS1N18NA340D
5 mm	PNP	10-38 V	N.O. + N.C.	2000 Hz	B	11,12,13,15,16	XS1N18PC410D
5 mm	NPN	10-38 V	N.O. + N.C.	2000 Hz	B	11,12,14,15,16	XS1N18NC410D

Shielded♦, EXTENDED RANGE, 2 m (6.6') cable

10 mm	PNP	10-38 V	N.O. ★	1000 Hz	A	—	XS1N18PA349
10 mm	NPN	10-38 V	N.O. ★	1000 Hz	A	—	XS1N18NA349

Shielded♦, EXTENDED RANGE, connector - micro style

10 mm	PNP	10-38 V	N.O. ★	1000 Hz	B	11,12,13,15,16	XS1N18PA349D
10 mm	NPN	10-38 V	N.O. ★	1000 Hz	B	11,12,14,15,16	XS1N18NA349D

Non-shielded, 2 m (6.6') cable

8 mm	PNP	10-38 V	N.O.	2000 Hz	A	—	XS2N18PA340
8 mm	NPN	10-38 V	N.O.	2000 Hz	A	—	XS2N18NA340
8 mm	PNP	10-38 V	N.O. + N.C.	2000 Hz	A	—	XS2N18PC410
8 mm	NPN	10-38 V	N.O. + N.C.	2000 Hz	A	—	XS2N18NC410

Non-shielded, connector - micro style

8 mm	PNP	10-38 V	N.O.	2000 Hz	B	11,12,13,15,16	XS2N18PA340D
8 mm	NPN	10-38 V	N.O.	2000 Hz	B	11,12,14,15,16	XS2N18NA340D
8 mm	PNP	10-38 V	N.O. + N.C.	2000 Hz	B	11,12,13,15,16	XS2N18PC410D
8 mm	NPN	10-38 V	N.O. + N.C.	2000 Hz	B	11,12,14,15,16	XS2N18NC410D

Plastic case

Non-shielded, 2 m (6.6') cable

8 mm	PNP	10-38 V	N.O. ★	2000 Hz	A	—	XS4P18PA340
8 mm	NPN	10-38 V	N.O. ★	2000 Hz	A	—	XS4P18NA340
8 mm	PNP	10-38 V	N.O. + N.C.	2000 Hz	A	—	XS4P18PC410
8 mm	NPN	10-38 V	N.O. + N.C.	2000 Hz	A	—	XS4P18NC410

Non-shielded, connector - micro style

8 mm	PNP	10-38 V	N.O. ★	2000 Hz	A	11,12,13,15,16	XS4P18PA340D
8 mm	NPN	10-38 V	N.O. ★	2000 Hz	A	11,12,14,15,16	XS4P18NA340D
8 mm	PNP	10-38 V	N.O. + N.C.	2000 Hz	A	11,12,13,15,16	XS4P18PC410D
8 mm	NPN	10-38 V	N.O. + N.C.	2000 Hz	A	11,12,14,15,16	XS4P18NC410D

★ To order a normally closed (N.C.) version change the **A** to **B**, example: XS1N18PA340 to XS1N18PB340.

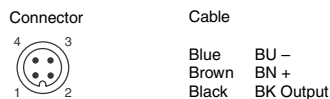
① See next page under specifications for LED function.

♦ See dimension X below.

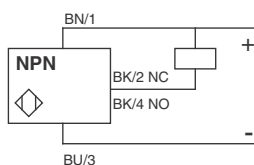
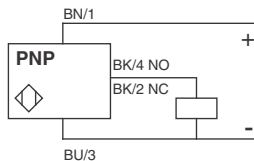
Minimum Mounting Clearances (mm/inches)

Side by side	Face to face	Facing a metal object	Mounting in a metal support	Mounted in a metal support
XS1 Shielded e: 10/.39	e: 60/2.36	e: 15/.59	D: 18/.71, H: 0/0	D: 18/.71
XS1 Extended range e: 20/.79	e: 96/3.78	e: 24/.94		x: 3.6/14
XS2/XS4 Non-shielded e: 16/.63	e: 96/3.78	e: 24/.94	D: 54/2.13, H: 16/.63	

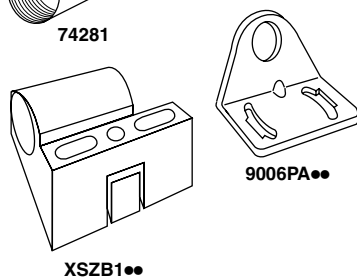
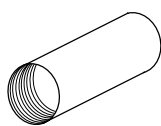
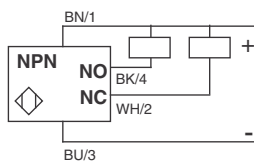
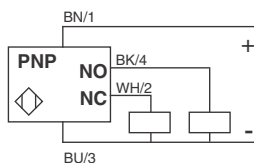
Wiring



Wire color/connector pin
3 wire NO or NC



4 wire NO + NC



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

Specifications

Mechanical			
Usable sensing range★	Shielded	Standard Range	0 to 4 mm
		Extended Range	0 to 8 mm
Standard temperature range	Non-shielded		0 to 6.4 mm
	Nickel plated brass		-25° C to +70° C (-13° F to +158° F)
Extended range	Plastic		-25° C to +80° C (-13° F to +176° F)
			-25° C to +50° C (-13° F to +122° F)
Enclosure rating - cable for connector, see p. 518	Nickel plated brass	NEMA Type	3, 4X, 6P, 12, 13
		IEC Type	IP67
	Plastic	NEMA Type	3, 4X, 6P, 12, 13
		IEC Type	IP68
Enclosure material	Nickel plated brass	Case	Nickel plated brass
		Sensing face	PBT
	Plastic	Case	PBT
		Sensing face	PBT
Tightening torque (max.)	Nickel plated brass		15 N•m (11 lb-ft)
	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
Standard target size (steel)	Shielded	Standard range	0.7" x 0.7" (18 mm x 18 mm)
		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%
LED indicator type	A		360° ring LED: Shows output status
	B		One LED visible from 4 quadrants: Shows output status
Cable	3 or 4 wire		22 AWG (0.34 mm ²), 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
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
Protective circuitry	Short circuit protection		Yes
	Overload		Yes
	Radio frequency immunity (RFI)		IEC 61000-4-3 Level 3
	Electrostatic; transients; impulse		IEC 61000-4-2 L2; IEC 61000-4-4 L3; 60947.5.2 L3 Extended range: IEC 61000-4-4 L3
Agency Listings	UL E 164869 CCN NRKH	SP 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 cable length	16.4 ft. (5 meter) cable	L1
	32.8 ft. (10 meter) cable	L2

Accessories

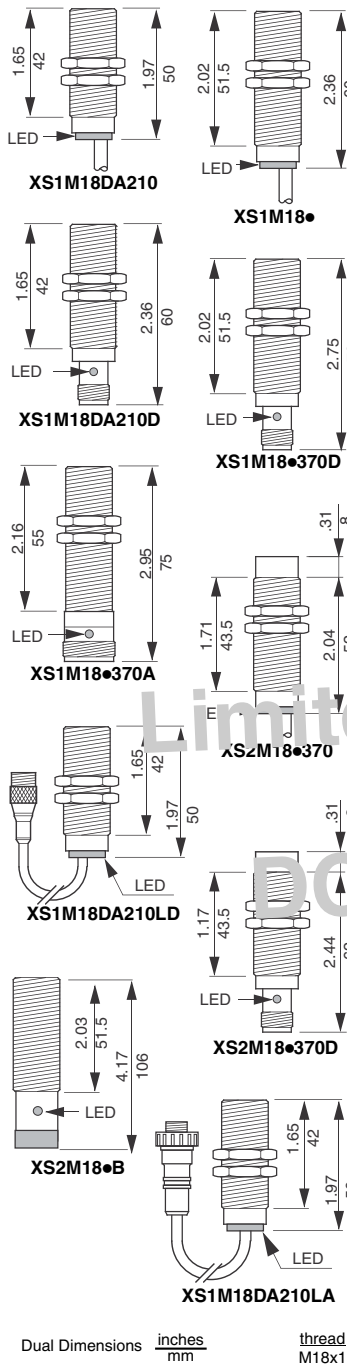
Description	Catalog Number	
Plastic mounting nuts	XSZE218	
Metal mounting nuts and lock washer	XSZE118	
Mounting bracket 90° steel	9006PA18	
Mounting bracket, plastic, long length	XSZB118	
0.5" NPT conduit adapter length 2" (50.8 mm)	Aluminum	7428
	Stainless	74282

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

Proximity Sensors

XS Tubular Inductive Sensors

18 mm Diameter, DC; Universal Standard Length



Features

- 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 LED ①	Mating Connector Style (see p. 18)	Catalog Number
Shielded, 2m (6.6') cable								
5 mm	2-wire	12-48 V	N.O. ★	1.5-100 mA	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.O. ★	200 mA	2000 Hz	A	—	XS1M18NA370
5 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	2000 Hz	A	—	XS1M18KP340
Shielded connector - micro style DC - 0.8 m (2.6 ft) pigtail								
5 mm	2-wire	12-48 V	N.O. ★	1.5-100 mA	3000 Hz	A	11,12,15,16	XS1M18DA210LD
Shielded connector - mini style DC								
5 mm	2-wire	12-48 V	N.O. ★	1.5-100 mA	3000 Hz	B	11,12,15,16	XS1M18DA210D
5 mm	PNP	12-48 V	N.O. ★	200 mA	2000 Hz	B	11,12,13,15,16	XS1M18PA370D
5 mm	NPN	12-48 V	N.O. ★	200 mA	2000 Hz	B	11,12,14,15,16	XS1M18NA370D
5 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	2000 Hz	B	11,12,15,16	XS1M18KP340D
Shielded, connector - mini style - 0.8 m (2.6 ft) pigtail								
5 mm	2-wire	12-48 V	N.O. ★	1.5-100 mA	3000 Hz	A	21,22	XS1M18DA210LA
Shielded, connector - mini style 3 PIN								
5 mm	PNP	12-48 V	N.O. ★	200 mA	2000 Hz	B	21,22	XS1M18PA370A
5 mm	NPN	12-48 V	N.O. ★	200 mA	2000 Hz	B	21,22	XS1M18NA370A
Shielded, screw terminal connection								
5 mm	2 wire	12-48 V	N.O. ★	1.5-100mA	3000 Hz	B	—	XS1M18DA210B
5 mm	PNP	12-48 V	N.O. ★	200 mA	2000 Hz	B	—	XS1M18PA370B
5 mm	NPN	12-48 V	N.O. ★	200 mA	2000 Hz	B	—	XS1M18NA370B
Non-shielded, 2m (6.6') cable								
8 mm	PNP	12-48 V	N.O. ★	200 mA	2000 Hz	A	—	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	—	XS2M18KP340
Non-shielded, connector - micro style								
8 mm	PNP	12-48 V	N.O. ★	200 mA	2000 Hz	B	11,12,13,15,16	XS2M18PA370D
8 mm	NPN	12-48 V	N.O. ★	200 mA	2000 Hz	B	11,12,14,15,16	XS2M18NA370D
8 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	2000 Hz	B	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)

Side by side	Face to face	Facing a metal object	Mounting in a metal support
XS1 Shielded XS2 Non-shielded	e: 10/.39 e: 16/.63	e: 60/2.36 e: 96/3.78	e: 15/.59 e: 24/.94 D: 18/.71, H: 0/0 D: 54/2.13, H: 8/31

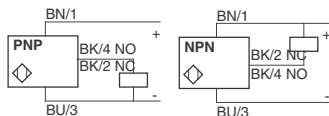
Wiring



Cable

Blue BU –
Brown BN +
Black BK Output

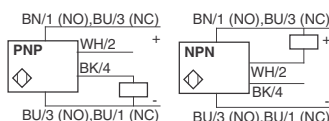
Wire color/connector pin
3 wire NO or NC



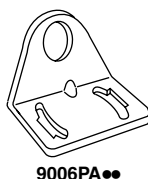
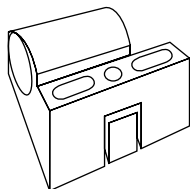
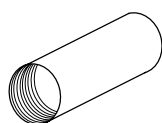
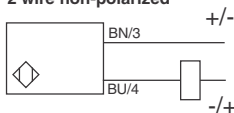
Cable

Blue BU –
Brown BN +
Black BK Output

4 wire, programmable, NO or NC output



2 wire non-polarized



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
XSZCA111Y	Micro Conn., 3 pin, 2 m, 90°

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

Specifications

Mechanical		
Usable sensing range★	Shielded	0 to 4 mm
	Non-shielded	0 to 6.4 mm
Standard temperature range		-25° C to +80° C (-13° F to +176° F)
Enclosure rating - cable (for connector, see p. 518)	NEMA Type	3, 4X, 6P, 12, 13
	IEC Type	IP68 – cutting oil proof; IP67 for B screw terminal
Enclosure material	Nickel plated brass	
	Sensing face: PBT	
Tightening torque (max.)	Nickel plated brass	35 N•m 26 (26 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)	Shielded	0.7" x 0.7" (18 mm x 18 mm)
	Non-shielded	0.94" x 0.94" (24 mm x 24 mm)
Differential (% of Sr)		15%
Repeatability (% of Sr)		3%
LED indicator type	A	360° ring LED: Shows output status
	B	One LED visible from 4 quadrants: Shows output status
Cable	2 wire	20 AWG (0.5 mm ²), PvR
	3 wire	22 AWG (0.34 mm ²), PvR
Electrical		
Voltage range – nominal		Std. KP-Models
		12 - 48 Vdc 12 - 24 Vdc
Voltage limit (including ripple)		10 - 58 Vdc 10 - 38 Vdc
Voltage drop (across switch), closed state	3 wire	2 V 2.6 V
	2 wire	4 V
Minimum load current	2 wire	1.5 mA
Maximum load current	2 wire	100 mA
	3 wire	200 mA
Current consumption (no load)	3 wire	10 mA
Residual (leakage) current, open state	2 wire	0.5 mA
On delay (max.)	2 wire	0.2 ms
	3 wire	0.15 ms
Off delay (max.)	2 wire	0.2 ms
	3 wire	0.35 ms
Power-up delay (max.)		5 ms
Protective circuitry	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 L2; IEC 61000-4-4 L3; 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
	16.4 ft. (5 meter) cable	L1
	32.8 ft. (10 meter) cable	L2

Accessories

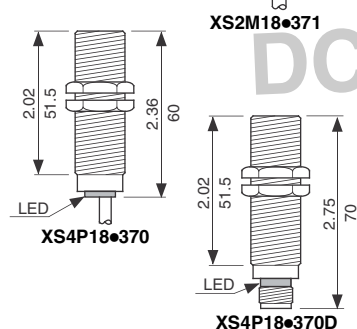
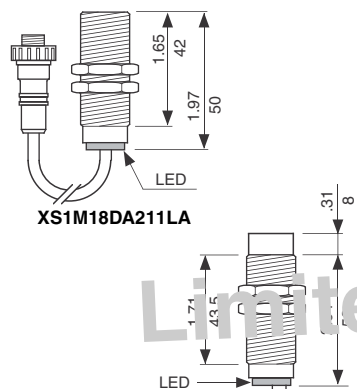
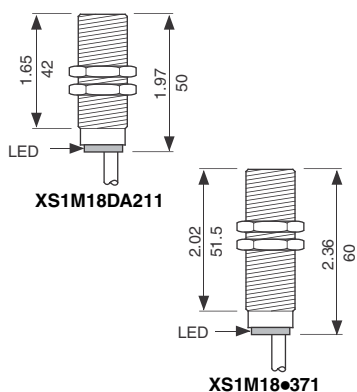
Description	Catalog Number	
Plastic mounting nuts	XSZE218	
Metal mounting nuts and lock washers	XSZE118	
Mounting bracket, 90° steel	9006PA 18	
Mounting bracket, plastic	XSZB118	
0.5" NPT conduit adapter length 2" (50.8 mm)	Aluminum	7428
	Stainless	74282

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

Proximity Sensors

XS Tubular Inductive Sensors

18 mm Diameter, DC; Universal Standard Length, Non-corrosive



Dual Dimensions $\frac{\text{inches}}{\text{mm}}$ thread M18x1

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
Stainless steel case								
Non-shielded, 2 m (6.6') cable								
5 mm	2-wire	12-48 V	N.O. ★	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	N.O.	200 mA	2000 Hz	A	—	XS1M18NA371
Shielded, connector - mini style - 0.8 m (2.6 ft) pigtail								
5 mm	2-wire	12-48 V	N.O. ★	1.5-100 mA	3000 Hz	A	21, 22	XS1M18DA211LA
Non-shielded, 2 m (6.6') cable								
8 mm	PNP	12-48 V	N.O. ★	200 mA	2000 Hz	A	—	XS2M18PA371
8 mm	NPN	12-48 V	N.O.	200 mA	2000 Hz	A	—	XS2M18NA371
Plastic case								
Non-shielded, 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-shielded, connector - micro style								
8 mm	PNP	12-48 V	N.O. ★	200 mA	2000 Hz	A	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-shielded, screw terminal connector								
8 mm	PNP	12-48 V	N.O.	200 mA	2000 Hz	A	—	XS4P18PA370B
8 mm	NPN	12-48 V	N.O.	200 mA	2000 Hz	A	—	XS4P18NA370B

★ 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.

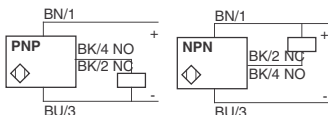
Minimum Mounting Clearances (mm/inches)

Side by side	Face to face	Facing a metal object	Mounting in a metal support
XS1 Shielded XS2/XS4 Non-shielded	e: 10/.39 e: 16/.63	e: 60/2.36 e: 96/3.78	e: 15/.59 e: 24/.94
			D: 18/.71, H: 0/0 D: 54/2.13, H: 8/.31

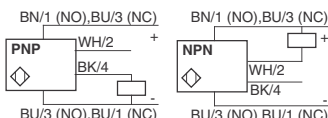
Wiring



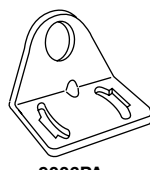
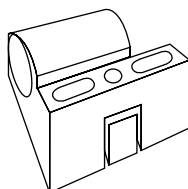
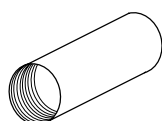
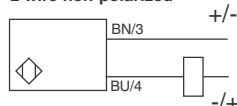
Wire color/connector pin 3 wire NO or NC



4 wire, programmable, NO or NC output



2 wire non-polarized



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
XSZCA111Y	Micro Conn., 3 pin, 2 m, 90°

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

Specifications

Mechanical				
Usable sensing range★	Shielded		0 to 4 mm	
	Non-shielded		0 to 6.4 mm	
Standard temperature range		-25° C to +80° C (-13° F to +176° F)		
Enclosure rating - cable (for connector, see p. 518)	NEMA Type		3, 4X, 6P, 12, 13	
	IEC Type		IP68	
Enclosure material	Stainless steel	Case	#303 Stainless steel	
		Sensing face	PBT	
	Plastic		PBT	
Tightening torque (max.)	Stainless steel		50 N•m 37 (lb-ft)	
	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	
Standard target size (steel)	Shielded		0.7" x 0.7" (18 mm x 18 mm)	
	Non-shielded		0.94" x 0.94" (24 mm x 24 mm)	
Differential (% of Sr)			15%	
Repeatability (% of Sr)			3%	
LED indicator type	A			
Cable	2 wire		360° ring LED: Shows output status	
	3 wire		20 AWG (0.5 mm ²), PvR	
			22 AWG (0.34 mm ²), 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
Voltage drop (across switch), closed state	Nickel plated brass & Stainless	2 wire	4 V	-
		3 wire	2 V	-
		4 wire	-	2.6
	Plastic	3 wire	2 V	
Minimum load current	2 wire		1.5 mA	
Maximum load current	2 wire		100 mA	
	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			
Protective circuitry	Short circuit protection		Yes	
	Overload		Yes	
	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 61000-4-4 L3; 60947.5.2 L3	
			3 wire: IEC 6000-4-2 L2; IEC 61000-4-4 L3; 60947.5.2 L3	
	Reverse polarity protection		Yes	
	Agency Listings		E 164869 CR 44087 CCN NRKH 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

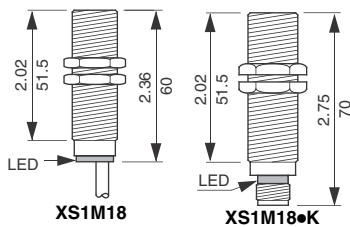
Description	Catalog Number
Plastic mounting nuts	XSZE218
Stainless steel mounting nuts	XSZE318
Locknut washers, stainless steel	XSZE918
Mounting bracket, 90° steel	9006PA18
Mounting bracket, plastic	XSZB118
0.5" NPT conduit adapter length 2" (50.8mm)	Aluminum 7428
	Stainless 74282

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

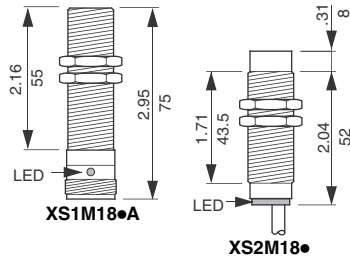
Proximity Sensors

XS Tubular Inductive Sensors

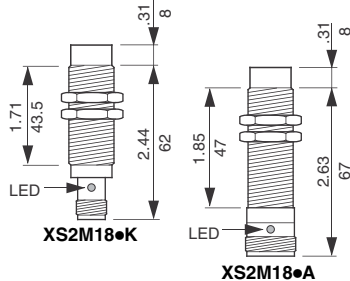
18 mm Diameter, AC/DC; Universal Standard Length



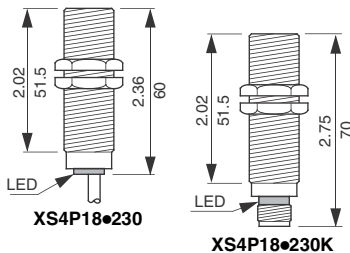
XS1M18•K



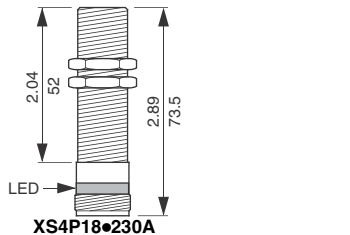
XS2M18•



XS2M18•A



XS4P18•230K



Dual Dimensions $\frac{\text{inches}}{\text{mm}}$ thread
M18x1

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 Distance	AC or AC/DC	Output Mode	Voltage Range		Operating Frequencies		SCP	Indicator LED ①	Mating Connector Style (see p. 518)	Catalog Number
			AC	DC	AC	DC				

Nickel brass case

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	C	—	XS1M18MA250

Shielded, connector - micro style AC

5 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	no	B	17,18	XS1M18MA230K
5 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	yes	B	17,18	XS1M18MA250K

Shielded, connector - mini style

5 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	no	B	23,24	XS1M18MA230A
5 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	yes	C	23,24	XS1M18MA250A

Shielded, screw terminal connection

5 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	3000 Hz	no	B	—	XS1M18MA230B
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Non-shielded, 2 m (6.6') cable

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	C	—	XS2M18MA250

Non-shielded, connector - micro style AC

8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	no	B	23,24	XS2M18MA230K
8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	yes	B	23,24	XS2M18MA250K

Non-shielded, connector - mini style

8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	no	B	18	XS2M18MA230A
8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	yes	C	18	XS2M18MA250A

Plastic case

Non-shielded, 2 m (6.6') cable

8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	no	A	—	XS4P18MA230
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Non-shielded, connector - micro style

8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	no	A	17,18	XS4P18MA230K
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Non-shielded, connector - mini style

8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	no	A	23,24	XS4P18MA230A
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Shielded, screw terminal connection

8 mm	AC/DC	N.O. ★	24-240 V	24-210 V	25 Hz	2000 Hz	no	B	—	XS4P18MA230B
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★ 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.

Minimum Mounting Clearances (mm/inches)

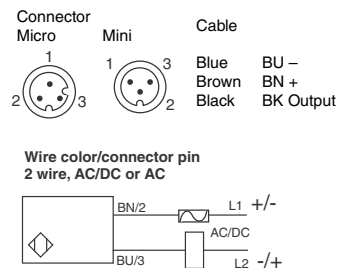
Side by side	Face to face	Facing a metal object	Mounting in a metal support
XS1 Shielded XS2/XS4 Non-shielded			
e: 10/.39 e: 16/.63	e: 60/2.36 e: 96/3.78	e: 15/.59 e: 24/.94	D: 18/.71, H: 0/0 D: 54/2.13, H: 8/.31

OSICONCEPT™ Proximity Sensors

XS Tubular Inductive Sensors

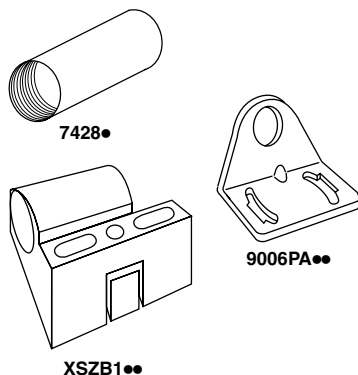
18 mm Diameter, AC/DC; Universal Standard Length

Wiring



Specifications

Mechanical		
Usable sensing range★	Shielded	0 to 4 mm
	Non-shielded	0 to 6.4 mm
Standard temperature range	-25° C to +80° C (-13° F to +176° F)	
Enclosure rating - cable (for connector, see p. 518)	NEMA Type	4X, 6P, 12, 13
	IEC Type	IP68
Enclosure material	Nickel plated brass	Case Sensing face
	Plastic	Nickel plated brass PBT
Tightening torque (max.)	Nickel plated brass	35 N•m 26 (lb-ft)
	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
Standard target size (steel)	Shielded	0.7" x 0.7" (18 mm x 18 mm)
	Non-shielded	0.94" x 0.94" (24 mm x 24 mm)
Differential (% of Sr)	15%	
Repeatability (% of Sr)	3%	
LED indicator type	A	360° ring LED: Shows output status
	B	One LED visible from 4 quadrants: Shows output status
	C	2 LED indicators: Red shows output status Green shows normal operation (SCP only)
Cable	2 wire	20 AWG (0.5 mm ²), PvR
	3 wire	22 AWG (0.34 mm ²), PvR
Electrical		
Voltage range	24 to 240 Vac, 24-210 Vdc	
Voltage limit (including ripple)	20 to 264 Vac/dc	
Voltage drop (across switch), closed state (max)	5.5 V	
Inrush current	2 A	
Minimum load current	5 mA	
Maximum load current	200 mA	
	20 ≤ Vdc ≤ 58 IEC 60947-5-2 Utilization category DC-13 Vdc > 58 IEC 60947-5-2 Utilization category DC-12	
Residual (leakage) current, open state	without SCP	0.6 mA
	with SCP	1.5 mA
On delay (max)	without SCP	0.2 ms
	with SCP	2 ms
Off delay (max)	without SCP	0.2 ms
	with SCP	4 ms
Power-up delay (max.)	without SCP	40 ms
	with SCP	70 ms
Protective circuitry	Short circuit protection	Optional▲
	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 	



Options

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
	Stainless	74282

- ★ 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; 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

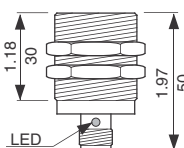
Proximity Sensors

XS Tubular Inductive Sensors

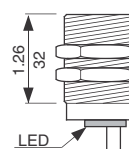
30 mm Diameter, DC; Economy Short Length



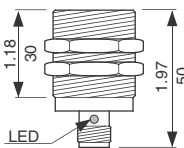
XS1N30●



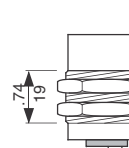
XS1N30●D



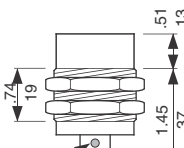
XS1N30●349



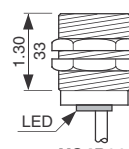
XS1N30●349D



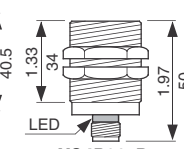
XS2N340●



XS2N30●D



XS4P30



XS4P30●D

Dual Dimensions $\frac{\text{inches}}{\text{mm}}$ $\frac{\text{thread}}{\text{M30x1.5}}$

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 Sensing Distance	Circuit Type	Voltage Range	Output Mode	Operating Frequency	Indicator LED ①	Mating Connector Style (see p. 518)	Catalog Number
--------------------------	--------------	---------------	-------------	---------------------	-----------------	-------------------------------------	----------------

Nickel plated brass case

Shielded, 2 m (6.6') cable

10 mm	PNP	12-24 V	N.O. ★	1000 Hz	A	—	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	A	—	XS1N30PC410
10 mm	NPN	12-24 V	N.O. + N.C.	1000 Hz	A	—	XS1N30NC410

Shielded, connector - micro style

10 mm	PNP	12-24 V	N.O. ★	1000 Hz	B	11,12,13,15,16	XS1N30PA340D
10 mm	NPN	12-24 V	N.O. ★	1000 Hz	B	11,12,14,15,16	XS1N30NA340D
10 mm	PNP	12-24 V	N.O. + N.C.	1000 Hz	B	11,12,13,15,16	XS1N30PC410D
10 mm	NPN	12-24 V	N.O. + N.C.	1000 Hz	B	11,12,14,15,16	XS1N30NC410D

Shielded, EXTENDED 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, EXTENDED RANGE, connector - micro style

20 mm	PNP	12-24 V	N.O. ★	500 Hz	B	11,12,13,15,16	XS1N30PA349D
20 mm	NPN	12-24 V	N.O. ★	500 Hz	B	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

15 mm	PNP	12-24 V	N.O.	1000 Hz	B	11,12,13,15,16	XS2N30PA340D
15 mm	NPN	12-24 V	N.O.	1000 Hz	B	11,12,14,15,16	XS2N30NA340D
15 mm	PNP	12-24 V	N.O. + N.C.	1000 Hz	B	11,12,13,15,16	XS2N30PC410D
15 mm	NPN	12-24 V	N.O. + N.C.	1000 Hz	B	11,12,14,15,16	XS2N30NC410D

Plastic case

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

15 mm	PNP	12-24 V	N.O.	1000 Hz	A	11,12,13,15,16	XS4P30PA340D
15 mm	NPN	12-24 V	N.O.	1000 Hz	A	11,12,14,15,16	XS4P30NA340D
15 mm	PNP	12-24 V	N.O. + N.C.	1000 Hz	A	11,12,13,15,16	XS4P30PC410D
15 mm	NPN	12-24 V	N.O. + N.C.	1000 Hz	A	11,12,14,15,16	XS4P30NC410D

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

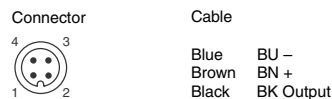
① See next page under specifications for LED function.

◆ See dimension X below.

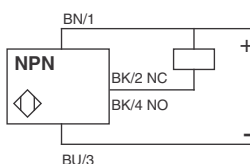
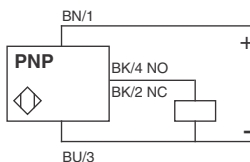
Minimum Mounting Clearances (mm/inches)

Side by side	Face to face	Facing a metal object	Mounting in a metal support	Mounting in a metal support
XS1 Shielded XS1 Extended range XS2/XS4 Non-shielded	e: 20/79 e: 40/1.57 e: 60/2.36	e: 120/4.72 e: 240/9.45 e: 180/7.09	e: 30/1.18 e: 60/2.36 e: 45/1.77	D: 30/1.18, H: 0/0 D: 90/3.54, H: 30/1.18 x: 0/0 x: 6/24

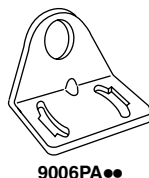
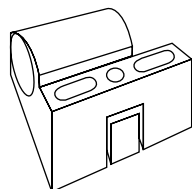
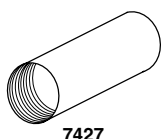
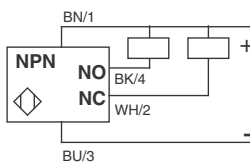
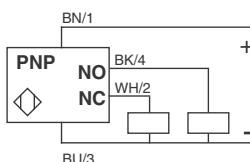
Wiring



**Wire color/connector pin
3 wire NO or NC**



4 wire NO + NC



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

Specifications

Mechanical			
Usable sensing range★	Shielded	Standard Range	0 to 8 mm
		Extended Range	0 to 16 mm
	Non-shielded		0 to 12 mm
Standard temperature range	Nickel plated brass		-25° C to +70° C (-13° F to +158° F)
	Plastic		-25° C to +80° C (-13° F to +176° F)
Extended range			-25° C to 50° C (-13° F to +122° F)
Enclosure rating - cable (for connector, see p. 518)	Nickel plated brass	NEMA Type	3, 4X, 6P, 12, 13
		IEC Type	IP67
	Plastic	NEMA Type	3, 4X, 6P, 12, 13
		IEC Type	IP68
Enclosure material	Nickel plated brass	Case	Nickel plated brass
		Sensing face	PBT
	Plastic	Case	PBT
		Sensing face	PBT
Tightening torque (max.)	Nickel plated brass		40 N•m 29.5 (lb-ft)
	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
Standard target size (steel)	Shielded	Standard Range	1.18" x 1.18" (30 mm x 30 mm)
	Unshielded	Extended range	1.88" x 1.88" (48 mm x 48 mm)
			1.41" x 1.41" (36 mm x 36 mm)
Differential (% of Sr)			15%
Repeatability (% of Sr)			3%
LED indicator type	A		360° ring LED: Shows output status
	B		One LED visible from 4 quadrants: Shows output status
Cable	3 or 4 wire		22 AWG (0.34 mm ²), PVR
Electrical			
Voltage range			12 to 24 Vdc
Voltage limit (including ripple)			10 to 38 Vdc
Voltage drop (across switch), closed state			2 V
Maximum load current			200 mA
Current consumption (no load)			10 mA
On delay (max.)	Shielded	Standard Range	0.3 ms
	Non-shielded	Extended Range	0.6 ms
Off delay (max.)	Shielded	Standard Range	0.3 ms
	Non-shielded	Extended Range	0.7 ms
Power up delay	Shielded	Standard Range	1.4 ms
	Non-shielded	Extended Range	0.7 ms
Protective circuitry	Short circuit protection		Yes
	Overload		Yes
	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 61000-4-4 L2; 60947.5.2 L3
			3 wire: IEC 61000-4-2 L3; IEC 61000-4-4L3; 60947.5.2 L3
	Reverse polarity protection		Extended range: IEC 61000-4-4 L3
Agency Listings	UL E 164869 CCN NRKH		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 cable length	16.4 ft. (5 meter) cable L1
	32.8 ft. (10 meter) cable L2

Accessories

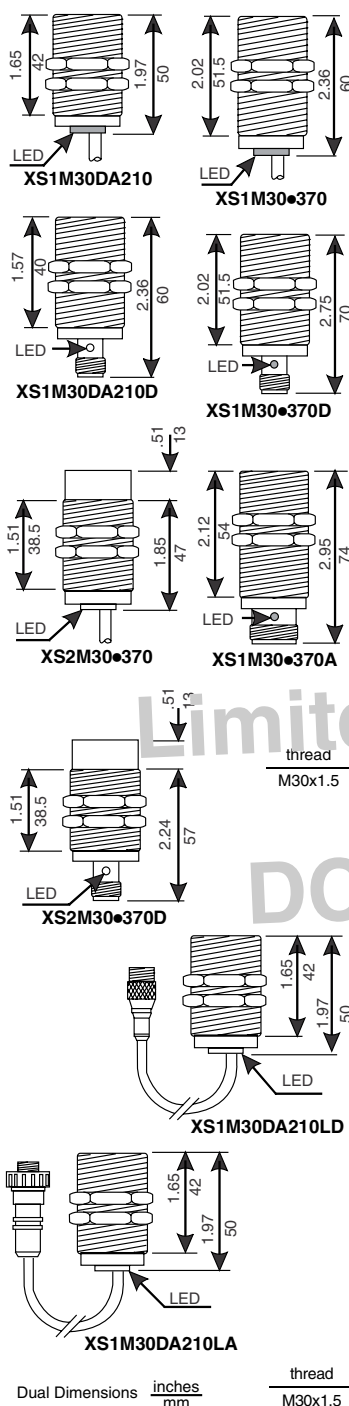
Description	Catalog Number
Plastic mounting nuts	XSZE230
Metal mounting nuts and lock nuts	XSZE130
Mounting bracket 90° steel	9006PA30
Mounting bracket, plastic, long length	XSZB130
0.5" NPT conduit adapter length 2" (50.8mm)	Aluminum 7427

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

Proximity Sensors

XS Tubular Inductive Sensors

30 mm Diameter, DC; Universal Standard Length



Features

- 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
- 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 plated brass case								
Shielded, 2 m (6.6') cable								
10 mm	2-wire	12-48 V	N.O.★	1.5-100 mA	2000 Hz	A	—	XS1M30DA210
10 mm	PNP	12-48 V	N.O.★	200 mA	1000 Hz	A	—	XS1M30PA370
10 mm	NPN	12-48 V	N.O.★	200 mA	1000 Hz	A	—	XS1M30NA370
10 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	1000 Hz	A	—	XS1M30KP340
Shielded, connector - micro style DC - 0.8 m (2.6 ft) pigtail								
10 mm	2-wire	12-48 V	N.O.★	1.5-100 mA	2000 Hz	A	11, 12, 15, 16	XS1M30DA210LD
Shielded, connector - mini style DC								
10 mm	2-wire	12-48 V	N.O.★	1.5-100 mA	2000 Hz	B	11, 12, 15, 16	XS1M30DA210D
10 mm	PNP	12-48 V	N.O.★	200 mA	1000 Hz	B	11, 12, 13, 15, 16	XS1M30PA370D
10 mm	NPN	12-48 V	N.O.★	200 mA	1000 Hz	B	11, 12, 14, 15, 16	XS1M30NA370D
10 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	1000 Hz	B	11, 12, 15, 16	XS1M30KP340D
Shielded, connector - mini style - 0.8 m (2.6 ft) pigtail								
10 mm	2-wire	12-48 V	N.O.★	1.5-100 mA	2000 Hz	A	21, 22	XS1M30DA210LA
Shielded, connector - mini style								
10 mm	PNP	12-48 V	N.O.	200 mA	1000 Hz	B	21, 22	XS1M30PA370A
10 mm	NPN	12-48 V	N.O.	200 mA	1000 Hz	B	21, 22	XS1M30NA370A
Shielded, connector - screw terminal connection								
10 mm	2 wire	12-48 V	N.O.★	1.5-100 mA	2000 Hz	B	—	XS1M30DA210B
10 mm	PNP	12-48 V	N.O.★	200 mA	1000 Hz	B	—	XS1M30PA370B
10 mm	NPN	12-48 V	N.O.★	200 mA	1000 Hz	B	—	XS1M30NA370B
Non-shielded, 2 m (6.6') cable								
15 mm	PNP	12-48 V	N.O.★	200 mA	1000 Hz	A	—	XS2M30PA370
15 mm	NPN	12-48 V	N.O.★	200 mA	1000 Hz	A	—	XS2M30NA370
15 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	1000 Hz	A	—	XS2M30KP340
Non-shielded, connector - micro style								
15 mm	PNP	12-48 V	N.O.★	200 mA	1000 Hz	B	11, 12, 13, 15, 16	XS2M30PA370D
15 mm	NPN	12-48 V	N.O.★	200 mA	1000 Hz	B	11, 12, 14, 15, 16	XS2M30NA370D
15 mm	PNP + NPN	12-24 V	N.O./N.C.	200 mA	1000 Hz	B	11, 12, 15, 16	XS2M30KP340D

★ To order a normally closed (N.C.) version change the A to B, example: XS1M12PA370 to XS1M12PB370.
 ① See next page under specifications for LED function.

