

Section 20

Electronic Sensors and Machine Cabling



Photoelectric Sensors



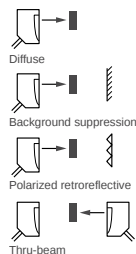
Proximity Sensors



Ultrasonic Sensors

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XUB Tubular Sensors



A single product that adapts to most environments.

For multi-mode models (XUB0, XUM0, XUK0, and XUX0) that are programmable to function as Diffuse, Diffuse/Background Suppression, Polarized Retroreflective, or Thru-Beam Receivers, consult the factory.



Table 20.1: XUB Tubular Sensors

XUB Tubular Sensors		XUB-A 18 mm plastic	XUB-B 18 mm metal
Usable sensing distance	Proximity diffuse (adjustable)	0.6 m (2.0 ft)	0.6 m (2.0 ft)
	Polarized retroreflective	2 m (6.6 ft)	2 m (6.6 ft)
	Retroreflective	4 m (13.1 ft)	4 m (13.1 ft)
	Thru-beam	15 m (49 ft)	15 m (49 ft)
Mounting (mm)		M 18 x 1	M 18 x 1
Enclosure: M (metal), P (plastic) / Dimensions (mm) Ø x L or W x H x D		P / M 18 x 46	P / M 18 x 46
Setup LEDs		—	—
Temperature range		-25 to +55 °C (-13 to +131 °F)	
Degree of protection (conforming to IEC 60529):		IP65; IP67 double insulation; IP69K double insulation (M12 only)	

Table 20.2: Sensors for DC Applications (Solid State Output: Transistor)

Connection			Precabled, PvR, 2 m [1] Catalog No.	M12 connector Catalog No.	Precabled, PvR, 2 m [1] Catalog No.	M12 connector Catalog No.
Receiver or Transmitter/Receiver, 3-wire PNP [2]	Proximity diffuse, adjustable	N.O.	XUB5APANL2	XUB5APANM12	XUB5BPNL2	XUB5BPNM12
		N.C.	XUB5APBNL2	XUB5APBNM12	XUB5BPNL2	XUB5BPNM12
	Polarized retroreflective	N.O.	XUB9APANL2	XUB9APANM12	XUB9BPNL2	XUB9BPNM12
		N.C.	XUB9APBNL2	XUB9APBNM12	XUB9BPNL2	XUB9BPNM12
	Retroreflective	N.O.	XUB1APANL2	XUB1APANM12	XUB1BPNL2	XUB1BPNM12
		N.C.	XUB1APBNL2	XUB1APBNM12	XUB1BPNL2	XUB1BPNM12
	Thru-beam	N.O.	XUB2APANL2R	XUB2APANM12R	XUB2BPNL2R	XUB2BPNM12R
		N.C.	XUB2APBNL2R	XUB2APBNM12R	XUB2BPNL2R	XUB2BPNM12R
Transmitter			XUB2AKSNL2T	XUB2AKSNM12T	XUB2AKSNL2T	XUB2AKSNM12T
Supply voltage limits, min/max (V) including ripple			10–36	10–36	10–36	10–36
Switching frequency (Hz)			500	500	500	500
Common characteristics for DC versions			Switching capacity, max (mA): 100 / Overload and short-circuit protection / LED output state			

Table 20.3: Metal Body Sensors for Two-Wire AC [3] or DC Applications (Solid-State Output: Transistor)

Connection			Precabled, PvR, 2 m [1]	1/2"-20UNF Connector
			Catalog No.	Catalog No.
System	Diffuse with adjustable background suppression	NO	XU8M18MA230	XU8M18MA230K
		NC	XU8M18MB230	XU8M18MB230K
	Diffuse	NO	XU5M18MA230	XU5M18MA230K
		NC	XU5M18MB230	XU5M18MB230K
	Polarized retroreflective [4]	NO	XU9M18MA230	XU9M18MA230K
		NC	XU9M18MB230	XU9M18MB230K
	Thru-beam[5]	NO	XU2M18MA230	XU2M18MA230K
		NC	XU2M18MB230	XU2M18MB230K
Rated supply voltage (Vac/Vdc)			24–240	24–240
Switching frequency (Hz)			25	25
Switching capacity (mA) [3]			10–200	10–200

Table 20.4: Accessories

		mm	Catalog No.
Reflectors	24 x 21		XUZC24
	Ø 80		XUZC80
	50 x 50		XUZC50
	100 x 100		XUZC100
Mounting brackets for XUB	Material		Catalog No.
	Die Cast Zinc		XUZA118
	Plastic		XUZA218
	90°	Straight	
Cables, 2 m, without LED [6] Suitable plug-in female connectors, including pre-wired versions	M8 (4-Pin)	XZCP1041L2	XZCP0941L2
	M12 (4-pin)	XZCP1241L2	XZCP1141L2
	1/2"-20UNF	XZCP1965L2	XZCP1865L2

[1] For a 5 m cable, change L2 to L5. For example, XUMB5APANL2 becomes XUMB5APANL5.

[2] For version with NPN output, change "P" to "N". For example: XUB1APANL2 would become XUB1ANANL2.

[3] These sensors do not incorporate overload or short-circuit protection. A 0.4 A fast-acting fuse should be connected in series with the load.

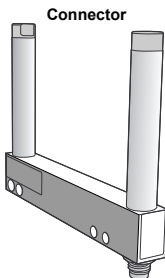
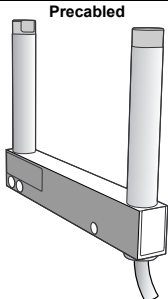
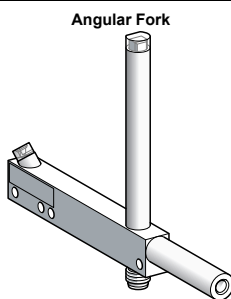
[4] A 50 x 50 mm reflector XUZC50 is included with a polarized retroreflective system.

[5] Includes a thru-beam transmitter and receiver.

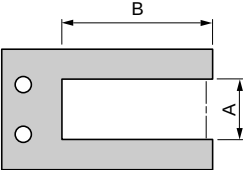
[6] For 5 or 10 meter lengths, replace 2 in the cable catalog number with 5 or 10.

XUVR / XUVA

Table 20.5: XUVR / XUVA Optical fork without adjustment

				
Sensing Characteristics		Thru-beam		
Sensing range, mm (in.)		2–180 (0.08 –7.09)		
Sensing frequency		4000 Hz		
Minimum size of object detected, mm (in.)	Passageway 2–120 mm	0.8 (0.03)		1.2 (0.05)
	Passageway u 150 mm	1 (0.04)		1.5 (0.06)
Fork type		XUVR•		XUVA•
Power Requirements				
Supply voltage		12–24 Vdc		
Max. load		100 mA with overload and short-circuit protection		
Environmental				
Operating temperature range		–10 to +60 °C (+14 to +140 °F)		
Environmental protection ratings		IP65 and IP67		
Construction				
Materials—Case		Painted aluminum and polyamide		
Catalog numbers of forks type XUVR•				
Precabled, 2 m, Depth (B): 40 mm (1.18 in.)				
Passageway (A)	Function	Output	Catalog Number	
30 mm (1.18 in.)	NO	PNP	XUVR0303PANL2	
M8, 3-Pin, Depth (B): 60 mm (2.36 in.)				
Passageway (A)	Function	Output	Catalog Number	
50 mm (1.97 in.)	NO	PNP	XUVR0605PANM8	
		NPN	XUVR0605NANM8	
	NC	PNP	XUVR0605PBNM8	
		NPN	XUVR0605NBNM8	
80 mm (3.15 in.)	NO	PNP	XUVR0608PANM8	
		NPN	XUVR0608NANM8	
	NC	PNP	XUVR0608PBNM8	
		NPN	XUVR0608NBNM8	
Connection—M8, 3-Pin, Depth (B): 120 mm (4.72 in.)				
Passageway (A)	Function	Output	Catalog Number	
120 mm (4.72 in.)	NO	PNP	XUVR1212PANM8	
		NPN	XUVR1212NANM8	
	NC	PNP	XUVR1212PBNM8	
		NPN	XUVR1212NBNM8	
180 mm (7.09 in.)	NO	PNP	XUVR1218PANM8	
		NPN	XUVR1218NANM8	
	NC	PNP	XUVR1218PBNM8	
		NPN	XUVR1218NBNM8	

