Section 20

Electronic Sensors and Machine Cabling



Photoelectric Sensors



Proximity Sensors



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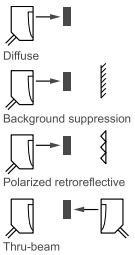
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XUB Tubular Sensors



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 (XUK: IP65)	

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	XUB5BPANL2	XUB5BPANM12
		N.C.	XUB5APBNL2	XUB5APBNM12	XUB5BPBNL2	XUB5BPBNM12
	Polarized retroreflective	N.O.	XUB9APANL2	XUB9APANM12	XUB9BPANL2	XUB9BPANM12
		N.C.	XUB9APBNL2	XUB9APBNM12	XUB9BPBNL2	XUB9BPBNM12
	Retroreflective	N.O.	XUB1APANL2	XUB1APANM12	XUB1BPANL2	XUB1BPANM12
		N.C.	XUB1APBNL2	XUB1APBNM12	XUB1BPBNL2	XUB1BPBNM12
	Thru-beam	N.O.	XUB2APANL2R	XUB2APANM12R	XUB2BPANL2R	XUB2BPANM12R
		N.C.	XUB2APBNL2R	XUB2APBNM12R	XUB2BPBNL2R	XUB2BPBNM12R
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			

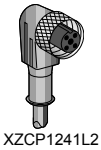

XUZC24


XUZC50


XUZC80


XUZA118


XUZA218


XZCP1241L2


XZCP1141L2

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

Connection			Precabled, PvR, 2 m *[1]* Catalog No.	1/2"-20UNF Connector Catalog No.
System	Diffuse with adjustable background suppression	NO	XU8M18MA230	XU8M18MA230K
		NC	XU8M18MB230	XU8M18MB230K
	Diffuse	NO	XU5M18MA230	XU5M18MA230K
		NC	XU5M18MB230	XU5M18MB230K
	Polarized retrofeflective *[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

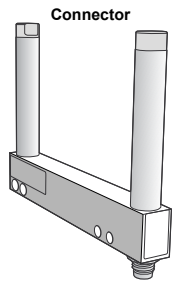
		mm	Catalog No.
Reflectors		24 x 21	XUZC24
		Ø 80	XUZC80
		50 x 50	XUZC50
		Material	Catalog No.
Mounting brackets for XUB		Die Cast Zinc	XUZA118
		Plastic	XUZA218
		90°	Straight
		Catalog No.	Catalog No.
Cables, 2 m, without LED *[6]* Suitable plug-in female connectors, including pre-wired versions	M8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

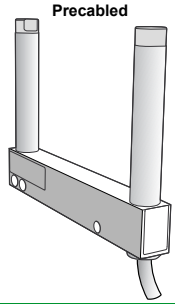
[1] For a 5 m cable, change L2 to L5. For example, XUMB5APAN**L2** becomes XUMB5APAN**L5**.
[2] For version with NPN output, change "P" to "N". For example: XUB1A**P**ANL2 would become XUB1A**N**ANL2.
[3] These sensors do not incorporate overload or short-circuit protection. A 0.4 A fast-acting fuse must 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.

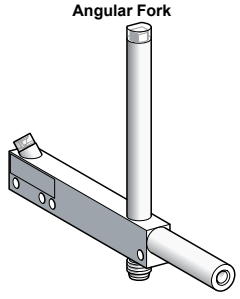
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XUVR / XUVA

Table 20.5: XUVR / XUVA Optical fork without adjustment



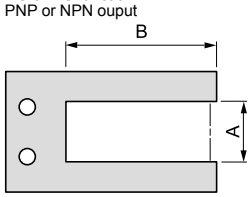




Sensing Characteristics		Thru-beam	
Sensing range, mm (in.)		2–180 (0.08 –7.09)	
Sensing frequency		4000 Hz	
Minimum size of object detected, mm (in.)	Passageway 2–120 mm	0.8 (0.03)	1.2 (0.05)
	Passageway u 150 mm	1 (0.04)	1.5 (0.06)
Fork type		XUVR•	XUVA•
Power Requirements			
Supply voltage		12–24 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•

3-Wire
NO or NC function
PNP or NPN ouput



A = Passageway
B = Depth

Connection—Precabled, length 2 m. Depth (B): 40 mm (1.18 in.)