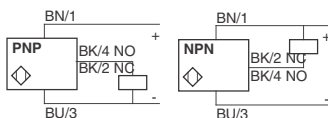
Minimum Mounting Clearances (mm/inches)

	Side by side	Face to face	Facing a metal object	Mounting in a metal support
XS1 Shielded	e: 20/.79	e: 120/4.72	e: 30/1.18	D: 30/1.18, H: 0/0
XS2 Non-shielded	e: 60/2.36	e: 180/7.09	e: 45/1.77	D: 90/3.54, H: 30/1.18

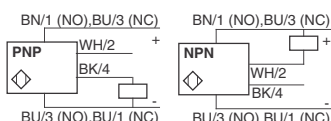
Wiring



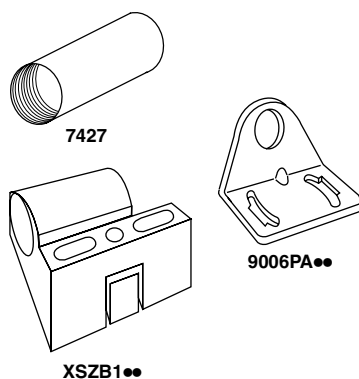
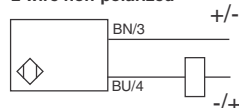
**Wire color/connector pin
3 wire NO or NC**



4 wire, programmable, NO or NC output



2 wire non-polarized



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
XSZCA111Y	Micro Conn., 3 pin, 2 m, 90°

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

Specifications

Mechanical		
Usable sensing range★	Shielded	0 to 8 mm
	Non-shielded	0 to 12 mm
Standard temperature range		-25° C to +80° C (-13° F to +176° F)
Enclosure rating - cable (for connector, see p. 518)	NEMA Type	3, 4X, 6P, 12, 13
	IEC Type	IP68 – cutting oil proof, IP67 for B screw terminals
Enclosure material	Nickel plated brass	
	Case: Nickel plated Brass 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 mm, f = 10-55 Hz
Shock resistance	(IEC 60068.2.27)	50 G duration 11 ms
Standard target size (steel)	Shielded	1.18" x 1.18" (30 mm x 30 mm)
	Non-shielded	1.41" x 1.41" (36 mm x 36 mm)
Differential (% of Sr)		15%
Repeatability (% of Sr)		3%
LED indicator type	A	360° ring LED: Shows output status
	B	One LED visible from 4 quadrants: Shows output status
Cable	2 wire	20 AWG (0.5 mm ²), PvR
	3 wire	22 AWG (0.34 mm ²), PvR
Electrical		KP-Models
Voltage range – nominal		12-48 Vdc
Voltage limit (including ripple)		10-58 Vdc
Voltage drop (across switch), closed state	3 wire	2 V
	2 wire	4 V
Minimum load current	2 wire	1.5 mA
	2 wire	100 mA
Maximum load current	3 wire	200 mA
	3 wire	200 mA
Current consumption (no load)		10 mA
Residual (leakage) current, open state	2 wire	0.5 mA
	2 wire	0.5 mA
On delay (max.)	2 wire	0.2 ms
	3 wire	0.3 ms
Off delay (max.)	2 wire	0.3 ms
	3 wire	0.7 ms
Power-up delay (max.)		5 ms
Protective circuitry		
Short circuit protection		Yes
Overload		Yes
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 61000-4-4 L3; 60947.5.2 L3	
	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

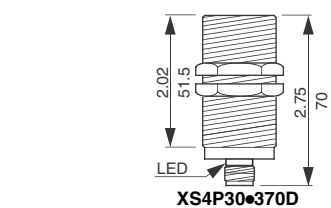
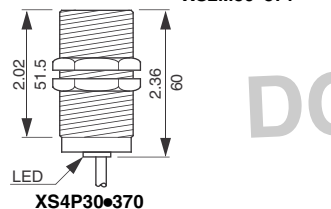
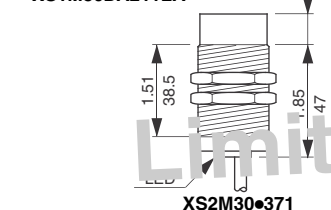
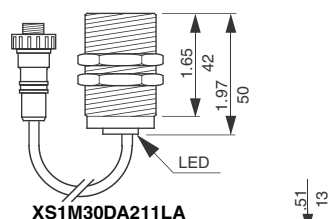
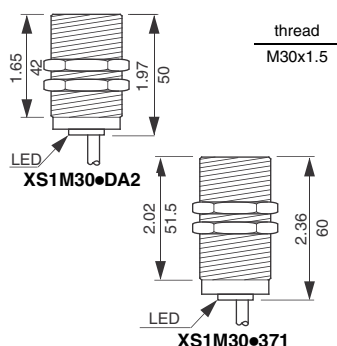
Description	Catalog Number
Metal mounting lock nuts	XSZE130
Mounting bracket, 90° steel and lock washers	9006PA30
Mounting bracket, plastic	XSZB130
0.5" NPT conduit adapter length 2" (50.8mm)	Aluminum 7427

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

Proximity Sensors

XS Tubular Inductive Sensors

30 mm Diameter, DC; Universal Standard Length, Non-Corrosive



Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

Features

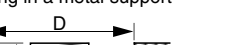
- Faster troubleshooting aided by high visibility 360° indicators
- 2 wire versions simplify wiring
- High impact stainless steel and plastic cases for aggressive environments - cutting oils, grease, solvents, etc.
- Worry free replacement: standard length, extended temperature and supply voltage range, 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 LED ①	Mating Connector Style (see p. 31)	Catalog Number
Stainless steel case								
Shielded, 2 m (6.6') cable								
10 mm	2-wire	12-48 V	N.O.★	1.5-100 mA	2000 Hz	A	—	XS1M30DA211
10 mm	PNP	12-48 V	N.O.	200 mA	1000 Hz	A	—	XS1M30PA371
10 mm	NPN	12-48 V	N.O.	200 mA	1000 Hz	A	—	XS1M30NA371
Shielded, connector - micro style - 0.8 m (2.6') pigtail								
10 mm	2-wire	12-48 V	N.O.★	1.5-100 mA	2000 Hz	A	11,12,15,16	XS1M30DA211LD
Shielded, connector - mini style - 1.8 m (5.9') pigtail								
10mm	2-wire	12-48 V	N.O.★	1.5-100 mA	2000 Hz	A	21,22	XS1M30DA211LA
Non-shielded, 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-shielded, 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-shielded, connector - micro style DC								
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	A	11,12,15,16	XS4P30KP340D

★ 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.

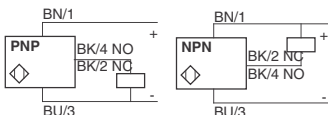
Minimum Mounting Clearances (mm/inches)

Side by side	Face to face	Facing a metal object	Mounting in a metal support	
				
XS1 Shielded XS2/XS4 Non-shielded	e: 20/79 e: 60/2.36	e: 120/4.72 e: 180/7.09	e: 30/1.18 e: 45/1.77	D: 30/1.18, H: 0/0 D: 90/3.54, H: 30/1.18

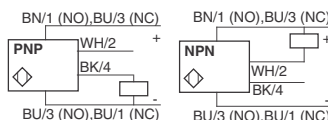
Wiring



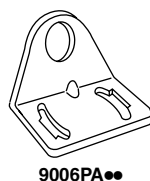
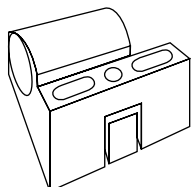
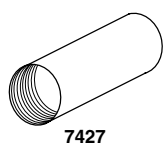
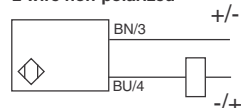
**Wire color/connector pin
3 wire NO or NC**



4 wire, programmable, NO or NC output



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
XSZCA111Y	Micro Conn., 3 pin, 2 m, 90°

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

Specifications

Mechanical		
Usable sensing range★	Shielded	0 to 8 mm
	Non-shielded	0 to 12 mm
Standard temperature range		-25° C to +80° C (-13° F to +176° F)
Enclosure rating cable (for connector, see p. 517)	NEMA Type	3, 4X, 6P, 12, 13
	IEC Type	IP68
Enclosure material	Stainless steel	Case #303 Stainless steel Sensing face PBT
	Plastic	PBT
Tightening torque (max.)	Stainless steel	100 N•m 74 (lb-ft)
	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
Standard target size (steel)	Shielded	1.18" x 1.18" (30 mm x 30 mm)
	Non-shielded	1.41" x 1.41" (36 mm x 36 mm)
Differential (% of Sr)	15%	
Repeatability (% of Sr)	3%	
LED indicator type	A	360° ring LED: Shows output status
Cable	2 wire	20 AWG (0.5 mm ²), PvR
	3 wire	22 AWG (0.34 mm ²), PvR
Electrical		
Voltage range – nominal		12 to 48 Vdc
Voltage limit (including ripple)		10 to 58 Vdc
Voltage drop (across switch), closed state	2 wire	4 V
	3 wire	2 V
	4 wire	2.6 V
Minimum load current	2 wire	1.5 mA
Maximum load current	2 wire	100 mA
	3 wire	200 mA
Current consumption (on load)	3 wire	10 mA
Residual (leakage) current, open state	2 wire	0.5 mA
On delay (max.)	2 wire	0.2 ms
	3 wire	0.3 ms
Off delay (max.)	2 wire	0.3 ms
	3 wire	0.7 ms
Power-up delay (max.)	5 ms	
Protective circuitry	Short circuit protection	Yes
	Overload	Yes
	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 61000-4-4 L3; 60947.5.2 L3 3 wire: IEC 61000-4-2 L2; IEC 61000-4-4 L3; 60947.5.2 L4
	Reverse polarity protection	Yes
Agency Listings	UL E 164869 CCN NRKH	CS CR 44087 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

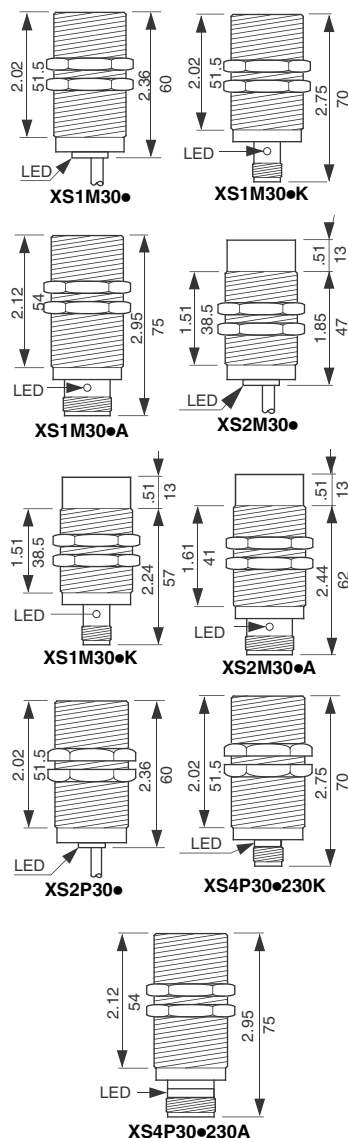
Description	Catalog Number
Plastic mounting nuts	XSZE230
Stainless steel mounting nuts	XSZE330
Locknut washers, stainless steel	XSZE930
Mounting bracket, 90° steel	9006PA30
Mounting bracket, plastic	XSZB130
0.5" NPT conduit adapter length 2" (50.8mm)	Aluminum 7427

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

Proximity Sensors

XS Tubular Inductive Sensors

30 mm Diameter, AC/DC; Universal Standard Length



Dual Dimensions inches mm thread M30x1.5

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	AC or AC/DC	Output Mode★	Voltage Range		Operating Frequency		SCP	Indicator LED ①	Mating Connector Style (see p. 518)	Catalog Number
			AC	DC	AC	DC				
Nickel plated brass case										
Shielded, 2 m (6.6') cable										
10 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	2000 Hz	no	A	—	XS1M30MA230
10 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	2000 Hz	yes	C	—	XS1M30MA250
Shielded, connector - micro style AC										
10 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	2000 Hz	no	B	13,14	XS1M30MA230K
10 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	2000 Hz	yes	B	13,14	XS1M30MA250K
Shielded, connector - mini style										
10 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	2000 Hz	no	B	17,20	XS1M30MA230A
10 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	2000 Hz	yes	C	18,20	XS1M30MA250A
Shielded, screw terminal connection										
10 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	2000 Hz	no	B	—	XS1M30MA230B
Non-shielded, 2 m (6.6') cable										
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	C	—	XS2M30MA250
Non-shielded, connector - micro style AC										
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	no	B	13,14	XS2M30MA230K
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	yes	B	13,14	XS2M30MA250K
Non-shielded, connector - mini style										
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	no	B	18,19	XS2M30MA230A
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	yes	C	18,19	XS2M30MA250A
Plastic case										
Non-shielded, 2 m (6.6') cable										
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	no	A	—	XS4P30MA230
Non-shielded, connector - micro style										
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	no	A	13,14	XS4P30MA230K
Non-shielded, connector - mini style										
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	no	A	18,20	XS4P30MA230A
Non-shielded, screw terminal connector										
15 mm	AC/DC	N.O.★	24-240 V	24-210 V	25 Hz	1000 Hz	no	B	—	XS4P30MA230B

★ To order a normally closed (N.C.) version change the A to B, example: XS1M30PA260 to XS1M12PB260.

① See next page under specifications for LED function.

Minimum Mounting Clearances (mm/inches)

Side by side	Face to face	Facing a metal object	Mounting in a metal support
XS1 Shielded XS2/XS4 Non-shielded	e: 20/79 e: 60/2.36	e: 120/4.72 e: 180/7.09	e: 30/1.18 e: 45/1.77
			D: 30/1.18, H: 0/0 D: 90/3.54, H: 30/1.18

Proximity Sensors

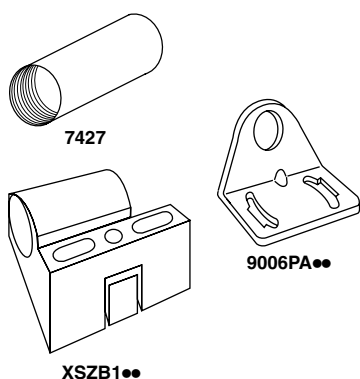
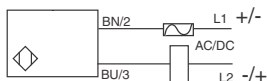
XS Tubular Inductive Sensors

30 mm Diameter, AC/DC; Universal Standard Length

Wiring



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



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

Specifications

Mechanical		
Usable sensing range★	Shielded	0 to 8 mm
	Non-shielded	0 to 12 mm
Standard temperature range		-25° C to +80° C (-13° F to +176° F)
Enclosure rating - cable (connector, see p. 518)	NEMA Type	3, 4X, 6P, 12, 13
	IEC Type	IP68 – P67 for B screw terminals
Enclosure material	Nickel plated brass	Case Nickel plated brass
	Plastic	Sensing face PBT
Tightening torque (max.)	Nickel plated brass	50 N•m 37 (lb-ft)
	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
Standard target size (steel)	Shielded	1.18" x 1.18" (30 mm x 30 mm)
	Non-shielded	1.41" x 1.41" (36 mm x 36 mm)
Differential (% of Sr)		15%
Repeatability (% of Sr)		3%
LED indicator type	A	360° ring LED: Shows output status
	B	One LED visible from 4 quadrants: Shows output status
	C	2 LED indicators: Red shows output status Green shows normal operation (SCP only)
Cable	2 wire	22 AWG (0.5 mm ²), 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), closed state		5.5 V
Inrush current		2 A
Minimum load current		5 mA
Maximum load current	AC	300 mA
	DC	200 mA 20 ≤ Vdc ≤ 58 IEC 60947-5-2 Utilization category DC-13 Vdc > 58 IEC 60947-5-2 Utilization category DC-12
Residual (leakage) current, open state	Without SCP	0.6 mA
	With SCP	1.5 mA
On delay (max.)	Without SCP	0.2 ms
	With SCP	2 ms
Off delay (max.)	Without SCP	0.3 ms
	With SCP	5 ms
	Without SCP	40 ms
	With SCP	70ms
Power-up delay (max.)	Without SCP	40 ms
	With SCP	70 ms
Protective circuitry	Short circuit protection	Optional▲
	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	

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

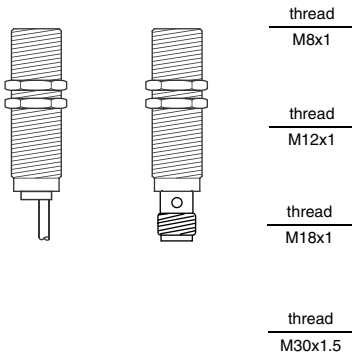
Description	Catalog Number
Plastic mounting nuts	XSZE230
Metal mounting nuts and lock washers	XSZE130
Mounting bracket, 90° steel	9006PA30
Mounting bracket, plastic	XSZB130
0.5" NPT conduit adapter length 2" (50.8 mm)	Aluminum 7427

- ★ Refer to p. 351 for target material correction coefficient Km.
▲ For devices without SCP, see p. 298 for protective fuses.

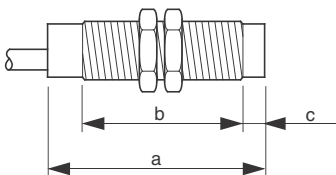
Proximity Sensors

XS Tubular Inductive Sensors

Economy D Series – DC, AC



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



Dimensions

		a		b		c	
		IN	mm	IN	mm	IN	mm
6.5 mm	Cable	1.65	42.0	—	—	—	—
	Connector	—	—	—	—	—	—
8 mm	Cable	1.65	42.0	1.60	40.6	—	—
	Connector	2.42	61.4	1.56	39.6	—	—
12 mm	Cable	1.66	42.2	1.57	40.0	.26	7
	Connector	2.09	53.0	1.56	39.6	—	—
18 mm	Cable	2.06	52.2	1.95	49.6	—	—
	Connector	2.52	64.0	1.96	49.7	—	—
30 mm	Cable	2.05	52.0	1.95	49.6	—	—
	Connector	—	—	—	—	—	—

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

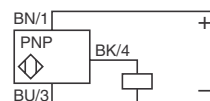
Circuit Type	Output Mode	Voltage Range	Voltage Drop Maximum	Load Current Maximum	Operating Frequency Maximum	Catalog Number
6.5 mm, Shielded, DC–2 Meter (6') Cable–Nominal Sensing Distance–1.5 mm						
PNP	N.O.	12 to 24 Vdc	3 V	50 mA	3000 Hz	XS1L06PA140
NPN	N.O.	12 to 24 Vdc	3 V	50 mA	3000 Hz	XS1L06NA140
8 mm, Shielded, DC–2 Meter (6') Cable–Nominal Sensing Distance–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, Shielded, DC–Micro Style Connector ★–Nominal Sensing 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, Shielded, DC–2 Meter (6') Cable–Nominal Sensing Distance–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, Shielded, DC–Micro Style Connector ★–Nominal Sensing Distance–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, DC–2 Meter (6') Cable–Nominal Sensing Distance–4 mm						
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, DC–Micro Style Connector–Nominal Sensing Distance–4 mm						
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, Shielded, AC–2 Meter (6') Cable–Nominal Sensing Distance–2 mm						
2 wire	N.O.	24 to 240 Vac	7V	200 mA	25 Hz	XS1M12FA264
18 mm, Shielded, DC–2 Meter (6') Cable–Nominal Sensing Distance–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, Shielded, DC–Micro Style Connector ★–Nominal Sensing Distance–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, DC–2 Meter (6') Cable–Nominal Sensing Distance–8 mm						
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, DC–Micro Style Connector ★–Nominal Sensing Distance–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, Shielded, AC–2 Meter (6') Cable–Nominal Sensing Distance–5 mm						
2 wire	N.O.	24 to 240 Vac	4.5 V	300 mA	25 Hz	XS1M18FA264
30 mm, Shielded, DC–2 Meter (6') Cable–Nominal Sensing Distance–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, Shielded, DC–Micro Style Connector ★–Nominal Sensing Distance–10 mm						
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, DC–2 Meter (6') Cable–Nominal Sensing Distance–15 mm						
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, DC–Micro Style Connector ★–Nominal Sensing Distance–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, Shielded, AC–2 Meter (6') Cable–Nominal Sensing Distance–10 mm						
2 wire	N.O.	24 to 240 Vac	4.5 V	300 mA	25 Hz	XS1M30FA264

★ See p. 517 for matching connector cables.

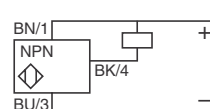
Wiring



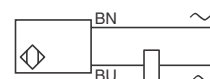
3 Wire, PNP, NO



3 Wire, NPN, NO



2 Wire, AC, NO



Specifications

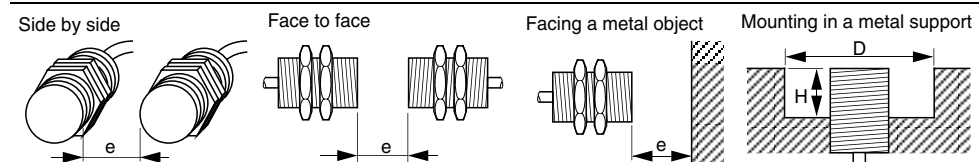
Mechanical		DC					AC			
Diameter		0.25" (6.5 mm)	0.31" (8 mm)	0.47" (12 mm)	0.7" (18 mm)	1.18" (30 mm)	0.47" (12 mm)	0.7" (18 mm)	1.18" (30 mm)	
Usable Sensing Range ★	Shielded	0.04" (1.2mm)	0.04" (1.2 mm)	0.06" (1.6 mm)	0.16" (4 mm)	0.31" (8 mm)	0.06" (1.6 mm)	0.16" (4 mm)	0.31" (8 mm)	
	Non-shielded	—	—	0.12" (3.2 mm)	0.25" (6.4 mm)	0.47" (12 mm)	—	—	—	
Temperature Range		-13° F to +158° F (-25° C to +70° C)								
Enclosure Rating	NEMA Type	1								
	CENELEC Type	IP66 (connector style is IP65)					IP67			
Vibration		25 G, amplitude =/- 2 mm, f = 10-55 Hz								
Shock Resistance		50 G, for 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 Material		Brass								
Wiring		3 x 0.34 mm ² (8 mm = 3 x 0.11 mm ²)					2 x 0.34 mm ²			
Electrical										
Voltage Range		12 to 24 Vdc					24 to 240 Vac			
Voltage Limit (Including Ripple)		10 to 30 Vdc					20 to 264 Vac			
Current Consumption (Maximum) (No Load)		10 mA					—			
Maximum Leakage (Residual) Current—open State		—					1.5 mA			
Voltage Drop (Closed 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 (Maximum)		0.5 ms	0.5 ms	0.5 ms	1 ms	2 ms	10 ms			
Off Delay (Maximum)		1 ms	1 ms	0.5 ms	2 ms	6 ms	15 ms			
Protective Circuitry	Short Circuit Protection	Yes					No			
	Overload Protection	Yes					No			
Agency Listings		 E 164869 CCN NRKH					 CR 44087 Class 3211 03			

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

Accessories

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

Minimum Mounting Clearances (mm/inches)



	e		e		e		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
XS1D08	0.12	3	0.71	18	0.18	4.5	0.31	8	0	0
XS1D/M12	0.16	4	0.94	24	0.24	6.0	0.47	12	0	0
XS2D12	0.63	16	1.89	48	0.47	12.0	1.42	36	0.31	8
XS1D/M18	0.39	10	2.36	60	0.59	15.0	0.59	15	0	0
XS1D/M30	0.79	20	4.72	120	1.18	30.0	1.18	30	0	0

Connector Cables (M12 or D suffix)

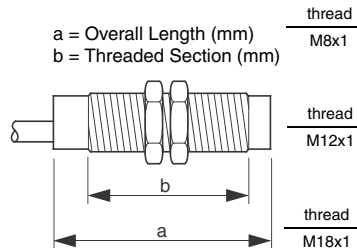
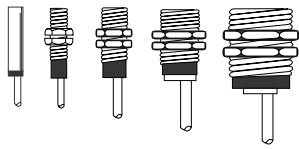
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°

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

Proximity Sensors

XS Tubular Inductive Sensors

Extended Range – AC/DC, DC



a		AC/DC		DC	
		mm	in.	mm	in.
6.5 mm	Cabled version	—	—	33	1.29
	Nano connector	—	—	42	1.65
	Micro connector	—	—	45	1.77
8 mm	Cabled version	—	—	33	1.29
	Nano connector	—	—	42	1.65
	Micro connector	—	—	45	1.77
12 mm	Cabled version	50	1.96	33	1.29
	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	—	—	—	—
	Cabled version	60	2.36	40.5	1.59
30 mm	Micro connector	70	2.75	50	1.96

b		AC/DC		DC	
		mm	in.	mm	in.
6.5 mm	Cabled version	—	—	30	1.18
	Nano connector	—	—	34	1.33
	Micro connector	—	—	24	0.94
8 mm	Cabled version	—	—	26	1.02
	Nano connector	—	—	26	1.02
	Micro connector	—	—	24	0.94
12 mm	Cabled version	42	1.65	26	1.02
	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	—	—	—	—
	Cabled version	51.5	2.02	32	1.25
30 mm	Micro connector	51.5	2.02	32	1.25

♦ For 6.5mm diameter, b = smooth length

Features

- Extended range feature available in Universal AC/DC, or DC only sensors, where previously only available in DC
- AC/DC has same extended sensing range as in DC only sensors
- Available in moulded cable or connector versions
- rugged IP68 Nickel plated brass casing
- 360° LED for complete visibility
- Metal lock nuts included in carton

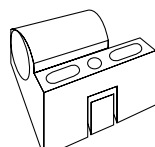
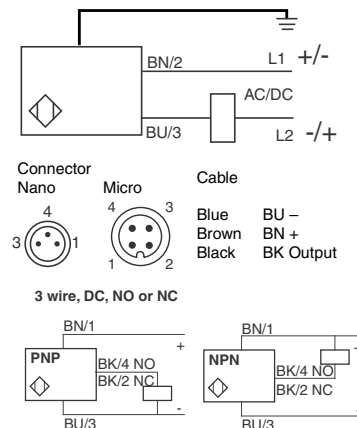
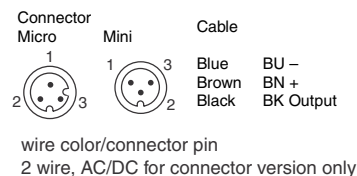
Circuit Type	Output Mode	Voltage Range	Voltage Drop Max.	Load Current Max.	Operating Frequency Max.	Connection ★	Catalog Number
6.5mm Diameter, DC, Shielded - Nominal Sensing Distance - 2mm							
PNP	N.O.	12- 24 Vdc	2.6 V	200 mA	2500 Hz	2 meter (6') cable	XS1L06PA349
NPN	N.O.	12- 24 Vdc	2.6 V	200 mA	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 Diameter, DC, Shielded - Nominal Sensing 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 Diameter, DC, Shielded - Nominal Sensing 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 Diameter, Universal AC/DC, Shielded - Nominal Sensing 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 Diameter, DC, Shielded - Nominal Sensing 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	XS1N18NA349
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 Diameter, Universal AC/DC, Shielded - Nominal Sensing 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 Diameter, DC, Shielded - Nominal Sensing 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 Diameter, Universal AC/DC, Shielded - Nominal Sensing 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

★ See p. 518 for matching connector cables.

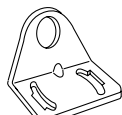
Minimum Mounting Clearances (mm/inches)

Side by side	Face to face	Facing a metal object	Mounting in a metal support	Mounted in a metal support
6.5 mm	5 mm (.196")	30 mm (1.18")	7.5 mm (.29") d = 10 mm (.393") h = 1.6 mm (.062")	d = 6.5 mm (.255") x = 1.3 mm (.051")
8 mm	5 mm (.196")	30 mm (1.19")	7.5 mm (.29") d = 10 mm (.393") h = 1.6 mm (.062")	d = 8 mm (.314") x = 1.6 mm (.062")
12 mm	8 mm (.314")	48 mm (1.88")	12 mm (.47") d = 14 mm (.551") h = 2.4 mm (.094")	d = 12 mm (.472") x = 1.6 mm (.062")
12 mm (AC/DC)	8 mm (.314")	48 mm (1.88")	12 mm (.47") d = 14 mm (.551") h = 1.2 mm (.047")	d = 12 mm (.472") x = 1.6 mm (.062")
18 mm	20 mm (.787")	96 mm (3.77")	30 mm (1.18") d = 28 mm (1.10") h = 3.6 mm (.141")	d = 18 mm (.708") x = 3.6 mm (.141")
18 mm (AC/DC)	20 mm (.787")	96 mm (3.77")	30 mm (1.18") d = 28 mm (1.10") h = 1.8 mm (.070")	d = 18 mm (.708") x = 1.8 mm (.070")
30 mm	40 mm (1.57")	240 mm (9.44")	60 mm (2.36") d = 50 mm (1.96") h = 6 mm (.236")	d = 30 mm (1.18") x = 6 mm (.236")

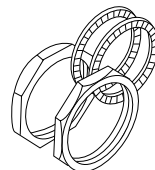
Wiring



XSZB1●●



9006PA●●



XSZE●●●

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

Specifications

Mechanical		6.5 mm	8 mm	12 mm	18 mm	30 mm
Usable sensing range ★		0 to 0.08" (0 to 2 mm)	0 to 0.08" (0 to 2 mm)	0 to 0.12" (0 to 3.2 mm)	0 to 0.31" (0 to 8 mm)	0 to 0.62" (0 to 16 mm)
Temperature range		-13 F to +25 F (-25 C to +70 C)				
Enclosure rating	NEMA Type	3, 4x, 6p, 12, 13				
	IEC Type	IP68 (except connectors)				
Max tightening torque		--	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)
Vibration		25 G, amplitude +/- 2mm, f = 10 - 55 Hz				
Shock resistance		50 G, duration 11ms"				
Standard target size (steel) (mm)		6.5x6.5x1	8x8x1	12x12x1	18x18x1	30x30x1
Max Differential (% of Sr)		15%				
Max Repeatability (% of Sr)		3%				
LED indicator type	Cable	360° ring LED, visible from all quadrants				
	Connector	One LED, visible from 4 quadrants				
Enclosure material		Nickel plated 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 24 Vdc				
Voltage limit (including ripple)		20 V to 264 Vac/dc, 10 to 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 (no load)		10 mA				
Power-up delay (max.)		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
Protective Circuitry	Short circuit protection	yes				
	Overload protection	yes				
	Reverse polarity protection	yes				
	Radio frequency immunity (RFI)	IEC 61000-4-3 Level 3				
	Electrostatic, Transients, Impulse	IEC 61000-4-2 Level 3; IEC 61000-4-4 Level 3; 60947.5.2 Level 3				
Agency Listings		 				

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

Options

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

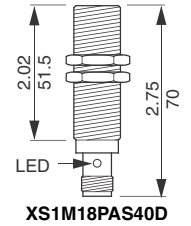
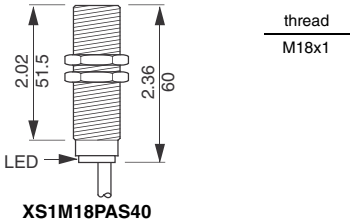
Accessories

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

Proximity Sensors

XS Inductive Sensors

18 mm, Ferrous Only - DC



Dual Dimensions inches
mm

Features:

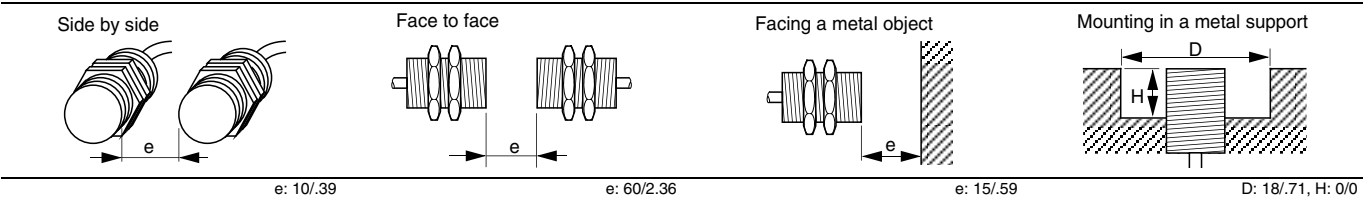
- Ideal for machining, sorting applications
- Responds only to ferrous metals, ignoring non ferrous metals such as Aluminum
- Stainless steel body
- Cable and micro-style connector versions offered *

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

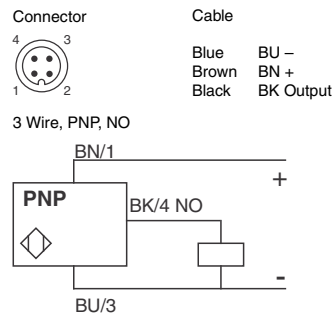
* See p. 518 for matching connector cables

Proximity Sensors

Minimum Mounting Clearances (mm/inches)



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 (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 ²), 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
Protective Circuitry	Short circuit protection	Yes
	Overload protection	Yes
	Reverse polarity protection	Yes
	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  CR 44087 Class 3211 03 

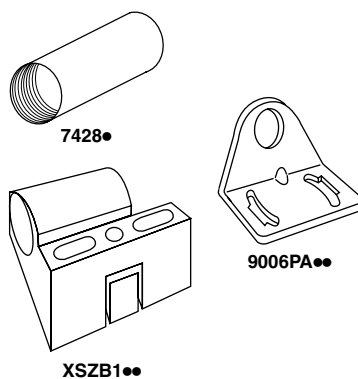
Options

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

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



Connector Cables (M12 or D suffix)

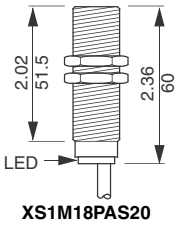
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°

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

Proximity Sensors

XS Inductive Sensors

18 mm, Non Ferrous Only - DC



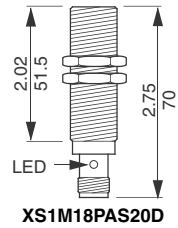
thread
M18x1

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 (6') cable - Nominal Sensing Distance - 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



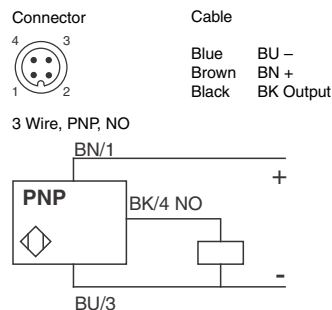
Dual Dimensions inches
mm

Proximity Sensors

Minimum Mounting Clearances (mm/inches)

Side by side	Face to face	Facing a metal object	Mounting in a metal support
e: 10/.39	e: 60/2.36	e: 15/.59	D: 18/.71, H: 0/0

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
	Connector version	4 LED windows at 90 degrees
Enclosure material		Metal
Wiring		22 AWG (0.34 mm ²), 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
Protective Circuitry	Short circuit protection	Yes
	Overload protection	Yes
	Reverse polarity protection	Yes
	Radio frequency immunity (RFI)	Yes
	Electrostatic discharges	Yes
	Fast transients (motor start/stop interference)	Yes
Agency Listings	UL E 164869 CCN NRKH	CR 44087 Class 3211 03
	CE	

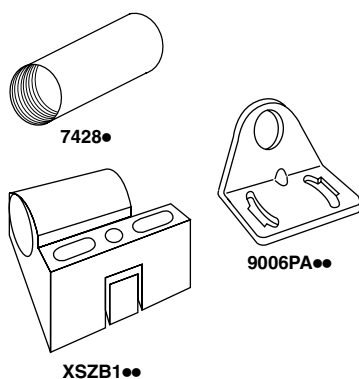
Options

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" NPT conduit adapter length 2" (50.8 mm)	Aluminum	7428
	Stainless	74282

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



Connector Cables (M12 or D suffix)

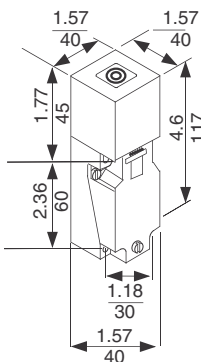
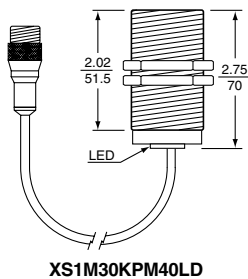
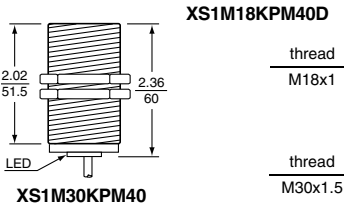
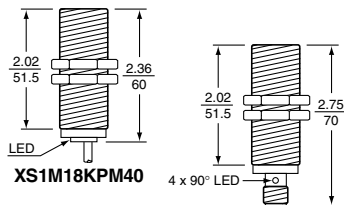
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°

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

Proximity Sensors

XS Inductive Sensors

Ferrous/Non-Ferrous; Universal, DC



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

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 Diameter							
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 Diameter							
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, 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)

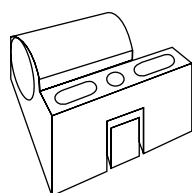
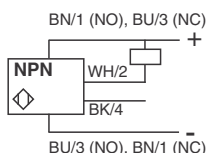
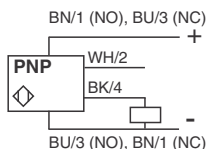
Side by side	Face to face	Facing a metal object	Mounting in a metal support
 XS1M18 e = 0.40 in. (10 mm) XS1M30 e = 0.79 in. (20 mm)	 e = 2.36 in. (60 mm) e = 4.72 in. (120 mm)	 e = 0.59 in. (15 mm) e = 1.18 in. (30 mm)	 d = 0.71 in. (18 mm), h = 0 d = 1.18 in. (30 mm), h = 0
 XS7C40KPM40 e = 1.57 in. (40 mm)	 e = 4.72 in. (120 mm)		 e = 1.77 in. (45 mm)

Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

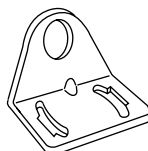
Wiring



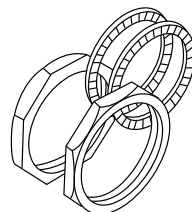
4 wire programmable NO or NC selectable output



XSZB100



9006PA00



XSZE000

Specifications

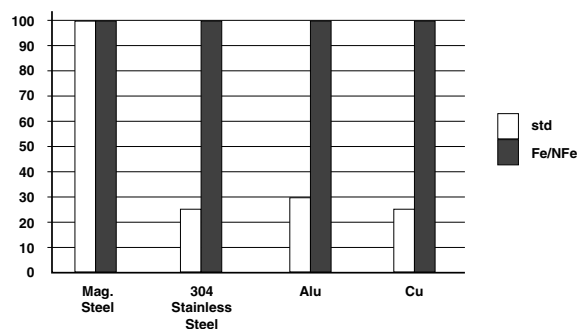
Mechanical		
Standard Temperature Range		32° to 122° F (0° to 50° C)
Enclosure Rating	NEMA Type	Tubular, cable 3, 4X, 6P, 12, 13 Tubular, connector See connector rating Limit switch body 4, 6P, 12 Tubular, cable IEC IP68 Tubular, connector See connector rating Limit Switch Body IEC IP67
	IEC Type	
Enclosure Material	Case	XS1M18 Nickel Plated Brass XS1M30 Stainless Steel XS7 ABS Plastic
Tightening torque (max.)		XS1M18 35 N·m XS1M30 50 N·m
Vibration resistance	(IEC 60068-2-6)	7 gn, amplitude ± 1mm (f = 10 Hz to 42 Hz)
Shock resistance	(IEC 60068-2-27)	30 gn, duration 11 ms
Standard Target Size	0.7" (18 mm)	0.7" x 0.7" (18 mm x 18 mm)
	1.18" (30 mm)	1.18" x 1.18" (30 mm x 30 mm)
Differential (max)	(% of Sr.)	15%
	Repeatability (max)	3%
LED indicator type	Tubular, cable	360° ring LED
	Tubular, connector	4 LED windows at 90°
Connection	Tubular, pigtail	360° ring LED
	Limit switch body	LED power On
Connection	10.7" (8 mm) cable	4 wire #22 AWG (0.34 mm ²), PvR
	0.7" (18 mm) connector	4 pin Micro Style DC
Connection	1.18" (30 mm) cable	4 wire #22 AWG (0.34 mm ²), PvR
	1.18" (30 mm) pigtail	4 pin Micro Style DC, 0.8 m (2.6') pigtail, PvR
Connection	Limit switch body	#14 AWG Screw Terminals
Electrical		
Voltage Range		12 - 24 Vdc
Voltage Limit (including ripple)		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.
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	UL E 164869 CCN NRKH	CR 44087 Class 3211 03

Accessories

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 vs. Fe/NonFe Prox Sensing Range (%)

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.



