

# Inductive proximity sensors

XS range, general purpose

Miniature, cylindrical, quasi-flush mountable

Three-wire DC, solid-state output



XS604R1PAL2



XS504R1NAM08



XS604R1NBL2



XS505R1PAM08

## Ø 4 plain

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight (kg)
Stainless steel case, quasi-flush mountable					
1,5	NO	PNP	Pre-cabled (L = 2 m)	XS604R1PAL2	0.030
			M8 connector	XS604R1PAM08	0.004
	NPN	NPN	Pre-cabled (L = 2 m)	XS604R1NAL2	0.030
			M8 connector	XS604R1NAM08	0.004
	NC	PNP	Pre-cabled (L = 2 m)	XS604R1PBL2	0.030
			M8 connector	XS604R1PBM08	0.004
0,8	NO	PNP	Pre-cabled (L = 2 m)	XS504R1PAL2	0.030
			M8 connector	XS504R1PAM08	0.004
	NPN	NPN	Pre-cabled (L = 2 m)	XS504R1NAL2	0.030
			M8 connector	XS504R1NAM08	0.004
	NC	PNP	Pre-cabled (L = 2 m)	XS504R1PBL2	0.030
			M8 connector	XS504R1PBM08	0.004
	NPN	NPN	Pre-cabled (L = 2 m)	XS504R1NBL2	0.030
			M8 connector	XS504R1NBM08	0.004

## Ø 5, threaded M5 x 0.5

Sensing distance (Sn) mm	Function	Output	Connection	Reference	Weight (kg)
Stainless steel case, quasi-flush mountable					
1,5	NO	PNP	Pre-cabled (L = 2 m)	<b>XS605R1PAL2</b>	0.030
			Pre-cabled (L = 5 m)	<b>XS605R1PAL5</b>	0.030
			M8 connector	<b>XS605R1PAM08</b>	0.004
		NPN	Pre-cabled (L = 2 m)	<b>XS605R1NAL2</b>	0.030
			M8 connector	<b>XS605R1NAM08</b>	0.004
	NC	PNP	Pre-cabled (L = 2 m)	<b>XS605R1PBL2</b>	0.030
			M8 connector	<b>XS605R1PBM08</b>	0.004
		NPN	Pre-cabled (L = 2 m)	<b>XS605R1NBL2</b>	0.030
M8 connector			<b>XS605R1NBM08</b>	0.004	
0.8	NO	PNP	Pre-cabled (L = 2 m)	<b>XS505R1PAL2</b>	0.030
			M8 connector	<b>XS505R1PAM08</b>	0.004
			NPN	Pre-cabled (L = 2 m)	<b>XS505R1NAL2</b>
	M8 connector			<b>XS505R1NAM08</b>	0.004
	NC	PNP	Pre-cabled (L = 2 m)	<b>XS505R1PBL2</b>	0.030
			M8 connector	<b>XS505R1PBM08</b>	0.004
		NPN	Pre-cabled (L = 2 m)	<b>XS505R1NBL2</b>	0.030
	M8 connector		<b>XS505R1NBM08</b>	0.004	

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
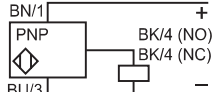
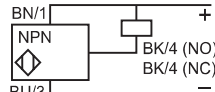
XS range, general purpose

Miniature, cylindrical, quasi-flush mountable

Three-wire DC, solid-state output

Characteristics				
Sensor type			XS040000M08 XS050000M08	XS040000L2 XS050000L2
Product certifications			cULus, CE, UKCA	UL, CE, UKCA
Connection (1)	Connector		M8	–
	Pre-cabled	Length	m	–
Operating zone	XS504	mm	0...0.65	2 for XS000000L2 5 for XS605000L5
	XS505	mm	0...0.65	
	XS604	mm	0...1.21	
	XS605	mm	0...1.21	
Degree of protection	Conforming to IEC 60529		IP 67	
Storage temperature		°C	-40...+85	
Operating temperature		°C	-25...+70	
Materials	Case		Stainless steel 303	
	Cable		PVC 3x0.149 mm <sup>2</sup>	
Vibration resistance			Conforming to IEC 60947-5-2	
Shock resistance			Conforming to IEC 60947-5-2	
Output state indication	LED		Yellow LED	
	Visibility		4 viewing ports at 90°	1 viewing port
Rated supply voltage		V	12...24	
Voltage limits (including ripple)		V	10...30	
Insulation class			III	
Current consumption, no-load		mA	≤ 10	
Switching capacity	3-wire PNP/NPN	mA	≤ 100 with overload and short-circuit protection	
Voltage drop, closed state		V	≤ 1.5	
Maximum switching frequency		kHz	5	
Delays	First-up	ms	50	