Passageway (A)	Function	Output	Catalog Number
30 mm (1.18 in.)	NO	PNP	XUVR0303PANL2

Connection—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

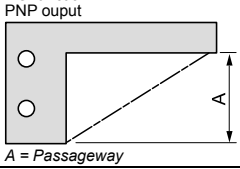
Connection—M8, 3-Pin. Depth (B): 120 mm (4.72 in.)

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

Catalog numbers of forks type XUVA•

Connection—M8 connector, 3-Pin

3-wire
NO function
PNP ouput



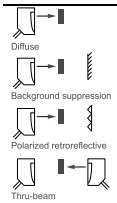
A = Passageway

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

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XUM Miniature, XUK and XUX Compact Sensors

Table 20.6: XUM Miniature, 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		XUM Miniature Design	XUK Compact Design 50 x 50	XUX Compact Design
Usable sensing distance	Proximity diffuse (adjustable sensitivity)	1 m (3.28 ft)	1 m (3.2 ft) *[7]*	2.1 m (6.8 ft)
	Polarized retroreflective	5 m (16.40 ft)*[8]*	5 m (16.4 ft) *[7]*	11 m (36 ft)
	Retroreflective	—	7 m (23.0 ft) *[7]*	14 m (46 ft)
	Thru-beam	15 m (49.21 ft)	30 m (98 ft) *[7]*	40 m (131.2 ft)
Mounting (mm)		direct: mounting centers 25.5, M3 screws	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 / 10.8 x 34 x 20	P / 18 x 50 x 50	P / 30 x 92 x 71
Setup LEDs		⊗	⊗	⊗
Common characteristics		⊗ LED output state indicator and power on LED (⊗): yes		

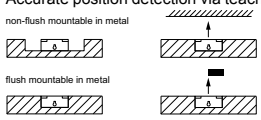
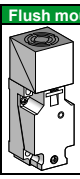
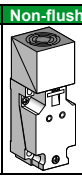
Sensors for DC Applications (Solid State Output: Transistor)			Catalog No.					
Connection			Precabled, PVC, 2 m	M8 connector	Precabled, PVC, 2 m	M12 connector	Screw terminals, ISO 16 cable gland	M12 connector
Transmitter			XUM2AKCNL2T	XUM2AKCNM8T	XUK2AKSNL2T	XUK2AKSNM12T	XUX0AKSAT16T	XUX0AKSAM12T
Receiver or Transmitter/ Receiver, 3-wire PNP *[9]*	Proximity diffuse, adjustable	N.O.	—	—	XUK5APANL2	XUK5APANM12	XUX5APANT16	XUX5APANM12
		N.C.	—	—	XUK5APBNL2	XUK5APBNM12	XUX5APBNT16	XUX5APBNM12
		N.O./N.C. convertible	XUM5APCNL2	XUM5APCNM8	—	—	—	—
	Polarized retroreflective	N.O.	—	—	XUK9APANL2	XUK9APANM12	XUX9APANT16	XUX9APANM12
		N.C.	—	—	XUK9APBNL2	XUK9APBNM12	XUX9APBNT16	XUX9APBNM12
		N.O./N.C. convertible	XUM9APCNL2	XUM9APCNM8	—	—	—	—
	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
		N.O./N.C. convertible	XUM2APCNL2R	XUM2APCNM8R	—	—	—	—
Supply voltage limits, min/max (V) including ripple			10–30	10–30	10–30	10–30	10–36	10–36
Switching frequency (Hz)			1000	1000	250	250	250	250
Common characteristics for DC versions			indicator (⊗): yes / power on LED (⊗): yes					
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	—
LED output state indicator(⊗) / power on LED (⊗)			—	—	⊗ / ⊗	—	⊗ / ⊗	—

NOTE: M8 is not Snap-C compatible.
See page 20-2 for suitable plug-in cables with female connectors.

[7] Excess gain of 2.
[8] With XUZC50 reflector.
[9] For version with NPN output, change "P" to "N". For example, XUM5A**P**CNL2 would become XUM5A**N**CNL2.

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XS Plastic Rectangular Sensors

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. 		