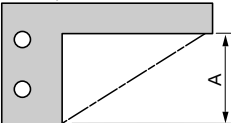
3-Wire
NO or NC function
PNP or NPN output



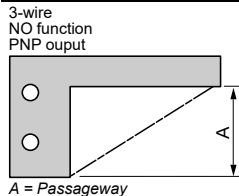
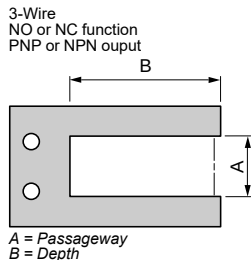
A = Passageway
B = Depth

Catalog numbers of forks, type XUVA•				
M8 connector, 3-Pin				
Passageway (A)	Function	Output	Catalog Number	
50 mm (1.97 in.)	NO	PNP	XUVA0505PANM8	
80 mm (3.15 in.)	NO	PNP	XUVA0808PANM8	
120 mm (4.72 in.)	NO	PNP	XUVA1212PANM8	
150 mm (5.91 in.)	NO	PNP	XUVA1515PANM8	

3-wire
NO function
PNP output

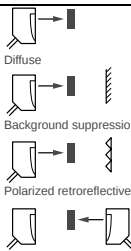


A = Passageway



XUK and XUX Compact Sensors

Table 20.6: XUK and XUX Compact

			A single product that adapts to most environments.							
For multi-mode models (XUB0, XUM0, XUK0, and XUX0) that are programmable to function as Diffuse, Diffuse/Background Suppression, Polarized Retroreflective, or Thru-Beam Receivers, consult the factory.										
Sensors			XUK Compact Design 50 x 50		XUX Compact Design					
Usable sensing distance	Proximity diffuse (adjustable sensitivity)		1 m (3.2 ft) [7]		2.1 m (6.8 ft)					
	Polarized retroreflective		5 m (16.4 ft) [7]		11 m (36 ft)					
	Retroreflective		7 m (23.0 ft) [7]		14 m (46 ft)					
	Thru-beam		30 m (98 ft) [7]		40 m (131.2 ft)					
Mounting (mm)			direct: mounting centers 40 x 40, M4 screws		direct: mounting centers 30/36 to 40/50/74, M5 screws					
Enclosure: M (metal) P (plastic) / Dimensions (mm) Ø x L or W x H x D			P / 18 x 50 x 50		P / 30 x 92 x 71					
Setup LEDs			⊗		⊗					
Sensors for DC Applications (Solid State Output: Transistor)										
Connection			Precabled, PVC, 2 m		M12 connector		Screw terminals, ISO 16 cable gland		M12 connector	
Transmitter			XUK2AKSNL2T		XUK2AKSNM12T		XUX0AKSAT16T		XUX0AKSAM12T	
Receiver or Transmitter/ Receiver, 3-wire PNP [8]	Proximity diffuse, adjustable	N.O.	XUK5APANL2		XUK5APANM12		XUX5APANT16		XUX5APANM12	
		N.C.	XUK5APBNL2		XUK5APBNM12		XUX5APBNT16		XUX5APBNM12	
	Polarized retroreflective	N.O.	XUK9APANL2		XUK9APANM12		XUX9APANT16		XUX9APANM12	
		N.C.	XUK9APBNL2		XUK9APBNM12		XUX9APBNT16		XUX9APBNM12	
	Retroreflective	N.O.	XUK1APANL2		XUK1APANM12		XUX1APANT16		XUX1APANM12	
		N.C.	XUK1APBNL2		XUK1APBNM12		XUX1APBNT16		XUX1APBNM12	
	Thru-beam	N.O.	XUK2APANL2R		XUK2APANM12R		XUX2APANT16R		XUX2APANM12R	
		N.C.	XUK2APBNL2R		XUK2APBNM12R		XUX2APBNT16R		XUX2APBNM12R	
Supply voltage limits, min/max (V) including ripple			10–36		10–36		10–36		10–36	
Switching frequency (Hz)			250		250		250		250	
Common characteristics for DC versions			Yellow output state LED (except T-beam transmitter): ⊗ ; Green power LED (T-beam Transmitter only): ⊗							
Multi-current/multi-voltage sensors for AC/DC applications, 20–264 Vac/Vdc, including ripple (relay output, 1 C/O, 3 A)										
Connection			Precabled, 2 m		—		Screw terminals, ISO 16 cable gland		—	
Transmitter			XUK2ARCNL2T		—		XUX0ARCTT16T		—	
Receiver or Transmitter/ Receiver	Diffuse	N.O. + N.C.	XUK5ARCNL2		—		XUX5ARCNT16		—	
	Polarized retroreflective	N.O. + N.C.	XUK9ARCNL2		—		XUX9ARCNT16		—	
	Retroreflective	N.O. + N.C.	XUK1ARCNL2		—		XUX1ARCNT16		—	
	Thru-beam	N.O. + N.C.	XUK2ARCNL2R		—		XUX2ARCNT16R		—	
Switching frequency (Hz)			20		—		20		—	
Yellow output state LED (except T-beam Transmitter) ⊗ /			⊗ / ⊗		—		⊗ / ⊗		—	
Green power LED (T-beam Transmitter only) ⊗			—		—		—		—	

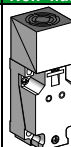
NOTE: See Table 20.4 Accessories, page 20-2 for suitable plug-in cables with female connectors.

[7] Excess gain of 2.

[8] For version with NPN output, change "P" to "N". For example, XUM5APCNL2 would become XUM5ANCNL2.

XS Plastic Rectangular Sensors

Table 20.7: General Purpose, Plastic Case, Limit Switch Style, 5-Position Turret Head