(1) Detection curves, see page 128

Wiring schemes			
Connector	Pre-cabled	PNP 3-wire	NPN 3-wire
M8 	BU: Blue BN: Brown BK: Black		

Setting-up							
Minimum mounting distances (mm)							
Sensor	d4	d1	d2	d3			
Ø 4 XS504 steel	≥ 2 (1)	≥ 3 (2)	≥ 0 (3)	≥ 4	≥ 8	≥ 2.4	
Ø 4 XS604 steel	≥ 3 (1)	≥ 4 (2)	≥ 0 (3)	≥ 4	≥ 8	≥ 4.5	
Ø 5 XS505 steel	≥ 0 (1)	≥ 1 (2)	≥ 0 (3)	≥ 5	≥ 5	≥ 2.4	
Ø 5 XS605 steel	≥ 1 (1)	≥ 2 (2)	≥ 0 (3)	≥ 5	≥ 10	≥ 4.5	

- (1) If mounting environment is ferro-magnetic metal, such as iron, cobalt, nickel, gadolinium, neodymium, etc.  
 (2) If mounting environment is non ferro-magnetic metal, such as aluminium, copper, brass, gold, silver, titanium, etc.  
 (3) If mounting environment is non-metal, such as plastic, wood, etc.

Tightening torque	
	For Ø 5: A < 1.5 N.m.

Dimensions				
Sensor	Pre-cabled		M8 connector	
	a	b	a	b
Ø 4 XS04	30.2	–	38.4	–
Ø 5 XS05	30.2	26.5	38.4	22.1

# Inductive proximity sensors

XS range, general purpose

Miniature, cylindrical, flush mountable

Three-wire DC, solid-state output



XS1L04●●310



XS1L04●●310S



XS1N05●●311S



XS1N05●●310

## Ø 4 plain

Sensing distance (Sn) mm	Function	Output	Connection (1)	Reference	Weight (kg)
<b>Brass case, flush mountable</b>					
1	NO	PNP	Pre-cabled (L = 2 m)	<b>XS1L04PA310</b>	0,025
			M8 connector	<b>XS1L04PA310S</b>	0.010
	NPN	PNP	Pre-cabled (L = 2 m)	<b>XS1L04NA310</b>	0.025
			M8 connector	<b>XS1L04NA310S</b>	0.010
	NC	PNP	Pre-cabled (L = 2 m)	<b>XS1L04PB310</b>	0.025
			M8 connector	<b>XS1L04PB310S</b>	0.010
		NPN	Pre-cabled (L = 2 m)	<b>XS1L04NB310</b>	0.025
			M8 connector	<b>XS1L04NB310S</b>	0.010

## Stainless steel case, flush mountable

0,8	NO	PNP	Pre-cabled (L = 2 m)	<b>XS1L04PA311</b>	0,025
			M8 connector	<b>XS1L04PA311S</b>	0.010
	NPN	PNP	Pre-cabled (L = 2 m)	<b>XS1L04NA311</b>	0.025
			M8 connector	<b>XS1L04NA311S</b>	0.010
	NC	PNP	Pre-cabled (L = 2 m)	<b>XS1L04PB311</b>	0.025
			M8 connector	<b>XS1L04PB311S</b>	0.010
		NPN	Pre-cabled (L = 2 m)	<b>XS1L04NB311</b>	0.025
			M8 connector	<b>XS1L04NB311S</b>	0.010

## Ø 5, threaded M5 x 0.5

Sensing distance (Sn) mm	Function	Output	Connection (1)	Reference	Weight (kg)
<b>Brass case, flush mountable</b>					
1	NO	PNP	Pre-cabled (L = 2 m)	<b>XS1N05PA310</b>	0,030
		NPN	Pre-cabled (L = 2 m)	<b>XS1N05NA310</b>	0,030
	NC	PNP	Pre-cabled (L = 2 m)	<b>XS1N05PB310</b>	0,030
		NPN	Pre-cabled (L = 2 m)	<b>XS1N05NB310</b>	0,030