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

Table 20.7: General Specifications

Product certifications	UL, CSA, e
Degree of protection conforming to IEC 60529	IP67
Operating temperature	–25 to +70 °C (–13 to +158 °F)

DC Supply

Table 20.8: 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	XS8C4A1DPN12	XS7C4A1DPN12	—
	NO or NC programmable	—	XS7C4A1DPN12	XS8C4A4DPN12
Weight, kg (lb)		0.220 (0.49)	0.220 (0.49)	0.220 (0.49)

Table 20.9: Supplemental Specifications

Connection *[1]*		Screw terminals, clamping capacity: 2 or 4 x 1.5 mm² (16 AWG)				
Operating zone, mm (in.)		**0–12 (0–0.47)**	**0–16 (0–0.63)**	**0–12 (0–0.47)**	**0–16 (0–0.63)**	**0–32 (0–1.26)**	**0–16 (0–0.63)**
Repeat accuracy		≤ 3% of effective sensing distance (Sr)				
Differential travel		3–20% of effective sensing distance (Sr)				
Status indication	Output	Yellow LED		Yellow LED	Yellow LED		Yellow LED
	Supply on	Green LED		—	Green LED		—
Rated supply voltage		12–48 Vdc with protection against reverse polarity				
Voltage limits (including ripple)		10–58 Vdc				
Current consumption, no-load		≤ 10 mA		—	≤ 10 mA		—
Switching capacity with overload + short-circuit protection		0–200 mA		1.5–100 mA	0–200 mA		1.5–100 mA
Residual current, open state		—		≤ 0.5 mA	—		≤ 0.5 mA
Voltage drop, closed state		≤ 2 V		≤ 4 V	≤ 2 V		≤ 4 V
Maximum switching frequency		1000 Hz		1500 Hz	1000 Hz	500 Hz	800 Hz
Delays	First-up	≤ 5 ms		≤ 5 ms	≤ 5 ms	≤ 5 ms	≤ 5 ms
	Response	≤ 0.3 ms		≤ 2 ms	≤ 0.3 ms	< 1 ms	≤ 2 ms
	Recovery	≤ 0.7 ms		≤ 5 ms	≤ 0.7 ms	< 1 ms	≤ 7 ms

Plug-in, AC or DC supply

Table 20.10: Catalog Numbers

		AC	AC/DC	AC/DC
Nominal sensing distance Sn, mm (in.)		15 (0.59)		40 (1.57)
2–wire AC	NO or NC programmable	XS7C4A1DPN12	XS8C4A1DPN12	XS8C4A4DPN12
2–wire AC or DC universal model	NO or NC programmable	XS7C4A1MPN12	XS8C4A1MPN12	XS8C4A4MPN12
Weight, kg (lb)		0.220 (0.49)	0.220 (0.49)	0.220 (0.49)

Table 20.11: Supplemental Specifications

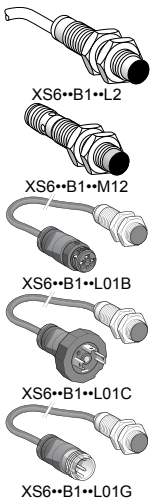
Connection *[2]*		Screw terminals, clamping capacity 2 x 1.5 mm² (16 AWG)		
Operating zone, mm (in.)		0–12 (0–0.47)		0–16 (0–0.63)
Repeat accuracy		≤ 3% of effective sensing distance (Sr)		
Differential travel		3–20% of effective sensing distance (Sr)		
Output state indication		Yellow LED		
Rated supply 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	20–264 Vac or Vdc	20–264 Vac or Vdc
Current consumption, no-load		—		
Switching capacity *[3]*		5–300 mA (2 A inrush) *[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	0.8 mA on 24 V 1.5 mA on 120 V	0.8 mA on 24 V 1.5 mA on 120 V
Voltage drop, closed state		≤ 5.5 V		
Maximum switching frequency		25 Hz	**AC**: 25 Hz; **DC**: 50 Hz	**AC**: 25 Hz; **DC**: 50 Hz
Delays	First-up	≤ 120 ms		
	Response	≤ 30 ms		
	Recovery	≤ 20 ms		

[1] 1/2" NPT conduit Entry. For PC13, change N12 to G13. For M20, change N12 to P20.
[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) must be connected in series with the load.