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



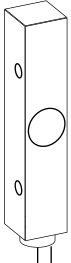
Proximity Sensors



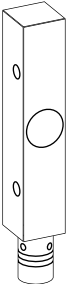
XS5L81



XS5L81***S



XS5L82



XS5L82***S

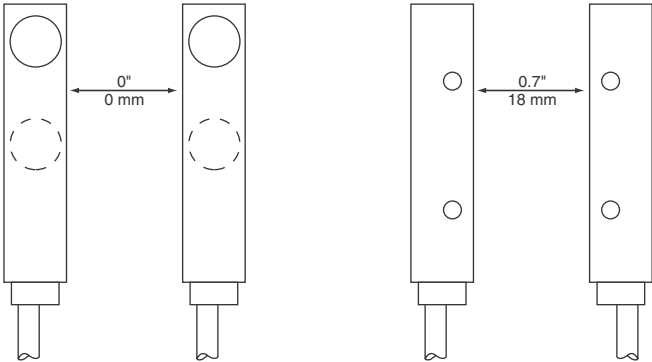
Features:

- 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

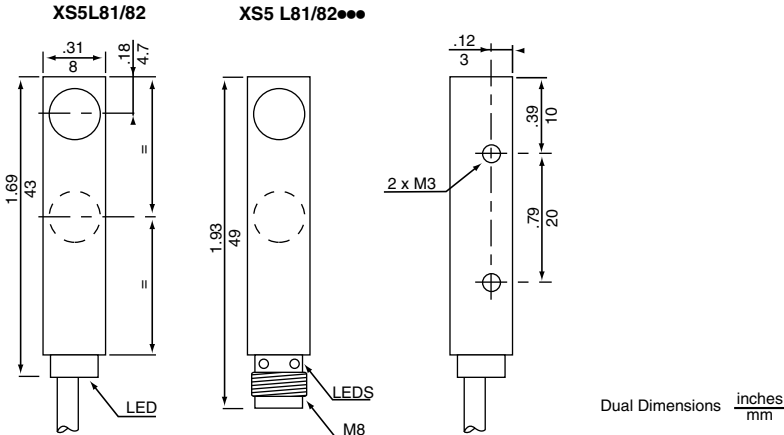
Sensing Face	Circuit Type	Output Mode	Voltage Range Max.	Load Current Max.	Operating Frequency Max.	Catalog Number
1.5 mm Nominal Sensing Distance, 2 M (6.6') cable						
Top	PNP	N.O.	10-30 Vdc	100 mA	2500 Hz	XS5L81PA140
Top	NPN	N.O.	10-30 Vdc	100 mA	2500 Hz	XS5L81NA140
1.5 mm Sensing Distance, Nano style Connector *						
Top	PNP	N.O.	10-30 Vdc	100 mA	2500 Hz	XS5L81PA140S
Top	NPN	N.O.	10-30 Vdc	100 mA	2500 Hz	XS5L81NA140S
1.5 mm Nominal Sensing Distance, 2 M (6.6') cable						
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 Distance, Nano style Connector *						
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



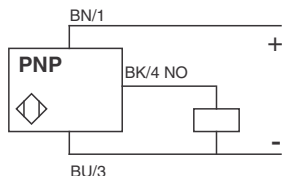
Dimensions



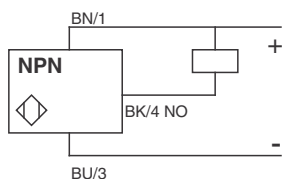
Wiring

Connector	Cable
	Blue BU – Brown BN + Black BK Output

3 Wire, PNP, NO



3 Wire, NPN, NO



Specifications

Mechanical		
Usable sensing range ★		1.2 mm
Temperature range		-13° to 158° F (-25° to 70° C)
Enclosure rating	IEC Type	IP67 (connector version depends on connector)
Differential (% of Sr)		20%
Repeatability (% of Sr)		3%
LED indicator	Cable Type	360° ring
	Connector type	90°, or visible from 4 quadrants
Enclosure material		Metal
Wiring		27 AWG (0.11 mm ²), 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 (max.)(no load)		10 mA
Residual (leakage) current, open state		0.1 mA
Power-up delay (max.)		5 ms
On delay (max.)		0.5 ms
Off delay (max.)		1 ms
Physical Characteristics		
Protective Circuitry	Short circuit protection	yes
	Overload protection	yes
	Reverse polarity protection	yes
Agency Listings	 E 164869 CCN NRKH  CR 44087 Class 3211 03 	

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)

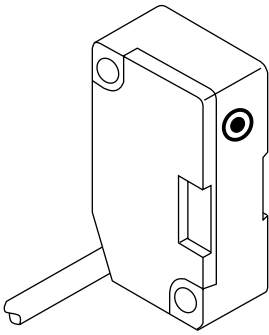
XSZCS101	Nano Conn., 3 pin, 2 m, straight
XSZCS111	Nano Conn., 3 pin, 2 m, 90°

For additional cable options and lengths see p. 518

Proximity Sensors

XS7/8H Miniature, Inductive Sensor

Sub-compact Block Style, DC



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)

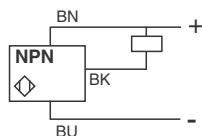
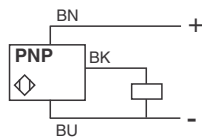
Side by side	Face to face	Facing a metal object	Mounting in a metal support
XS7 Shielded XS8 Non-shielded	e: 7/1.27 e: 10/.39	e: 30/1.18 e: 40/1.57	e: 7/1.27 e: 10/.39
			e: 0/0 e: 5/.19

Front View

Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

Wiring

3 wire, N.O.



Specifications

Mechanical		
Usable sensing range	Shielded	0-1.6 mm (0.06")
	Non-shielded	0-2.4 mm (0.19")
Standard temperature range	Shielded	-13° F to +158° F (-25° C to +70° C)
	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)
	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)		10 mA
On and off delay (maximum)		.1 ms
Power-up delay		5 ms
Reverse polarity protection		Standard
Protective circuitry	Radio frequency immunity (RFI)	IEC 61000-4-3 Level 3
	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  CR 44087 Class 3211 03 	

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

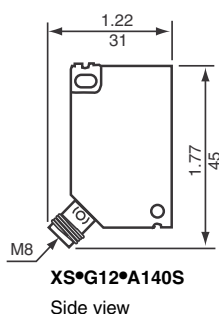
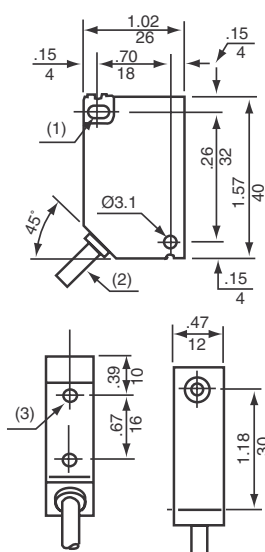
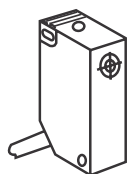
Options

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

Proximity Sensors

XS7/8G Inductive Sensors

Compact Block Style



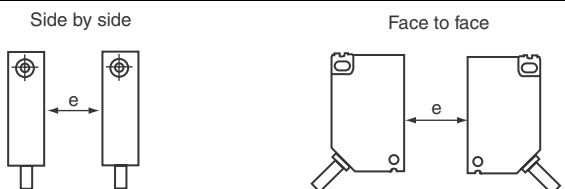
Features:

- 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') cable, Nominal Sensing 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 Distance - 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 Connector, Nominal Sensing 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-shielded - 2 meter (6.6') cable, Nominal Sensing Distance - 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-shielded - 2 meter (6.6') cable, Nominal Sensing Distance - 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 Connector, Nominal Sensing 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

- * See p. 518 for matching connector cables

Minimum Mounting Clearances



XS7G Shielded	e: 0mm (0")	e: 15 mm (.6")
XS8G Non-shielded	e: 10 mm (.4")	e: 60 mm (2.4")

- (1) 1 elongated hole 3.1 x 5.1mm (0.12" x 0.20")
- (2) Cable, L= 2m (6.6')
- (3) 2 holes M= 3 x 5mm (0.12" x 0.20")

Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

Wiring

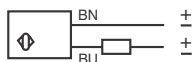
Connector



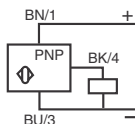
Cable

Blue BU –
Brown BN +
Black BK Output

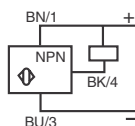
2-wire AC or DC NO or NC
XS•G12M•230



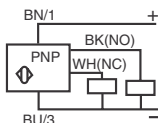
3-wire DC NO
XS•G12PA140
XS•G12PA140S



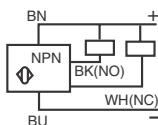
XS•G12NA140
XS•G12NA140S



4-wire DC NO + NC
XS•G12PC440



XS•G12NC440



Specifications

Mechanical		
Usable sensing range ★	Shielded	0 - 1.6 mm (.06")
	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)	25 G, amplitude =/2 mm, f = 10 - 55 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 ²), PvR cable	
Electrical	AC/DC models	DC models
Voltage range	24 to 240 Vac	12 to 24 Vdc
	24 to 210 Vdc	--
Voltage limit (including ripple)	20 to 264 Vac/dc	10 to 30 Vdc
Current consumption (max.)(no load)	--	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
Protective Circuitry	Short circuit protection	No
	Overload protection	No
Agency Listings	 E 164869 CCN NRKH  CR 44087 Class 3211 03 	

Options

Description	Suffix
Extended temperature range	
to +185° F (+85° C)	TT
to -40° F (-40° C)	TF
5 meter (16') cable length	L1
10 meter (33') cable length	L2

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

Connector Cables (M8 or S suffix)

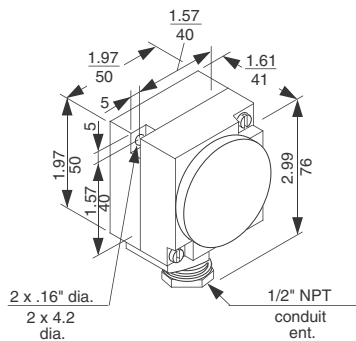
XSZCS101	Nano Conn., 3 pin, 2 m, straight
XSZCS111	Nano Conn., 3 pin, 2 m, 90°

For additional cable options and lengths see p. 518

Proximity Sensors

XSB Rectangular, Inductive Sensors

Compact Block, AC and DC; Plug-in



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

Output Mode	Voltage Range	Max. Load	Residual (leakage) Current	Operating Frequency	LED/SCP★	Catalog Number
NAMUR - DC, 2 wire, screw terminals for use with intrinsically safe relays						
1mA/3mA	7-12 V	-	-	250 Hz	No/Yes	XSBN25122
DC models, 2 wire, screw terminals						
N.O.	12-58 V	80 mA	1.2 mA	250 Hz	No/No	XSBC25710
AC models, 2 wire, screw terminals						
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 mA (P)②	40 Hz	Yes/Yes	XSBA25523
N.O.	93-132 V	150 mA	1.5 mA (P)②	40 Hz	Yes/No	XSBA25811
N.C.	93-132 V	150 mA	1.5 mA (P)②	40 Hz	Yes/No	XSBA25821
N.O.	93-264 V	50 mA	4.5 mA (P)②	40 Hz	Yes/No	XSBA25911
N.C.	93-264 V	50 mA	4.5 mA (P)②	40 Hz	Yes/No	XSBA25921
DC models, 2 wire, mini style connector ③						
N.O.	93-132 V	150 mA	1.7 mA (P)②	40 Hz	Yes/Yes	XSBA25513R3
N.C.	93-132 V	150 mA	1.7 mA (P)②	40 Hz	Yes/Yes	XSBA25523R3
N.O.	93-132 V	150 mA	1.5 mA (P)②	40 Hz	Yes/No	XSBA25911R3
N.C.	93-264 V	150 mA	4.5 mA (P)②	40 Hz	Yes/No	XSBA25921R3

- ② PLC Applications:
P = PLC compatible.
R = Bleeder resistor needed for PLC application.
- ③ See p. 518 for matching connector cables.
- ★ For AC devices without SCP, see p. 298 for protective fuses.

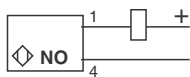
Minimum Mounting Clearances

	Side by side	Face to face
XSC.15	e: 38mm (1.5")	e: 97mm (3.8")
XSC.20	e: 80mm (3.1")	e: 160mm (6.3")

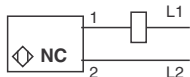
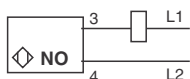
Wiring



2 wire DC



2 wire AC



Specifications

Mechanical		
Usable sensing range*		0-20 mm (.78")
Standard temperature range		-13° F to +158° F (-25° C to +70° C)
Enclosure rating	• NEMA Type	3, 4, 6, 13
	• IEC Type	IP67
Vibration resistance		25 G, amplitude ± 2 mm, f = 10-55 Hz
Shock resistance		50 G for 11 ms
Standard target size (steel)		3" x 3" (75 x 75 mm)
Differential		Max. 20%
Repeatability		Max. 5%
Radio Frequency Immunity (RFI)		Standard
Cable		Screw terminals, #16AWG
Electrical		
Voltage drop (across switch)		9.5 V
Inrush current (inductive @ 20mS)		.9 A
Minimum load current		20 mA
Power supply current (no load)		-
On delay (max.)		10 ms
Off delay (max.)		10 ms
Power-up delay (max.)		150 ms
Reverse polarity protection		-

Agency Listings



E 164353 ■
CCN NRKH



LR 44087 ★
Class 3211 03

FM: J.I. OROH9.AX
(3610, 3611)



- Excent XSBN25122
- ★ Excent XSBN25122 LF 595, Class 3211 06

Options

Description	Suffix
Extended temperature range ▲ to +185° F (+85° C)	TT
to -40° F (-40° C)	TF

Ex: XSB C... TT

▲ Not available for AC models with SCP.

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)

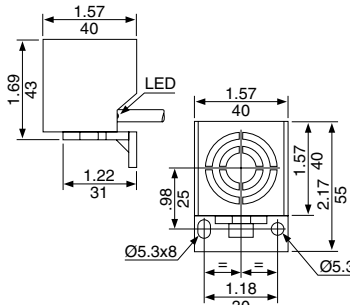
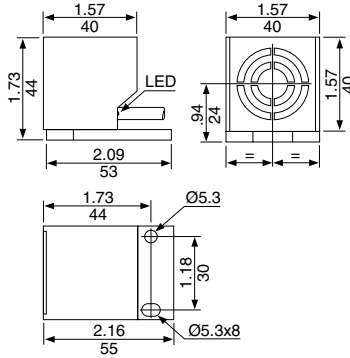
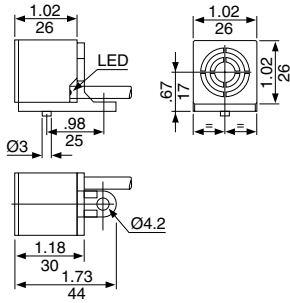
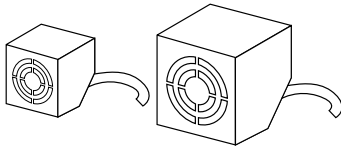
XSZCA901Y	Mini Conn., 3 pin, 2 m, straight
XSZCA911Y	Mini Conn., 3 pin, 2 m, 90°

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



Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

Features

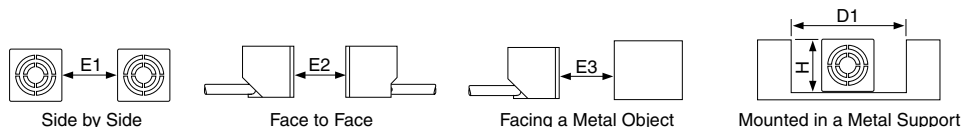
- Compact cubed body style in rugged PBT plastic
- Flush and Non-flush mountable
- Comparable sensing distance to Limit Switch style in half the body size
- Mounting bracket included with each sensor
- Elbow bracket provides interchangeability with Limit Switch style sensor, and enables multiple positioning 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 Number
26 mm x 26 mm								
DC, Flush Mountable								
2 Meter (6') Cable ▲								
26 x 26	10 mm	2 wire	N.O.	12–48 Vdc	5.2 V	100 mA	100 Hz	XS7T2DA210
26 x 26	10 mm	PNP	N.O. + N.C.	12–48 Vdc	2 V	200 mA	1000 Hz	XS7T2PC440
26 x 26	10 mm	NPN	N.O. + N.C.	12–48 Vdc	2 V	200 mA	1000 Hz	XS7T2NC440
0.8 m (2.6 ft) Pigtail with 4 Pin Micro Connector ▲								
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 with 4 Pin Micro Connector ▲								
26 x 26	10 mm	2 wire	N.O.	12–48 Vdc	5.2 V	100 mA	100 Hz	XS7T2DA214LD01
DC, Non-Flush Mountable								
2 Meter (6') Cable ▲								
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 Micro Connector ▲								
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 40 mm								
DC, Flush Mountable								
2 Meter (6') Cable ▲								
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	XS7T4PC440
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 Micro Connector ▲								
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 with 4 Pin Micro Connector ▲								
40 x 40	15 mm	2 wire	N.O.	12–48 Vdc	5.2 V	100 mA	150 Hz	XS7T4DA214LD01
DC, Non-Flush Mountable								
2 Meter (6') Cable ▲								
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 Micro Connector ▲								
40 x 40	20 mm	PNP	N.O. + N.C.	12–48 Vdc	2 V	200 mA	1000 Hz	XS8T4PC440LD
40 x 40	20 mm	NPN	N.O. + N.C.	12–48 Vdc	2 V	200 mA	1000 Hz	XS8T4NC440LD

▲ See p. 518 for matching connector cables

Minimum Mounting Clearances

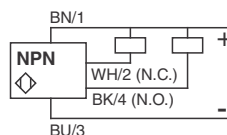
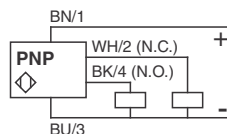
	E1		E2		E3		D1		H	
	IN	mm	IN	mm	IN	mm	IN	mm	IN	mm
XS7T2 Shielded	0.98	25	4.32	110	1.18	30	1.02	26	0	0
XS7T4 Non-shielded	1.57	40	4.71	120	1.77	45	1.57	40	0	0
XS7T4 Shielded	1.49	38	4.72	120	1.77	45	3.07	78	1.02	26
XS8T4 Non-shielded	2.36	60	6.29	160	2.36	60	4.72	120	1.57	40



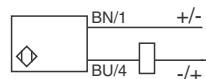
Wiring



4 Wire



2 Wire



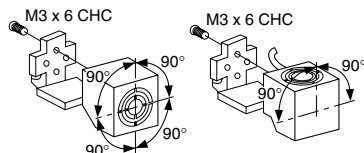
Specifications

Mechanical				
Usable Sensing Range ★	XS7T2	0–8 mm (.32")		
	XS8T2	0–12 mm (.47")		
Temperature Range		-13° to 158° F (-25° to 70° C)		
Enclosure Rating	NEMA Type	1, 4X, 12		
	IEC Type	IP67 (connector version depends on connector)		
Vibration		25 G, amplitude $\approx$ 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 cable		
Enclosure Material		Plastic		
Wiring		20 AWG (0.5 mm ²), 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) Current–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
Protective Circuitry	Short Circuit Protection	Yes	Yes	Yes
	Overload Protection	Yes	Yes	Yes
Agency Listings	 E 164869 CCN NRKH	 CR 44087 Class 3211 03		

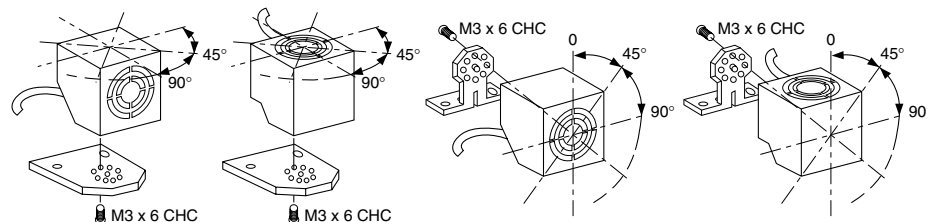
★ Refer to p. 351 for target material correction coefficient Km.

Mounting options

XS7/8T2



XS7/8T4



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

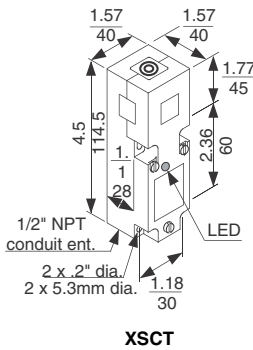
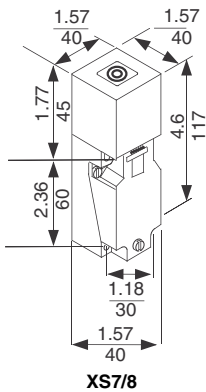
Proximity Sensors

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



Dual Dimensions inches mm

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

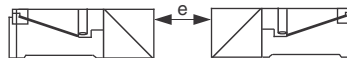
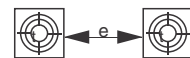
Circuit Type	Output Mode	Voltage Range		Maximum Load Current ■	Residual (leakage) current	Operating Frequency	LED/SCP★	Catalog Number
		AC	DC					
Shielded								
15mm (.59") sensing range universal, AC/DC								
2 wire	N.O./N.C.	24-240 V	24-210 V	300 mA/200 mA	0.5 mA at 24 V 1.5 mA at 120 V	25/50 Hz	Yes/No	XS7C40MP230
15mm (.59") sensing range, 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	N.O. + N.C.	-	12-48 V	200 mA	-	1000 Hz	2/Yes	XS7C40PC440
NPN	N.O. + N.C.	-	12-48 V	200 mA	-	1000 Hz	2/Yes	XS7C40NC440
20mm (.79") extended range, DC 3 wire								
PNP	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 range, AC								
2 wire	N.O./N.C.	24-240 V	-	500 mA	1.5 mA	25 Hz	Yes/No	XS7C40FP260
Non-shielded								
20mm (.79") 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	XS8C40MP230
20mm (.79") sensing range, 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	N.O. + N.C.	-	12-48 V	200 mA	-	1000 Hz	2/Yes	XS8C40PC440
NPN	N.O. + N.C.	-	12-48 V	200 mA	-	1000 Hz	2/Yes	XS8C40NC440
40mm (1.6") extended range, DC 3 wire								
PNP	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 range, AC								
2 wire	N.O./N.C.	24-240 V	-	500 mA	1.5 mA	25 Hz	Yes/No	XS8C40FP260
20mm (.79") sensing range, AC Model with Timer (1-20s)								
2 wire	N.O./N.C.	24-240 V	-	350 mA	2.0 mA (R)	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.
 ■ $20 \leq V_{dc} \leq 58$ IEC 60947-5-2 Utilization category DC-13; $V_{dc} > 58$ IEC 60947-5-2 Utilization category DC-12

Minimum Mounting Clearances (mm/inches)

Side by side

Face to Face



XS7 Shielded e: 40/1.57
 XS8 Non-shielded e: 80/3.15

e: 120/4.72
 e: 160/6.30

Wiring

Connector



K30/K31

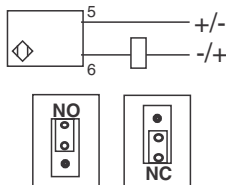
R30/R31

R5

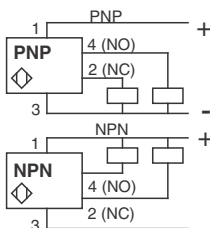
Cable

Blue BU –
Brown BN +
Black BK Output

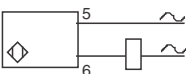
2 wire DC Non Polarized



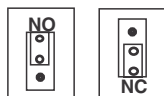
4 wire DC NO/NC



2 wire AC



NO/NC Selector Jumper



Specifications

Mechanical		
Usable sensing range *	Shielded	0-12 mm (.47")
	Non-shielded	0-16 (63")
Standard temperature range		-13° F to +158° F (-25° C to +70° C)
Enclosure rating	NEMA Type	4, 6P, 12 (UL test pending)
	CENELEC Type	IP67
Enclosure material	Body & sensing face	PBT
	Screws	Stainless Steel
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
Standard target size (steel)	Shielded	45 x 45 mm (1.8" x 1.8")
	Non-shielded	60 x 60 mm (2.4" x 2.4")
Differential	Max. 20%	
Repeatability	Max. 3%	
Radio Frequency Immunity (RFI)	Standard	
Cable	Screw terminals	

Electrical	AC Models	DC Models		AC/DC Models
		2 wire	4 wire	
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 (including 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	5 mA	1.5 mA	–	5 mA
Maximum load current	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
Off delay (max.)	Shielded	20 ms	5 ms	0.7 ms
	Non-shielded	20 ms	7 ms	0.7 ms
Power-up delay (max.)	120 ms	5 ms	5 ms	120 ms

Protective circuitry

Short circuit protection	Optional ★
Overload protection	Yes
Radio frequency immunity (RFI)	IEC 61000-4-3 Level 3
Electrostatic; Transients; Impulse	IEC 61000-4-2 Level 4; IEC 61000-4-3 Level 3; IEC 60947.5.2 Level 3
Reverse polarity protection DC Versions	Yes

Agency Listings	 E 164869 CCN NRKH  CR 44087 Class 3211 03 
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* See page 351 for target material corrective 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

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 style 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)

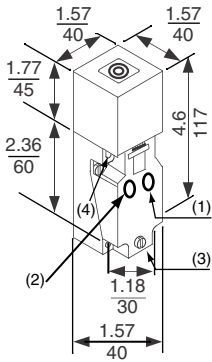
XSZCK101Y	Micro Conn., 3 pin, 2 m, straight
XSZCK111Y	Micro Conn., 3 pin, 2 m, 90°
XSZCA901Y	Mini Conn., 3 pin, 2 m, straight
XSZCA911Y	Mini Conn., 3 pin, 2 m, 90°
XSZCA1501Y	Mini Conn., 5 pin, 2 m, straight
XSZCA1511Y	Mini Conn., 5 pin, 2 m, 90°

For additional cable options and lengths see p. 518

Proximity Sensors

XS Inductive Sensors

Limit Switch Body, 5 Position Turret Head, DC IQ Prox™



- (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)

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.

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.

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

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

XSC8C40•AA40 e: 80/3.15

Face to face

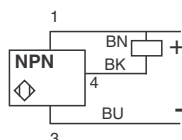
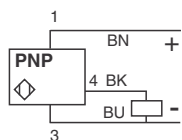
e: 9.45m/240

Proximity Sensors

Dual Dimensions inches
mm

Wiring

3-wire DC, NO output



XS8C40•AA40

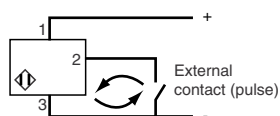
Specifications

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)
Enclosure Rating	NEMA Type	4, 4X, 6, 6P, 12,
	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%
LED indicator type		Power/Teach (green)
Connection		Output (yellow)
		Screw Terminal
Electrical		
Voltage Limit (including ripple)		19 - 30 Vdc
Voltage Drop (across switch) closed state (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 NRRH  CR 44087 Class 3211 03 

Activating self-teaching mode

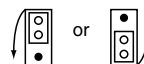
Option 1

by external contact



Option 2

internally (repositioning of jumper)



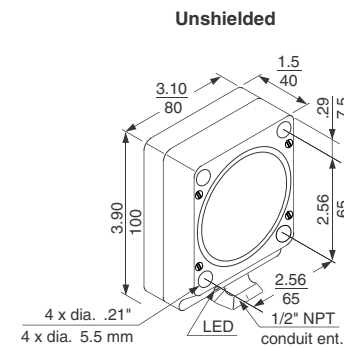
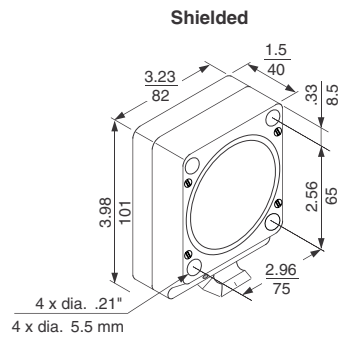
When in the self-teaching mode, the green LED (status) flashes rapidly.

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



Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

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 Type	Output Mode	Voltage Range ▲	Max. Load	Residual (Leakage) Current	Operating Frequency Maximum	LED/SCP★	Catalog Number
DC Model, Screw Terminals							
2 wire	N.O.	12-48 V	100 mA	0.5 mA	180 Hz	Yes	XSDC407138

40 mm (1.57") Sensing Range, Non-shielded

DC Model, Screw Terminals							
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 Model, Screw Terminals							
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 Model Mini Style Connector, 3 Pins ◊

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 Model with Timer

2 wire	N.O./N.C.	24-240 V	500 mA	3.5 mA (R) ■	10 Hz	Yes/No	XSDT023319
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50 mm (2") Sensing Range, Shielded

AC/DC Model, Screw Terminals							
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

50 mm (2") Sensing Range, Non-shielded

DC Model, Screw Terminals							
2 wire	N.O.	12-48 V	100 mA	0.5 mA	180 Hz	Yes/Yes	XSDC507139
AC Model, Screw Terminals							
2 wire	N.O./N.C.	24-240 V	500 mA	1.5 mA	10 Hz	Yes/No	XSDA500519
2 wire	N.O./N.C.	24-240 V	500 mA	1.5 mA	10 Hz	3★/Yes	XSDA505539
AC Model Mini Style Connector, 3 Pins ◊							
2 wire	N.O./N.C.	24-240 V	500 mA	1.5 mA	10 Hz	Yes/No	XSDA500519R†
2 wire	N.O./N.C.	24-240 V	500 mA	1.5 mA	10 Hz	3★/Yes	XSDA505539R†

- 100 mA for DC.
- 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.

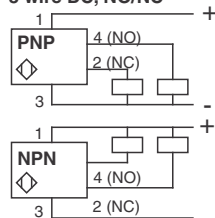
Minimum Mounting Clearances (Except XSDM500538) (mm/inches)

Side by side		Face to face	
XSD 40	e: 200/7.9	XSD 40	e: 400/15.7
XSD 50	e: 250/10	XSD 50	e: 500/20

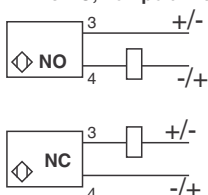
Wiring



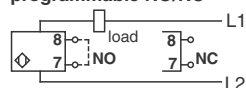
3 wire DC, NO/NC



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)		
Enclosure Rating	NEMA Type	3,4 X (indoor),12,13		
	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 120 mm (4.7" x 4.7")		
Differential		Maximum 20%		
Repeatability		Maximum 5%		
Cable, PVC		Screw Maximum, #16 AWG		
Electrical	AC Models	DC Models		AC/DC Models
		2 wire	4 wire	
	Voltage range max. (including ripple)	20-264 V	10-58 V	10-58 V
Voltage Drop (Across Switch)	5.5 V★	4 V	1.8 V	6 V
Inrush Current (Inductive @ 20mS)	2 A	-	-	2 A
Minimum Load Current	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 Immunity (RFI)		4 cm (1.6") Minimum from antenna		
Agency Listings		FM: J.I. OROH9.AX (3610, 3611)		



E 164353 ■
CCN NRKH



LR 44087 ★
Class 3211 03



★ Timer model voltage drop is 4.5 V.

Options

Description	Suffix
Extended Temperature Rangea	
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 p. 351 for target material correction coefficient Km.

Connector Cables (A or R3 suffix)

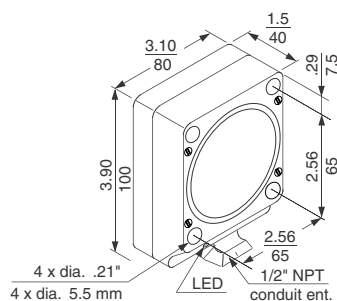
XSZCA901Y	Mini Conn., 3 pin, 2 m, straight
XSZCA911Y	Mini Conn., 3 pin, 2 m, 90°

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
- AC/DC model available
- Radio Frequency Immunity (RFI)
- Short Circuit Protection (SCP) (selected models)
- 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 model, 2 and 3 wire screw terminals							
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 model, screw terminals							
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 DC models, screw terminals							
2 wire	N.O./N.C.	24-240 Vac	500 mA	1.7 mA @ 120 V ② ■			
		24-210 Vdc	100 mA	115 V	10 Hz	3③/Yes	XSDM600539
AC and AC/DC models, mini style receptacle, 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
2 wire	N.O./N.C.	24-240 Vac	500 mA	1.7 mA ②			
		24-210 Vdc	100 mA	1.7 mA @ 120 V ② ■	10 Hz	3③/Yes	XSDM600539R3

② PLC compatible.

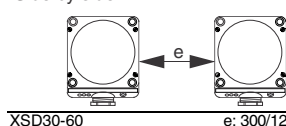
③ 1 LED for power OUT and 1 LED for output ON, 1 LED for SCP triggered.

■ < 1 mA @ 24 V, < 3 mA @ 240 V

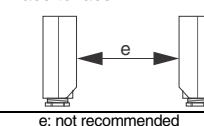
★ For devices without SCP, see p. 298 for protective fuses.

Minimum Mounting Clearances (mm/inches)

Side by side



Face to face

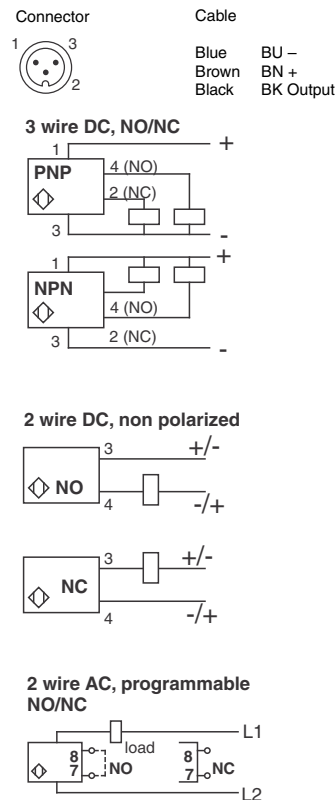


Proximity Sensors

XSD Rectangular, Inductive Sensors

Long Range Block, AC and DC; Adjustable Sensing Range

Wiring



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)			
Enclosure rating	NEMA Type	3, 4, 6, 12, 13			
	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" x 4.7")			
Differential		Max. 20%			
Repeatability		Max. 5%			
Cable, PVC		Screw terminals, #16 AWG			
Electrical	AC Models	DC Models			AC/DC Models
		2 wire, N.O.	2 wire, N.O./N.C.	4 wire	
Voltage range (including 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 (inductive @ 20mS)	2 A	—	—	—	2 A
Minimum load current	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 protection	—	Standard	Standard	Standard	—
Radio Frequency Immunity (RFI)	4 cm (1.6") Minimum from antenna				
Agency Listings	 E 164353 ■ CCN NRKH  LR 44087 ★ FM: J.I. OROH9.AX (3610, 3611) 				

Options

Description	Suffix
Extended temperature range★	
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)

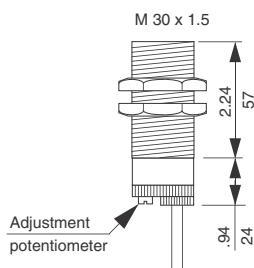
XSZCA901Y	Mini Conn., 3 pin, 2 m, straight
XSZCA911Y	Mini Conn., 3 pin, 2 m, 90°

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 $\frac{\text{inches}}{\text{mm}}$

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.