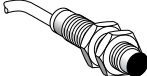
Sensor		Flush mountable in metal		Non-flush mountable in metal
A single product that automatically adapts to most environments. Accurate position detection via teach mode.				
non-flush mountable in metal				
flush mountable in metal				
General Specifications				
Product certifications		UL, CSA, CE		
Degree of protection conforming to IEC 60529		IP65, IP67, and IP69K		
Operating temperature		-25 to +70 °C (-13 to +158 °F) [1]		
DC Supply				
Catalog Numbers				
Nominal sensing distance Sn, mm (in.)		Increased range 20 (0.79)	15 (0.59)	Increased range 40 (1.57)
4-wire DC (complementary outputs)	PNP, NO + NC	XS8C4A1PCN12	—	XS8C4A4PCN12
	NPN, NO + NC	XS8C4A1NCN12	—	XS8C4A4NCN12
2-wire DC (non-polarized)	NO or NC programmable	XS8C4A1DPN12	XS7C4A1DPN12	XS8C4A4DPN12
Weight, kg (lb)		0.244 (0.54)	0.244 (0.54)	0.244 (0.54)
Supplemental Specifications				
Connection [2]		Screw terminals, clamping capacity: 2 or 4 x 1.5 mm² (16 AWG)		
Operating zone, mm (in.)		0–16 (0–0.63)	0–12 (0–0.47)	0–32 (0–1.26)
Repeat accuracy		≤3% of effective sensing distance (Sr)		
Differential travel		3–15% of effective sensing distance (Sr)		
Status indication	Output	Yellow LED		
	Supply on	Green LED (4-wire)		
Rated supply voltage		12–48 Vdc with protection against reverse polarity		
Voltage limits (including ripple)		10–58 Vdc		
Current consumption, 4-wire no-load		<15 mA		
Switching capacity with overload + short-circuit protection		4-wire, 200 mA; 2-wire, 100 mA		
Residual current, 2-wire open state		<0.6 mA		
Voltage drop, closed state		4-wire, <2 V; 2-wire, <4.2 V		
Maximum switching frequency		300 Hz flush mount	300 Hz flush mount	150 Hz non-flush mount
Delays	First-up	4-wire, 7 ms; 2-wire, 20 ms		
	Response	Flush mount: ≤1.2 ms; non-flush mount: ≤1.4 ms		
	Recovery	Flush mount: ≤1.8 ms; non-flush mount: ≤3.5 ms		
Plug-in, AC or DC supply				
Catalog Numbers		AC, Flush Mountable	AC/DC, Flush Mountable	AC/DC, Non-Flush Mountable
Nominal sensing distance Sn, mm (in.)		20 (0.78)	15 (0.59)	40 (1.57)
2-wire AC	NO or NC programmable	XS8C4A1DPN12	XS7C4A1DPN12	XS8C4A4DPN12
2-wire AC or DC universal model	NO or NC programmable	XS8C4A1MPN12	XS7C4A1MPN12	XS8C4A4MPN12
Supplemental Specifications				
Weight, kg (lb)		0.244 (0.54)	0.244 (0.54)	0.244 (0.54)
Connection [2]		Screw terminals, clamping capacity 2 x 1.5 mm² (16 AWG)		
Operating zone, mm (in.)		0–16 (0–0.63)	0–12 (0–0.47)	0–32 (0–1.26)
Repeat accuracy		≤3% of effective sensing distance (Sr)		
Differential travel		3–15% of effective sensing distance (Sr)		
Output state indication		Yellow LED		
Rated supply voltage (with reverse polarity protection)		24–240 Vac, 50/60 Hz	24–240 Vac, 50/60 Hz / 24–210 Vdc	24–240 Vac, 50/60 Hz / 24–210 Vdc
Voltage limits (including ripple)		20–264 Vac or Vdc	20–264 Vac or Vdc	20–264 Vac or Vdc
Current consumption, no-load		—		
Switching capacity [3]		5–300 mA or 5–200 mA DC [3]	5–300 mA AC or 5–200 mA DC [3]	5–300 mA AC or 5–200 mA DC [3]
Residual current, open state		1.5 mA	1.5 mA	1.5 mA
Voltage drop, closed state		≤5.5 V		
Maximum switching frequency		AC: 25 Hz; DC: 300 Hz	AC: 25 Hz; DC: 300 Hz	AC: 25 Hz; DC: 150 Hz
Delays	First-up	20 ms		
	Response	Flush mount: ≤1.2 ms; non-flush mount: ≤1.4 ms		
	Recovery	Flush mount: ≤1.8 ms; non-flush mount: ≤3.5 ms		

[1] Also available: very low temperature models (suffix TF: -40 to +70 °C) or very high temperature models (suffix TT: -25 to +85 °C). Consult the Sensor Competency Center at 800-425-2121, option 2.
 [2] 1/2" NPT conduit Entry. For PC13, change N12 to G13. For M20, change N12 to P20.
 [3] These sensors do not incorporate overload or short-circuit protection. A 0.4 mA fast-acting fuse (XUZE04) should be connected in series with the load.

3-Wire, 12–48 Vdc, Long Case Sensors and Accessories

Table 20.8: General Purpose, Long Case, Increased Range, Flush Mountable, 3-Wire DC, Solid-State Output

Sensors, 3-wire 12–48 Vdc, long case model									
Sensing Distance Sn, mm (in.)	Function	Output	Connection	Weight		Catalog No.			
				kg	lb				
Ø 8, threaded M8 x 1									
2.5 (0.10)	NO	PNP	Precabled (2 m) [4]	0.035	0.08	XS608B1PAL2			
			M12 connector	0.015	0.03	XS608B1PAM12			
		NPN	Precabled (2 m) [4]	0.035	0.08	XS608B1NAL2			
			M12 connector	0.015	0.03	XS608B1NAM12			
	NC	PNP	Precabled (2 m) [4]	0.035	0.08	XS608B1PBL2			
			M12 connector	0.015	0.03	XS608B1PBM12			
		NPN	Precabled (2 m) [4]	0.035	0.08	XS608B1NBL2			
			M12 connector	0.015	0.03	XS608B1NBM12			
Ø 12, threaded M12 x 1									
4 (0.16)	NO	PNP	Precabled (2 m) [4]	0.075	0.17	XS612B1PAL2			
			M12 connector	0.020	0.04	XS612B1PAM12			
		NPN	Precabled (2 m) [4]	0.075	0.17	XS612B1NAL2			
			M12 connector	0.020	0.04	XS612B1NAM12			
	NC	PNP	Precabled (2 m) [4]	0.075	0.17	XS612B1PBL2			
			M12 connector	0.020	0.04	XS612B1PBM12			
		NPN	Precabled (2 m) [4]	0.075	0.17	XS612B1NBL2			
			M12 connector	0.020	0.04	XS612B1NBM12			
Ø 18, threaded M18 x 1									
8 (0.31)	NO	PNP	Precabled (2 m) [4]	0.100	0.22	XS618B1PAL2			
			M12 connector	0.040	0.09	XS618B1PAM12			
			Remote screw term. connector	0.100	0.22	XS618B1PAL01B[5]			
			Remote DIN 43650 connector	0.100	0.22	XS618B1PAL01C			
			Remote M18 connector	0.100	0.22	XS618B1PAL01G			
			Remote U78 connector	0.100	0.22	XS618B1PAL01U78			
		NPN	Precabled (2 m) [4]	0.100	0.22	XS618B1NAL2			
			M12 connector	0.040	0.09	XS618B1NAM12			
	NC	PNP	Remote screw term. connector	0.100	0.22	XS618B1NAL01B[5]			
			Remote U78 connector	0.100	0.22	XS618B1NAL01U78[5]			
		NPN	Precabled (2 m) [4]	0.100	0.22	XS618B1PBL2			
			M12 connector	0.040	0.09	XS618B1PBM12			
		NPN	Remote screw term. connector	0.100	0.22	XS618B1PBL01B[5]			
			Precabled (2 m) [4]	0.100	0.22	XS618B1NBL2			
		NPN	M12 connector	0.040	0.09	XS618B1NBM12			
			Ø 30, threaded M30 x 1.5						
15 (0.59)	NO	PNP	Precabled (2 m) [4]	0.205	0.45	XS630B1PAL2			
			M12 connector	0.145	0.32	XS630B1PAM12			
			Remote screw term. connector	0.205	0.45	XS630B1PAL01B[5]			
			Remote DIN 43650 connector	0.205	0.45	XS630B1PAL01C			
			Remote M18 connector	0.205	0.45	XS630B1PAL01G			
			Remote U78 connector	0.100	0.22	XS630B1PAL01U78			
		NPN	Precabled (2 m) [4]	0.205	0.45	XS630B1NAL2			
			M12 connector	0.145	0.32	XS630B1NAM12			
	NC	PNP	Remote screw term. connector	0.205	0.45	XS630B1NAL01B[5]			
			Precabled (2 m) [4]	0.205	0.45	XS630B1PBL2			
		NPN	M12 connector	0.145	0.32	XS630B1PBM12			
			Remote DIN 43650 connector	0.205	0.45	XS630B1PBL01C			
		NPN	Precabled (2 m) [4]	0.205	0.45	XS630B1NBL2			
			M12 connector	0.145	0.32	XS630B1NBM12			