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

Table 20.12: 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 kg	Weight (lb)	Catalog No.
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
		NPN	Precabled (2 m) [4]	0.100	(0.22)	XS618B1NAL2
			M12 connector	0.040	(0.09)	XS618B1NAM12
			Remote screw term. connector	0.100	(0.22)	XS618B1NAL01B [5]
			Remote DIN 43650 connector	0.100	(0.22)	XS618B1NAL01C
	NC	PNP	Precabled (2 m) [4]	0.100	(0.22)	XS618B1PBL2
			M12 connector	0.040	(0.09)	XS618B1PBM12
			Remote screw term. connector	0.100	(0.22)	XS618B1PBL01B [5]
			Remote DIN 43650 connector	0.100	(0.22)	XS618B1PBL01C
		NPN	Precabled (2 m) [4]	0.100	(0.22)	XS618B1NBL2
			M12 connector	0.040	(0.09)	XS618B1NBM12
			Remote screw term. connector	0.100	(0.22)	XS618B1NBL01B [5]
			Remote DIN 43650 connector	0.100	(0.22)	XS618B1NBL01C
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
		NPN	Precabled (2 m) [4]	0.205	(0.45)	XS630B1NAL2
			M12 connector	0.145	(0.32)	XS630B1NAM12
			Remote screw term. connector	0.205	(0.45)	XS630B1NAL01B [5]
			Remote DIN 43650 connector	0.205	(0.45)	XS630B1NAL01C
	NC	PNP	Precabled (2 m) [4]	0.205	(0.45)	XS630B1PBL2
			M12 connector	0.145	(0.32)	XS630B1PBM12
			Remote screw term. connector	0.205	(0.45)	XS630B1PBL01B [5]
			Remote DIN 43650 connector	0.205	(0.45)	XS630B1PBL01C
			Remote M18 connector	0.205	(0.45)	XS630B1PBL01G
		NPN	Precabled (2 m) [4]	0.205	(0.45)	XS630B1NBL2
			M12 connector	0.145	(0.32)	XS630B1NBM12
			Remote screw term.connector	0.205	(0.45)	XS630B1NBL01B [5]
			Remote DIN 43650 connector	0.205	(0.45)	XS630B1NBL01C

Table 20.13: Accessories

Description	For use with sensors	Weight kg	Weight (lb)	Catalog No.
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

[4] For a 5 m cable replace L2 with **L5**; for a 10 m cable replace L2 with **L10**. For example, XS608B1PA**L2** becomes XS608B1PA**L5** with a 5 m cable.
[5] Protective cable gland included with remote screw terminal connector.

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Description	Cables 90°	Cables Straight	Mounting Bracket with Indexing Pin for Tubular Sensors	
Plug-in female connectors, including pre-wired versions (2 m, without LED)				
	Catalog No.	Catalog No.		Catalog No.
M8	XZCP0666L2	XZCP0566L2	M12	XSZB112
M12	XZCP1241L2	XZCP1141L2	M18	XSZB118
U20	XZCP1965L2	XZCP1865L2	M30	XSZB130

3-wire 12–24 Vdc, Short Case Sensors

Table 20.14: Sensors, 3-wire 12–24 Vdc, Short Case Model

	Sensing Distance Sn, mm (in.)	Function	Output	Connection	Weight kg	Weight (lb)	Catalog Number
	Ø 6.5, plain						
	1.5 (0.06)	NO	PNP	Precabled (2 m) *[6]*	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
		NC	PNP	Precabled (2 m)*[7]*	0.035	(0.08)	XS506B1PBL2
				M8 connector	0.025	(0.06)	XS506B1PBM8
			NPN	Precabled (2 m)*[7]*	0.035	(0.08)	XS506B1NBL2
				M8 connector	0.025	(0.06)	XS506B1NBM8
	Ø 8, threaded M8 x 1						
XS506B1••L2	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
XS508B1••L2		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
XS512B1••M12				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
			NPN	Precabled (2 m)*[7]*	0.075	(0.17)	XS512B1NAL2
XS518B1••M12				M12 connector	0.035	(0.08)	XS512B1NAM12
		NC	PNP	Precabled (2 m)*[7]*	0.075	(0.17)	XS512B1PBL2
				M12 connector	0.035	(0.08)	XS512B1PBM12
			NPN	Precabled (2 m)*[7]*	0.075	(0.17)	XS512B1NBL2
XS518B1••L2				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
			NPN	Precabled (2 m)*[7]*	0.120	(0.26)	XS518B1NAL2
XS530B1••L2				M12 connector	0.060	(0.13)	XS518B1NAM12
		NC	PNP	Precabled (2 m)*[7]*	0.120	(0.26)	XS518B1PBL2
				M12 connector	0.060	(0.13)	XS518B1PBM12
			NPN	Precabled (2 m)*[7]*	0.120	(0.26)	XS518B1NBL2
				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
			NPN	Precabled (2 m)*[7]*	0.205	(0.45)	XS530B1NAL2
				M12 connector	0.145	(0.32)	XS530B1NAM12
		NC	PNP	Precabled (2 m)*[7]*	0.205	(0.45)	XS530B1PBL2
				M12 connector	0.145	(0.32)	XS530B1PBM12
			NPN	Precabled (2 m)*[7]*	0.205	(0.45)	XS530B1NBL2
				M12 connector	0.145	(0.32)	XS530B1NBM12