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, 10mm sensing range, Shielded, 2m cable							
DC models, 10-58 Vdc (including 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 models, 20-264 Vac/dc							
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

★ (P) – PLC Compatible, (R) – Bleeder resistor required for PLC applications

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

Minimum Mounting Clearances (mm/inches)

Side by side	Face to face	Facing a metal object	Mounting in a metal support
30 mm e: 20/79	e: 120/4.7	e: 30/1.2	D: 30/1.2, H: 0/0

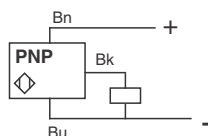
Proximity Sensors

XSAV Tubular, Inductive Sensors

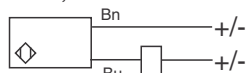
30mm Diameter, Motion Detection, DC or AC/DC

Wiring

3 wire, DC



2 wire, AC/DC



Specifications

Mechanical		
Usable sensing range★	0.7" (18 mm)	0-0.15" (0-4 mm)
	1.18" (30 mm)	0--.31" (0-8 mm)
Standard temperature range	-13° F to +158° C (-25° F to +70° F)	
Enclosure rating	NEMA Type	1, 3, 4, 6, 12, 13
	IEC Type	IP67
Vibration resistance	25 G, amplitude ± 2 mm, 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 18mm)
	1.18" (30mm) diameter	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
Inrush current (inductive @ 20 ms)		2 A
Minimum load current		5 mA
Current Consumption (no load)		15 mA
Start-up delay (max.)	XSAV1 models	9 sec. ±20% + 1/Fr ①
	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)	TT
	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.

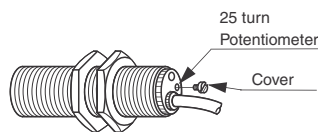
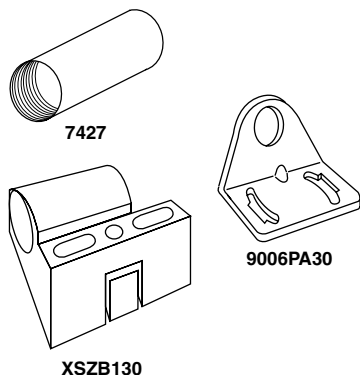
This number (n) should be within the operating frequency range given in the selection table. For reasons of mechanical balance, even numbers are recommended (2, 4, 6 etc.).

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.

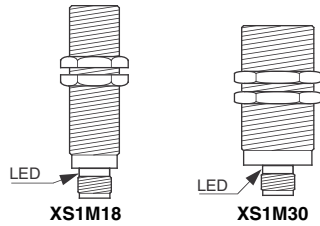
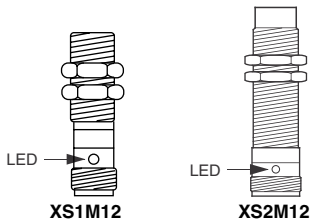
Care should be taken not to exceed the maximum frequency rating above which the sensor cannot detect the target, therefore, assuming zero speed condition.



Proximity Sensors

XS Tubular Inductive Sensors

Weld Field Immune, DC



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.

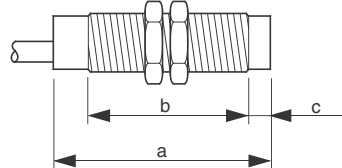
- The body styles are cylindrical in 0.47", 0.7" and 1.18" (12, 18 and 30 mm) diameters.
- Enclosure material is brass coated in Teflon® to prevent slag (molten bits of metal) from sticking to sensing face, reducing the possibility of false triggering.
- Available in Micro connector versions.★
- Mounting 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 ★, 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 Shielded, DC with Micro Connector ★, Nominal Sensing Distance–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.

Dimensions

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



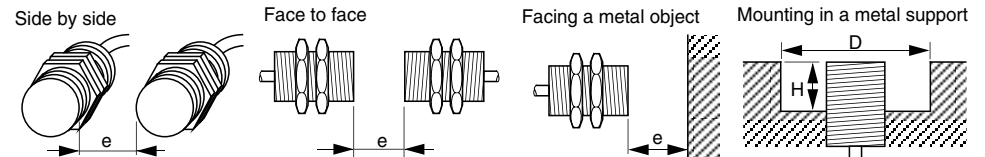
	a	b	c
XS1M12	2.3" (60)	1.6" (40)	0
XS2M12	2.3" (60)	1.5" (38)	0.16" (4)
XS1M18	2.3" (60)	1.6" (40)	0
XS1M30	2.3" (60)	1.6" (40)	0

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

$$B \text{ [mT]} = \frac{0.2 \times I \text{ [A]}}{r \text{ [mm]}}$$

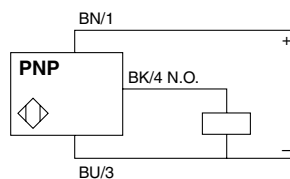
B [mT] = Electromagnetic Flux Density
I [A] = Welding Current
r [mm] = Distance

Minimum Mounting Clearances



	Side by Side		Face to Face		Facing a Metal Object		Mounted in Metal			
	e		e		e		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

Wiring



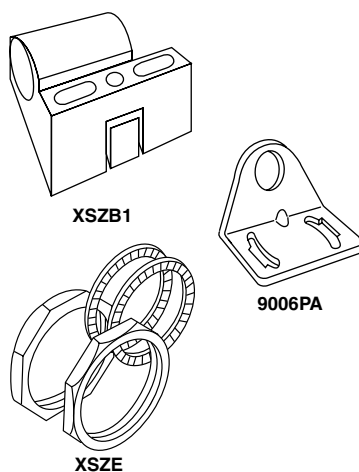
Specifications

Mechanical		XS1M12	XS2M12	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)			
Enclosure Rating	NEMA Type	3, 4, 6, 12, 13, 4X Indoor			
	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 Ripple)		10 to 36 Vdc			
Current Consumption (max.) (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
Protective Circuitry	Short Circuit Protection	Yes			
	Overload Protection	Yes			
	Reverse Polarity Protection	Yes			
Agency Listings		UL E 164869 CCN NRKH SP LR 702985 Class 3211 03 CE			

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

Accessories

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



Connector Cables (M12 or D suffix)

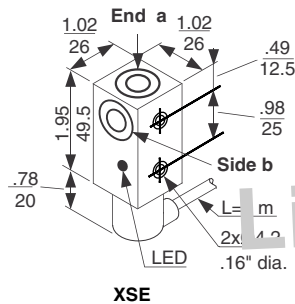
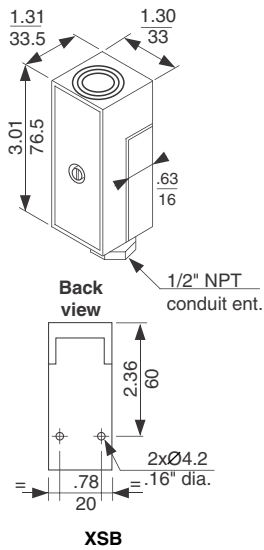
XSZCD101Y	Micro Conn., 4 pin, 2 m, straight
XSZCD111Y	Micro Conn., 4 pin, 2 m, 90°

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



Dual Dimensions inches mm

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.

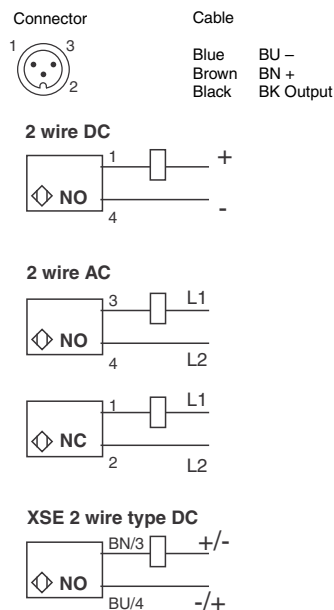
Output Mode/ Sensing Face (XSE)	Voltage Range	Max. Load Current	Residual (leakage) Current	Operating Frequency	Housing	LED/SCP★/ WFI	Catalog Number
XSB 13mm (.511") sensing range, Non-shielded							
AC, 2 wire, plug-in, screw terminal, no sensing							
N.O.	93-132 V	150 mA	4.5 mA (R) ①	10 Hz	Polyester	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 wire, plug-in, mini style connector, no sensing							
N.O.	93-132 V	150 mA	4.5 mA (R) ①	10 Hz	Polyester	Yes/No/Yes	XSBA105112A
N.C.	93-132 V	150 mA	4.5 mA (R) ①	10 Hz	Polyester	Yes/No/Yes	XSBA105212A
AC, 2 wire, non plug-in, 2m (6') cable, no sensing *							
N.O.	93-132 V	150 mA	4.5 mA (R) ①	10 Hz	Polyester	Yes/No/Yes	XSBA105112C
N.C.	93-132 V	150 mA	4.5 mA (R) ①	10 Hz	Polyester	Yes/No/Yes	XSBA105212C
AC, 2 wire, non plug-in, mini style connector, no sensing *							
N.O.	93-132 V	150 mA	4.5 mA (R) ①	10 Hz	Polyester	Yes/No/Yes	XSBA105112R
N.C.	93-132 V	150 mA	4.5 mA (R) ①	10 Hz	Polyester	Yes/No/Yes	XSBA105212R
DC, 2 wire, plug-in, not WFI							
N.O.	12-48 V	80 mA	1.2 mA	250 Hz	Polyester	No/No/No	XSBC10710
XSE 10mm (.393") sensing range, Shielded, DC models, 2 wire, N.O.							
2m(6') cable							
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 terminals							
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 cable (.8m - 2.6'), with pig-tailed 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 cable (.8m - 2.6'), with pig-tailed micro style 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.

① PLC Applications:
R = Bleeder resistor needed.
P = PLC compatible.

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

Wiring



Specifications

Mechanical			
Usable sensing range *		0-9 mm (.35") for XSB	
		0-8 mm (.31") for XSE	
Standard temperature range		-13° F to +158° F (-25° C to +70° C)	
Enclosure rating	NEMA Type	3, 4, 6, 12, 13	
	IEC Type	IP67	
Vibration resistance		25 G, amplitude ± 2 mm, f =10-55 Hz	
Shock resistance		50 G for 11 ms	
Standard target size (steel)		40 x 40 mm (1.6" x 1.6") for XSB	
		30 x 30 mm (1.18" x 1.18") for XSE	
Differential		Max. 20%	
Repeatability		Max. 5%	
Radio Frequency Immunity (RFI)		Standard	
Cable		Screw terminals, #16 AWG	
		PvR, #20 AWG	
Electrical		DC Models	
		XSB	XSE
Voltage drop (across switch)		9.5 V	7 V
Inrush current (inductive @ 20 mS)		0.9 A	–
Minimum load current		30 mA	1.5 mA
On delay (max.)		40 ms	.4 ms
Off delay (max.)		30 ms	1 ms
Power-up delay (max.)		80 ms	1.2 ms
Reverse polarity protection		–	Standard
Weld field immunity		100 mT	Standard
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

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

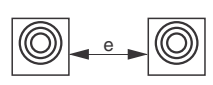
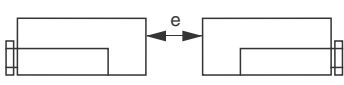
Accessories

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)

Side by side		Face to face	
			
XSE.15	e: 38/1.5"		e: 97/3.8"
XSB.20	e: 80/3.1"		e: 160/6.3"

Connector Cables (A or R3 suffix)

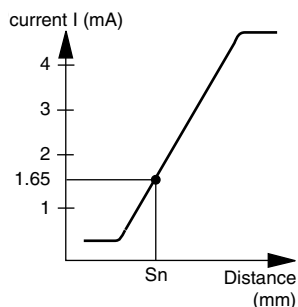
XSZCA901Y	Mini Conn., 3 pin, 2 m, straight
XSZCA911Y	Mini Conn., 3 pin, 2 m, 90°

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 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, 2m (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

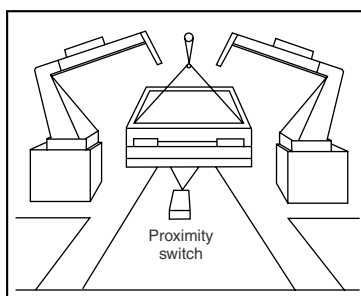
Plastic block type

Enclosure Style	Nominal Sensing Distance *	Operating Zone	Operating Frequency	Catalog Number
Shielded, terminal connections				
Limit switch style	0.6" (15 mm)	0-0.47" (0-12.0 mm)	100 Hz	XSCN151229
Non-shielded, terminal connections				
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 K_m .

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

Specifications

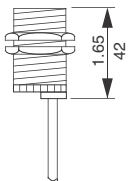
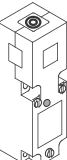
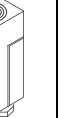
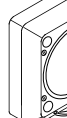
Mechanical		
Standard temperature range	operation	-25° C to +70° C (-13° F to +158° F)
	storage	-40° C to +80° C (-40° F to +176° F)
Enclosure rating	NEMA Type	4mm & 5mm
		1, 3, 4, 13
	IEC Type	all others
		3, 4, 6, 12, 13
	4mm & 5mm	IP64
	all others	IP67
Repeatability (% of Sr)		5% or less
Cable		2 wire
		22 AWG (0.11 mm ²), PvR
Electrical		
Voltage range		7 to 12 Vdc
Current consumption from supply		Sensor activated (target present) = 1 mA or less;
8.2 V (internal resistance: about 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 LR 15996 FM: J.I. OROH9.AX Class 3218 06 (3610, 3611)

* Consider for intrinsically safe systems.

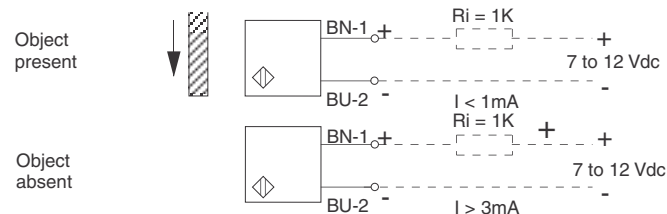
NAMUR Sensors

DC 2 wire, N.C.

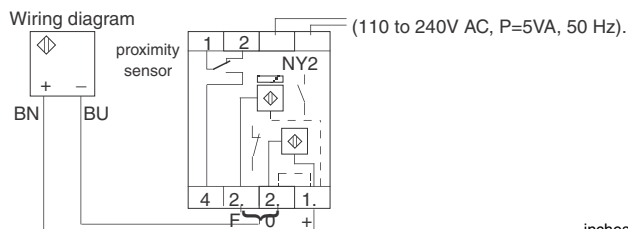
M: Metal case - P: Plastic case.

4mm unthreaded	M5x0.5	6.5mm unthreaded	M8x1	M8x1	M12x1	M18x1
						
Metal	Metal	Metal	Metal	Plastic	Plastic	Plastic
XSLN08122	XSMN08122	XSLN01122	XSAN01122	XSPN01122	XSPN02122	XSPN05122
M30x1.5	Dimensions page 292	Sensors not suitable for flush mounting in metal				
		M12x1	M18x1	M30x1.5	Dimensions page 288	Dimensions page 272
Plastic	Plastic					
XSPN10122	XSCN151229	XSPN04122	XSPN08122	XSPN15122	XSBN10122	XSDN501229

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



Association with an NY2 power supply/relay amplifier unit



Dual Dimensions inches mm

Proximity Sensors

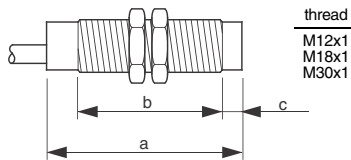
XS Inductive Sensors

Analog Output, DC



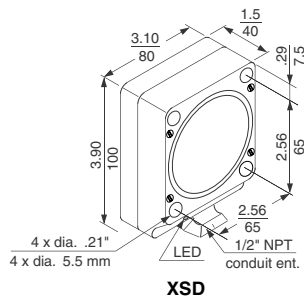
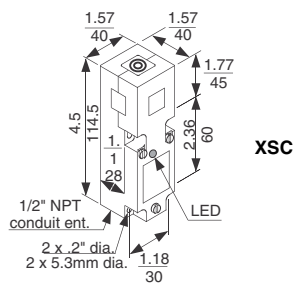
Dimensions:

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



Tubular Style dimensions (mm)

		a	b	c
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)



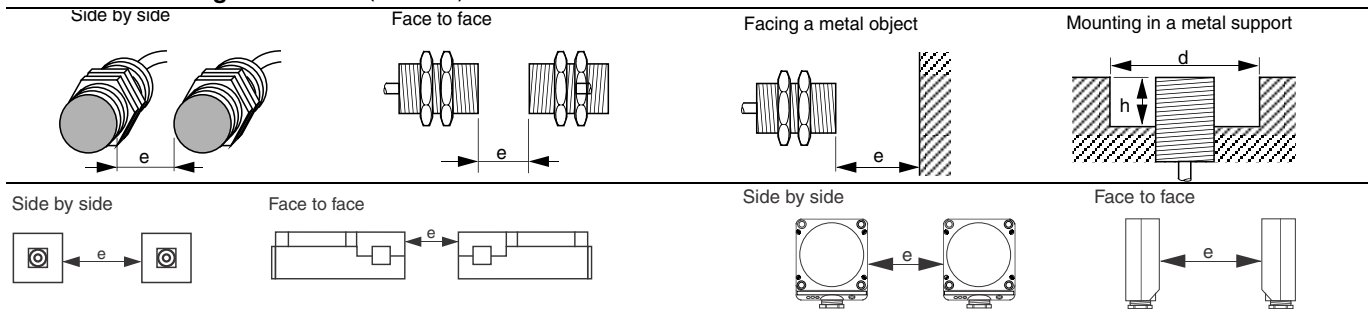
Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

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
- 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 Diameter - 2 meter cable							
0.2 - 2 mm	Shielded	Metal	24 Vdc	2 wire 3 wire	4 - 20 mA 0 - 16 mA	1500 Hz	XS1M12AB120
0.2 - 4 mm	Non-Shielded	Plastic	24 Vdc	2 wire 3 wire	4 - 20 mA 0 - 16 mA	1500 Hz	XS4P12AB120
0.4 - 4 mm	Non-Shielded	Plastic	24-48 Vdc	2 wire 3 wire	4 - 14 mA 0 - 10 mA	1500 Hz	XS4P12AB110
18 mm Diameter - 2 meter cable							
0.5 - 5 mm	Shielded	Metal	24 Vdc	2 wire 3 wire	4 - 20 mA 0 - 16 mA	500 Hz	XS1M18AB120
0.8 - 8 mm	Non-Shielded	Plastic	24 Vdc	2 wire 3 wire	4 - 20 mA 0 - 16 mA	500 Hz	XS4P18AB120
0.8 - 8 mm	Non-Shielded	Plastic	24-48 Vdc	2 wire 3 wire	4 - 14 mA 0 - 10 mA	500 Hz	XS4P18AB110
30 mm Diameter - 2 meter cable							
1 - 10 mm	Shielded	Metal	24 Vdc	2 wire 3 wire	4 - 20 mA 0 - 16 mA	300 Hz	XS1M30AB120
1.5 - 15 mm	Non-Shielded	Plastic	24 Vdc	2 wire 3 wire	4 - 20 mA 0 - 16 mA	300 Hz	XS4P30AB120
1.5 - 15 mm	Non-Shielded	Plastic	24-48 Vdc	2 wire 3 wire	4 - 14 mA 0 - 10 mA	300 Hz	XS4P30AB110
Limit Switch Style - 2 meter cable							
2 - 20 mm	Non-Shielded	Plastic	24-48 Vdc	2 wire 3 wire	4 - 14 mA 0 - 10 mA	60 Hz	XSCH207629
2 - 20 mm	Non-Shielded	Plastic	24 Vdc	2 wire 3 wire	4 - 20 mA 0 - 16 mA	60 Hz	XSCH203629
Block Style - 2 meter cable							
6 - 60 mm	Non-Shielded	Plastic	24-48 Vdc	2 wire 3 wire	4 - 14 mA 0 - 10 mA	50 Hz	XSDH607629
6 - 60 mm	Non-Shielded	Plastic	24 Vdc	2 wire 3 wire	4 - 20 mA 0 - 16 mA	50 Hz	XSDH603629

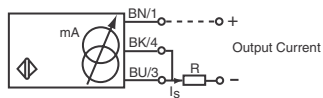
Minimum Mounting Clearances (mm/inches)



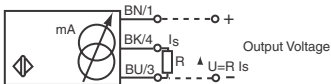
	Side by side	Face to face	Facing a metal object	Mounted in metal
12 mm Shielded	e: 4 mm (0.16")	e: 24 mm (0.94")	e: 6 mm (0.24")	d: 12 mm (0.47") h: 0 mm (0")
12 mm Non-shielded, 24 V	e: 16 mm (0.63")	e: 48 mm (1.89")	e: 12 mm (0.47")	d: 36 mm (1.42") h: 8 mm (0.31")
12 mm Non-shielded, 48 V	e: 16 mm (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		

Wiring

2-wire



3-wire



Output current	Value of R (R = load impedance)
24 V	0 to 10 mA $\leq 1800 \Omega$
	0 to 16 mA $\leq 1125 \Omega$
48 V	0 to 10 mA $\leq 4200 \Omega$

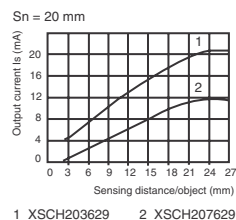
Ensure a minimum of 5 V between the + and sensor output

Specifications

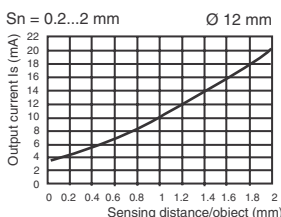
Mechanical			
Temperature range		-13° F to +158° F (-25° C to +70° C)	
Enclosure rating		IEC Type IP67	
Tightening torque (max.)		Metal	Plastic
	12mm	6 N•m 4.5 (lb-ft)	2 N•m 1.5 (lb-ft)
	18mm	15 N•m 11.1 (lb-ft)	5 N•m 3.7 (lb-ft)
	30mm	40 N•m 29.5 (lb-ft)	20 N•m 14.7 (lb-ft)
Enclosure material		Metal	
		Plastic	
Wiring	Tubular	22 AWG (0.34 mm ²), PvR	
	Limit Switch/Block style	Screw term. 16 AWG(1.5 mm ²)	
General Characteristics			
Voltage limit (including ripple)		XS1●●●●120, XS4●●●●120: 15 - 38 Vdc	
		XS1●●●●110, XS4●●●●110: 15 - 58 Vdc	
		XSCH207●●●, XSDH607●●●: 19 - 58 Vdc	
		XSCH203●●●, XSDH603●●●: 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%	
Protective Circuitry	Short circuit protection	yes	
	Overload protection	yes	
	Reverse polarity protection	yes	
Agency Listings	 (XS1, XS4) E 164869 CCN NRKH (XSC, XSD) E 164353 CCN NKCR		 LR 44087 Class 3211 03

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

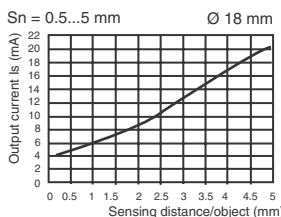
XSCH20●629



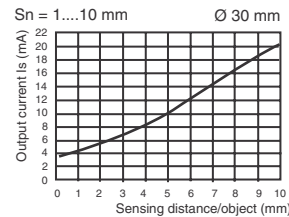
XS1M12AB120



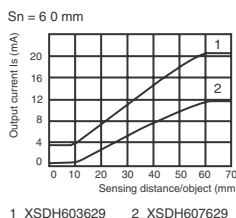
XS1M18AB120



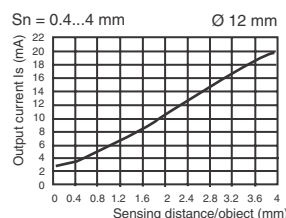
XS1M30AB120



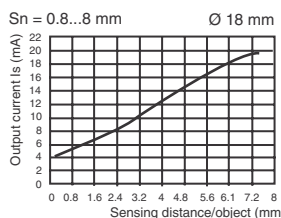
XSDH20●629



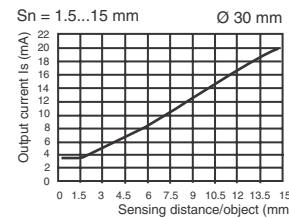
XS4P12AB120



XS4P18AB120

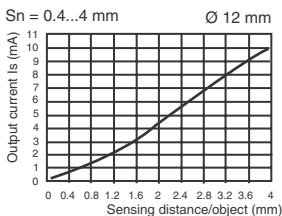


XS4P30AB120

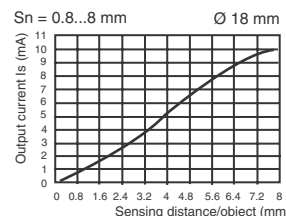


Output Curves 0 to 10 mA, 3-wire connection, (cylindrical models)

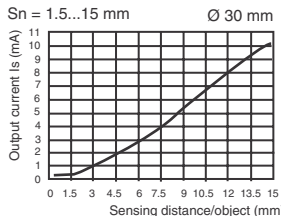
XS4P12AB110



XS4M18AB110

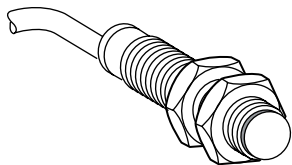


XS4P30AB110

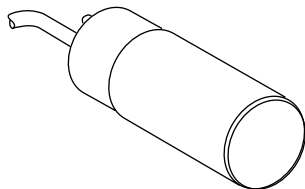


Proximity Sensors XT Capacitive Sensors

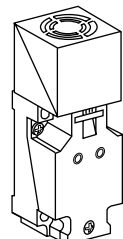
12mm, 18mm, 30mm, 32mm and Limit Switch Style; AC and DC



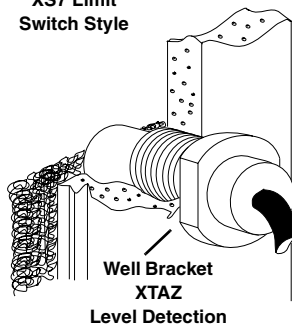
XT1/4 Threaded



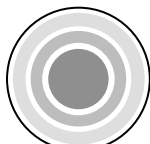
XT1/4 Smooth



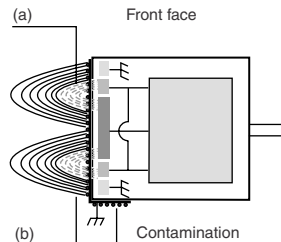
XS7 Limit
Switch Style



Well Bracket
XT4Z
Level Detection



Front face



- Main electrode
- Earth electrode
- Compensation electrode
- (a) : compensation field (suppression of external contamination)
- (b) : main electric field

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 Distance	AC or DC	Output Mode	Circuit Type	Voltage Range	Operating Frequency	Catalog Number
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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 diameter, 2m (6.6') cable, with Sensitivity Adjustment

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 Mountable -- Threaded Plastic Case

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 diameter, 2m (6.6') cable, with Sensitivity Adjustment

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 Mountable -- Threaded Plastic Case

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 diameter, 2m (6.6') cable, with Sensitivity Adjustment

Flush Mountable -- Smooth 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 Mountable -- Smooth Plastic Case

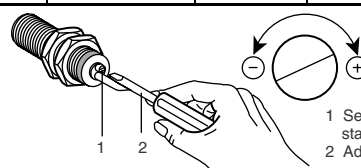
20 mm	AC	N.O.	2 wire	110 – 220 V	10 Hz	XT4L32FA262
20 mm	AC	N.C.	2 wire	110 – 220 V	10 Hz	XT4L32FB262

Limit Switch Style, 0.5" NPT, with Sensitivity Adjustment

Flush Mountable -- Plastic Case

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

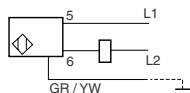
Sensitivity Adjustment



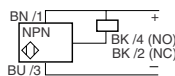
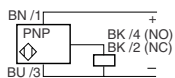
- 1 Sensitivity adjustment potentiometer and output state indicator (yellow LED)
- 2 Adjustment using screwdriver

Wiring

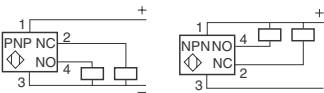
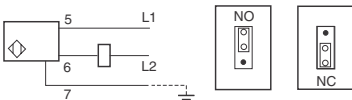
2-wire AC, N.O. or N.C. output
XT1L32F●262, XT4L32F●262



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



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



Specifications

Mechanical			
Standard Temperature Range	-13° F to +158° F (-25° C to +70° C)		
Enclosure Rating	NEMA Type	4, 4X, 6, 6P, 12, 13 (Except Smooth Case 4, 4X, 6, 12)	
	IEC Type	IP67 (Except Smooth Case -- IP63)	
Differential (% of Sr.)	20%		
Repeatability (% of Sr.)	10%		
Electrical			
		AC Models (All)	Smooth
Voltage Range		24 – 240 V	110 – 220 V
Voltage Limit		20 – 264 V	90 – 250 V
Voltage Drop (across switch) Closed State		5.5 V	9 V
Minimum Load Current		5 mA	15 mA
Maximum Load Current	Tubular	300 mA	250 mA (Ue=110V*)
	Limit Switch	350 mA	–
Current Consumption @ No Load		–	–
Residual Leakage Current		1.5 mA at 120V	7 mA
On Delay Max.	Tubular	50 ms	50 ms
	Limit Switch	20 ms	–
Off Delay Max.	Tubular	50 ms	15 ms
	Limit Switch	30 ms	–
Power-up Delay Max.	Tubular	300 ms	300 ms
	Limit Switch	150 ms	–
Protective Circuitry	Electrostatic Discharges Radio Magnetic Fields Fast Transients Impulse Voltage		
Agency Listings	E 164869 CCN NRKH		
	LR 44087 Class 3211 03		

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

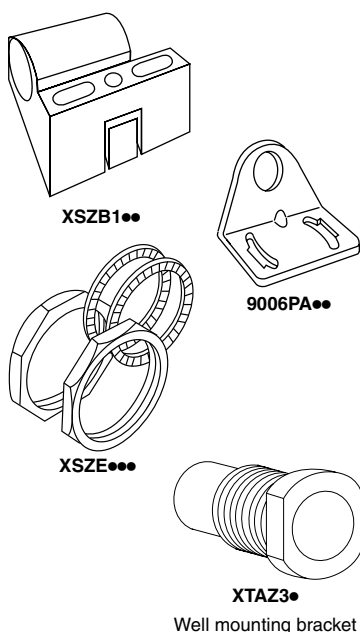
The operating distance of the sensor is related to the dielectric constant (ϵ_r) of the object material to be detected. The higher the value of ϵ_r , the easier it will be for the object to be detected.

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

The Usable Sensing Distance depends on the object material: $S_u = S_n \times F_c$
 S_u = Usable Sensing Distance; S_n = Nominal Sensing Distance; F_c = Correction Coefficient for the object material

Example: Sensor XT1M30PA372 used to detect a rubber object $S_n = 10$ mm, $F_c = 0.3$

Usable Sensing Distance $S_u = 10$ mm $\times 0.3 = 3$ mm



Material	ϵ_r	F_c
Acetone	20	0.8
Air	1	0
Alcohol	24	0.85
Ammonia	15-25	0.75-0.85
Cement (powder)	4	0.35
Cereals	3-5	0.3-0.4
Damp wood	10-30	0.7-0.9
Dry wood	2-7	0.2-0.6
Ethylene glycol	38	0.95
Epoxy resin	4	0.36
Flour	2.5-3	0.2-0.3
Glass	3-10	0.3-0.7
Marble	6-7	0.5-0.6
Mica	6-7	0.5-0.6
Nylon	4-5	0.3-0.4
Oil	2.2	0.2

Material	ϵ_r	F_c
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

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
32mm	Well mounting bracket	XTAZ32
32mm	Surface mounting bracket	XUZB32

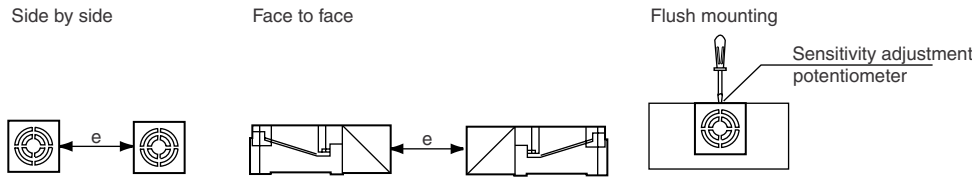
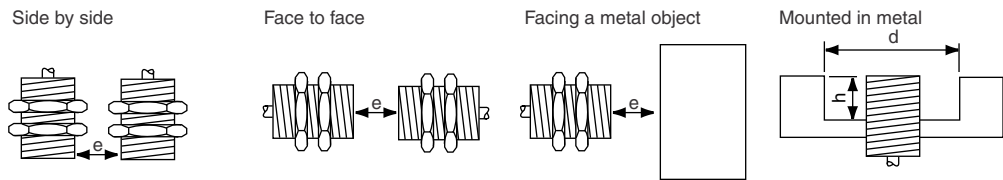
Proximity Sensors

XT Capacitive Sensors

12mm, 18mm, 30mm, 32mm and Limit Switch Style; AC and DC

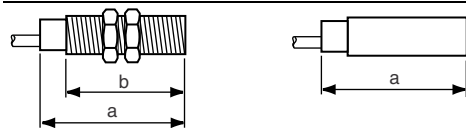


Minimum Mounting Clearances



To avoid influence of the immediate surroundings it maybe necessary to reduce the sensitivity when flush mounting the sensor.