XS6•B1•L2



XS6•B1•M12



XS6•B1•L01B



XS6•B1•L01C



XS6•B1•L01G

Table 20.9: Accessories

Description	For use with sensors	Weight		Catalog No.
		kg	lb	
90° metal mounting brackets	Ø 8	0.006	0.01	9006PA08
	Ø 12	0.006	0.01	9006PA12
	Ø 18	0.010	0.02	9006PA18
	Ø 30	0.020	0.02	9006PA30
Cables		Mounting Bracket		
Description	90°	Straight	with Indexing Pin for Tubular Sensors	
M12	XZCP1241L2	XZCP1141L2	M18	XSZB118
Plug-in PUR female connectors, including pre-wired versions (2 m, without LED) [6]				
	Catalog No.	Catalog No.		Catalog No.
M8	XZCP0666L2	XZCP0566L2	M12	XSZB112
U20	XZCP1965L2	XZCP1865L2	M30	XSZB130

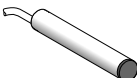
[4] For a 5 m cable replace L2 with L5; for a 10 m cable replace L2 with L10. For example, XS608B1PAL2 becomes XS608B1PAL5 with a 5 m cable.

[5] Protective cable gland included with remote screw terminal connector.

[6] For PVC models, add V after the P in the model number. For example, XZCP1241L2 becomes XZCPV1241L2.

3-wire 12–24 Vdc, Short Case Sensors

Table 20.10: Sensors, 3-wire 12–24 Vdc, Short Case Model

Sensing Distance Sn, mm (in.)			Function	Output	Connection	kg	Weight lb	Catalog Number
Ø 6.5, plain								
1.5 (0.06)		NO	PNP	Precabled (2 m) [7]	0.035	0.08	XS506B1PAL2	
				M8 connector	0.025	0.06	XS506B1PAM8	
				M12 connector	0.025	0.06	XS506B1PAM12	
		NPN	Precabled (2 m) [7]	0.035	0.08	XS506B1NAL2		
			M8 connector	0.025	0.06	XS506B1NAM8		
			M12 connector	0.025	0.06	XS506B1NAM12		
	NC	PNP	Precabled (2 m) [7]	0.035	0.08	XS506B1PBL2		
			M8 connector	0.025	0.06	XS506B1PBM8		
			Precabled (2 m) [7]	0.035	0.08	XS506B1NBL2		
		NPN	M8 connector	0.025	0.06	XS506B1NBM8		
Ø 8, threaded M8 x 1								
1.5 (0.06)		NO	PNP	Precabled (2 m) [7]	0.035	0.08	XS508B1PAL2	
				M8 connector	0.025	0.06	XS508B1PAM8	
				M12 connector	0.025	0.06	XS508B1PAM12	
		NPN	Precabled (2 m) [7]	0.035	0.08	XS508B1NAL2		
			M8 connector	0.025	0.06	XS508B1NAM8		
			M12 connector	0.025	0.06	XS508B1NAM12		
	NC	PNP	Precabled (2 m) [7]	0.035	0.08	XS508B1PBL2		
			M8 connector	0.025	0.06	XS508B1PBM8		
			M12 connector	0.025	0.06	XS508B1PBM12		
		NPN	Precabled (2 m) [7]	0.035	0.08	XS508B1NBL2		
			M8 connector	0.025	0.06	XS508B1NBM8		
			M12 connector	0.025	0.06	XS508B1NBM12		
Ø 12, threaded M12 x 1								
2 (0.08)		NO	PNP	Precabled (2 m) [7]	0.075	0.17	XS512B1PAL2	
				M12 connector	0.035	0.08	XS512B1PAM12	
				Precabled (2 m) [7]	0.075	0.17	XS512B1NAL2	
		NPN	M12 connector	0.035	0.08	XS512B1NAM12		
			Precabled (2 m) [7]	0.075	0.17	XS512B1PBL2		
			M12 connector	0.035	0.08	XS512B1PBM12		
	NC	PNP	Precabled (2 m) [7]	0.075	0.17	XS512B1NBL2		
			M12 connector	0.035	0.08	XS512B1NBM12		
			M12 connector	0.035	0.08	XS512B1NBM12		
		NPN	M12 connector	0.035	0.08	XS512B1NBM12		
Ø 18, threaded M18 x 1								
5 (0.20)		NO	PNP	Precabled (2 m) [7]	0.120	0.26	XS518B1PAL2	
				M12 connector	0.060	0.13	XS518B1PAM12	
				Precabled (2 m) [7]	0.120	0.26	XS518B1NAL2	
		NPN	M12 connector	0.060	0.13	XS518B1NAM12		
			Precabled (2 m) [7]	0.120	0.26	XS518B1PBL2		
			M12 connector	0.060	0.13	XS518B1PBM12		
	NC	PNP	Precabled (2 m) [7]	0.120	0.26	XS518B1NBL2		
			M12 connector	0.060	0.13	XS518B1PBM12		
			Precabled (2 m) [7]	0.120	0.26	XS518B1NBL2		
		NPN	M12 connector	0.060	0.13	XS518B1NBM12		
Ø 30, threaded M30 x 1.5								
10 (0.39)		NO	PNP	Precabled (2 m) [7]	0.205	0.45	XS530B1PAL2	
				M12 connector	0.145	0.32	XS530B1PAM12	
				Precabled (2 m) [7]	0.205	0.45	XS530B1NAL2	
		NPN	M12 connector	0.145	0.32	XS530B1NAM12		
			Precabled (2 m) [7]	0.205	0.45	XS530B1PBL2		
			M12 connector	0.145	0.32	XS530B1PBM12		
	NC	PNP	Precabled (2 m) [7]	0.205	0.45	XS530B1NBL2		
			M12 connector	0.145	0.32	XS530B1PBM12		
			Precabled (2 m) [7]	0.205	0.45	XS530B1NBL2		
		NPN	M12 connector	0.145	0.32	XS530B1NBM12		

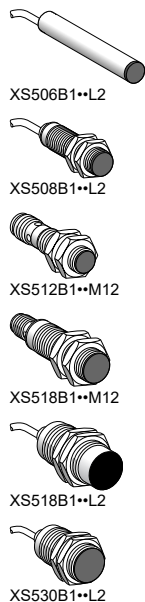


Table 20.11: Accessories

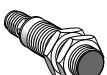
Description	For use with sensors	Weight		Catalog Number
		kg	lb	
Mounting brackets	Ø 6.5 (plain)	0.005	0.01	XSZB165
	Ø 8	0.006	0.01	XSZB108
	Ø 12	0.006	0.01	XSZB112
	Ø 18	0.010	0.02	XSZB118
	Ø 30	0.020	0.02	XSZB130

[7] For a 5 m cable replace L2 with L5; for a 10 m cable replace L2 with L10. Example: XS508B1PAL2 becomes **XS508B1PAL5** with a 5 m cable.