Table 20.15: Accessories

Description	For use with sensors	Weight kg	Weight (lb)	Catalog Number
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

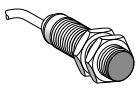
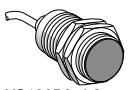
[6] For a 5 m cable replace L2 with L5; for a 10 m cable replace L2 with L10. Example: XS106B3PA**L2** becomes XS106B3PA**L5** with a 5 m cable.
[7] For a 5 m cable replace L2 with **L5**; for a 10 m cable replace L2 with **L10**.
Example: XS508B1PAL2 becomes **XS508B1PAL5** with a 5 m cable.

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XS•••B3 Basic Plus Sensors

Table 20.16: 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				
Switching capacity	50 mA	50 mA	100 mA		
Specifications		XS1ppB3ppM8, XS1ppB3ppM12, XS1ppB3ppL2			
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 (XS1ppB3ppLp 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 to 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		y 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	Weight (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
			NPN	Precabled (2 m) *[8]*	1	0.090	(0.19)	XS112B3NAL2
				M12 connector	1	0.030	(0.06)	XS112B3NAM12
		NC	PNP	Precabled (2 m) *[8]*	1	0.090	(0.19)	XS112B3PBL2
				M12 connector	1	0.030	(0.06)	XS112B3PBM12
			NPN	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
			NPN	Precabled (2 m) *[8]*	1	0.110	(0.24)	XS118B3NAL2
				M12 connector	1	0.060	(0.13)	XS118B3NAM12
		NC	PNP	Precabled (2 m) *[8]*	1	0.110	(0.24)	XS118B3PBL2
				M12 connector	1	0.060	(0.13)	XS118B3PBM12
			NPN	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
			NPN	Precabled (2 m) *[8]*	1	0.180	(0.39)	XS130B3NAL2
				M12 connector	1	0.130	(0.28)	XS130B3NAM12
		NC	PNP	Precabled (2 m) *[8]*	1	0.180	(0.39)	XS130B3PBL2
				M12 connector	1	0.130	(0.28)	XS130B3PBM12
			NPN	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: XS106B3PA**L2** becomes XS106B3PA**L5** with a 5 m cable.

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2-Wire AC or DC, Long Case Sensors

Table 20.17: Acessories, Basic Plus, XS•••B3

Mounting Bracket



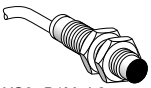
Sensor Body	Catalog No.
M8	9006PA08
M12	9006PA12
M18	9006PA18
M30	9006PA30

Mounting Bracket w/ Indexing Pin for Cylindrical Sensors

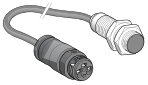


Diameter	Catalog No.
M6	XSZB165
M8	XSZB108
M12	XSZB112
M18	XSZB118
M30	XSZB130

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••U20


XS6••B1••L01B


XS6••B1••L01C

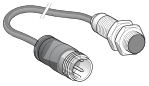

XS6••B1••L01G

Table 20.18: 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	Weight 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
		Remote M18 connector	XS618B1MAL01G	0.100	0.22
	NC	Precabled (2 m) *[1]*	XS618B1MBL2	0.100	0.22
		1/2"-20UNF connector	XS618B1MBU20	0.060	0.13
		Remote screw terminal connector	XS618B1MBL01B *[2]*	0.100	0.22
		Remote DIN 43650A connector	XS618B1MBL01C	0.100	0.22
		Remote M18 connector	XS618B1MBL01G	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
		Remote M18 connector	XS630B1MAL01G	0.205	0.45
	NC	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
		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	Weight 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 20.19: 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: XS612B1MA**L2** becomes XS612B1MA**L5** 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.