Minimum Mounting Clearances		Side by Side (mm/in)	Face to Face (mm/in)	Facing a Metal Object (mm/in)	Mounting in Metal (mm/in)
XT1 Flush Mountable	18 mm	e: 0	e: 30/1.18	e: 30/1.18	d: 18/.71 h: 0
	30 mm	e: 0	e: 60/2.36	e: 60/2.36	d: 30/1.18 h: 0
	32 mm	e: 0	e: 100/3.94	e: 100/3.93	d: 32/1.26 h: 0 x: 2/.07
XT4 Non-Flush Mountable	18 mm	e: 40/1.57	e: 50/1.97	e: 80/3.15	d: 18/.71 h: 0
	30 mm	e: 60/2.36	e: 80/3.15	e: 100/3.94	d: 90/3.54 h: 20/.79
	32 mm	e: 60/2.36	e: 100/3.94	e: 100/3.94	d: 96/3.78 h: 25/.98
XT7 Limit Switch Style		e: 40/1.57	e: 120/4.72		

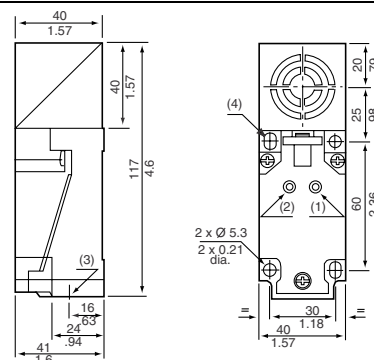
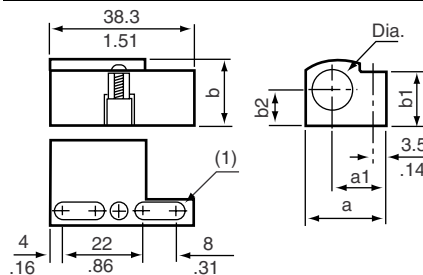
Dimensions (mm/in.)
XT1/4


Dimensions (mm/in)	a	b
XT●M18	60/2.36	51/2.03
XT●M30	60/2.36	51/2.03
XT●M32	80/3.15	n/a

a = Overall

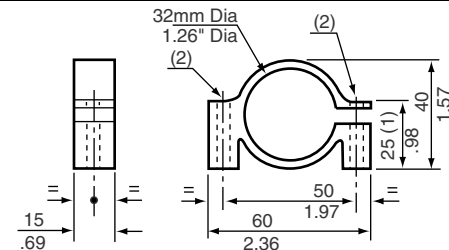
b = Threaded Section

- (1) Output LED
(2) Supply LED (depending on model)
(3) 1 entry threaded for 0.5 NPT
(4) 2 elongated holes 5.3 X 7mm (0.21 X 0.28")

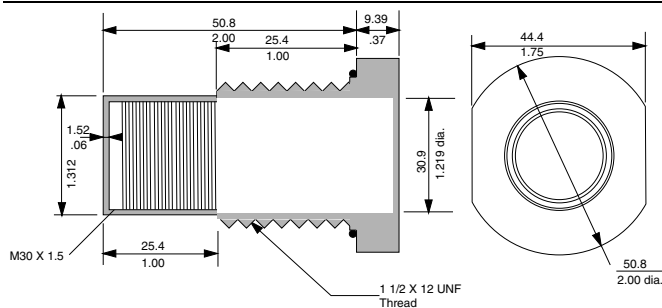
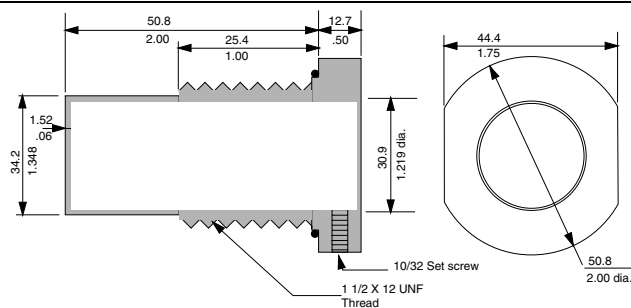
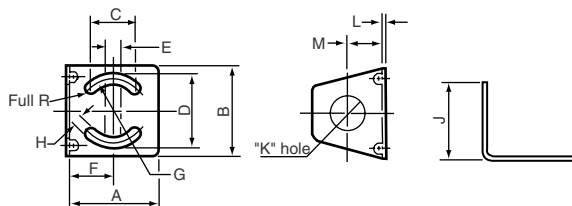
XT7

Accessories Dimensions (mm/in.)
XSZB112, B118, B130


XSZ	a	a1	b	b1	b2	Dia.
B112	21.9 0.86	14.5 0.57	16 0.63	15.5 0.61	8.5 0.33	12
B118	26 1.02	15.7 0.62	22 0.87	20.1 0.80	11.5 0.45	18
B130	39 1.53	21.7 0.85	35.5 1.40	31 1.22	18.5 0.73	30

(1) 2 elongated holes 4 X 8mm (0.16 X 0.31 in)

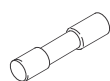
XUZB32


- (1) maximum value
(2) 2 holes $\varnothing$ 5.5mm (.22 in)
Clamp supplied with two M5 screws. HM head

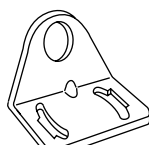
XTAZ30

XTAZ32

9006PA●●


Type	A		B		C		D		E		F		G		H		J		K		L		M	
	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	0.69	18	1.20	31	0.39	10	0.69	18	0.98	25	0.21	5	1.28	33	0.49	13	0.08	2	0.71	18

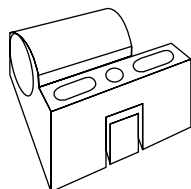
Proximity Sensors XS Inductive Sensors Mounting Accessories



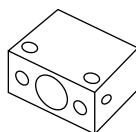
XUZE08



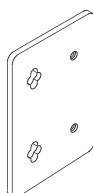
9006PA●●



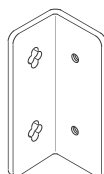
XSZB1●●



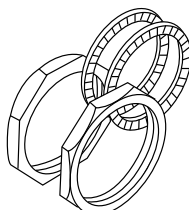
8316●●



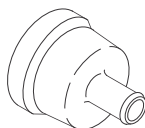
XSEZ01



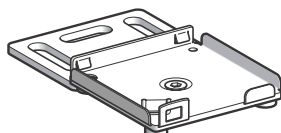
XSEZ02



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
Cylindrical inductive proximity sensors	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
	12 (M12 x 1)	XS1/XS2/XS4	XSZB112 9006PA12
	18 (M18 x 1)	XS1/XS2/XS4	XSZB118 9006PA18
Zinc die cast for cylindrical 4-12 mm dia.	30 (M30 x 1.5)	XS1/XS2/XS4	XSZB130 9006PA30
	4mm	XS1L04	831604
	5mm	XS1L05	831605
	6mm	XS1/XS2 L06	831606
	8mm	XS1/XS2/XS4	831608
Metal plate bracket	12mm	XS1/XS2/XS4	831612
	Straight	XSE	XSEZ01
	Right angled	XSE	XSEZ02

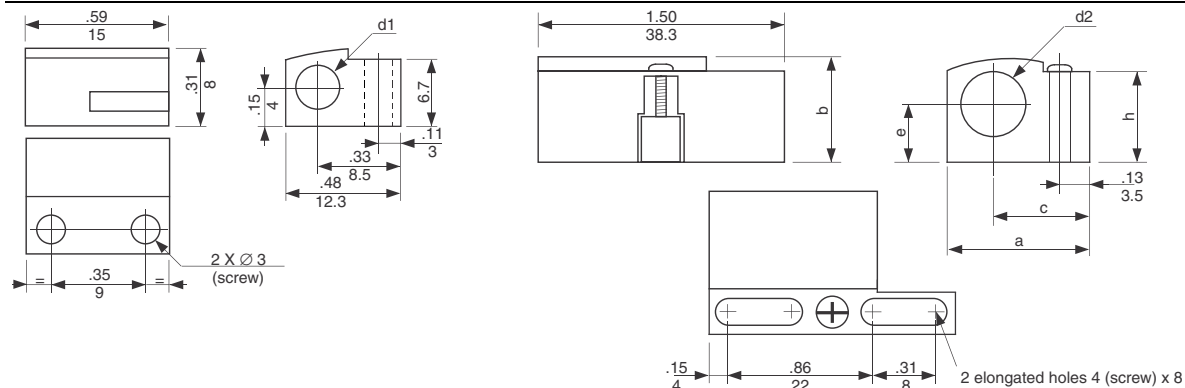
Mounting nuts

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

Mounting brackets

XSZB104/105

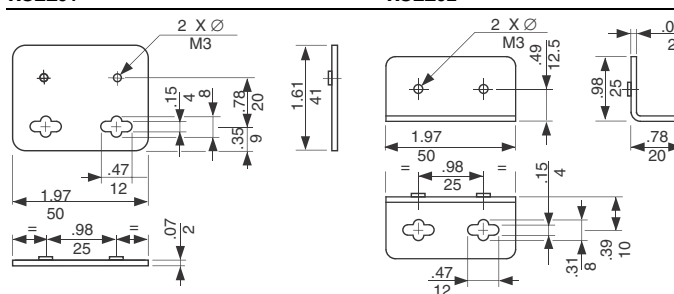
XSZB165/108/112/118/130



Sensors	Brackets	d1		d2		a		b		c		e		h	
		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
12mm	XSZB112			.47	12.0	.86	21.9	.63	16.0	.57	14.5	.33	8.5	.21	15.5
18mm	XSZB118			.70	18.0	1.00	26.0	.86	22.0	.61	15.7	.45	11.5	.79	20.1
30mm	XSZB130			1.18	30.0	1.53	39.0	1.40	35.5	.85	21.7	.72	18.5	1.20	31.0

XSEZ01

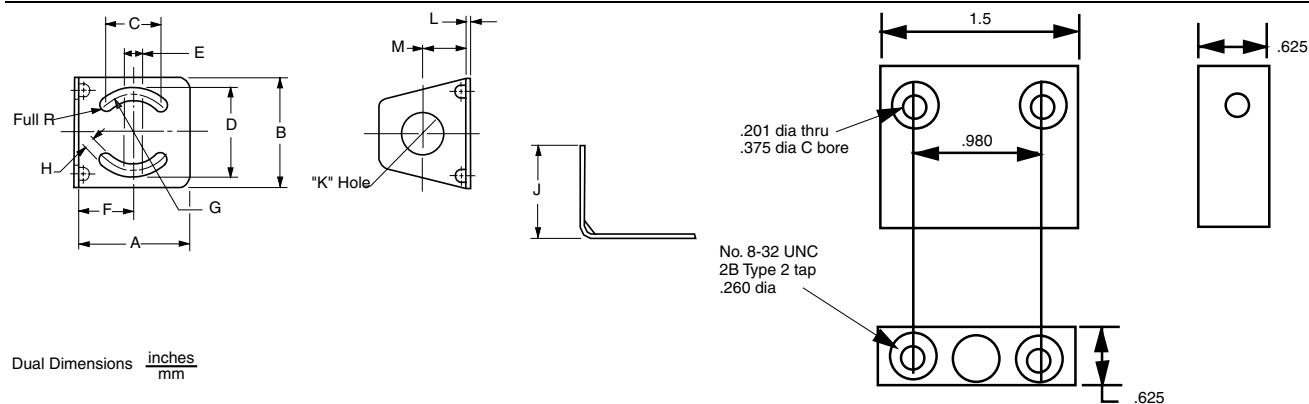
XSEZ02



Approximate Dimensions

9006PA●●

8316 Bracket



Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

Type	A		B		C		D		E		F		G		H		J		K		L		M	
	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	2.64	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	0.08	3	0.71	18

Proximity Sensors

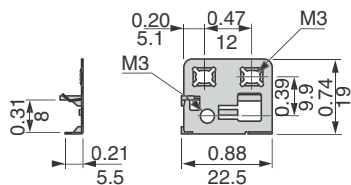
XS Inductive Sensors

Mounting Accessories, Dimensions

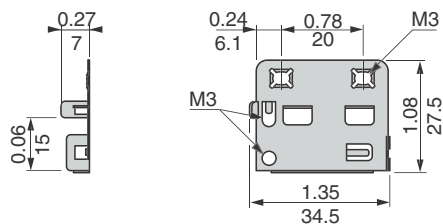


Proximity Sensors

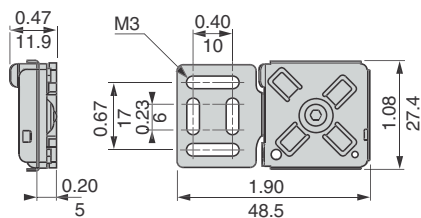
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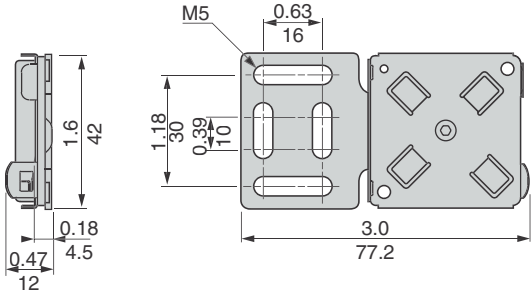
XSZBF00



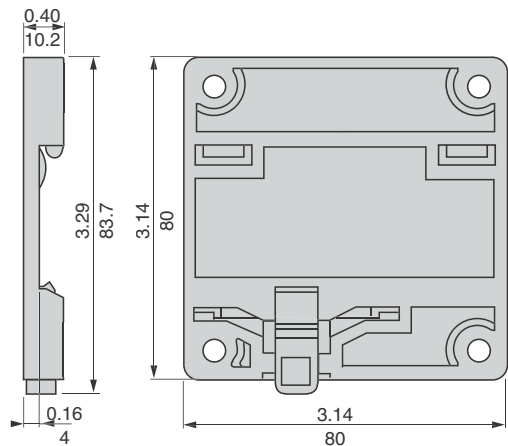
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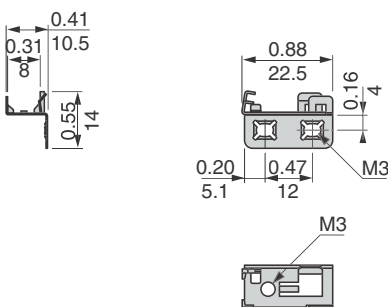
XSZBC00



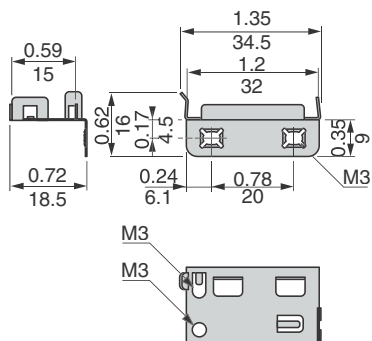
XSZBD00



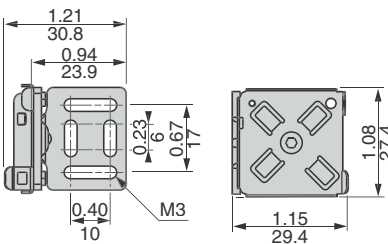
XSZBJ90



XSZBF90

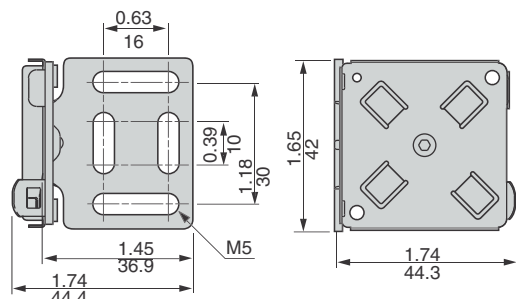


XSZBE90

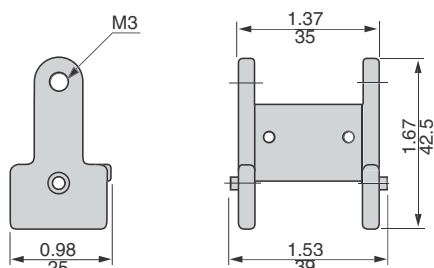


Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

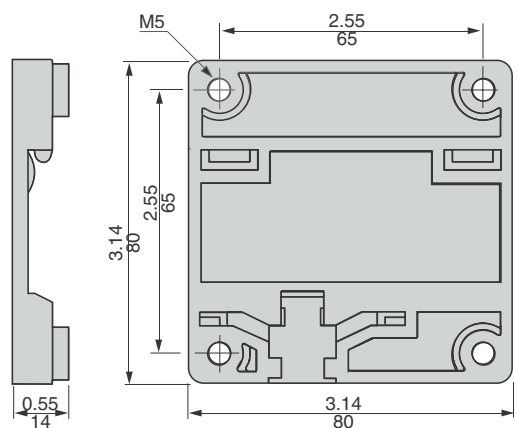
XSZBC90



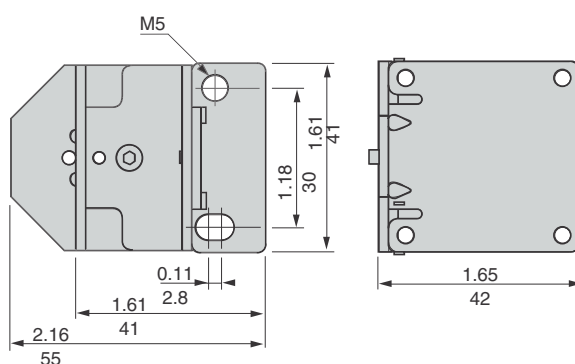
XSZBE10



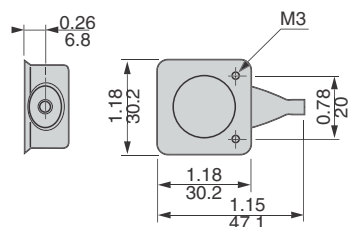
XSZBD10



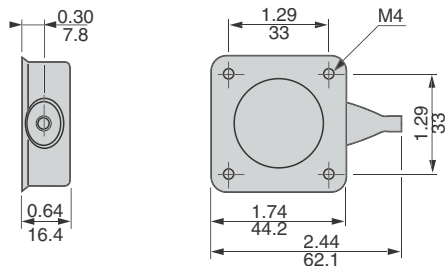
XSZBC10



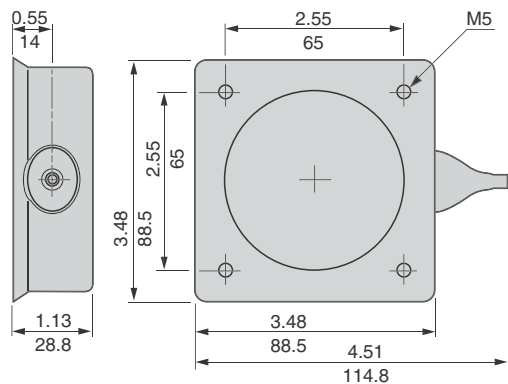
XSZEE10



XSZEC10



XSZED10



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

Circuit Type	AC ratings			DC ratings			Leakage (mA)	Dim. Fig. No.	Wiring Fig.	Catalog Number
	VA (max.)	Volts †	Current (max.)	VA (max.)	Volts (max.)	Current (max.)				
Reed output - DC only										
N.O.	-	-	-	10	200	0.5 A	0	1	A	SGA8016
N.O.	-	-	-	10	200	0.5 A	0	2	A	SGA8031
Reed output - DC only - built-in resistor protection										
N.O.	-	-	-	10	200	0.5 A	0	1	A	SGA8182
Reed output - DC only - High temperature -40° F to 300° F										
N.O.	-	-	-	10	200	0.5 A	0	1	A	SGA8053
Reed output - AC and DC - built-in RC protection										
N.C.	3	130	0.25 A	3	100	0.25 A	6 (R) ①	2	B	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 output - AC only (inductive 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	C	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 Number
		All ③	SG2 8195	
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.

Wiring

Figure A (N/O)

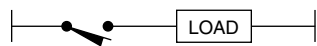
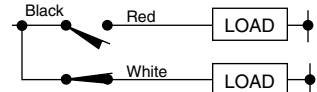


Figure B (N/C)



Figure C (N/O or N/C)



Specifications

Mechanical		
Standard temperature range	-40° F to +140° F (-40° C to +60° C) (to 300° 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 Ω

Options

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

Ex: SGO8168L05

Dimensions

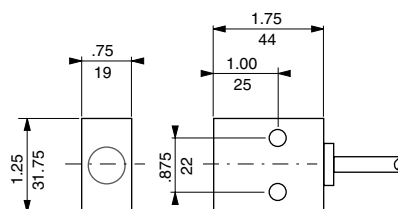


Figure 1
SGA8016
SGA8177
SGA8182
SGA8053
SGO8239

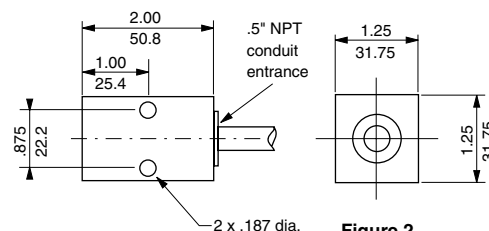


Figure 2
SGA8031
SGA8175
SGA8176

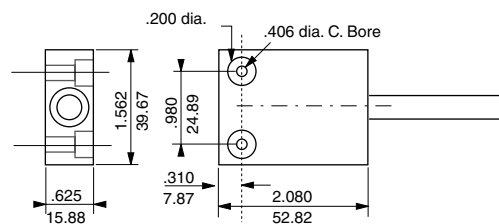


Figure 3
SGO8168
SG28195

Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

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 (max.)	DC ratings (resistive only)		Leakage (mA)	Dim. Fig. No.	Wiring Fig.	Catalog Number
	VA (max.)	Volts (nom.)	Current (max.)		Volts (max.)	Current (max.)				
AC triac output, non plug-in										
N.O.	360	120	3.0A	—	—	—	1.7 (P)▲	1	A	SG08003
N.C.	360	120	3.0A	—	—	—	1.7 (P)▲	1	B	SG18004
Non plug-in with light indicator										
N.O.	360	120	3.0A	—	—	—	1.7 (P)▲	1	A	SG0L8003
N.C.	360	120	3.0A	—	—	—	1.7 (P)▲	1	B	SG1L8004
DC, transistor output, non plug-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 output, non plug-in (AC model has built-in surge RC protection)										
N.O.	-	-	-	10	200	0.5 A	0	1	A	SGA8005
N.O.	15	120	1.0A	15	250	1.0 A	6 (R)▲	1	A	SGA8040
N.O./N.C.	-	-	-	3	200	0.25 A	0	1	C	SGC8027
N.O./N.C.	-	-	-	20	500	1.5 A	0	3	C	SGC8025

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

Magnet actuators (See page 310) inches (mm)

		To all others	8079	Sensing distance		8025	Catalog Number
				8040	8027		
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.

Wiring

Figure A



Figure B

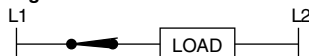
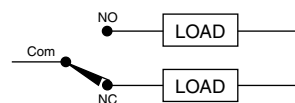
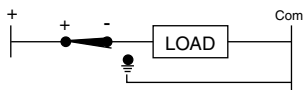


Figure C



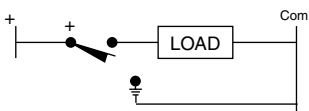
Terminal strip marked: NO-COM-NC

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



Specifications

General characteristics						
Temperature range		-40° F to 140° F (-40° C to 60° C)				
		-40° F to 125° F (-40° C to 52° C) for transistor 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 ms N.O. 1.5 ms N.C.	2 ms N.O./ 4 ms N.C.
Cable - screw terminals	#16 AWG					
Agency Listings except where noted	 E 42259 CCN NKCR2					

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

① See p. 518 for matching connector cables.

Dimensions

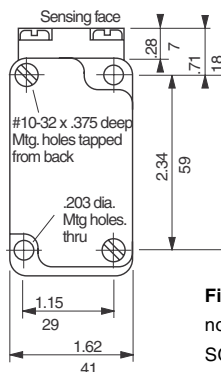


Figure 1
non-plug-in
SGA8005
SGO8003
SGC8027
SGI8056
SGO8056
SGI8004
SGO8040
SGO8079

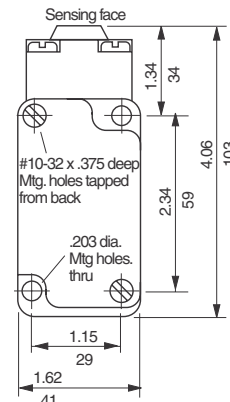
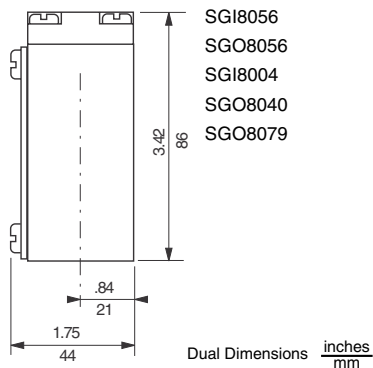
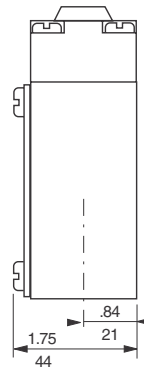


Figure 2
Style C
SGC8025



Dual Dimensions inches mm



Proximity Sensors

SG Magnet Actuated Sensors

Tubular Style

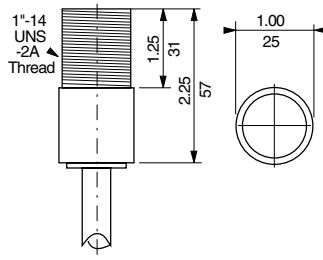


Figure 1
SGA8057
(Aluminum)
SGC8058 (PVC)
SGA8072 (PVC)
SGA8189 (Brass)

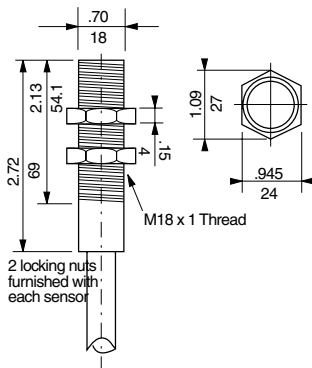


Figure 2
SGA8179
SGA8180
SGC8181

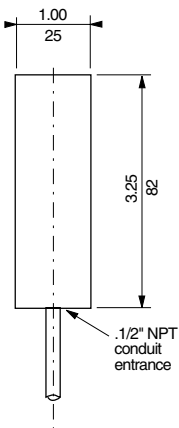


Figure 3
SGA8038

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; Polyimide 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 (mA)	Dim. Fig. No.	Wiring Fig.	Catalog Number
	VA (max.)	Volts nominal	Current (max.)	VA (max.)	Volts (max.)	Current (max.)				
Reed output AC & DC switching (Built-in RC protection), threaded.										
N.O.	15	120	1.0 A	12	48	0.25 A	6 ②	1	A	SGA8057
N.O./N.C.	15	120	1.0 A	15	100	1.0 A	6 ②	1	C	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 output - DC, threaded, resistor built-in for long cable runs ③										
N.O.	—	—	—	10	200	0.5 A	0	2	A	SGA8180 ★
N.O./N.C.	—	—	—	3	100	0.25 A	0	2	C	SGC8181 ★
Reed output - AC & DC (built-in RC protection), smooth										
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 Ω for SGA8180 and 470 Ω 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)	7093
Flat bracket, side	South pole	0.2" (5.1)	7063
90° bracket	South pole	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 $\frac{\text{inches}}{\text{mm}}$

Wiring

Figure A

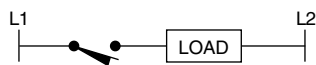


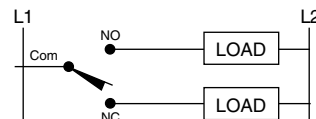
Figure C

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	I x R	I x R
On delay (max.)	2 mS	0.75 ms	2.5 ms N.O. 3.5 ms N.C.
Cable, 3'	22-2 vinyl: SGA8038, 8180; 23-2 vinyl SGC 8181; 16-2 SJTO: SGA8057, 8072. SO cable for SGA8179		
Agency Listings except where noted	 E 42259 CCN NKCR2		

① 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 (for models with built in resistor)	Vinyl	L10
	SJTO (8057, 8072, 8179)	L10

Proximity Sensors

SG Magnet Actuated Sensors

Maintained Contact

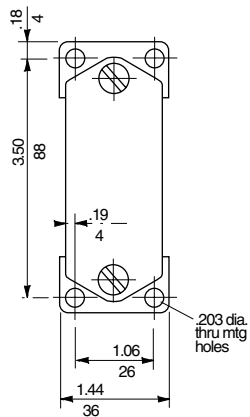
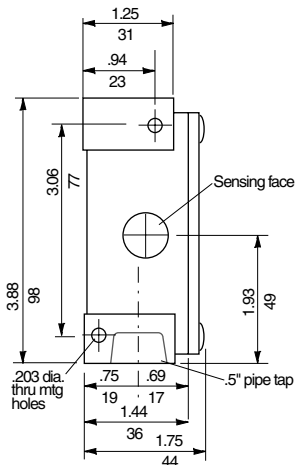


Figure 1
SGA8018
SGO8026
SGO8110
SGO8141

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 (mA)	Wiring Fig.	Catalog Number
	VA (max.)	Volts (nom.)	Current (max.)	VA (max.)	Volts (max.)	Current (max.)			
Reed, DC									
1 N.O.	—	—	—	15	250	1.0 A	0	A	SGA8018
Triac, AC									
1 N.O.	360	120	3.0 A	—	—	—	1.7	A	SGO8026
Triac, AC low temperature: -30° F to 85° F									
1 N.O.	360	120	3.0 A	—	—	—	1.7	B	SGO8110

Magnet actuators (see page 310)

Description		Sensing Distance	Catalog Number
Tubular		1.3"	7046
Flat bracket, center	South pole	1.0"	7093
	North pole	1.0"	7547
Flat bracket, side	South pole	0.7"	7063
	North pole	0.7"	70631
90° bracket	South pole	0.7"	7062
	North pole	0.7"	70621
Block type		0.5"	7099
Flexible tape - 1" long		0.5"	7096

Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

Wiring

Figure A

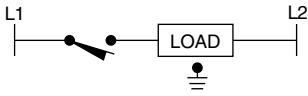
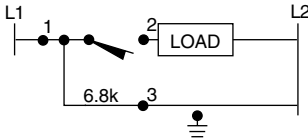


Figure B



Connect terminal 3 (heater) to line (L2) for operation below +32°F.

Specifications

Mechanical		
Temperature range	+32° F to 140° F (0° C to 60° C)	
	+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%	
Repeatability	Max. 0.003"	
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
Cable - screw terminals	#16 AWG	
Agency Listings	 E 42259 CCN NKCR2	 LR 25490 Class 3211 03

Proximity Sensors

SG Magnet Actuated Sensors

Magnet Actuators

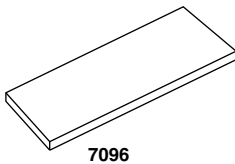
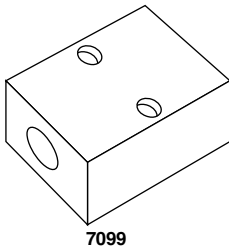
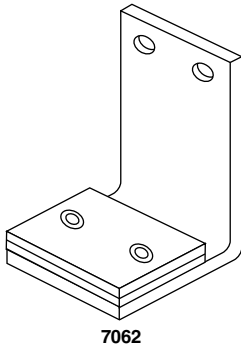
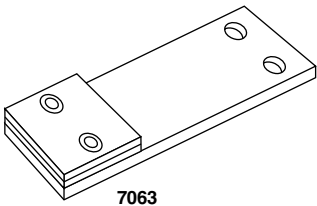
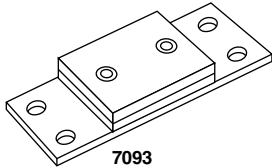
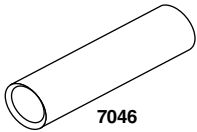


Features:

- 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
Flat bracket, center	South pole	330 Gauss	7093
	North pole	330 Gauss	7547
Flat bracket, side	South pole	240 Gauss	7063
	North pole	240 Gauss	70631
90° bracket	South pole	260 Gauss	7062
	North pole	260 Gauss	70621
Block type		340 Gauss	7099
Flexible tape	1' long	180 Gauss	7096*

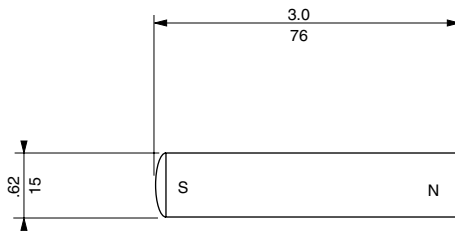
* For longer tape specify total length in feet. Example: 70966 = 6 feet.



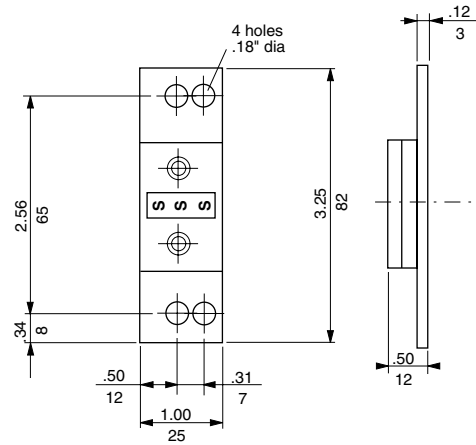
Proximity Sensors

Magnet actuator dimensions

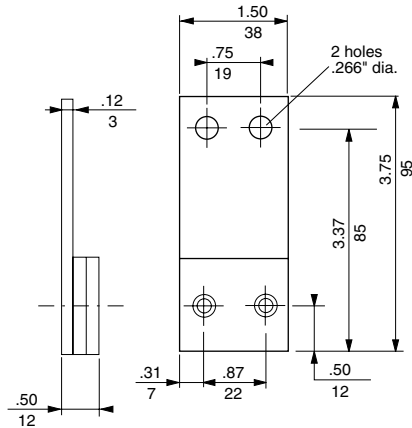
Tubular magnet actuator 7046



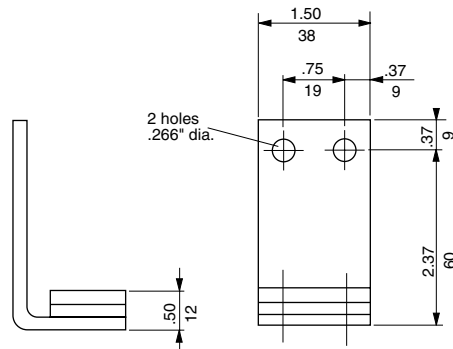
Magnet actuator 7093 (south pole)
Magnet actuator 7597 (north pole)



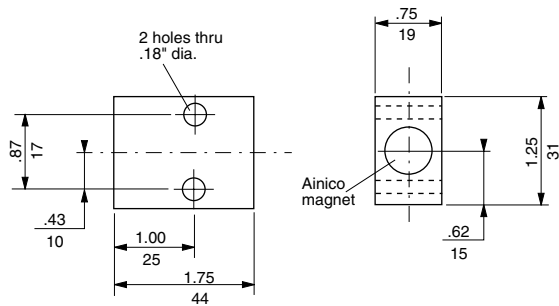
Magnetic actuator 7063 (south pole)
Magnet actuator 70631 (north pole)



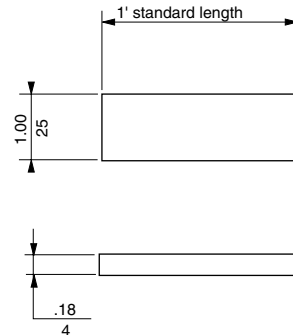
Magnet actuator 7062 (south pole)
Magnet actuator 70621 (north pole)



Block type magnet actuator 7099



Flexible magnetic tape 7096 1 foot



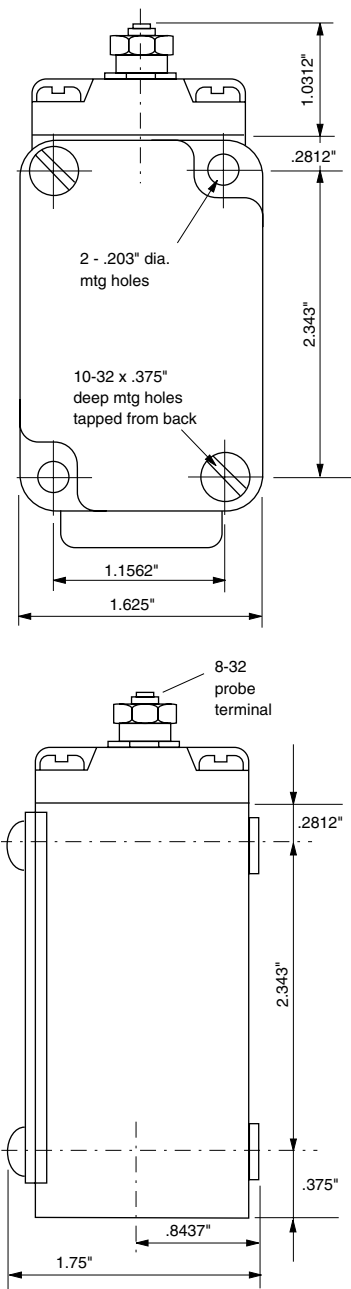
Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

Proximity Sensors

ST Grounded Probe Switch



Proximity Sensors



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 Ω 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.

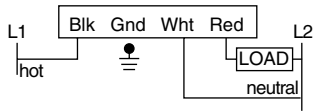
- Open voltage: 12 Vdc
- Peak current: 1 mA

Switch models

Circuit type	Voltage (nominal)	Current load (max.)	Leakage current (max.)	On delay	Off delay	Catalog 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 with 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

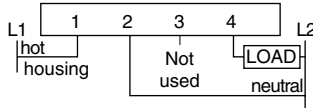
Wiring

Cable wiring



Target connected to ground

Terminal strip wiring



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.

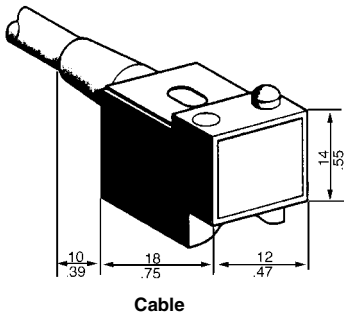
Specifications

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

Proximity Sensors

XS7V Magnetic Cylinder Position Sensors

Rectangular, Compact; DC

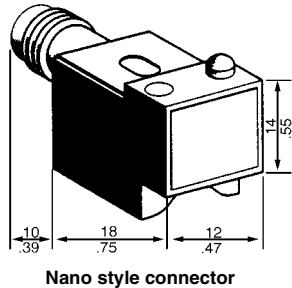


Description

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

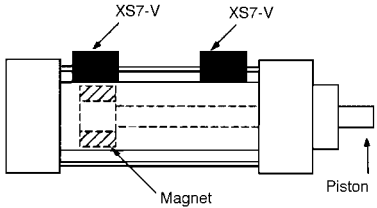
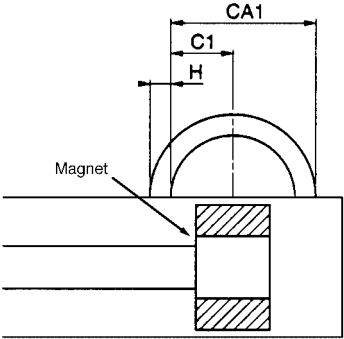
* At 11mT.



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 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

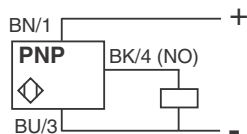


Proximity Sensors

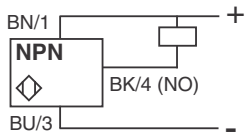
Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

Wiring

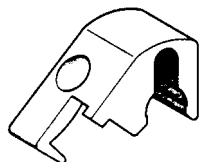
3 wire, PNP



3 wire, NPN



**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)
	Storage	-40° C to + 70° C (-40° F to + 158° F)
Enclosure rating	NEMA Type	
	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)		30mA
Actuation speed (max.)		10 ms
Response time		3 ms

Options

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

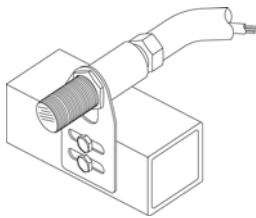
Accessories

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

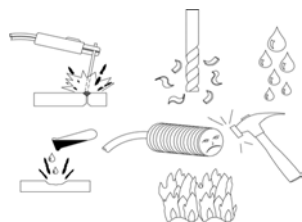


Features:

- 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		XSZCAR12
18mm (0.71)	M18 x 1		XSZCAR18
30mm (1.18)	M30 x 1.5		XSZCAR30

Proximity Sensors



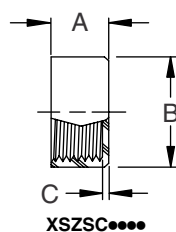
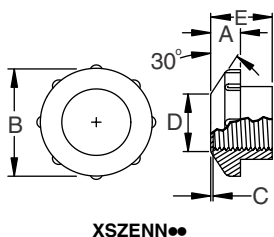
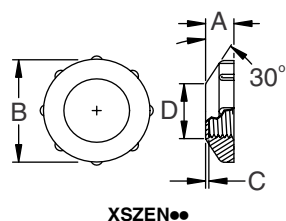
Features:

- 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)



A	B	C	D	E	Catalog Number
8 mm Diameter shielded					
5.1 (0.20)	15.1 (0.59)	0.38 (0.15)	7.00 (0.28)	–	XSZEN08
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 non-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

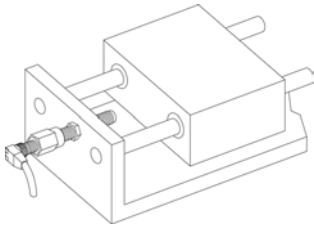
A	B	C	Catalog Number
12 mm Diameter shielded			
8.90 (0.35)	16.1 (0.63)	1.26 (0.05)	XSZSC12C
8.90 (0.35)	16.1 (0.63)	0.76 (0.03)	XSZSC12D
8.90 (0.35)	16.1 (0.63)	0.76 (0.03)	XSZSC12T
12 mm Diameter non-shielded			
15.2 (0.60)	16.1 (0.63)	0.76 (0.03)	XSZSC12ND
15.2 (0.60)	16.1 (0.63)	0.76 (0.03)	XSZSC12NT
18 mm Diameter shielded			
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 non-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 $\frac{\text{inches}}{\text{mm}}$

Proximity Sensors

Inductive Sensor Accessories

Plunger Screw Adapters



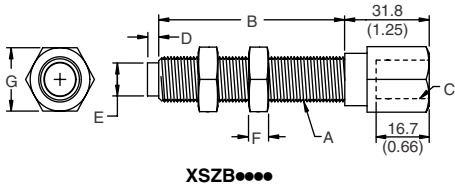
Features

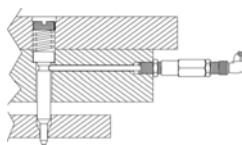
- Accepts 8, 12, or 18mm shielded sensor
- Heat-treated alloy steel construction
- Rugged stop with solid state output

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.

A	B	C	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 Diameter Shielded Sensors								
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 Diameter Shielded Sensors								
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





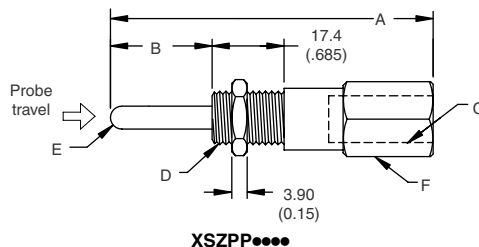
Features:

- 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.