XS...B3 Basic Plus Sensors

Table 20.12: Basic Plus, XS...B3

Sensing Characteristics	Ø 6.5 Plain Flush Mountable	Ø M8 Flush Mountable	Ø M12 Flush Mountable	Ø M18 Flush Mountable	Ø M30 Flush Mountable
Basic, Tubular, Flush-Mountable, Increased Range, 3-Wire DC, Solid-State Output					
Sensing range	2 mm (0–0.08 in.)	2 mm (0–0.08 in.)	4.0 mm (0–0.15 in.)	8.0 mm (0.31 in.)	15.0 mm (0.59 in.)
Switching frequency	2500 Hz	2500 Hz	2500 Hz	1000 Hz	500 Hz
Shock resistance	50 gn, duration 11 ms	50 gn, duration 11 ms	50 gn, duration 11 ms	50 gn, duration 11 ms	50 gn, duration 11 ms
Vibration resistance (10–55 Hz)	25 gn, amplitude ± 2 mm	25 gn, amplitude ± 2 mm	25 gn, amplitude ± 2 mm	25 gn, amplitude ± 2 mm	25 gn, amplitude ± 2 mm
Power Requirements					
Supply voltage	12–24 (10–36 max) Vdc with protection against reverse polarity, overload, and short circuit				
Specifications		XS1••B3••M8, XS1••B3••M12, XS1••B3••L2			
Operating zone	Ø 6.5 and Ø 8	0–2.0 mm (0–0.07 in.)			
	Ø 12	0–4.0 mm (0–0.15 in.)			
	Ø 18	0–8.0 mm (0–0.31 in.)			
	Ø 30	0–15 mm (0–0.59 in.)			
Degree of protection	Conforming to IEC 60529	IP65 and IP67			
Operating temperature	–25 to +70 °C (–13 to +158 °F)				
Materials	Case	Nickel-plated brass			
	Cable (XS1••B3••L only)	PvR 3 x 0.34 mm² (22 AWG), except Ø 6.5 and Ø 8: 3 x 0.11 mm² (27 AWG)			
Vibration resistance	Conforming to IEC 60068-2-6	25 gn, amplitude ± 2 mm (10–55 Hz)			
Shock resistance	Conforming to IEC 60068-2-27	50 gn, duration 11 ms			
Rated supply voltage	12–24 Vdc with protection against reverse polarity				
Switching capacity	200 mA with overload and short-circuit protection				
Maximum switching frequency	Ø 6.5, Ø 8, and Ø 12	2500 Hz			
	Ø 18	1000 Hz			
	Ø 30	500 Hz			

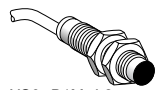
Sensing Distance Sn, mm (in.)		Function	Output	Connection	Sold in lots of	Weight kg lb		Catalog Number
Ø 8, threaded M8 x 1								
Three-wire 12–24 Vdc, flush mountable								
 XS108B3••M8 2 (0.07)	NO	PNP	Precabled (2 m) [8]	1	0.070	0.15	XS108B3PAL2	
			M8 connector	1	0.030	0.06	XS108B3PAM8	
			M12 connector	1	0.060	0.13	XS108B3PAM12	
		NPN	Precabled (2 m) [8]	1	0.070	0.15	XS108B3NAL2	
			M8 connector	1	0.030	0.06	XS108B3NAM8	
			M12 connector	1	0.060	0.13	XS108B3NAM12	
	NC	PNP	Precabled (2 m) [8]	1	0.070	0.15	XS108B3PBL2	
			M8 connector	1	0.030	0.06	XS108B3PBM8	
			M12 connector	1	0.060	0.13	XS108B3PBM12	
		NPN	Precabled (2 m) [8]	1	0.070	0.15	XS108B3NBL2	
			M8 connector	1	0.030	0.06	XS108B3NBM8	
			M12 connector	1	0.060	0.13	XS108B3NBM12	
Ø 12, threaded M12 x 1								
Three-wire 12–24 Vdc, flush mountable								
 XS112B3••L2 4 (0.15)	NO	PNP	Precabled (2 m) [8]	1	0.090	0.19	XS112B3PAL2	
			M12 connector	1	0.030	0.06	XS112B3PAM12	
			Precabled (2 m) [8]	1	0.090	0.19	XS112B3NAL2	
		NPN	M12 connector	1	0.030	0.06	XS112B3NAM12	
			Precabled (2 m) [8]	1	0.090	0.19	XS112B3PBL2	
			M12 connector	1	0.030	0.06	XS112B3PBM12	
	NC	PNP	Precabled (2 m) [8]	1	0.090	0.19	XS112B3NBL2	
			M12 connector	1	0.030	0.06	XS112B3NBM12	
			Precabled (2 m) [8]	1	0.090	0.19	XS112B3PBL2	
		NPN	M12 connector	1	0.030	0.06	XS112B3PBM12	
			Precabled (2 m) [8]	1	0.090	0.19	XS112B3NBL2	
			M12 connector	1	0.030	0.06	XS112B3NBM12	
Ø 18, threaded M18 x 1								
Three-wire 12–24 Vdc, flush mountable								
 XS118B3••M12 8 (0.31)	NO	PNP	Precabled (2 m) [8]	1	0.110	0.24	XS118B3PAL2	
			M12 connector	1	0.060	0.13	XS118B3PAM12	
			Precabled (2 m) [8]	1	0.110	0.24	XS118B3NAL2	
		NPN	M12 connector	1	0.060	0.13	XS118B3NAM12	
			Precabled (2 m) [8]	1	0.110	0.24	XS118B3PBL2	
			M12 connector	1	0.060	0.13	XS118B3PBM12	
	NC	PNP	Precabled (2 m) [8]	1	0.110	0.24	XS118B3NBL2	
			M12 connector	1	0.060	0.13	XS118B3NBM12	
			Precabled (2 m) [8]	1	0.110	0.24	XS118B3PBL2	
		NPN	M12 connector	1	0.060	0.13	XS118B3PBM12	
			Precabled (2 m) [8]	1	0.110	0.24	XS118B3NBL2	
			M12 connector	1	0.060	0.13	XS118B3NBM12	
Ø 30, threaded M30 x 1.5								
Three-wire 12–24 Vdc, flush mountable								
 XS130B3••L2 15 (0.59)	NO	PNP	Precabled (2 m) [8]	1	0.180	0.39	XS130B3PAL2	
			M12 connector	1	0.130	0.28	XS130B3PAM12	
			Precabled (2 m) [8]	1	0.180	0.39	XS130B3NAL2	
		NPN	M12 connector	1	0.130	0.28	XS130B3NAM12	
			Precabled (2 m) [8]	1	0.180	0.39	XS130B3PBL2	
			M12 connector	1	0.130	0.28	XS130B3PBM12	
	NC	PNP	Precabled (2 m) [8]	1	0.180	0.39	XS130B3NBL2	
			M12 connector	1	0.130	0.28	XS130B3NBM12	
			Precabled (2 m) [8]	1	0.180	0.39	XS130B3PBL2	
		NPN	M12 connector	1	0.130	0.28	XS130B3PBM12	
			Precabled (2 m) [8]	1	0.180	0.39	XS130B3NBL2	
			M12 connector	1	0.130	0.28	XS130B3NBM12	

[8] For a 5 m cable replace L2 with L5; for a 10 m cable replace L2 with L10. Example: XS106B3PAL2 becomes XS106B3PAL5 with a 5 m cable.

2-Wire AC or DC, Long Case Sensors

Table 20.13: Accessories, Basic Plus, XS...B3

Mounting Bracket			Mounting Bracket with Indexing Pin for Cylindrical Sensors		
	Sensor Body	Catalog No.		Diameter	Catalog No.
	M8	9006PA08		M6	XSZB165
	M12	9006PA12		M8	XSZB108
	M18	9006PA18		M12	XSZB112
	M30	9006PA30		M18	XSZB118
			M30	XSZB130	
Cables	See M8 and M12 connector cables on page 3—Wire, 12 — 48 Vdc, Long Case Sensors and Accessories, page 20-6.				