## Stainless steel case, flush mountable

0.8	NO	PNP	Pre-cabled (L = 2 m)	<b>XS1N05PA311</b>	0.030
			M8 connector	<b>XS1N05PA311S</b>	0.015
		NPN	Pre-cabled (L = 2 m)	<b>XS1N05NA311</b>	0.030
			M8 connector	<b>XS1N05NA311S</b>	0.015
	NC	PNP	Pre-cabled (L = 2 m)	<b>XS1N05PB311</b>	0.030
			M8 connector	<b>XS1N05PB311S</b>	0.004
		NPN	Pre-cabled (L = 2 m)	<b>XS1N05NB311</b>	0.004
			M8 connector	<b>XS1N05NB311S</b>	0.015

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

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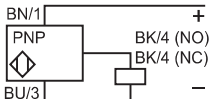
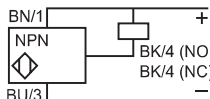
Miniature, cylindrical, flush mountable

Three-wire DC, solid-state output

Characteristics				
Sensor type			XS1L04●●●●●●S, XS1N05●●●●●●S	XS1L04●●●●●●, XS1N05●●●●●●
Product certifications			cULus, CE, UKCA	
Connection (1)	Connector		M8	—
	Pre-cabled	Length	m	2
Operating zone	Ø 4 brass	mm	0...0.8	
	Ø 4 stainless steel	mm	0...0.6	
	Ø 5 brass	mm	0...0.8	
	Ø 5 stainless steel	mm	0...0.6	
Degree of protection	Conforming to IEC 60529		IP 67	
Storage temperature		°C	- 40...+ 85	
Operating temperature		°C	- 25...+ 70	
Materials	Case		Nickel plated brass or stainless steel 303	
	Cable		PvR 3 x 0.11 mm <sup>2</sup>	
Vibration resistance	Conforming to IEC 60068-2-6		25 gn, amplitude ± 2 mm (f = 10 to 55 Hz)	
Shock resistance	Conforming to IEC 60068-2-27		50 gn, duration 11 ms	
Output state indication	LED		Yellow LED	
	Visibility		1 viewing port	
Rated supply voltage		V	— 5...24	
Voltage limits (including ripple)		V	— 5...30	
Insulation class			□	
Current consumption, no-load		mA	≤ 10	
Switching capacity	3-wire PNP/NPN	mA	≤ 100 with overload and short-circuit protection	
Voltage drop, closed state		V	≤ 2	
Maximum switching frequency		kHz	5	
Delays	First-up	ms	≤ 5	
	Response	ms	≤ 0.1	
	Recovery	ms	≤ 0.1	

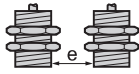
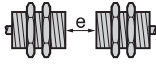
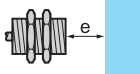
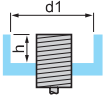
(1) Detection curves, see page 128

## Wiring schemes

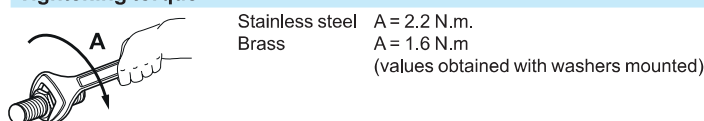
Connector	Pre-cabled	PNP 3-wire	NPN 3-wire
M8 	BU: Blue BN: Brown BK: Black		

## Setting-up

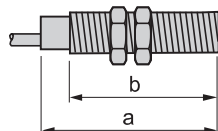
### Minimum mounting distances (mm)

Sensor	Side by side	Face to face	Facing a metal object	
				
Ø 4 XS1L04●●●●●●	e ≥ 2	e ≥ 12	e ≥ 3	d1 ≥ 4, h ≥ 0
Ø 5 XS1N05●●●●●●	e ≥ 2	e ≥ 12	e ≥ 3	d1 ≥ 5, h ≥ 0

## Tightening torque



## Dimensions

	Sensor	Pre-cabled		M8 connector	
		a	b	a	b
	Ø 4 XS1L04●●●●●●	28	—	43	—
	Ø 5 XS1N05●●●●●●	28	24	43	24