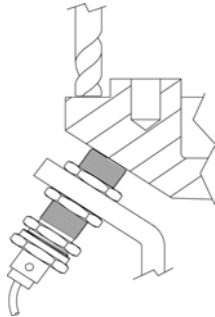
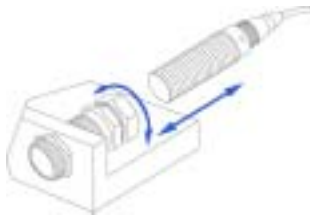
A	B	C	D	E (Dia.)	F	Catalog Number
8 mm Diameter Shielded Sensor						
75.6 (2.98)	25.0 (1.00)	M8 x 1 to depth of 21.8 (0.86)	M8 x 1	3.18 (.125)	11.1 (.436)	XSZPP0825
99.6 (3.92)	50.0 (2.00)	M8 x 1 to depth of 21.8 (0.86)	M8 x 1	3.18 (.125)	11.1 (.436)	XSZPP0850
126 (4.96)	75.0 (3.00)	M8 x 1 to depth 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 Diameter Shielded Sensor						
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



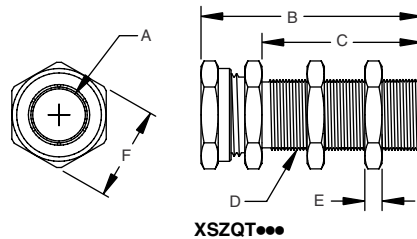
Features:

- 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

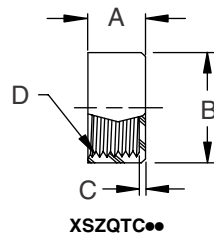
Provides time savings in maintenance of sensors, helps prevent downtime. An internal shoulder stop and a collet-style locknut precisely holds the sensor. This helps to maintain a precise sensing distance and reduces the required expertise needed during sensor installation.

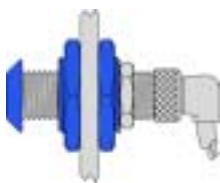
A	B	C	D	E	F	Catalog Number
8 mm Diameter Shielded Sensors						
8.18 (0.32)	32.4 (1.28)	17.5 (0.69)	M12x1	3.85 (0.15)	16.9 (0.67)	XSZQT08
8.18 (0.32)	48.0 (1.90)	34.0 (1.34)	M12x1	3.85 (0.15)	16.9 (0.67)	XSZQTL08
12 mm Diameter Shielded Sensors						
12.1 (0.48)	33.7 (1.34)	19.5 (0.77)	M16.5x1.5	4.01 (0.16)	21.8 (0.86)	XSZQT12
12.1 (0.48)	44.8 (1.76)	30.0 (1.18)	M16.5x1.5	4.01 (0.16)	21.8 (0.86)	XSZQTL12
18 mm Diameter Shielded Sensor						
18.1 (0.71)	38.5 (1.52)	20.0 (0.79)	M24 x 1.5	4.95 (0.19)	30.0 (1.18)	XSZQT18
18.1 (0.71)	58.0 (2.28)	40.0 (1.57)	M24 x 1.5	4.95 (0.19)	30.0 (1.18)	XSZQTL18
30 mm Diameter Shielded Sensors						
30.1 (1.19)	35.0 (1.50)	20.0 (0.79)	M36 x 1.5	6.13 (0.24)	41.0 (1.61)	XSZQT30
30.1 (1.19)	58.0 (2.28)	40.0 (1.57)	M36 x 1.5	6.13 (0.24)	41.0 (1.61)	XSZQTL30



Teflon Caps for Quick change mounting tubes

A	B	C	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





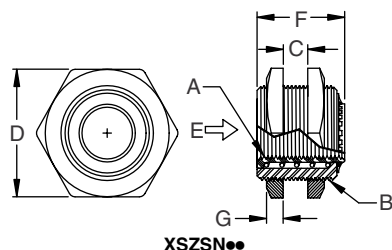
Features:

- 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.

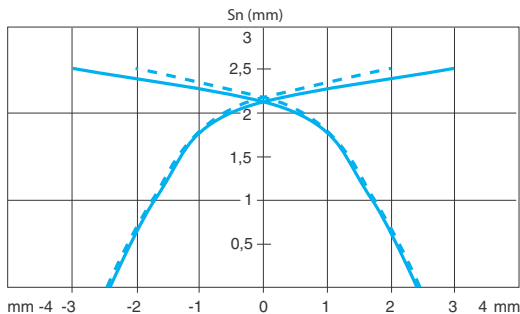
Description

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 Diameter Sensors							
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 Diameter 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 Diameter 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

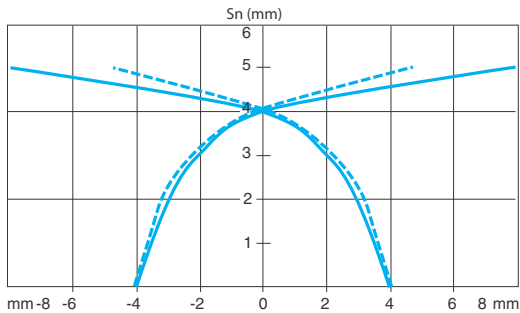


Shielded



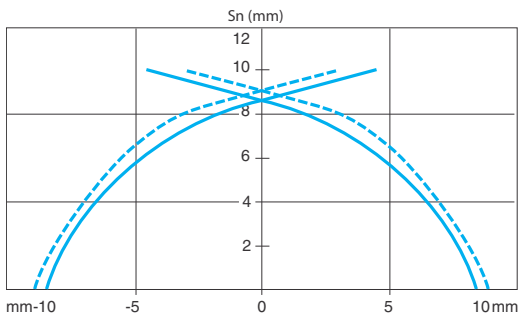
	Target size	Usable range
	mm	mm
XS7J1A1D	5 x 5 x 1	0 ... 2

———— pick up points
----- drop out points



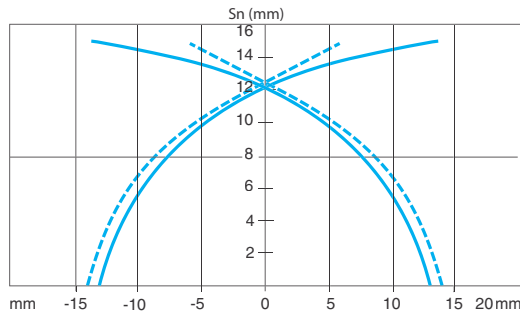
	Target size	Usable range
	mm	mm
XS7F1A1D	5 x 5 x 1	0 ... 4

———— pick up points
----- drop out points



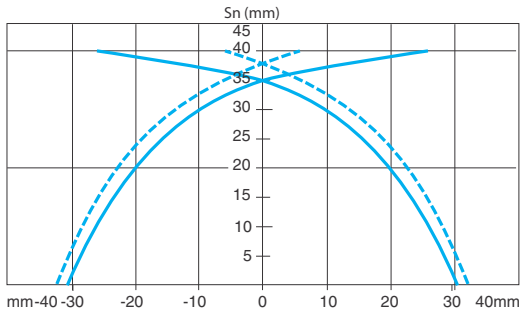
	Target size	Usable range
	mm	mm
XS7E1A1D	8 x 8 x 1	0 ... 8
XS7E1A1C	8 x 8 x 1	0 ... 8

———— pick up points
----- drop out points



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

———— pick up points
----- drop out points

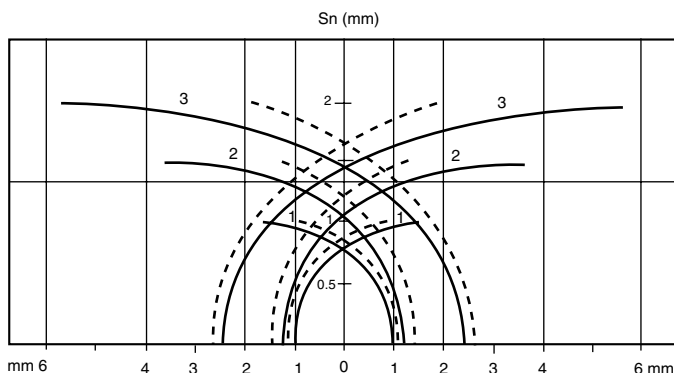


	Target size	Usable range
	mm	mm
XS7D1A1D	30 x 30 x 1	0 ... 32
XS7D1A1C	30 x 30 x 1	0 ... 32

———— pick up points
----- drop out points

Shielded

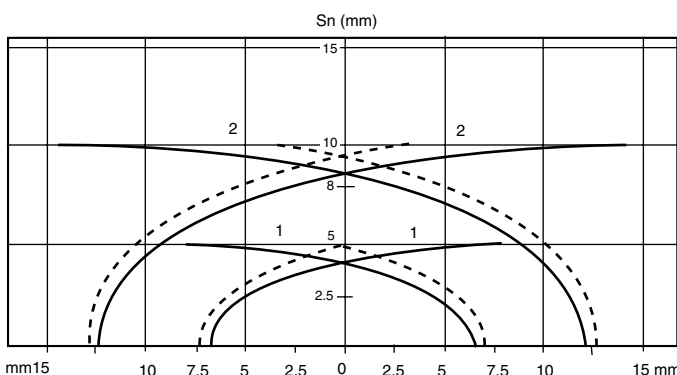
- 1 $\varnothing$ 4 XS1
 $\varnothing$ 5 (M5x0.5) XS1
- 2 $\varnothing$ 6.5 XS1
 $\varnothing$ 8 (M8x1) XS1, XS3
- 3 $\varnothing$ 12 (M12x1)
XS1, XS3



Standard targets	Size	Usable range
	mm	
4	5 x 5 x 1	0 ... 0.8
5	5 x 5 x 1	0 ... 0.8
6.5	8 x 8 x 1	0 ... 1.2
8	8 x 8 x 1	0 ... 1.2
12	12 x 12 x 1	0 ... 1.6

———— pick up points
----- drop out points

- 1 $\varnothing$ 18 (M18x1)
XS1, XS3
- 2 $\varnothing$ 30 (M30x1.5)
XS1, XS3

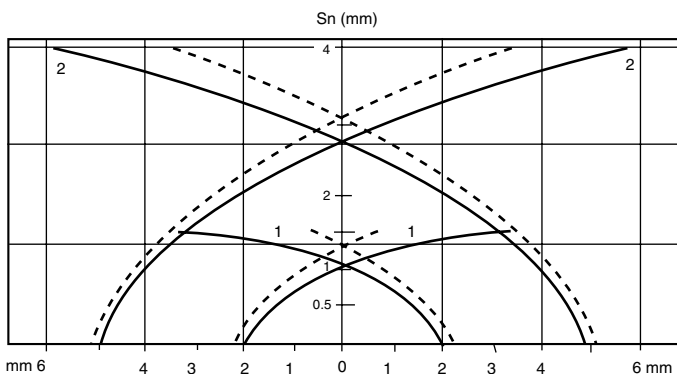


Standard targets	Size	Usable range
	mm	
18	18 x 18 x 1	0 ... 4
30	30 x 30 x 1	0 ... 8

———— pick up points
----- drop out points

Non-Shielded and Extended Range

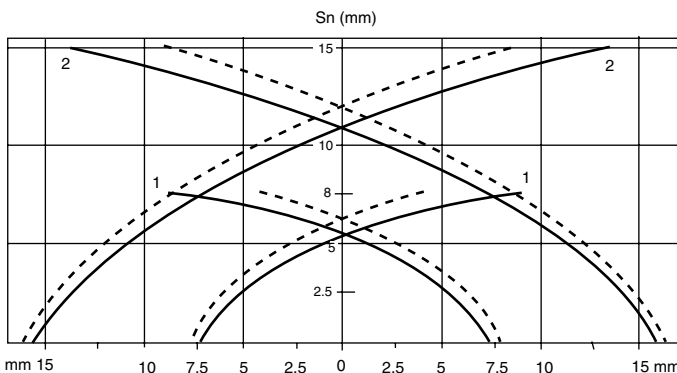
- 1 $\varnothing$ 8 (M8x1)
XS1, XS2, XS4
- 2 $\varnothing$ 12 (M12x1)
XS1, XS2, XS4



Standard targets	Size	Usable range
	mm	
8	8 x 8 x 1	0 ... 2
12	12 x 12 x 1	0 ... 3.2

———— pick up points
----- drop out points

- 1 $\varnothing$ 18 (M18x1) XS1,
XS2, XS4
- 2 $\varnothing$ 30 (M30x1.5) XS1,
XS2, XS4



Standard targets	Size	Usable range
	mm	
18	24 x 24 x 1	0 ... 6.4
30	45 x 45 x 1	0 ... 12

———— pick up points
----- drop out points

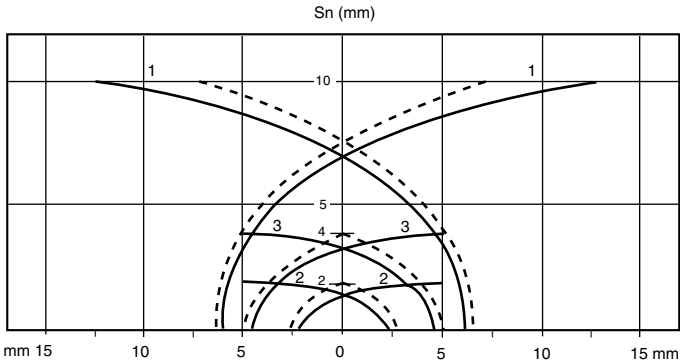
Proximity Sensors

Block Type Inductive Sensing Curves



Proximity Sensors

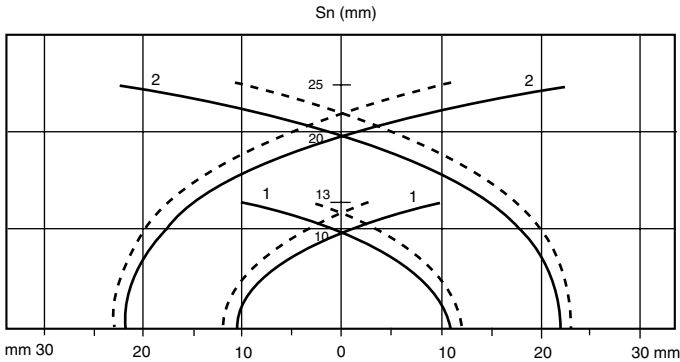
- 1 shielded, XSEC10
- 2 shielded, XSG•02
- 3 non-shielded, XSG•04



Standard targets	Size	Usable range
	mm	mm
XSEC10	30 x 30 x 1	0 ... 8
XSG•02	12 x 12 x 1	0 ... 1.6
XSG•04	12 x 12 x 1	0 ... 3.2

————— pick up points
 - - - - - drop out points

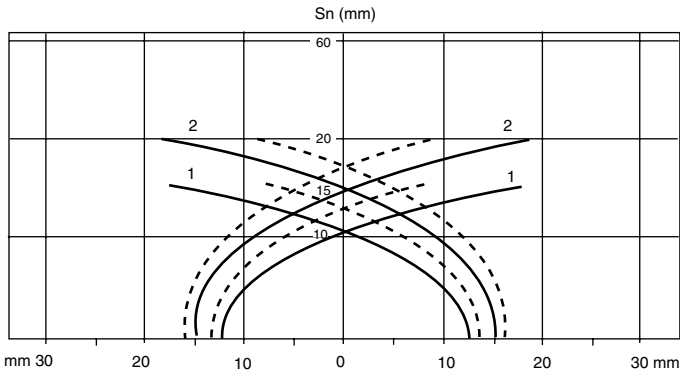
- 1 XSB•10
- 2 XSB•25



Standard targets	Size	Usable range
	mm	mm
XSB•10	40 x 40 x 1	0 ... 9
XSB•25	75 x 75 x 1	0 ... 20

————— pick up points
 - - - - - drop out points

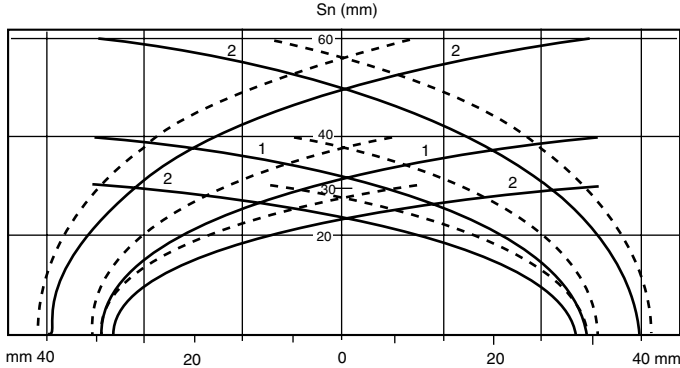
- 1 shielded, XS7
- 2 non-shielded, XS8



Standard targets	Size	Usable range
	mm	mm
XSC/XS7	45 x 45 x 1	0 ... 12
XSC/XS8	60 x 60 x 1	0 ... 16

————— pick up points
 - - - - - drop out points

- 1 fixed sensing distance, XSD•40
- 2 adjustable sensing distance, XSD•60



Standard targets	Size	Usable range
	mm	mm
XSD•40	120 x 120 x 1	0 ... 32
XSD•60	180 x 180 x 1	0 ... 48

————— pick up points
 - - - - - drop out points

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

Proximity Sensors Existing to New Substitution



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 ---		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

Proximity Sensors Existing to New Substitution



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 ~		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	XS612B1MAL10	XS1M18MB250K	XS618B1MBU20
XS2M30NA370L1	XS630B1NAL5	XS1M12MB230	XS612B1MBL2	XS1M18MB250L1	XS618B1MBL5
XS2M30NB370	XS630B1NBL2	XS1M12MB230K	XS612B1MBU20	XS1M18MB250L2	XS618B1MBL10
XS2M30NB370D	XS630B1NBM12	XS1M12MB230L1	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	XS612B1MAL10	XS2M18MA230L1	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	XS2M18MA250L1	XS618B1MAL5
XS2N30NA340	XS630B1NAL2	XS2M12MB230L1	XS612B1MBL5	XS2M18MA250L2	XS618B1MAL10
XS2N30NA340D	XS630B1NAM12	XS2M12MB230L2	XS612B1MBL10	XS2M18MB230	XS618B1MBL2
XS2N30NB340	XS630B1NBL2	XS2M12MB250	XS612B1MBL2	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	XS612B1MAL5	XS2M18MB230L2	XS618B1MBL10
XS2N30PA340D	XS630B1PAM12	XS3P12MB230	XS612B1MBL2	XS2M18MB250	XS618B1MBL2
XS2N30PA340L1	XS630B1PAL5	18 mm Cylindrical ~		XS2M18MB250A	XS618B1MBU20
XS2N30PA340L2	XS630B1PAL10	XS1M18MA230	XS618B1MAL2	XS2M18MB250K	XS618B1MBU20
XS2N30PB340	XS630B1PBL2	XS1M18MA230A	XS618B1MAU20	XS2M18MB250L1	XS618B1MBL5

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 ~		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 ~		XS7C40NC440H29	XS7C1A1NBM8 + XSZBC10
XS1M30MA239	XS630B1MAL2	XS7C40NC449	XS8C1A1MAL01U20 + XSZBC10	XS7C40NC449	XS8C1A1NAM8 + XSZBC10
XS1M30MA239A	XS630B1MAU20	XS7C40NC449	XS8C1A1MBL01U20 + XSZBC10	XS7C40NC449	XS8C1A1NBM8 + XSZBC10
XS1M30MA250	XS630B1MAL2	XSD Rectangular ~		XS7C40NC449H29	XS8C1A1NAM8 + XSZBC10
XS1M30MA250A	XS630B1MAU20	XS7C40NC449H29	XS8D1A1MAU20 + XSZBD10	XS7C40NC449H29	XS8C1A1NBM8 + XSZBC10
XS1M30MA250AH4	XS630B1MAU20	XS7C40PC440	XS8D1A1MBU20 + XSZBD10	XS7C40PC440	XS7C1A1PAM8 + XSZBC10
XS1M30MA250H4	XS630B1MAL2	XS7C40PC440	XS8D1A1MAU20 + XSZBD10	XS7C40PC440	XS7C1A1PBM8 + XSZBC10
XS1M30MA250K	XS630B1MAU20	XS7C40PC440D	XS8D1A1MBU20 + XSZBD10	XS7C40PC440D	XS7C1A1PAM8 + XSZBC10
XS1M30MA250KH4	XS630B1MAU20	XS7C40PC440D	XS8D1A1MAU20 + XSZBD10	XS7C40PC440D	XS7C1A1PBM8 + XSZBC10
XS1M30MA250L1	XS630B1MAL5	XS7C40PC440H29	XS8D1A1MBU20 + XSZBD10	XS7C40PC440H29	XS7C1A1PAM8 + XSZBC10
XS1M30MA250L2	XS630B1MAL10	XS7C40PC440H29	XS8D1A1MAU20 + XSZBD10	XS7C40PC440H29	XS7C1A1PBM8 + XSZBC10
XS1M30MB230	XS630B1MBL2	XS7C40PC440H7	XS8D1A1MBU20 + XSZBD10	XS7C40PC440H7	XS7C1A1PAM8 + XSZBC10
XS1M30MB230A	XS630B1MBU20	XS7C40PC440H7	XS8D1A1MAU20 + XSZBD10	XS7C40PC440H7	XS7C1A1PBM8 + XSZBC10
XS1M30MB230B	XS630B1MBU20	XS7C40PC449	XS8D1A1MBU20 + XSZBD10	XS7C40PC449	XS8C1A1PAM8 + XSZBC10
XS1M30MB230C	XS630B1MBU20	XS7C40PC449	XS8D1A1MAU20 + XSZBD10	XS7C40PC449	XS8C1A1PBM8 + XSZBC10
XS1M30MB230G	XS630B1MBU20	XS7C40PC449H29	XS8D1A1MBU20 + XSZBD10	XS7C40PC449H29	XS8C1A1PAM8 + XSZBC10
XS1M30MB230K	XS630B1MBU20	XS7C40PC449H29	XS8D1A1MAU20 + XSZBD10	XS7C40PC449H29	XS8C1A1PBM8 + XSZBC10
XS1M30MB230L1	XS630B1MBL5	XS7C40PC449H7	XS8D1A1MBU20 + XSZBD10	XS7C40PC449H7	XS8C1A1PAM8 + XSZBC10
XS1M30MB230L2	XS630B1MBL10	XS7C40PC449H7	XS8D1A1MAU20 + XSZBD10	XS7C40PC449H7	XS8C1A1PBM8 + XSZBC10
XS1M30MB250	XS630B1MBL2	XS7T2DA210	XS8D1A1MBU20 + XSZBD10	XS7T2DA210	XS7E1A1DAL2 + XSZBE10
XS1M30MB250A	XS630B1MBU20	XS7T2DA214LD	XS8D1A1MAU20 + XSZBD10	XS7T2DA214LD	XS7E1A1CAL08M12 + XSZBE10
XS1M30MB250K	XS630B1MBU20	XS7T2DA214LD01	XS8D1A1MBU20 + XSZBD10	XS7T2DA214LD01	XS7E1A1CAL01M12 + XSZBE10
XS1M30MB250L1	XS630B1MBL5	XS7T2NC440	XS8D1A1MAU20 + XSZBD10	XS7T2NC440	XS7E1A1NAL2 + XSZBE10
XS1M30MB250L2	XS630B1MBL10	XS7T2NC440	XS8D1A1MBU20 + XSZBD10	XS7T2NC440	XS7E1A1NBL2 + XSZBE10
XS2M30MA230	XS630B1MAL2	XS7T2NC440LD	XS7 Rectangular ---		XS7E1A1NAL01M12 + XSZBE10
XS2M30MA230A	XS630B1MAU20	XS7T2NC440LD	XS7C1A1DAM8 + XSZBC10	XS7T2NC440LD	XS7E1A1NBL01M12 + XSZBE10
XS2M30MA230C	XS630B1MAU20	XS7T2PC440	XS7C1A1DAM8 + XSZBC10	XS7T2PC440	XS7E1A1PAL2 + XSZBE10
XS2M30MA230G	XS630B1MAU20	XS7T2PC440	XS7C1A1CAL08M12 + XSZBC10	XS7T2PC440	XS7E1A1PBL2 + XSZBE10
XS2M30MA230K	XS630B1MAU20	XS7T2PC440LD	XS7C1A1DAM8 + XSZBC10	XS7T2PC440LD	XS7E1A1PAL08M12 + XSZBE10
XS2M30MA230L1	XS630B1MAL5	XS7T2PC440LD	XS7C1A1DBM8 + XSZBC10	XS7T2PC440LD	XS7E1A1PBL08M12 + XSZBE10
XS2M30MA230L2	XS630B1MAL10	XS7T4DA210	XS7C1A1DAM8 + XSZBC10	XS7T4DA210	XS7C1A1DAL2 + XSZBC10
XS2M30MA230T	XS630B1MAL2T	XS7T4DA214LD	XS7C1A1DBM8 + XSZBC10	XS7T4DA214LD	XS7C1A1CAL08M12 + XSZBC10
XS2M30MA250	XS630B1MAL2	XS7T4DA214LD01	XS7C1A1DAM8 + XSZBC10	XS7T4DA214LD01	XS7C1A1CAL01M12 + XSZBC10
XS2M30MA250K	XS630B1MAU20	XS7T4NC440	XS7C1A1DBM8 + XSZBC10	XS7T4NC440	XS7C1A1NAL2 + XSZBC10
XS2M30MA250L1	XS630B1MAL5	XS7T4NC440	XS7C1A1DAM8 + XSZBC10	XS7T4NC440	XS7C1A1NBL2 + XSZBC10
XS2M30MA250L2	XS630B1MAL10	XS7T4NC440LD	XS7C1A1DBM8 + XSZBC10	XS7T4NC440LD	XS7C1A1NAL01M12 + XSZBC10

Proximity Sensors Existing to New Substitution



Old Design	New Design	Old Design	New Design	Old Design	New Design
XS7T4NC440LD	XS7C1A1NBL01M12 + XSZBC10	XS7 Rectangular ~		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 ~		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
XS8T4PC440	XS8C1A1PAL2 + XSZBC10	XS8C40MP230	XS8C1A1MAL01U20 + XSZBC10	XSEC107233	XS7E1A1DBM12 + XSZBE10
XS8T4PC440	XS8C1A1PBL2 + XSZBC10	XS8C40MP230	XS8C1A1MAL01U20 + XSZBC10	XSEC1072331	XS7E1A1DBL08M12 + XSZBE10
XS8T4PC440LD	XS8C1A1PAL01M12 + XSZBC10	XS8C40MP230H29	XS8C1A1MAL01U20 + XSZBC10	XSEC1571300	XS7E1A1DAL2 + XSZBE10
XS8T4PC440LD	XS8C1A1PBL01M12 + XSZBC10	XS8C40MP230H29	XS8C1A1MBL01U20 + XSZBC10	XSEC1571330	XS7E1A1DAL2 + XSZBE10

Old Design	New Design	Old Design	New Design	Old Design	New Design
XSC Rectangular ~					
XSCA150549	XS8C1A1MAL01U20 + XSZBC10				
XSCA150549	XS8C1A1MBL01U20 + XSZBC10				
XSD Rectangular ~					
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	XS8D1A1MAU20 + XSZBD10				
XSDA600519H7	XS8D1A1MBU20 + XSZBD10				
XSDM500538	XS8D1A1MAU20 + XSZBD10				
XSDM500538	XS8D1A1MBU20 + XSZBD10				
XSDM600539	XS8D1A1MAU20 + XSZBD10				
XSDM600539	XS8D1A1MBU20 + XSZBD10				
XSDM600539H7	XS8D1A1MAU20 + XSZBD10				
XSDM600539H7	XS8D1A1MBU20 + XSZBD10				

Proximity Sensors

AC Only to AC/DC Cross Reference



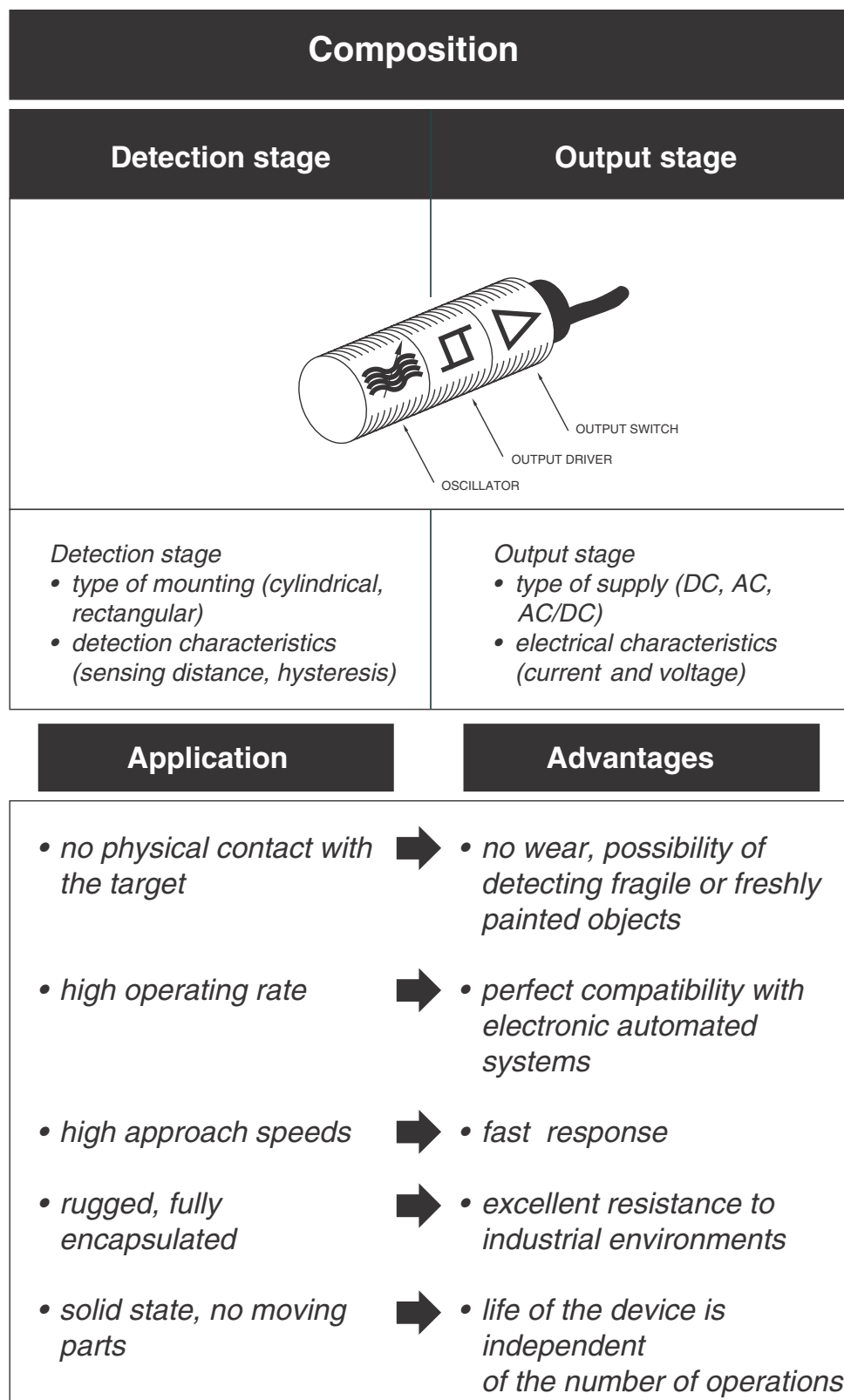
Obsolete Part Number	Replaced by Part Number
AC	AC/DC
XS1M12FA260	XS1M12MA230
XS1M12FA260K	XS1M12MA230K
XS1M12FB260	XS1M12MB230
XS1M12FB260K	XS1M12MB230K
XS1M18FA260	XS1M18MA230
XS1M18FA260A	XS1M18MA230A
XS1M18FA260K	XS1M18MA230K
XS1M18FB260	XS1M18MB230
XS1M18FB260A	XS1M18MB230A
XS1M18FB260K	XS1M18MB230K
XS1M30FA260	XS1M30MA230
XS1M30FA260A	XS1M30MA230A
XS1M30FA260K	XS1M30MA230K
XS1M30FB260	XS1M30MB230
XS1M30FB260A	XS1M30MB230A
XS1M30FB260K	XS1M30MB230K
XS2M12FA260	XS2M12MA230
XS2M12FA260K	XS2M12MA230K
XS2M12FB260	XS2M12MB230
XS2M12FB260K	XS2M12MB230K
XS2M18FA260	XS2M18MA230
XS2M18FA260A	XS2M18MA230A
XS2M18FA260K	XS2M18MA230K
XS2M18FB260	XS2M18MB230
XS2M18FB260A	XS2M18MB230A
XS2M18FB260K	XS2M18MB230K
XS2M30FA260	XS2M30MA230
XS2M30FA260A	XS2M30MA230A
XS2M30FA260K	XS2M30MA230K
XS2M30FB260	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
XS4P12FB260K	XS4P12MB230K
XS4P18FA260	XS4P18MA230
XS4P18FA260A	XS4P18MA230A
XS4P18FA260K	XS4P18MA230K
XS4P18FB260	XS4P18MB230
XS4P18FB260A	XS4P18MB230A
XS4P18FB260K	XS4P18MB230K
XS4P30FA260	XS4P30MA230
XS4P30FA260A	XS4P30MA230A
XS4P30FA260K	XS4P30MA230K
XS4P30FB260	XS4P30MB230
XS4P30FB260A	XS4P30MB230A
XS4P30FB260K	XS4P30MB230K

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.

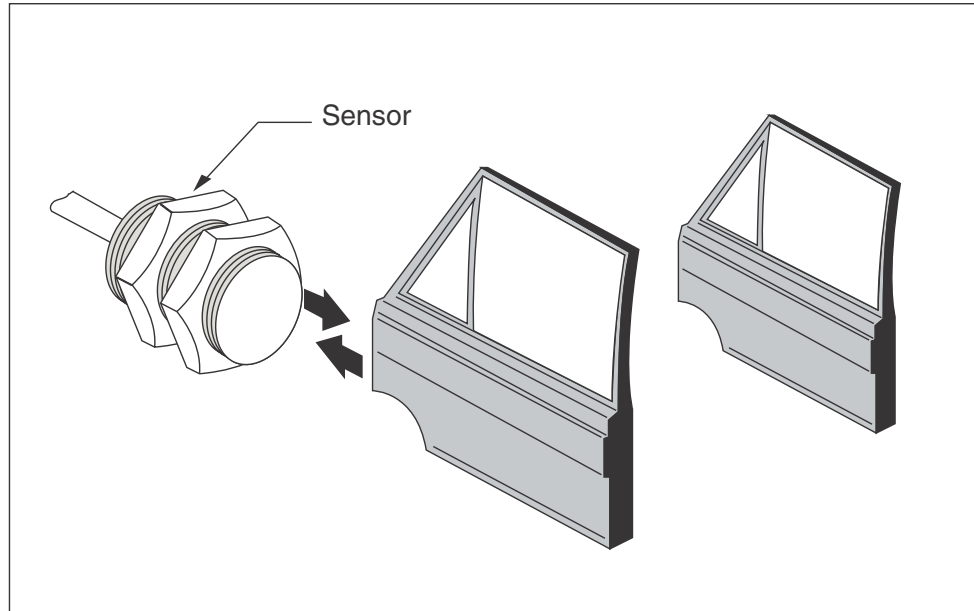
Essentially, it is a **non-contact part presence** detector.



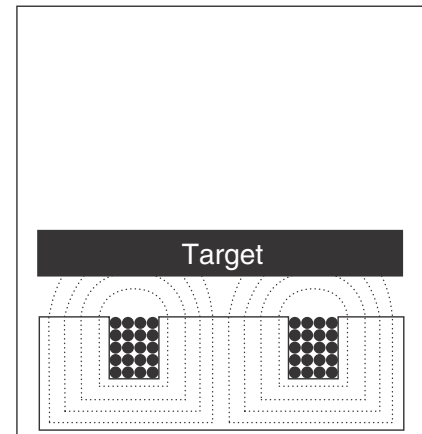
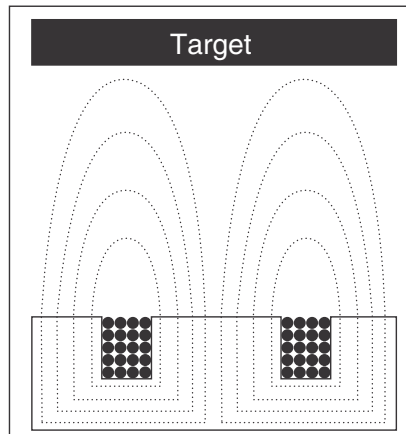
Suitable for the detection of metal objects

Inductive

- **Identifies** only **metal** targets
- **Predictable** sensing technology—few variables
- **Reliable** industrial technology



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.

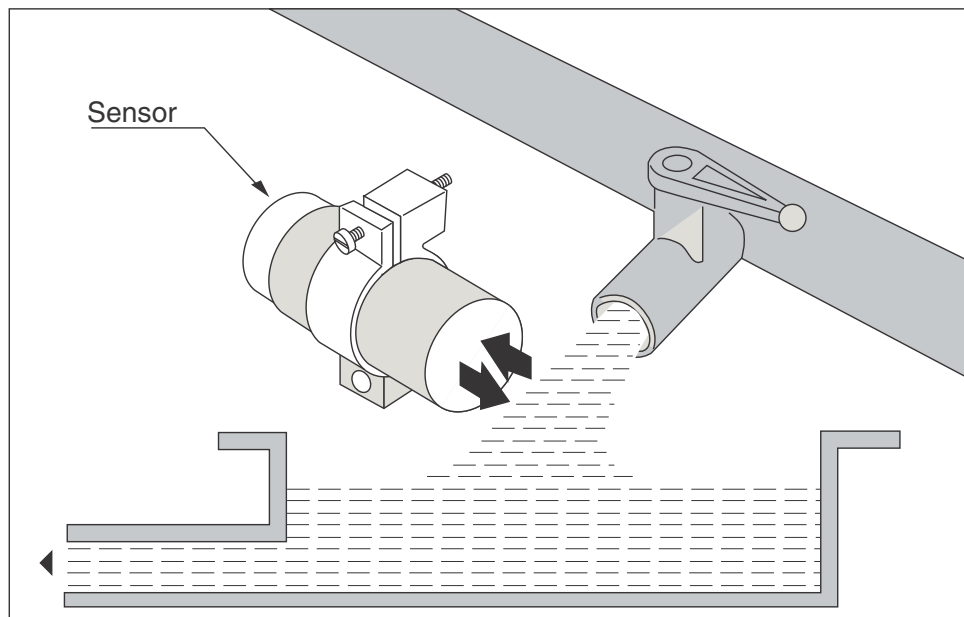
When a metal object is placed within this field, the resulting currents induced into the target form an additional load, and the oscillations cease.