XS6..B1M..L2



XS6..B1..L01B



XS6..B1..L01G



XS6..B1..U20



XS6••B1••I 01C

Table 20.14: General Purpose, Long Case, Tubular, Increased Range, Flush Mountable, 2-Wire AC or DC

Sensors, 2-wire 24–240 V AC or DC, long case model					
Sensing Distance Sn, mm (in.)	Function	Connection	Catalog Number	Weight	
				kg	lb
Ø 12, threaded M12 x 1					
4 (0.16)	NO	Precabled (2 m) [1]	XS612B1MAL2	0.075	0.17
		1/2"-20UNF connector	XS612B1MAU20	0.025	0.06
	NC	Precabled (2 m) [1]	XS612B1MBL2	0.075	0.17
		1/2"-20UNF connector	XS612B1MBU20	0.025	0.06
Ø 18, threaded M18 x 1					
8 (0.31)	NO	Precabled (2 m) [1]	XS618B1MAL2	0.100	0.22
		1/2"-20UNF connector	XS618B1MAU20	0.060	0.13
		Remote screw terminal connector	XS618B1MAL01B [2]	0.100	0.22
		Remote DIN 43650A connector	XS618B1MAL01C	0.100	0.22
	NC	Remote M18 connector	XS618B1MAL01G	0.100	0.22
		Precabled (2 m) [1]	XS618B1MBL2	0.100	0.22
		Remote screw terminal connector	XS618B1MBL01B [2]	0.100	0.22
		Remote DIN 43650A connector	XS618B1MBL01C	0.100	0.22
Ø 30, threaded M30 x 1.5					
15 (0.59)	NO	Precabled (2 m) [3]	XS630B1MAL2	0.205	0.45
		1/2"-20UNF connector	XS630B1MAU20	0.145	0.32
		Remote screw terminal connector	XS630B1MAL01B [2]	0.205	0.45
		Remote DIN 43650A connector	XS630B1MAL01C	0.205	0.45
	NC	Remote M18 connector	XS630B1MAL01G	0.205	0.45
		Precabled (2 m) [3]	XS630B1MBL2	0.205	0.45
		1/2"-20UNF connector	XS630B1MBU20	0.145	0.32
		Remote screw terminal connector	XS6 30B1MBL01B [2]	0.205	0.45
NC	Remote DIN 43650A connector	XS6 30B1MBL01C	0.205	0.45	
	Remote M18 connector	XS6 30B1MBL01G	0.205	0.45	
Description		For use with sensors	Catalog Number	Weight	
				kg	lb
Mounting brackets		Ø 12	XSZB112	0.006	0.01
		Ø 18	XSZB118	0.010	0.02
		Ø 30	XSZB130	0.020	0.04

Table 20.15: Osisense Capacitive Proximity Sensors, Cylindrical Stainless Steel, DC

Sensing Characteristics



	Ø M12 threaded M12 x 1	Ø M18 threaded M18 x 1	Ø M30 threaded M30 x 1.5
Sensing Range	2 mm (0.078 in.)	5 mm (0.197 in.)	10 mm (0.394 in.)
Switching Frequency	300	200	150
Shock Resistance	Conforming to IEC 60068-2-27: 30 gn, 11 ms		
Vibration Resistance	Conforming to IEC 60068-2-6 10 gn, +/- 1 mm (10–55 Hz)		
Power Requirements			
Supply Voltage	30 mm: 24 Vdc (12–30 Vdc limits)		32 mm: 24–240 Vac (20–264 Vac limits)
Max. Load	200 mA		
Environment			
Operating Temperature Range	–25 +70 °C (–13 +158 °F)		
Product Certification	CE, ETL		
Environmental Protection Ratings	IP67, NEMA 4X (Indoor Use Only), IP65 (Ø M12 PCM and Ø18 PCM)		
Connection	Precabled, PVC (2 m)		
Catalog Numbers			
Housing Material	Stainless Steel	Nickel Plated Brass	
Cable (flush mountable)	Catalog No.	Catalog No.	Catalog No.
3-wire / PNP / N.O. function	XT112S1PAL2	XT118B1PAL2	XT130B1PAL2
3-wire / NPN / N.O. function	XT112S1NAL2	XT118B1NAL2	XT130B1NAL2
4-wire / PNP / N.O./N.C. function	XT112S1PCL2	XT118B1PCL2	XT130B1PCL2
Connector (flush mountable)	M12		
4-wire / PNP / N.O./N.C. function	XT112S1PCM12	XT118B1PCM12	XT130B1PCM12

[1] For a 5 m cable, replace L2 with **L5**; for a 10 m cable, replace L2 with **L10**. Example: XS612B1MAL2 becomes XS612B1MAL5 with a 5 m cable.

[2] Protective cable gland included with remote screw terminal connector.

[3] Available in ø8 plastic with double insulation. See page 2/30 of 9006CT1007.

XX•18, XUV, and XXV Sensors

Table 20.16: XX•18 Sensors, 1 m Nominal Sensing Distance, 18 mm Diameter, M12 Connector

Body	Output	Catalog Number
Plastic	Discrete	XXS18P1PM12
	4–20 mA	XXS18P1AM12
	0–10 V	XXS18P1VM12
Plastic (with 90° head)	Discrete	XXA18P1PM12
	4–20 mA	XXA18P1AM12
	0–10 V	XXA18P1VM12
Brass	Discrete	XXS18B1PM12
	4–20 mA	XXS18B1AM12
	0–10 V	XXS18B1VM12
Brass (with 90° head)	Discrete	XXA18B1PM12
	4–20 mA	XXA18B1AM12
	0–10 V	XXA18B1VM12
Stainless Steel	Discrete	XXS18S1PM12
	4–20 mA	XXS18S1AM12
	0–10 V	XXS18S1VM12
Stainless Steel (with 90° head)	Discrete	XXA18S1PM12
	4–20 mA	XXA18S1AM12
	0–10 V	XXA18S1VM12



XXS18P1-M12



XXS18B1-M12, XXS18S1-M12

Table 20.17: XUV Label Sensor

Sensing Characteristics	
Nominal Sensing Distance	3 mm (0.12 in.)
Switching Frequency	500 Hz
Power Requirements	
Supply Voltage	12–24 Vdc (10–30 Vdc limits)
Max. Load	100 mA
Environmental	
Operating Temperature Range	+5 to +55 °C (+41 to +131 °F)
Environmental Protection Ratings	IP65, NEMA 4X (indoor use only), 5, 12, 12k, 13
Construction	
Flat Profile Dimensions (W x H x D)	92.5 x 47.3 x 16.0 mm (3.64 x 1.86 x 0.63 in.)
Housing Material	Aluminium
Transducer	Glass Epoxy
Connection	
Precabled (2 m)	XUVU06M3KCNL2
Connector (M8)	XUVU06M3KSNM8