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XUV and XXV Sensors

Table 20.20: 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	**Catalog No.**
M8 Connector	XUVU06M3KCNM8
Precabled (2 m)	XUVU06M3KCNL2

Table 20.21: 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 20.22: Mounting Brackets



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

Table 20.23: Sensor Accessories



Teachable Pushbutton Accessory for Virtu Series
Catalog No.
XXZPB100



Python AC/DC Power Convertor
Catalog No.
XXZPM100M12

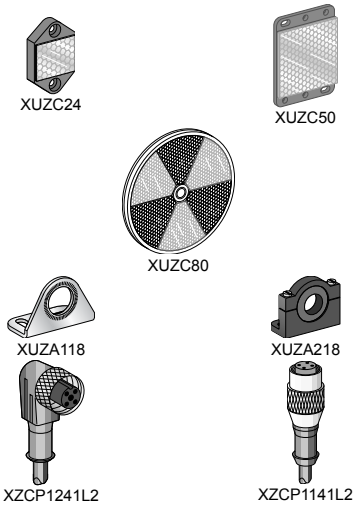


Table 20.24: Accessories

		mm	Catalog No.
Reflectors		24 x 21	XUZC24
		Ø 80	XUZC80
		50 x 50	XUZC50
		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

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

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VM Sensors

Table 20.25: 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 1 x 77.62 mm (0.709 x 3.06 in.)					
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

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30 MM Ultrasonic Sensors

Table 20.26: 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			PEI Resin		
Transducer	Glass Epoxy		Silicon Rubber or Fluorosilicone			Glass Epoxy		
Output Type			1 m / 2 m			8 m		
	Description	Catalog No.	Description		Catalog No.	Description	Catalog No.	
Proximity Output	PNP Sourcing N.O.	XX6V3A1PAM12	1 m	Connector	SM950A100000	Cable	SM900A800000	
	PNP Sourcing N.C.	XX6V3A1PBM12		Cable	SM900A100000			
	NPN Sinking N.O.	XX6V3A1NAM12	2 m	Connector	SM950A400000	Connector	SM950A800000	
	NPN Sinking N.C.	XX6V3A1NBM12		Cable	SM900A400000			
Dual-Level Pump In	Connector		Cable 1 m *[2]*		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 w/alarm		SM902A1560000	Pump-out latch w/alarm	SM902A8560000	
	PNP	XX2V3A1PGM12	Pump-out latch, w/setpoint		SM902A1760000	Pump-out latch, w/setpoint	SM902A8760000	
	NPN	XX2V3A1NGM12	Pump-in latch		SM902A110000	Pump-in latch	SM902A810000	
	Off on loss of echo; Off on power up		Pump-in latch w/alarm		SM902A1460000	Pump-in latch w/alarm	SM902A8460000	
	PNP	XX2V3A1PFM12	Pump-in latch, w/setpoint		SM902A1660000	Pump-in latch, w/setpoint	SM902A8660000	
	NPN	XX2V3A1NFM12	Dual setpoint		SM902A1260000	Dual setpoint	SM902A8260000	
Dual-Level Pump Out	Hold on loss of echo; Off on power up		Dual alarm		SM902A1360000	Dual alarm	SM902A8360000	
	PNP	XX2V3A1PJM12	Connector		PNP, NO	Connector	PNP, NO	
	NPN	XX2V3A1NJM12	Pump-out latch		SM952A100000	Pump-out latch	SM952A800000	
	Off on loss of echo; Off on power up		Pump-out latch w/alarm		SM952A1560000	Pump-out latch w/alarm	SM952A8560000	
	PNP	XX2V3A1PHM12	Pump-out latch, w/setpoint		SM952A1760000	Pump-out latch, w/setpoint	SM952A8760000	
	NPN	XX2V3A1NHM12	Pump-in latch		SM952A110000	Pump-in latch	SM952A810000	
			Pump-in latch w/alarm		SM952A1460000	Pump-in latch w/alarm	SM952A8460000	
			Pump-in latch, w/setpoint		SM952A1660000	Pump-in latch, w/setpoint	SM952A8660000	
			Dual setpoint		SM952A1260000	Dual setpoint	SM952A8260000	
			Dual alarm		SM952A1360000	Dual alarm	SM952A8360000	
Analog	Quick Disconnect		Cable 1 m *[2]*			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	SM906A88000	
	Direct output	XX9V3A1D4M12	Direct slope		SM906A110000	Direct slope	SM906A81000	
	Inverse output	XX9V3A1E4M12	Inverse slope		SM906A100000	Inverse slope	SM906A80000	
	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	SM906A80000	
	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	SM956A85000	
	Inverse output	XX9V3A1H3M12	Direct slope		SM956A110000	Direct slope	SM956A81000	
	0–10 Vdc		Inverse slope		SM956A100000	Inverse slope	SM956A50000	
	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 the 2 m version, change model from SMxxx**A1**xxxxx to SMxxx**A4**xxxxx.

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