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

Capacitive

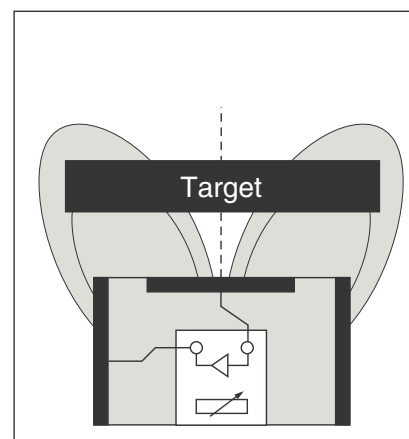
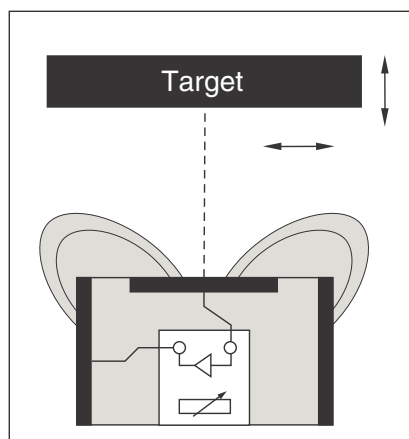
- Detects **any material**
- Affected by environment: humidity, dust, etc.
- Best for:
 - bulk material
 - liquids
 - targets behind a separation wall

Suitable for the detection of non-conductive targets, liquids and powders



Proximity Sensors

Principle of operation



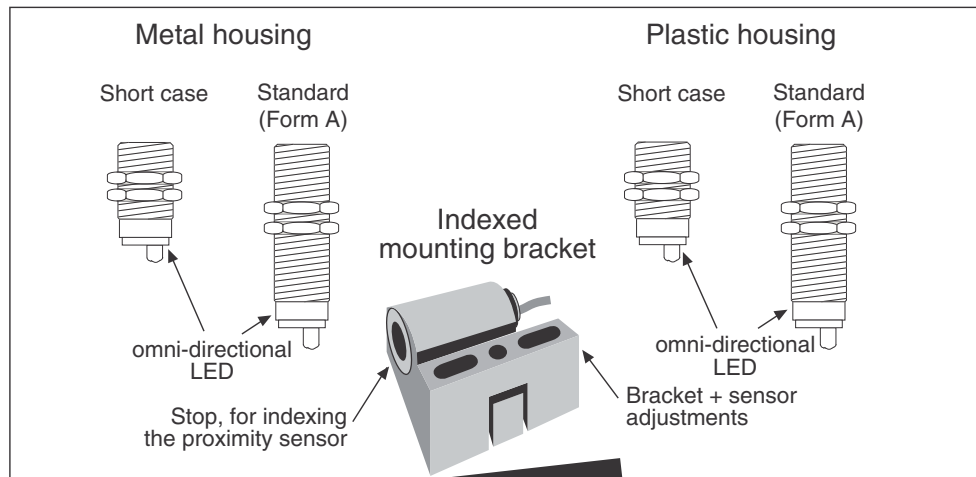
An capacitive proximity sensor is basically comprised of an oscillator whose capacitors constitute the sensing face.

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.

Housing types

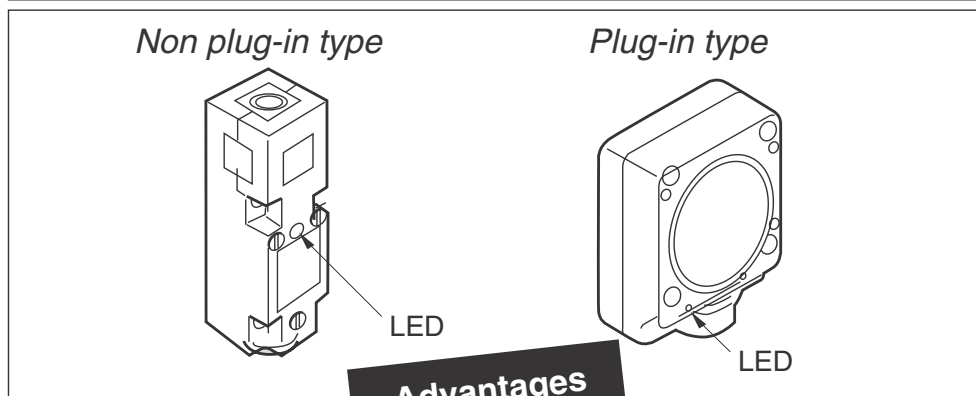
Tubular type



Advantages

- Simple installation and set-up: pre-wired or connector models
- Excellent environmental protection:
 - encapsulated
 - metal housing (plated brass)
 - plastic or stainless steel housing (food, pharmaceuticals)
- Two choices:
 - very short for restricted access areas
 - standard (form A) length for ease of replacement
- No adjustment replacement by using a patented indexing mounting bracket

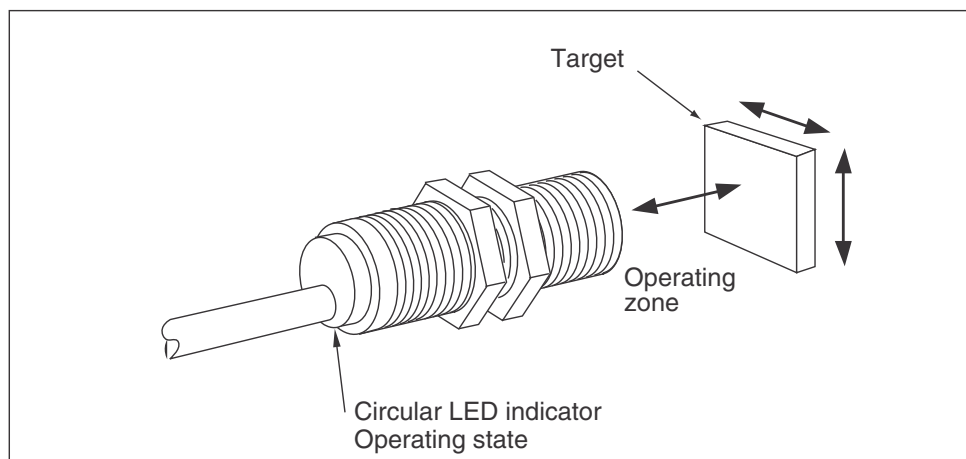
Block type



Advantages

- Direct interchangeability, no need for readjustment
- Flexibility of connections: screw terminals or connector
- Long sensing distance

**Operating
zone**

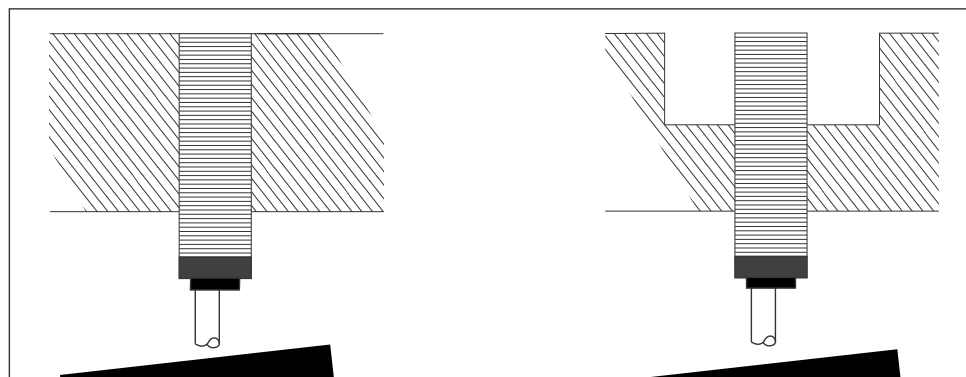


The targets are generally of steel, and of a size equivalent to the sensing face of the sensor. To ensure detection, the target should pass at a distance less than or equal to the usable sensing distance given in the data sheet of the sensor selected.

**Suitability for flush
mounting in metal**

Suitable (shielded)

**Not suitable
(unshielded)**



Advantages

Advantages

- No lateral effect

- Sensing distance + 50 to + 100%

But

But

- Reduced sensing distance

- Space required around the device to eliminate the effects of the surrounding metal

Power supply

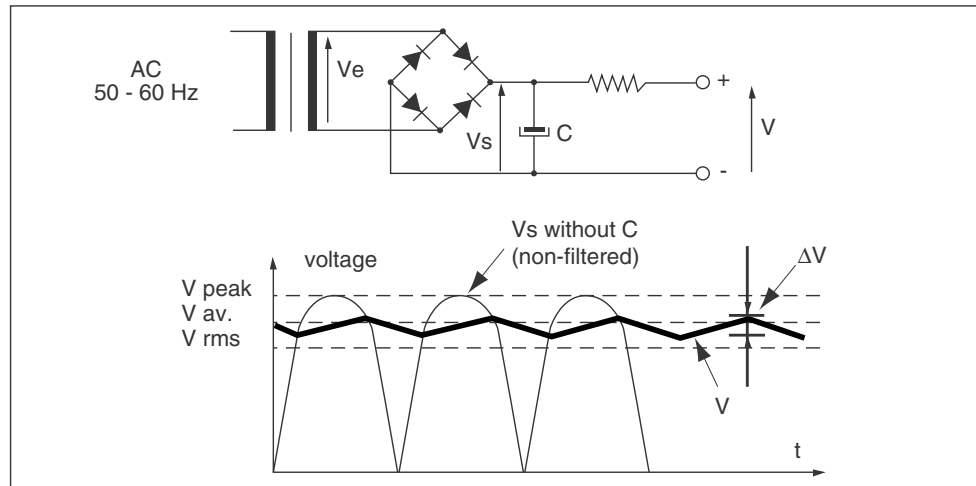
AC or AC/DC sensors for AC circuits

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

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 $V_e \times \sqrt{2}$.
- The minimum voltage of the DC supply is greater than the minimum voltage rating of the sensor, given that $\Delta V = (I \times t) \div C$.

ΔV = 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 (μF)

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

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

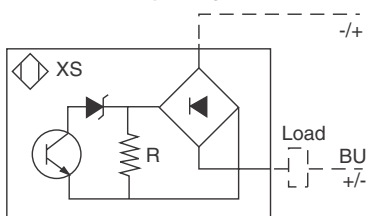
Mount a filtering capacitor of minimum 400 μF per sensor or 2000 μF for each ampere of load current required.

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.

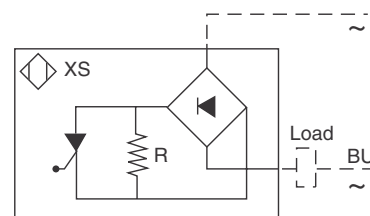
2 Wire type

Output signal

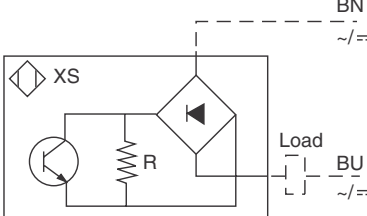
DC, 2 wire, not polarity conscious BN



AC 2 wire



AC/DC 2 wire



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

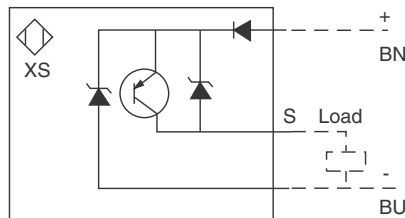
But

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

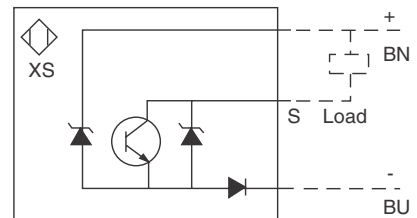
Output signal

3 Wire type

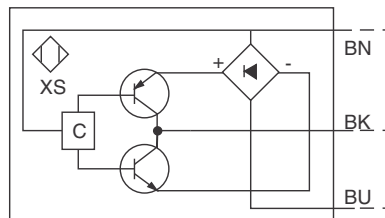
3 wire type
PNP



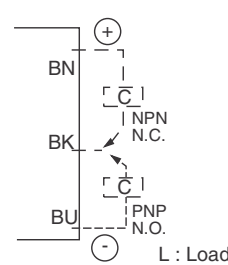
3 wire type
NPN



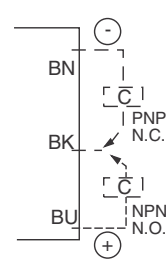
3 wire type, programmable
PNP/NPN/N.O./N.C.



Polarity (case 1)



Polarity (case 2)



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

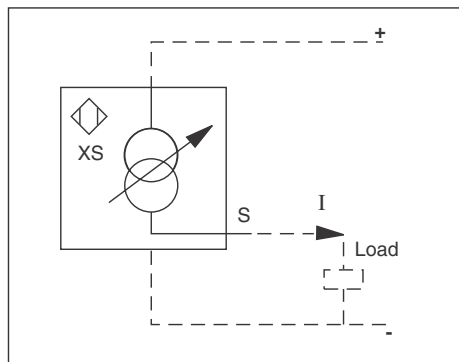
- *Best switching characteristics: no residual current, low voltage drop, fast*
- *N.O. + N.C. versions*
- *Universal versions, reduces stock requirements*

But

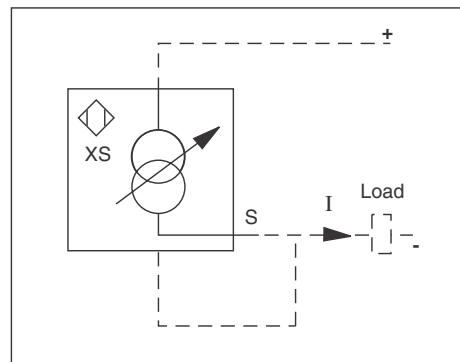
Requires the use of a specialized sensor (PNP or NPN, function of the load connection, to negative or positive, respectively) or a selectable universal type.

Analog type

Output signal



3 wire type



2 wire 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:

dual voltage: 24/48 Vdc
Output: 0 - 10 mA with 3 wire connection
4 - 14 mA with 2 wire connection

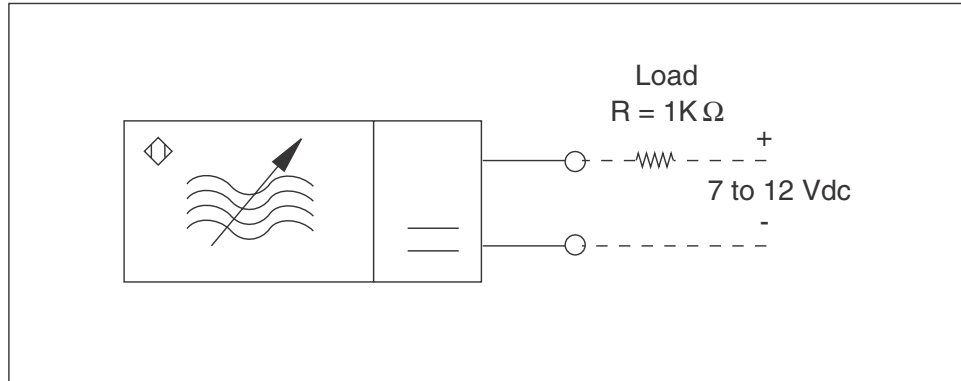
single voltage: 24 Vdc
Output: 0 - 16 mA with 3 wire connection
4 - 20 mA with 2 wire connection

Advantages

- Output signal proportional to the distance.
- Two or three wire connection using the same device.

Output signal

Namur type



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.

Advantages

- *Can work in hazardous environments.*
- *Basic product, without amplifier.*
- *Compact size.*

Method of connection

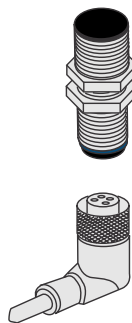
Cable



Features

Pre-wired sealed cable, excellent resistance to splashing liquid (IP67) or cutting oils (IP68).

Connector



Features

Ease of installation and replacement.

Screw Terminals



Features

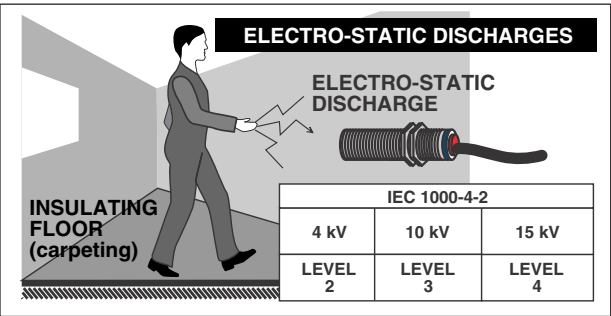
Flexibility: user selects type and length of cable.

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.

The XS sensors are tested according to IEC 60947.5.2 standard (similar to the proposed new NEMA ICS 5-4-1999x standard).

Electromagnetic interference



DC versions

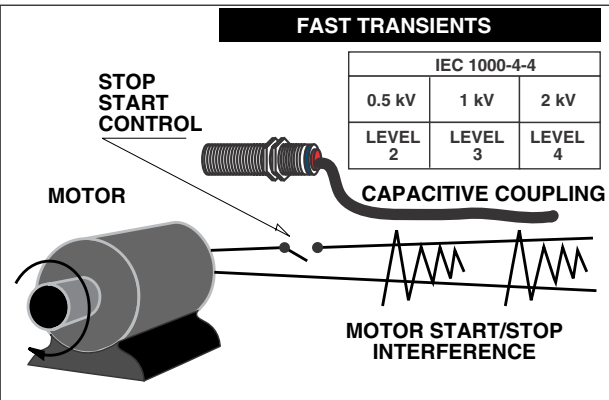
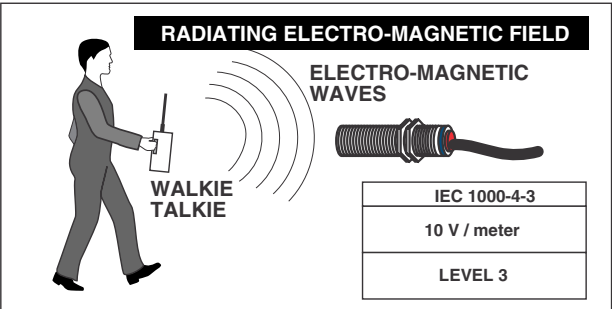
- level 2 immunity (3 wire type)
- level 3 immunity (2 wire type)

AC/DC versions

- level 4 immunity

DC and AC/DC versions

- level 3 immunity (RFI Radio Frequency Immunity)



DC versions

- level 3 immunity

AC/DC versions

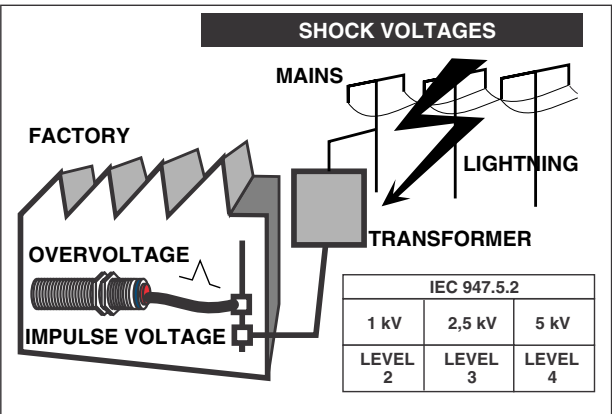
- level 4 immunity

Extended range DC

- level 3 immunity

DC and AC/DC versions

- level 3 immunity (over 8 mm diameter)
- level 2 immunity (tubular 8 mm and smaller)



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.

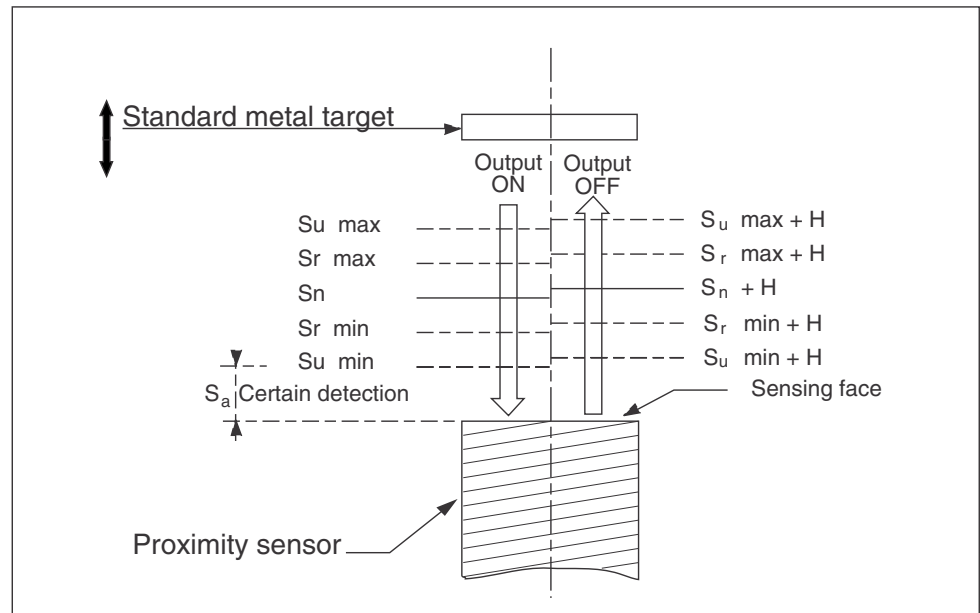
Vibrations

- The sensors are tested according to IEC 60068.2.6, amplitude ± 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.

**Definition of
sensing distances**



Nominal (or rated) sensing distance S_n :

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 S_r :

The real sensing distance is measured at rated voltage (U_n) and at the rated ambient temperature (T_n). It must be between 90% and 110% of the real sensing distance: $0.9S_n \leq S_r \leq 1.1S_n$.

Usable sensing distance S_u :

The usable sensing distance is measured at the limits of the permissible variations of the ambient temperature (T_a) and the supply voltage (U_b). It must be between 90% and 110% of the real sensing distance: $0.9S_r \leq S_u \leq 1.1S_r$.

Operating zone S_a (usable sensing range):

The operating zone is between **0 and 81%** of the nominal sensing distance S_n :

$$0 \leq S_a \leq 0.81S_n$$

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.

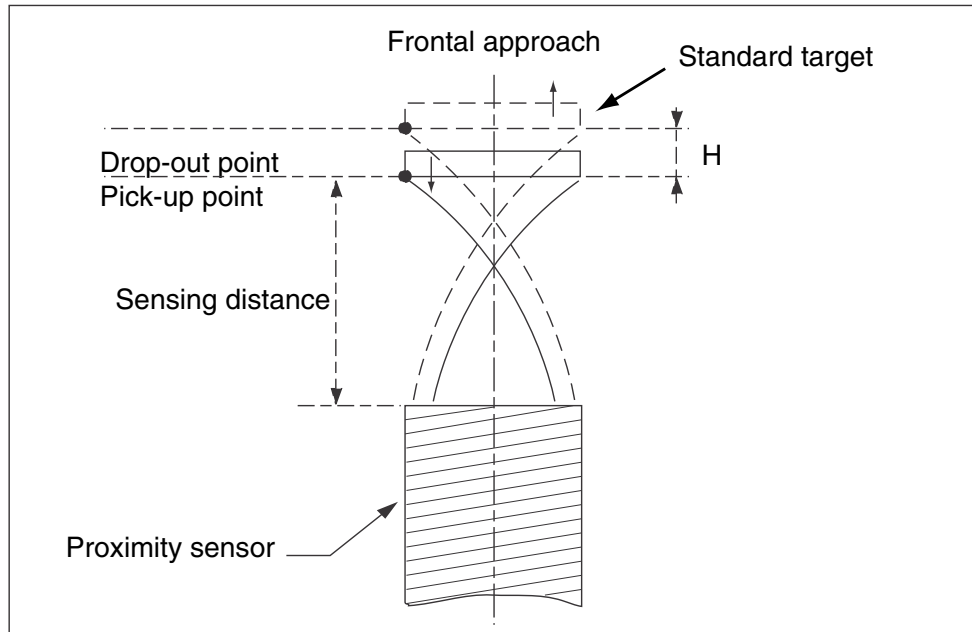
This is the **maximum** sensing distance **the designer should consider** for all applications. Correction factors should be considered only when conditions preclude the use of the standard target in the operating temperature and voltage range.

Standard metal target

Standard metal target:

1 mm thick, square mild cold rolled steel, type FE 360. The side of the square is either equal to the diameter of the sensor or of the circle engraved on the active face of the sensing face or is 3 times the nominal sensing distance (S_n). The higher of these values is used.

Differential travel



Differential travel: (hysteresis) H:

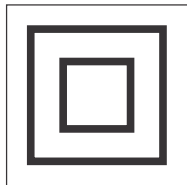
The distance between the pick-up point as the standard metal target frontally approaches the sensor, and the drop-out point as it moves away. Expressed as a percentage of the real sensing distance S_r .

Repeat accuracy (Repeatability)

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 S_r . Important parameter for positioning applications.

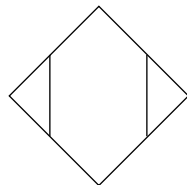
Class 2 material Double Isolation



Class 2 material - Double isolation

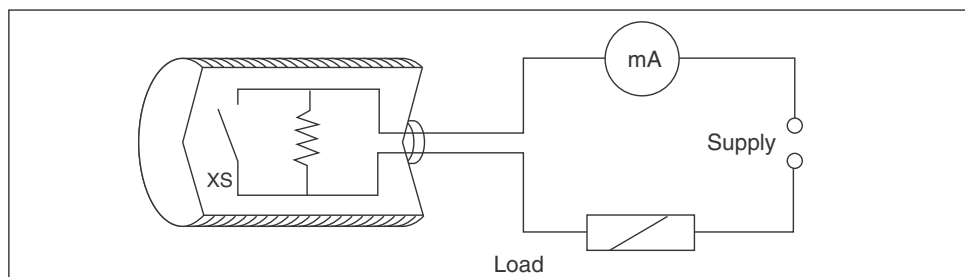
The symbol represents electrical insulation conforming to IEC 60536 class 2. It means that all live parts are isolated inside the housing and touching any exterior exposed metal is harmless. No groundings required.

Symbol



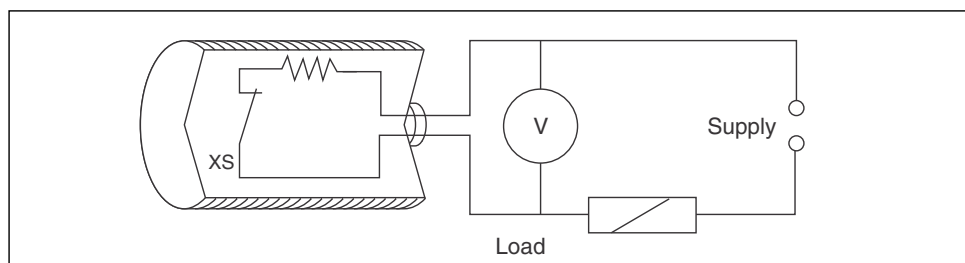
International symbol for proximity switches.

**Leakage or
Residual current
(I_r)**



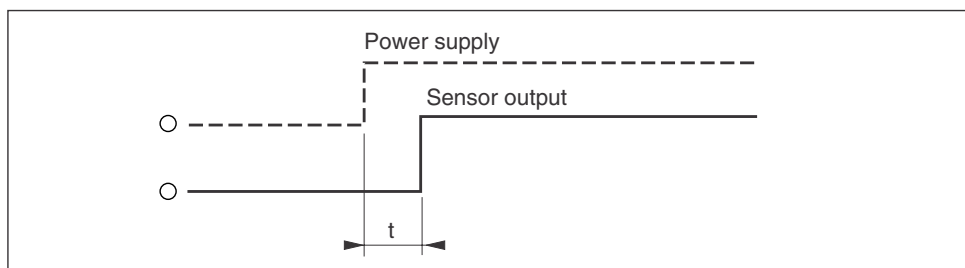
The leakage or residual current corresponds to the current flowing through the sensor in the OFF or “open” state. Important for 2 wire proximity sensors.

**Voltage drop
(U_d)**



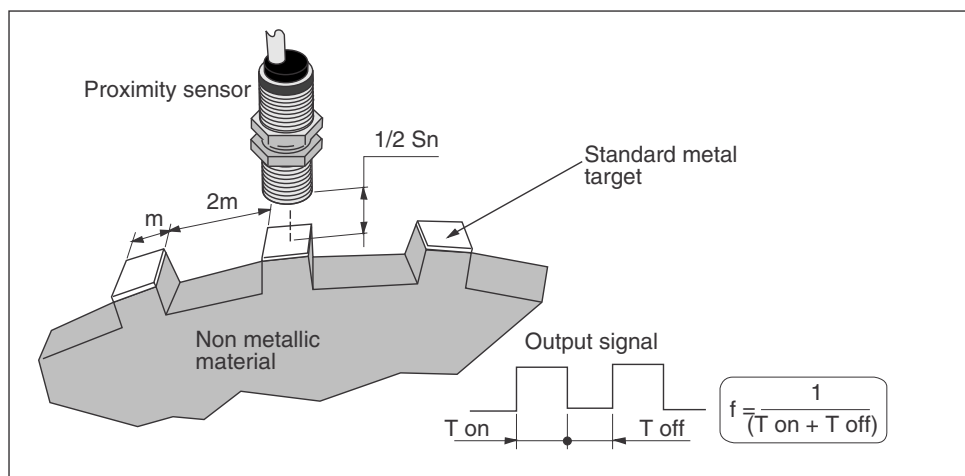
The voltage drop corresponds to the voltage at the proximity sensor's terminals in the ON or “closed” state. Especially important for 2 wire proximity sensors.

**RESPONSE TIME
power-up delay**



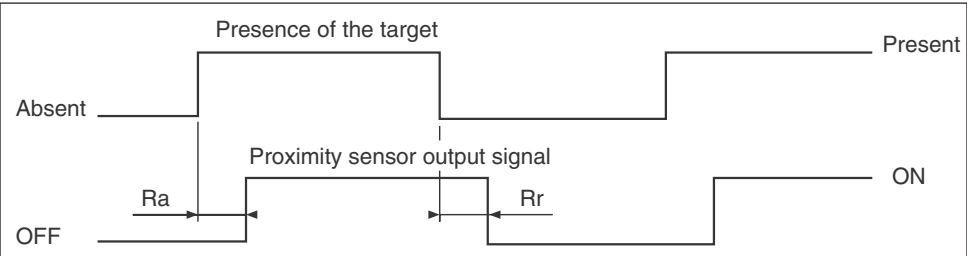
The period of time between energizing the sensor and its fully operational condition. Known also as “warm-up” or “first-up” delay.

**Maximum operating
frequency**



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.

Response time



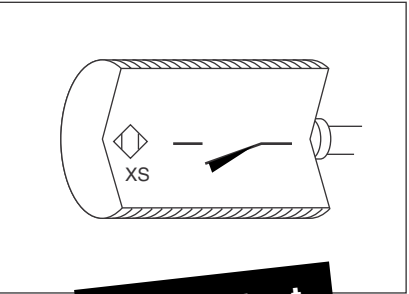
ON delay Ra:

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:

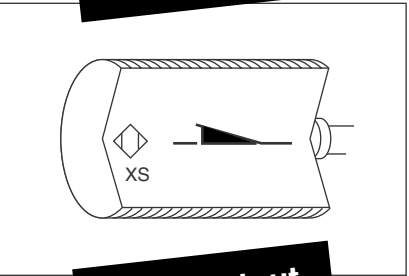
The period between the exit of the target from the sensor's operating zone and the subsequent change in its output state. This design parameter limits the interval between successive targets.

Output signal



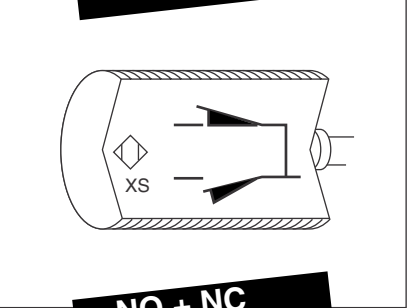
N.O. - Normally open

Output circuit turns ON output current when a target is present.



N.C. - Normally closed

Output circuit turns OFF output current when a target is present.

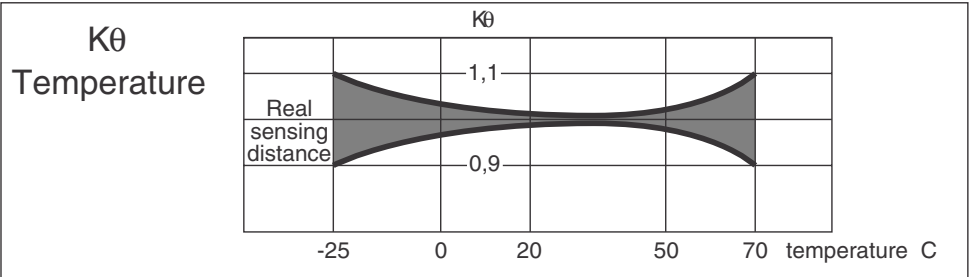


N.O. + N.C.

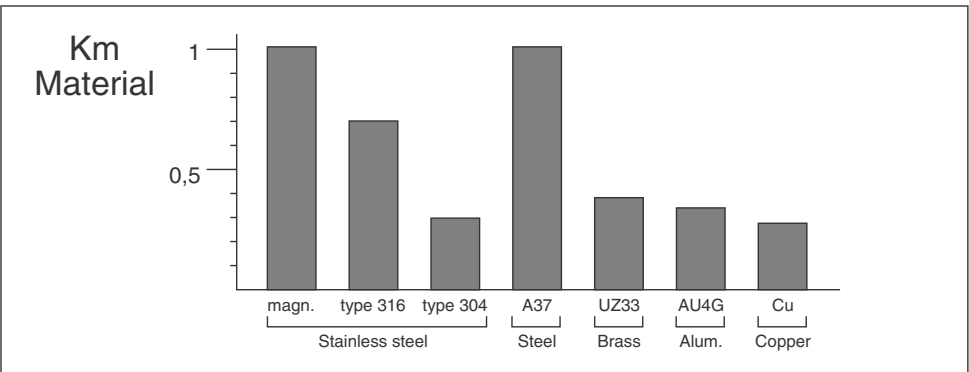
Complementary outputs proximity sensor with two outputs, one of which opens, the other closes when a target is present.

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.

Theoretical calculation



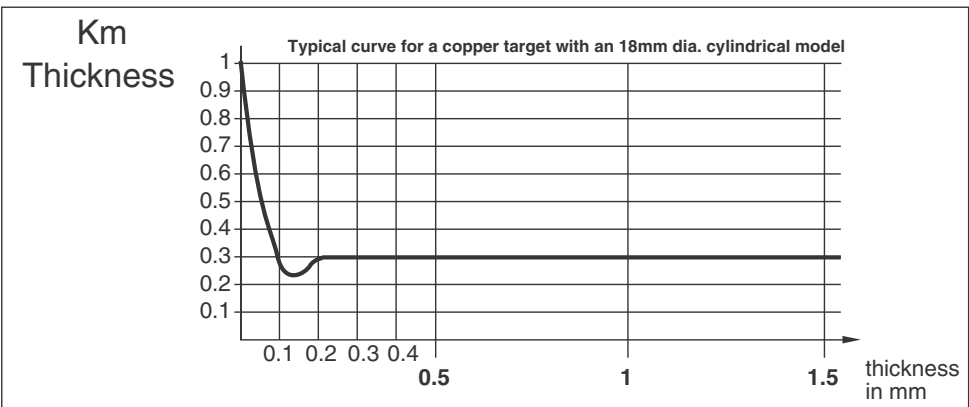
Apply a correction factor $K\theta$ to be determined using the curve above.



Target material correction coefficient K_m

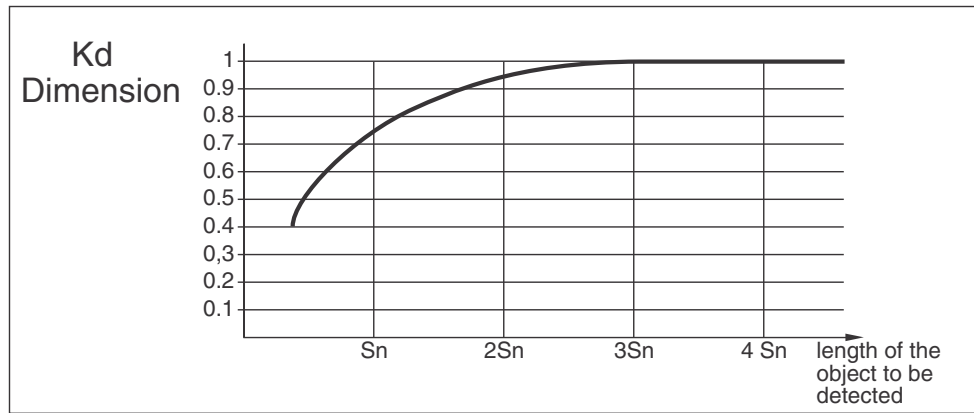
Target Material	Stainless Steel			Mild Steel	Brass	Aluminum	Copper
	Magn.	Type 316	Type 304	A37	UZ33	AU4G	CU
K_m	1.00	0.70	0.30	1.00	0.37	0.35	0.30

Apply a correction factor K_m to be determined using the graph above.



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.



Apply a correction factor K_d to be determined using the curve above.

For all situations, use the general correction factor $K_t = 0.9$ for power supply variations within the entire voltage range.

$$S_a = S_n \times K_{\theta} \times K_m \times K_d \times K_t$$

Where S_a = usable sensing distance
 S_n = nominal sensing distance

Proximity sensor XS7C40MP230 with nominal sensing distance $S_n = 15$ mm.
 Ambient temperature variation 0°C to $+20^{\circ}\text{C}$.

Target characteristics:

material: Steel

dimensions: 45 mm x 45 mm x 1 mm

The operating zone, S_a can be found using the formula:

$$\begin{aligned} S_a &= S_n \times K_{\theta} \times K_m \times K_d \times K_t \\ S_a &= 15 \times 0.98 \times 1 \times 0.95 \times 0.9 \\ S_a &= 12.5 \text{ mm} \end{aligned}$$

For standard targets, the rule of thumb is:

$$S_a = 0.8 S_n$$

Note

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

Usable sensing distance

Calculation example

Rule of thumb

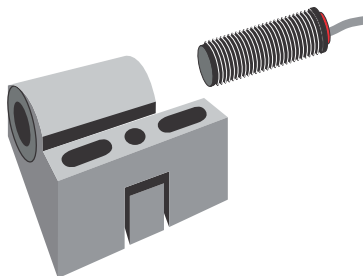
Always test!