XUV



XXV

Table 20.18: XXV 18 mm Ultrasonic Sensors

Sensing Characteristics		
Nominal Sensing Distance		2 mm to 50.8 mm (0.08 in. to 2.0 in.)
Switching Frequency		80 Hz
Power Requirements		
Supply Voltage		12–24 Vdc
Max. Load		200 mA
Environmental		
Operating Temperature Range		0 to 60 °C (32 to 140 °F)
Environmental Protection Ratings		NEMA Type 4 and 13, and IP67
Construction		
Barrel Dimensions (Ø x L)		18 x 1 x 43.2 mm (0.71 x 0.04 x 1.70 in.)
Housing Material		Nickel Plated Brass
Transducer		Glass Epoxy
Connection		Catalog No.
Cable		Precabled, PVC (2 m)
PNP	N.O.	XXV18B1PAL2
	N.C.	XXV18B1PBL2
NPN	N.O.	XXV18B1NAL2
	N.C.	XXV18B1NBL2
Connection		M12
PNP	N.O.	XXV18B1PAM12
	N.C.	XXV18B1PBM12
NPN	N.O.	XXV18B1NAM12
	N.C.	XXV18B1NBM12

Table 20.19: Mounting Brackets

Body Type	Catalog No.
M12	9006PA12
M18	9006PA18
M30	9006PA30



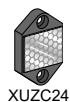
Table 20.20: Sensor Accessories

Teach Push Button Accessory for Virtu and XX•18 Series	
Catalog No.	
XXZPB100	
Python AC/DC Power Converter	
Catalog No.	
XXZPM100M12	



Table 20.21: Accessories

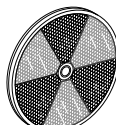
Description		mm	Catalog No.
Reflectors		24 x 21	XUJZC24
		Ø 80	XUJZC80
		50 x 50	XUJZC50
		Material	Catalog No.
Mounting Brackets for XUB		Die Cast Zinc	XUZA118
		Plastic	XUZA218
		90°	Straight
		Catalog No.	Catalog No.
Cables (PUR), 2 m, without LED ^[1] Suitable plug-in female connectors, including pre-wired versions	M8 (4-Pin)	XZCP1041L2	XZCP0941L2
	M12 (4-pin)	XZCP1241L2	XZCP1141L2
	1/2-20UNF	XZCP1965L2	XZCP1865L2
Cables (PVC), 2 m, without LED ^[1] Suitable plug-in female connectors, including pre-wired versions	M8 (4-Pin)	XZCPV1041L2	XZCPV0941L2
	M12 (4-pin)	XZCPV1241L2	XZCPV1141L2
	1/2-20UNF	XZCPV1965L2	XZCPV1865L2



XUJZC24



XUJZC50



XUJZC80



XZCP1241L2



XZCP1141L2



XUZA118



XUZA218

[1] For 5 or 10 meter lengths, replace 2 in the cable catalog number with 5 or 10.

VM Sensors

Table 20.22: Specifications and Catalog Numbers



Virtu™ VM1 and VM18

Specifications							
Sensing Characteristics							
Sensing Range	51–508 mm (2–20 in.)						
Max. Switching Frequency	300 Hz						
Power Requirements							
Supply Voltage	12–24 Vdc						
Supply Current	40 mA (excluding load)						
Environmental Ratings							
Operating Temperature	–30 to 70 °C (–22 to 158 °F)						
Environment	NEMA 4X (indoor use only), IP67						
Construction							
VM18 Barrel, ØxL	18 x 77.62 mm (0.709 x 3.06 in.) with 1 mm-6g thread						
VM1 Dual Mount	Ø 18 mm and Flat Format 43.7 x 18 x 59.7 mm (1.72 x 0.70 x 2.35 in.)						
Housing Material	PBT Resin						
Transducer	Glass Epoxy						
Output Type		Catalog Number					
		Output		Cable		Quick Disconnect	
				Dual Mount	Barrel	Dual Mount	Barrel
Proximity	PNP Sourcing	N.O.	VM1PNO	VM18PNO	VM1PNOQ	VM18PNOQ	
		N.C.	VM1PNC	VM18PNC	VM1PNCQ	VM18PNCQ	
	NPN Sinking	N.O.	VM1NNO	VM18NNO	VM1NNOQ	VM18NNOQ	
		N.C.	VM1NNC	VM18NNC	VM1NNCQ	VM18NNCQ	
	PNP Sourcing	N.O.	VM1PTO	VM18PTO	VM1PTOQ	VM18PTOQ	
		N.C.					
	NPN Sinking	N.O.	VM1NTO	VM18NTO	VM1NTOQ	VM18NTOQ	
		N.C.					
Dual-Level Pump In Normally Open	Off at loss of echo and at powerup	PNP	VM1PPI0000	VM18PPI0000	VM1PPI0000Q	VM18PPI0000Q	
		NPN	VM1NPI0000	VM18NPI0000	VM1NPI0000Q	VM18NPI0000Q	
	On at loss of echo and at powerup	PNP	VM1PPI1000	VM18PPI1000	VM1PPI1000Q	VM18PPI1000Q	
		NPN	VM1NPI1000	VM18NPI1000	VM1NPI1000Q	VM18NPI1000Q	
	Hold on loss of echo, Off at powerup	PNP	VM1PPI2000	VM18PPI2000	VM1PPI2000Q	VM18PPI2000Q	
		NPN	VM1NPI2000	VM18NPI2000	VM1NPI2000Q	VM18NPI2000Q	
Dual-Level Pump Out Normally Open	Off at loss of echo and at powerup	PNP	VM1PPO0000	VM18PPO0000	VM1PPO0000Q	VM18PPO0000Q	
		NPN	VM1NPO0000	VM18NPO0000	VM1NPO0000Q	VM18NPO0000Q	
	On at loss of echo and at powerup	PNP	VM1PPO1000	VM18PPO1000	VM1PPO1000Q	VM18PPO1000Q	
		NPN	VM1NPO1000	VM18NPO1000	VM1NPO1000Q	VM18NPO1000Q	
	Hold on loss of echo, Off at powerup	PNP	VM1PPO2000	VM18PPO2000	VM1PPO2000Q	VM18PPO2000Q	
		NPN	VM1NPO2000	VM18NPO2000	VM1NPO2000Q	VM18NPO2000Q	
Analog	Voltage 0–10 Vdc with Temperature Compensation For Direct/Inverse models, change VD or VI to VA.						
	Direct, 0 V at loss of echo and at powerup		VM1VD0000	VM18VD0000	VM1VD0000Q	VM18VD0000Q	
	Inverse, 0 V at loss of echo and at powerup		VM1VI0000	VM18VI0000	VM1VI0000Q	VM18VI0000Q	
	Direct, 10 V at loss of echo and at powerup		VM1VD1000	VM18VD1000	VM1VD1000Q	VM18VD1000Q	
	Inverse, 10 V at loss of echo and at powerup		VM1VI1000	VM18VI1000	VM1VI1000Q	VM18VI1000Q	
	Direct, hold on loss of echo, 0 V at powerup		VM1VD2000	VM18VD2000	VM1VD2000Q	VM18VD2000Q	
	Inverse, hold on loss of echo, 0 V at powerup		VM1VI2000	VM18VI2000	VM1VI2000Q	VM18VI2000Q	
	Direct, hold on loss of echo, 10 V at powerup		VM1VD3000	VM18VD3000	VM1VD3000Q	VM18VD3000Q	
	Inverse, hold on loss of echo, 10 V at powerup		VM1VI3000	VM18VI3000	VM1VI3000Q	VM18VI3000Q	
	Current 4–20 mA with Temperature Compensation For Direct/Inverse models, change CD or CI to CA.						
	Direct, 4 mA at loss of echo and at powerup		VM1CD0000	VM18CD0000	VM1CD0000Q	VM18CD0000Q	
	Inverse, 4 mA at loss of echo and at powerup		VM1CI0000	VM18CI0000	VM1CI0000Q	VM18CI0000Q	
	Direct, 20 mA at loss of echo and at powerup		VM1CD1000	VM18CD1000	VM1CD1000Q	VM18CD1000Q	
	Inverse, 20 mA at loss of echo and at powerup		VM1CI1000	VM18CI1000	VM1CI1000Q	VM18CI1000Q	
	Direct, hold on loss of echo, 4 mA at powerup		VM1CD2000	VM18CD2000	VM1CD2000Q	VM18CD2000Q	
	Inverse, hold on loss of echo, 4 mA at powerup		VM1CI2000	VM18CI2000	VM1CI2000Q	VM18CI2000Q	
	Direct, hold on loss of echo, 20 mA at powerup		VM1CD3000	VM18CD3000	VM1CD3000Q	VM18CD3000Q	
	Inverse, hold on loss of echo, 20 mA at powerup		VM1CI3000	VM18CI3000	VM1CI3000Q	VM18CI3000Q	