- Patented design
- No adjustment replacement

Mounting

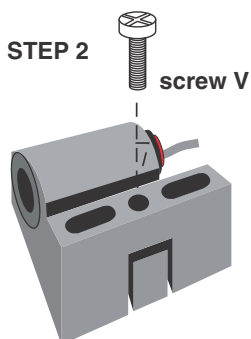
Indexed mounting bracket XSZB

STEP 1



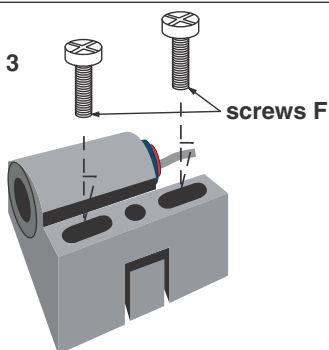
- Insert the sensor in the bracket until it butts against the stop.

STEP 2



- Secure the sensor using V screw.

STEP 3



- Adjust the sensor/bracket combination to assure detection.
- Secure the combination using F screws.

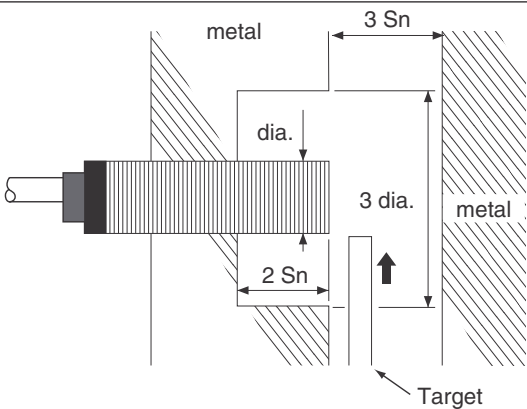
If for any reason adjustment or replacement is necessary:

- Unscrew screw 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.

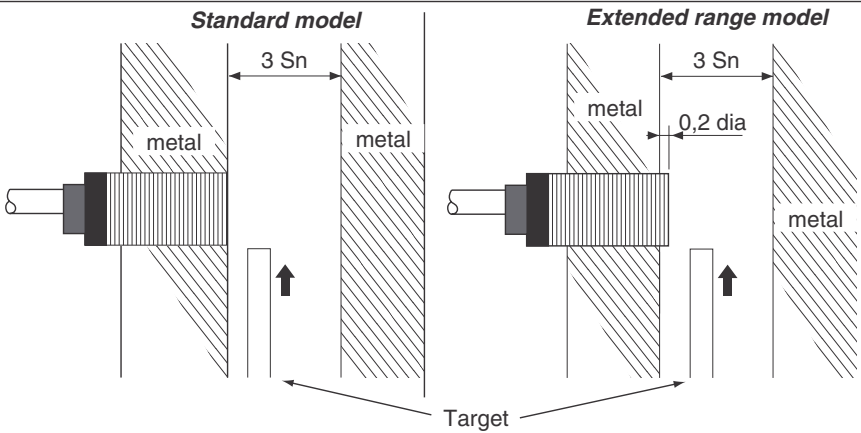
Note: these functions are similar to those of a block type sensor

Clearing distances

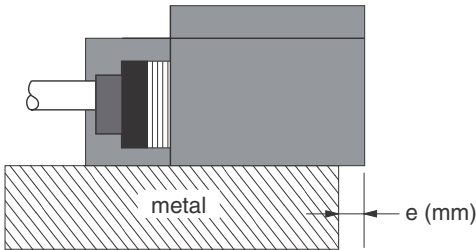
Tubular proximity sensor



Versions not suitable for flush mounting in metal (non-shielded)



Versions suitable for flush mounting in metal (shielded)



- Versions suitable for flush mounting in metal
e (min): 0
- Versions not suitable for flush mounting in metal
M8 e (min): 5 mm
M12 e (min): 8 mm
M18 e (min): 16 mm
M30 e (min): 30 mm

Mounting with XSZ B mounting bracket

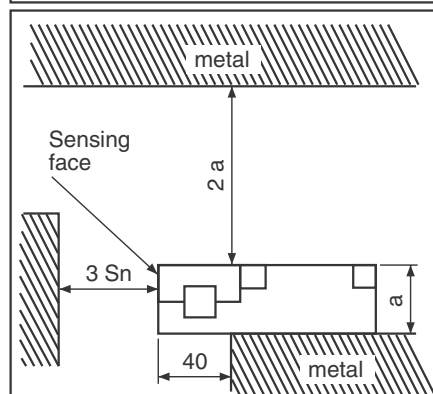
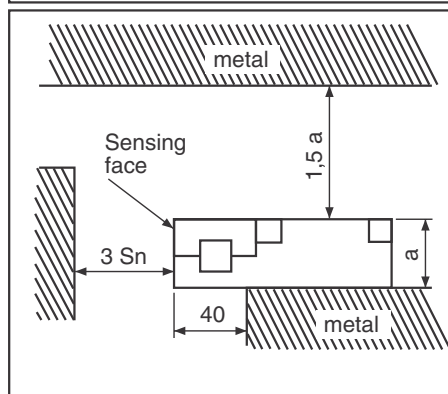
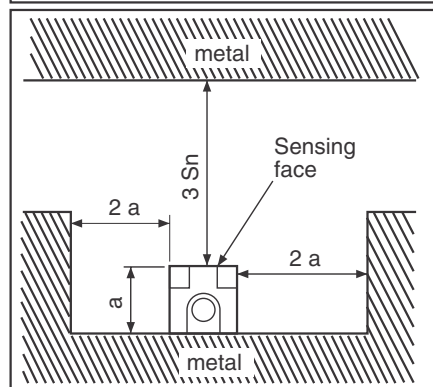
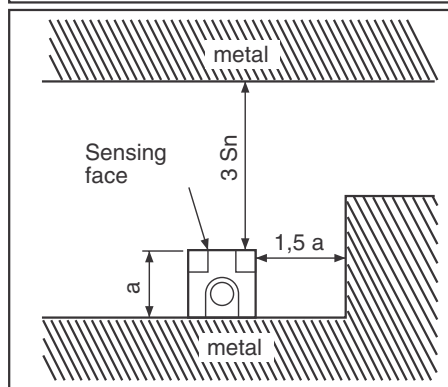
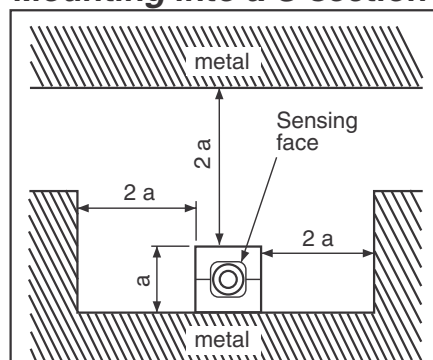
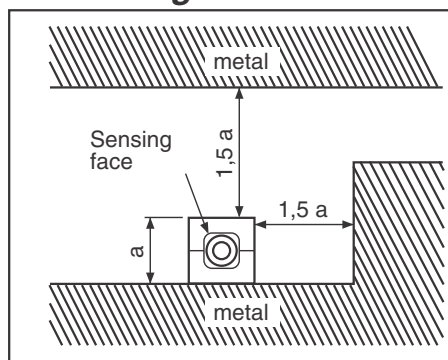
**Block type proximity sensors
not suitable for mounting in metal**

Non-shielded

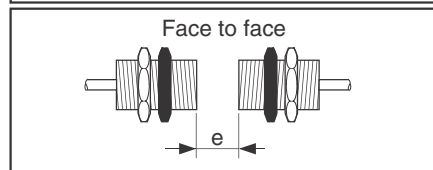
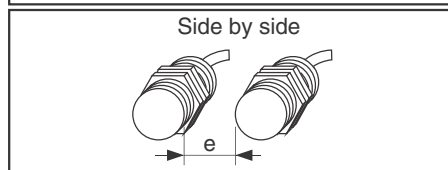
Mounting into a T section

Mounting into a U section

Clearing distances



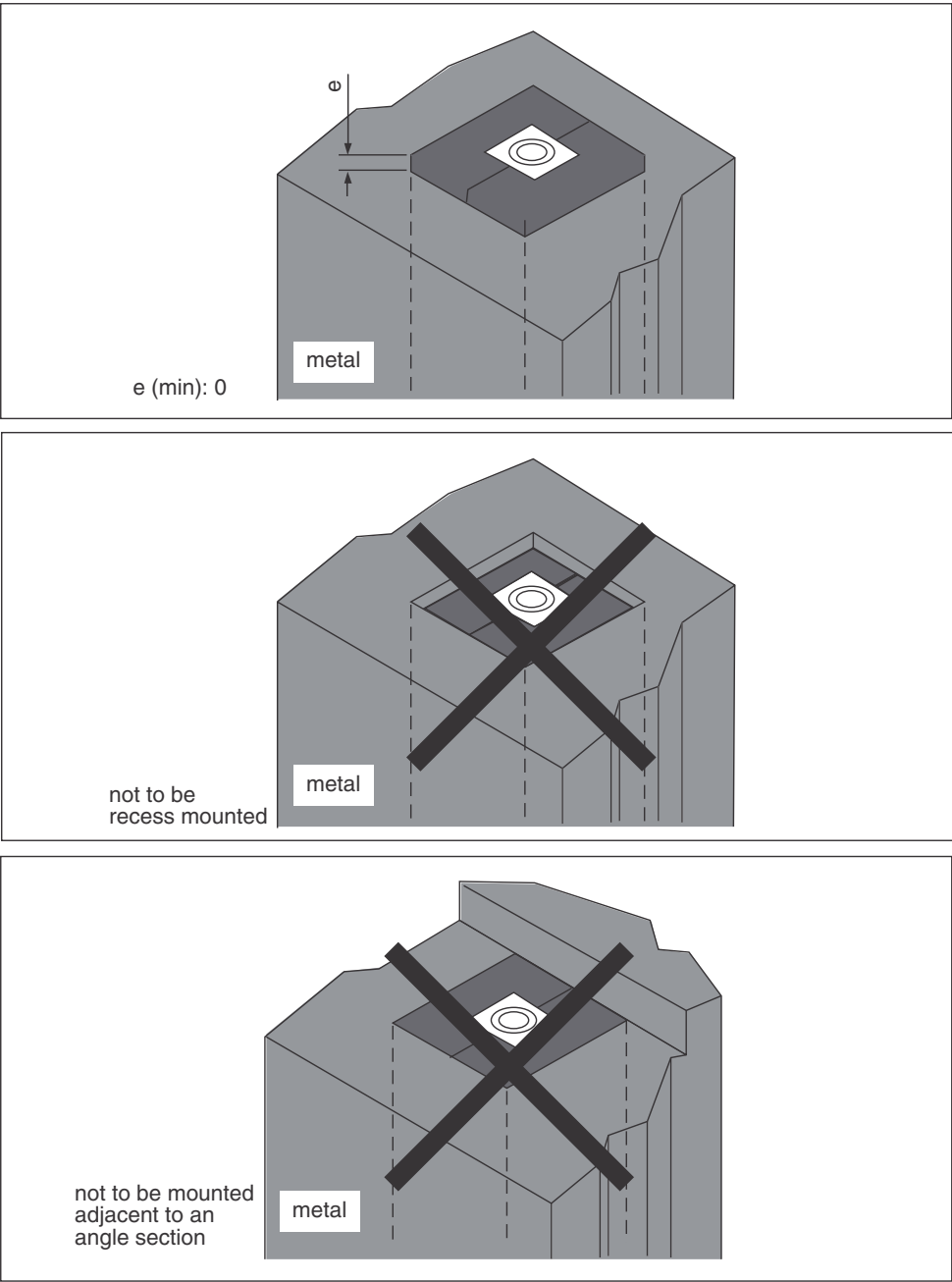
Side by side
Face to face



NOTE: For shorter distances, **alternate frequency** models are required. Call factory for availability.

Suitable for flush mounting in metal

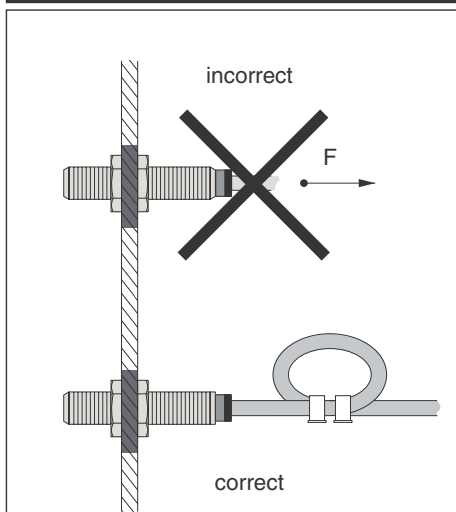
Shielded
Mounting with metal on one or more sides simultaneously



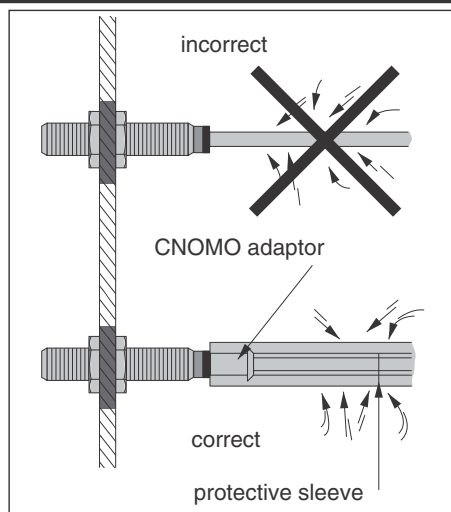
Any metal within the immediate vicinity of a proximity sensor distorts the magnetic field around the sensing face. The clearance distances shown above are given for a simplified installation arrangement and would result in the increase of the sensing distance of less than 5%.

Precautions

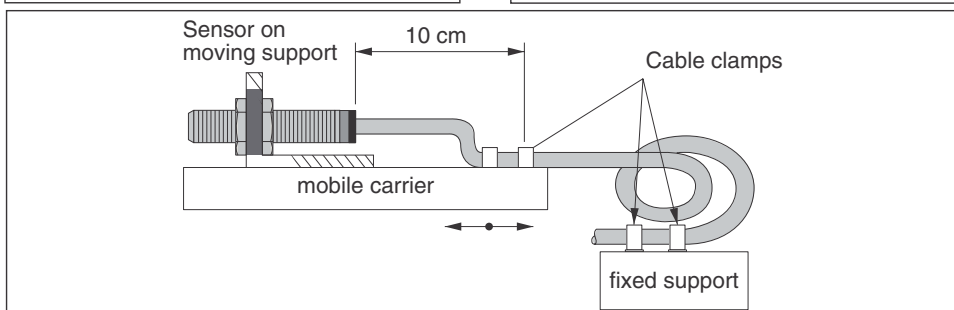
Protection of the cable



Do not exert a pulling force of over 4.4 lb on the sensor cable.

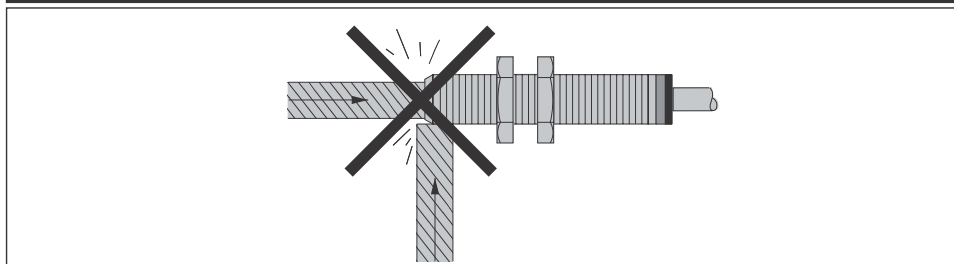


Consider using a protective sleeve or rigid conduit, where necessary.



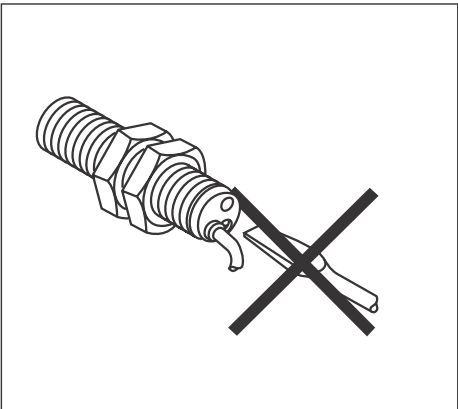
Avoid repetitive flexing movement between the cable and the sensor.

Protection of the sensing face

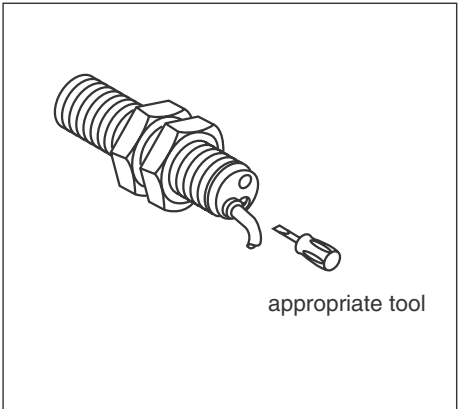


The sensor must never be used as a mechanical stop as this may cause irreparable damage.

Use of tools for adjustment
of the proximity sensor



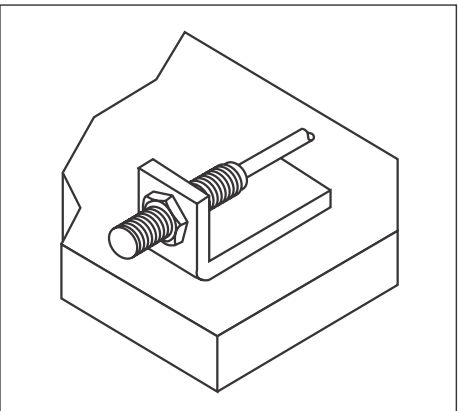
Incorrect



Correct

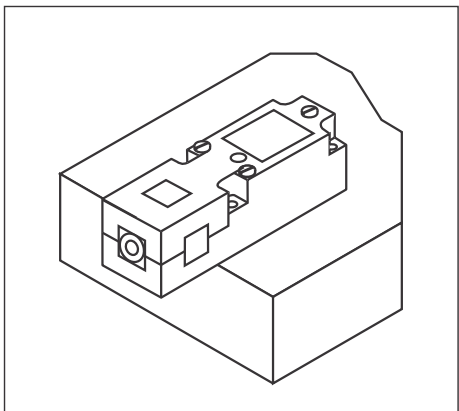
Mounting

Tubular sensor



Ensure a rigid mounting
the mounting must be sufficiently
rigid and thick to resist shock
and vibrations

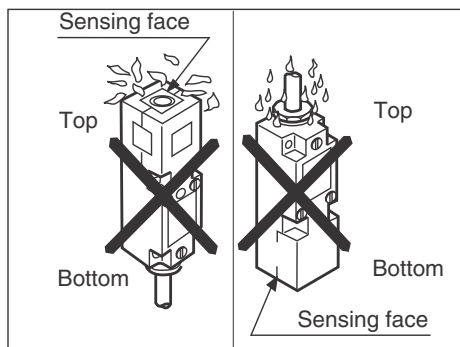
Block type sensor



Ensure a rigid mounting
the mounting area must be large
enough to support the sensor
correctly

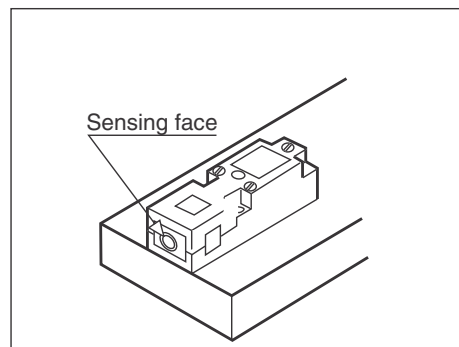
Precautions

Positioning



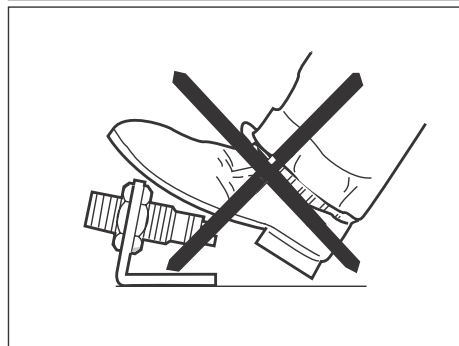
Incorrect

- danger of debris collecting on the sensor sensing face
- danger of liquid entry should the cable gland be mounted improperly

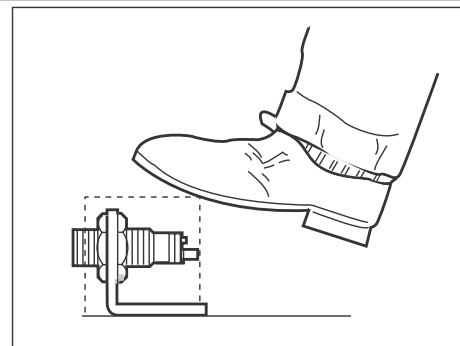


Correct

Mechanical protection



A proximity sensor should never be used as a footrest



Where the possibility of this type of abuse exists, a protective cover should be fitted over the sensor

Remember: For proper installation, the sensor must be mounted solidly to its support.

Depending on the application, the adjustment of the operating distance is carried out:

- either by moving the mounting bracket
- or by adjusting the target

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.**

$$1. R_b = \frac{R_{in} \times V_o \text{ Max}}{I \text{ off (Rin)} - V_o \text{ max}} \quad * \quad P_b = \frac{V_s^2}{R_b}$$

Where: V_o max = PLC input maximum OFF voltage (20-40 Vac)
 R_{in} = PLC input resistance
 V_s = Line voltage
 P_b = Minimum Bleeder Resistor power rating

Example:

I off = 3.5 mA
 V_o max = 20 V
 R_{in} = 6.5 kΩ

Typical examples for Telemecanique TSX DET input modules:

	TSX DET 1604	TSX DET 0804
For I off = 3.5 mA	47 kΩ/0.5 W	—
For I off = 7 mA	4.7 kΩ/3 W	12 kΩ/1.5 W

$$2. R_b = \frac{R_{in} \times V_o \text{ Max}}{I \text{ off (Rin)} - V_o \text{ max}} \quad * \quad P_b = \frac{V_s^2}{R_b}$$

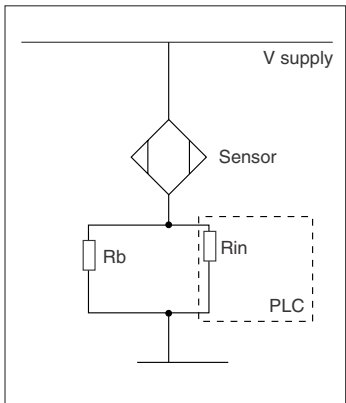
Example:

I min = 30 mA
 V_s = 120 V
 R_{in} = 7 kΩ

Typical examples using TSX programmable controllers:

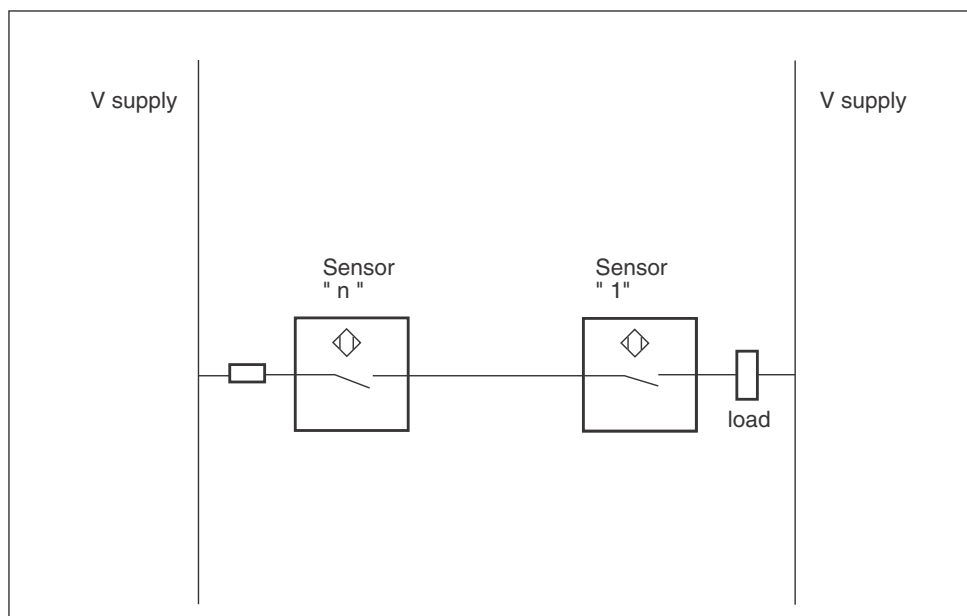
	TSX DET 1604	TSX DET 0804
For I min = 20 mA	64 kΩ/0.5 W	24 kΩ/1 W
For I min = 30 mA	8.7 kΩ/2 W	8.7 kΩ/2 W

NOTE: All DC 3 wire sensors are PLC compatible.



Wiring
in series

Wiring two or more sensors in series
2 wire type



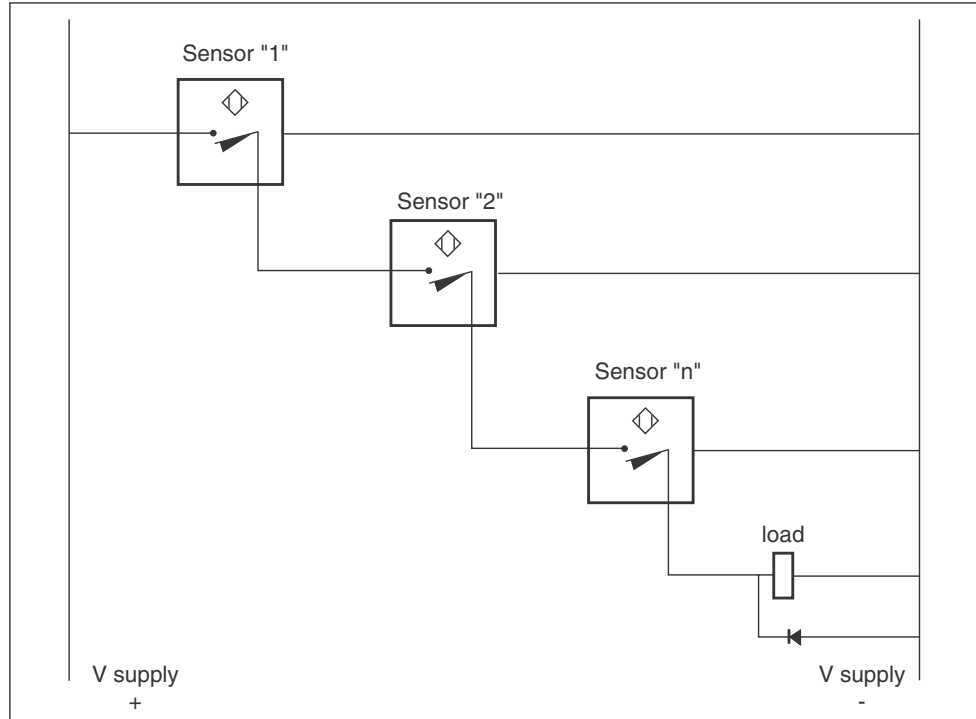
The following points should be considered:

1. When in the open state, each sensor will share the supply voltage:
voltage across the sensor =
$$\frac{V_{\text{supply}}}{n^{\circ} \text{ proximity sensors}}$$

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).

Wiring two or more sensors in series 3 wire type

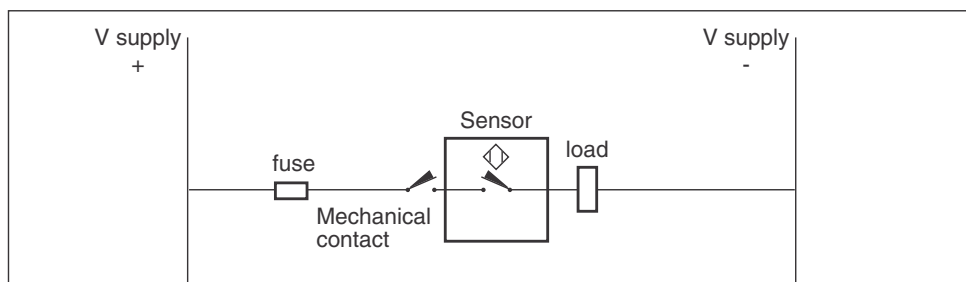


The following points should be considered:

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
in series

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.
2. 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 individual sensor characteristics

Wiring several sensors in parallel 2 wire type

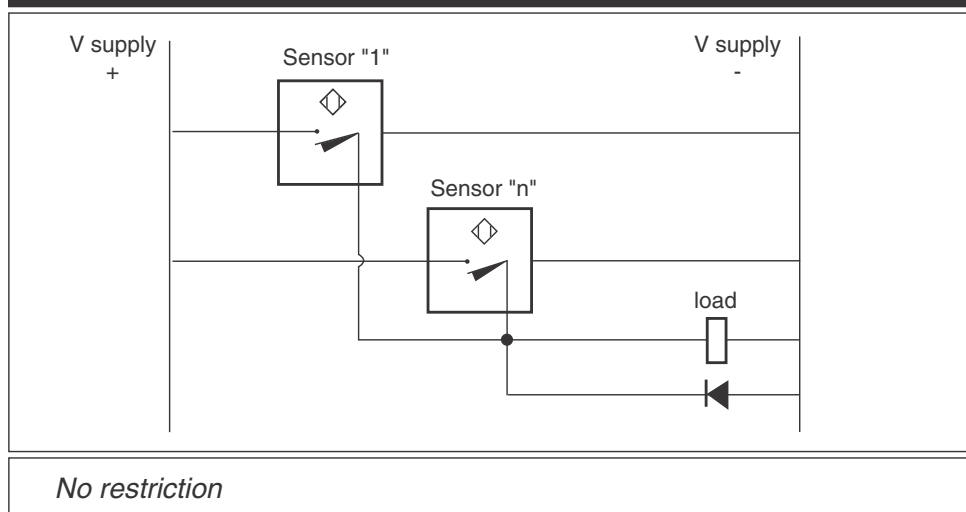
The use of proximity sensors wired in parallel either between themselves or together with mechanical contacts is not recommended.

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.

3 wire type



Precautions

Length of the cable

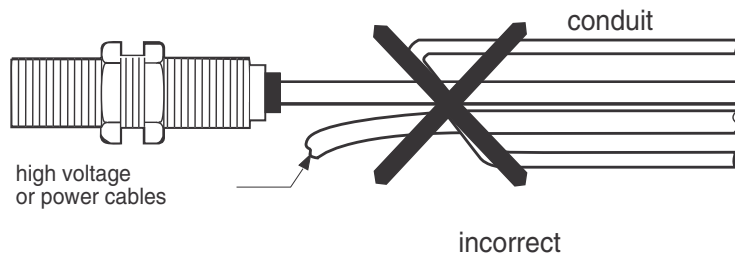
No restrictions up to 660 feet (200 meters) or up to a line capacitance of 0.1 μF . It is important to take into account voltage drop on the line over 660 feet (200 meters).

The XS models are immune to electrical interference encountered in normal industrial conditions.

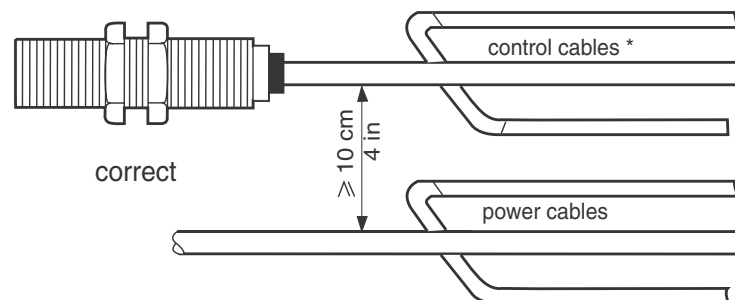
Where extreme electrical noise conditions could occur (large motors, spot welders, etc.) it may be advisable to protect against transients in the following ways:

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.

Separation of power and control wiring



Incorrect

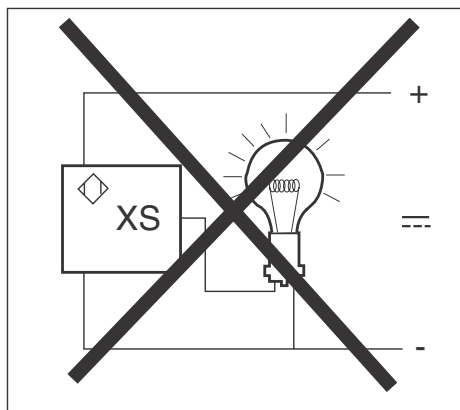


Correct

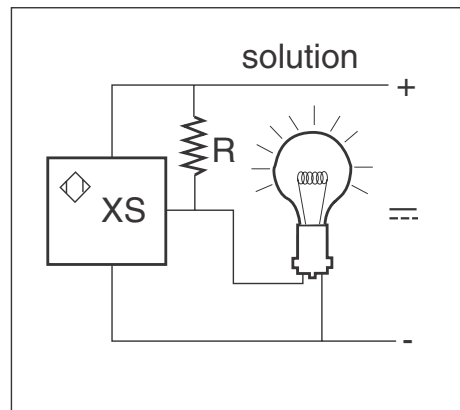
* Use of individual cables is recommended if long lengths are involved.

Precautions

Electrical connections to be avoided



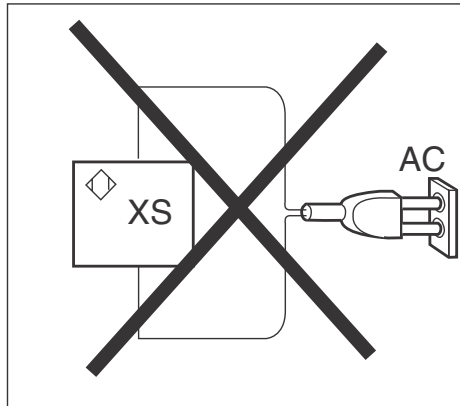
If the load consists of an incandescent lamp, the cold state resistance can be ten times lower than the hot state resistance. This can cause very high current levels on switching



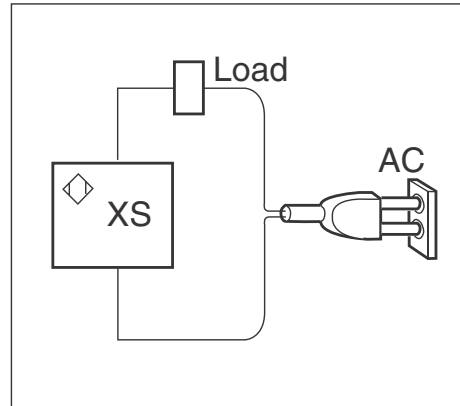
Install a pre-heat resistance in parallel with the proximity sensor.

$$R = \frac{V^2}{P} \times 10$$

*V= supply voltage
P= power of lamp*



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)



A suitable load (see product data) must be connected in series with the proximity sensor.

Problems

The sensor's output will not change state when a metal target is moved within its operating zone.

False or erratic operation with or without the presence of the target object.

Possible cause

Remedial action

Output failure, or the short circuit protection has operated.

*Wiring error
Supply problems*

Transients

Influence of surrounding metal

Effect of interference on the supply lines

Response time of the sensor too long for the particular target.

Effects of high temperature

- Check that the sensor is the correct one for the supply being used.
- Check the load current.
- Characteristics:
 - If load current is greater than the max. rated current, a relay should be interposed between the sensor and the load.
 - 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).
 - For a tubular sensor, if the sensor is brand new, check the mounting torque.
- Check the wiring.
- Check voltage range.
- Check that the supply voltage falls within the operating limits of the sensor in question. Remember that with a rectified supply: $V_{peak} = V_{rms} \times \sqrt{2}$
- Install transient suppressors across potential sources (coils, arcing contactors)
- Refer to the instruction sheet supplied with the sensor.
- Ensure that any DC supplies when derived from rectified AC, are correctly filtered ($C \geq 400 \mu f$)
- Ensure that AC power cables are run separately from low level DC cables.
- Where very long distances are involved, use suitable cable:
 - shielded and/or twisted pair
 - suitable wire gage
- Position the sensor as far away as possible from any source of interference.
- Check suitability of the sensor for the target; choose a sensor with a faster response time or use a longer target.
- Eliminate sources of radiated heat, or protect the housing with a heat shield.

**Cenelec
standards**

Cylindrical	Block type	
Form A	Form C	Form D
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 63-075)		<i>Determination of sensing distance and operating frequencies</i>
EN 50032 (NFC 63-079)		<i>Definitions, classification, description</i>
EN 50040 (NFC 63-074)		<i>Connection identification</i>

Series XS1/XS2 N, XS1/XS2 M, XS4 P also conform to the requirements of IEC 60947.5.2 standard. (ISO 9000 Self-Certification, NEMA project ICS 5-4-199X)

Approvals



File LR46094 + LR44087
class 321103



File E39291
guide NKCR2



File E39281
guide NKCR



Standard version
approved
pending



Special North American
version (1/2" NPT cable
entry, UL label, etc.)



Intrinsically safe
applications

					USSR
XS1 / XS2 L/N	●	—	●	●	—
XS1 / XS2 M	●	—	●	●	—
XS4P	●	—	●	●	—
XSB	▲	—	▲	●	●
XS7 / 8	▲	—	▲	●	—
XSD	▲	—	▲	●	—
XSE	▲	—	▲	●	●
XSG	▲	▲	—	—	—
XS5	▲	—	●	●	—
XS6	▲	—	●	●	—
XS7	▲	—	●	●	—
XS8	▲	—	●	●	—
XS9	▲	—	●	●	—

EN - For pricing and availability in your local country please visit one of the below links:

DE - Informationen zu Preisen und Verfügbarkeit in Ihrem Land erhalten Sie über die unten aufgeführten Links:

FR - Pour connaître les tarifs et la disponibilité dans votre pays, cliquez sur l'un des liens suivants:

[XS1M12MA230K](#)

[XS1M18PA370B](#)

[XS1M30MA230K](#)

[XS1M18KP340](#)

EN

This Datasheet is presented by
the manufacturer

DE

Dieses Datenblatt wird vom
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FR

Cette fiche technique est
présentée par le fabricant