30 mm Ultrasonic Sensors

Table 20.23: Specifications and Catalog Numbers

							
Virtu™ 30 mm	M30 30 mm (1 or 2 m)	M30 30 mm (8 m)					
Specifications							
Sensing Characteristics							
Sensing Range	102–1000 mm (4–39 in.)		51 mm to 1 m (2–39 in.); 119 mm to 2 m (4.7–79 in.)		304.8 mm to 8 m (12–315 in.)		
Sensing Frequency	180 kHz		200 kHz		75 kHz		
Power Requirements							
Supply Voltage	12–24 Vdc discrete, 15–24 Vdc analog		12–24 Vdc discrete; 15–24 Vdc analog		12–24 Vdc discrete; 15–24 Vdc analog		
Supply Current	40 mA discrete, 90 mA analog (excluding load)		80 mA (excluding load)		80 mA (excluding load)		
Environmental Ratings							
Operating Temperature	0 to 70 °C (32 to 158 °F)		0 to 50 °C (32 to 122 °F) discrete –20 to 60 °C (–4 to 140 °F) analog		–40 to 60 °C (–40 to 140 °F)		
Environment	NEMA 4X (indoor use only), IP67		NEMA 4X (indoor use only), IP67		NEMA 4X (indoor use only), IP67		
Construction							
Barrel, ØxL	30 x 1 x 95.26 mm (1.18 x 3.75 in.)		30 x 1 x 95 mm (1.18 x 3.74 in.)		30 x 1 x 116 mm (9.18 x 4.58 in.)		
Housing Material	PBT Resin		PEI Resin, or Stainless Steel (1 m only)		PEI Resin		
Transducer	Glass Epoxy		Silicon Rubber or Fluorosilicone		Glass Epoxy or PVDF		
Output Type			1 m / 2 m		8 m		
Proximity Output	Description	Catalog No.	Description	Catalog No.	Description	Catalog No.	
	PNP Sourcing N.O.	XX6V3A1PAM12	1 m [2]	Connector	SM950A100000	Cable	SM900A800000
	PNP Sourcing N.C.	XX6V3A1PBM12		Cable	SM900A100000		
	PNP Sourcing N.O./N.C.	XX6V3A1PSM12	2 m				
	NPN Sinking N.O.	XX6V3A1NAM12		Connector	SM950A400000	Connector	SM950A800000
	NPN Sinking N.C.	XX6V3A1NBM12		Cable	SM900A400000		
NPN Sinking N.O./N.C.	XX6V3A1NSM12						
Dual-Level Pump In	Connector		Cable 1 m [3]	PNP, NO	Cable 8 m	PNP, NO	
	Normally Open		Pump-out latch	SM902A100000	Pump-out latch	SM902A800000	
	Hold on loss of echo; Off on power up		Pump-out latch with alarm	SM902A1560000	Pump-out latch with alarm	SM902A8560000	
	PNP	XX2V3A1PGM12	Pump-out latch, with setpoint	SM902A1760000	Pump-out latch, with setpoint	SM902A8760000	
	NPN	XX2V3A1NGM12	Pump-in latch	SM902A110000	Pump-in latch	SM902A810000	
	Off on loss of echo; Off on power up		Pump-in latch with alarm	SM902A1460000	Pump-in latch with alarm	SM902A8460000	
	PNP	XX2V3A1PFM12	Pump-in latch, with setpoint	SM902A1660000	Pump-in latch, with setpoint	SM902A8660000	
	NPN	XX2V3A1NFM12	Dual setpoint	SM902A1260000	Dual setpoint	SM902A8260000	
	Hold on loss of echo; Off on power up		Dual alarm	SM902A1360000	Dual alarm	SM902A8360000	
	PNP	XX2V3A1PJM12	Connector [3]	PNP, NO	Connector	PNP, NO	
Dual-Level Pump Out	NPN	XX2V3A1NJM12	Pump-out latch	SM952A100000	Pump-out latch	SM952A800000	
	Off on loss of echo; Off on power up		Pump-out latch with alarm	SM952A1560000	Pump-out latch with alarm	SM952A8560000	
	PNP	XX2V3A1PHM12	Pump-out latch, with setpoint	SM952A1760000	Pump-out latch, with setpoint	SM952A8760000	
	NPN	XX2V3A1NHM12	Pump-in latch	SM952A110000	Pump-in latch	SM952A810000	
			Pump-in latch with alarm	SM952A1460000	Pump-in latch with alarm	SM952A8460000	
			Pump-in latch, with setpoint	SM952A1660000	Pump-in latch, with setpoint	SM952A8660000	
			Dual setpoint	SM952A1260000	Dual setpoint	SM952A8260000	
			Dual alarm	SM952A1360000	Dual alarm	SM952A8360000	
	Quick Disconnect			Cable 1 m [3]	Cable 8 m		
	0–20 mA	Catalog No.	Voltage (0–10 Vdc)	Catalog No.	Voltage (0–10 Vdc)	Catalog No.	
Direct/Inverse slope	XX9V3A1C4M12	Auto slope	SM906A180000	Auto slope	SM906A880000		
Direct output	XX9V3A1D4M12	Direct slope	SM906A110000	Direct slope	SM906A810000		
Inverse output	XX9V3A1E4M12	Inverse slope	SM906A100000	Inverse slope	SM906A800000		
4–20 mA		Current (4–20 mA)		Current (4–20 mA)			
Direct/Inverse slope	XX9V3A1C2M12	Auto slope	SM906A190000	Auto slope	SM906A890000		
Direct output	XX9V3A1D2M12	Direct slope	SM906A130000	Direct slope	SM906A830000		
Inverse output	XX9V3A1E2M12	Inverse slope	SM906A120000	Inverse slope	SM906A820000		
Analog	0–5 Vdc		Connector		Connector		
	Direct/Inverse slope	XX9V3A1F3M12	Voltage (0–10 Vdc)		Voltage (0–10 Vdc)		
	Direct output	XX9V3A1G3M12	Auto slope	SM956A180000	Auto slope	SM956A880000	
	Inverse output	XX9V3A1H3M12	Direct slope	SM956A110000	Direct slope	SM956A810000	
	0–10 Vdc		Inverse slope	SM956A100000	Inverse slope	SM956A800000	
	Direct/Inverse slope	XX9V3A1F1M12	Current (4–20 mA)		Current (4–20 mA)		
	Direct output	XX9V3A1G1M12	Auto slope	SM956A190000	Auto slope	SM956A890000	
	Inverse output	XX9V3A1H1M12	Direct slope	SM956A130000	Direct slope	SM956A830000	
			Inverse slope	SM956A120000	Inverse slope	SM956A820000	

[2] For stainless steel, add suffix S.

[3] For the 2 m version, change model from SMxxxA1xxxxx to SMxxxA4xxxxx.