

Water- and Environment-resistant FA Connectors Save Wiring and Maintenance Effort

- Compact FA connectors meet IP67 requirements and ensure a 94V-0 fire retardant rating.
- A wide array of connectors makes a wiring system more modular, simplifies maintenance, and reduces downtime.
- Connectors with Cables and Connector Assemblies are available.
- Three types of Connector Assembly: Crimping, soldering, and screw-on.
- Connectors with Cables are UL certified.
- Based on IEC61076-2-101 (IEC60947-5-2) and NECA 4202.



Refer to *Safety Precautions* on page 34.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Model Number Legend

Connectors with Cables Model Number Legend

Connector	Cable specifications	XS2: M12 Screw Connection			XS5: One-touch Smartclick Connection* (compatible with M12 connectors)			
		Cable length (m)	Model	Reference page	Cable length (m)	Model		
Connectors on both cable ends	Fire-retardant, PVC robot cable	0.5	XS2W-D421-B81-F	5	0.5	XS5W-D421-B81-F		
		1	XS2W-D421-C81-F		1	XS5W-D421-C81-F		
		2	XS2W-D421-D81-F		2	XS5W-D421-D81-F		
		3	XS2W-D421-E81-F		3	XS5W-D421-E81-F		
		4	XS2W-D421-F81-F		4	XS5W-D421-F81-F		
		5	XS2W-D421-G81-F		5	XS5W-D421-G81-F		
		10	XS2W-D421-J81-F		10	XS5W-D421-J81-F		
		15	XS2W-D421-K81-F		15	XS5W-D421-K81-F		
	Spatter-resistant cable	2	XS2W-D421-D81-SA	2	XS5W-D421-D81-SA			
		5	XS2W-D421-G81-SA	5	XS5W-D421-G81-SA			
		Connector on one cable end (Socket)	Fire-retardant, PVC robot cable	1	XS2F-D421-C80-F	7	1	XS5F-D421-C80-F
				2	XS2F-D421-D80-F		2	XS5F-D421-D80-F
				3	XS2F-D421-E80-F		3	XS5F-D421-E80-F
				5	XS2F-D421-G80-F		5	XS5F-D421-G80-F
10	XS2F-D421-J80-F			10	XS5F-D421-J80-F			
15	XS2F-D421-K80-F			15	XS5F-D421-K80-F			
Spatter-resistant cable	2	XS2F-D421-D80-SA	2	XS5F-D421-D80-SA				
	5	XS2F-D421-G80-SA	5	XS5F-D421-G80-SA				
	Connector on one cable end (Plug)	Fire-retardant, PVC robot cable	0.3	XS2H-D421-A80-F	14	0.3	XS5H-D421-A80-F	
			0.5	XS2H-D421-B80-F		0.5	XS5H-D421-B80-F	
			1	XS2H-D421-C80-F		1	XS5H-D421-C80-F	
2			XS2H-D421-D80-F	2		XS5H-D421-D80-F		
3			—	3		XS5H-D421-E80-F		
5			XS2H-D421-G80-F	5		XS5H-D421-G80-F		
Spatter-resistant cable		0.3	XS2H-D421-A80-SA	0.3		XS5H-D421-A80-SA		
		1	XS2H-D421-C80-SA	1		XS5H-D421-C80-SA		

*For details, refer to the data sheet of the XS5 Round Water-resistant Connectors (M12 Smartclick).

Note 1. Only DC, straight, 4-core types, and common cable specifications are shown above. Refer to the relevant pages for other products.

2. Other than the M12 sizes introduced above, M8-sized (XS3) products are also available.

For details, refer to the data sheet of the XS3 Round Water-resistant Connectors (M8/S8).

XS2: M12 Screw Connection



XS5: One-touch Smartclick Connection* (compatible with M12 screws)

Note: Screw connections will be made if connecting with a screw type.



Turn approx. 1/8 of a turn to connect Connections can be checked using markings

*For details, refer to the data sheet of the XS5 Round Water-resistant Connectors (M12 Smartclick).

Ratings and Specifications

Rated current	4 A
Rated voltage	250 VAC/VDC
Contact resistance (Connector)	40 mΩ max. (20 m V max. and 100 mA max.)
Insulation resistance	1,000 MΩ min. (at 500 VDC)
Dielectric strength (Connector)	1,500 VAC for 1 min (leakage current: 1 mA max.)
Degree of protection	IP67 (IEC60529)
Insertion tolerance	200 times
Cable holding strength	Cable diameter: 6 mm 98 N/15 s 4 to 5 mm 49 N/15 s 3 mm 29 N/15 s
Ambient operating temperature range	-25 to 70°C *
Ambient humidity range	20% to 85%

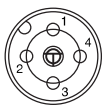
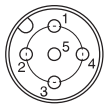
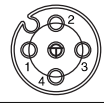
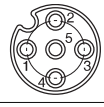
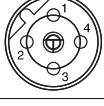
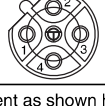
*Use the robot cable within a temperature range between 0°C and 70°C to prevent the wires inside the cable from being broken when bending it.

Materials and Finish

Item	Model	XS2F/H/W	XS2F-LED	XS2M/R/P	XS2C/G
Contacts		Copper alloy/Gold plating			Brass
Thread bracket		Copper alloy/Nickel plated *			
Pin block		PBT resin		PA resin	PBT resin
O-ring		Rubber			
Cover		PBT resin	TPU resin	—	PBT resin
Cable	Fire-retardant, PVC robot cable	UL AWM2464 CL3, 6 mm dia. AWG20 Sheath color: light gray	—	—	—
	Non-polar DC Connectors with Standard PVC cable	6 mm dia. AWG20 Sheath color: light gray	—	—	—
	E2E models with conventional connector pin with Fire-retardant, PVC robot cable	UL AWM2464 CL3, 6 mm dia. AWG20 Sheath color: light gray	—	—	—
	Standard PVC cable up to 105°C	6 mm dia. AWG20 Sheath color: light gray	—	—	—
	Spatter-resistant cable	6.6 mm dia. AWG20 Sheath color: blue	—	—	—
	Standard PVC cable (XS2F-LED)	—	UL AWM2464 5.0 mm dia. (3 conductors) 5.4 mm dia. (4 conductors) 0.34 mm ² Sheath color: black	—	—

*The T-joint of the XS2R is aluminum/white.

Pin Arrangement (Engaged Side)

Item	No. of poles	4 poles	5 poles
DC type	Male (plug) contacts		
	Female (socket) contacts		
AC type	Male (plug) contacts		---
	Female (socket) contacts		---

Note: The AC and DC mating section forms are different as shown here and therefore cannot be connected together.

Connections

Connection Combinations

OMRON model No.		M12 Plug Connectors	Smartclick Plug Connectors
		XS2H, XS2G, XS2W (plug side), XS2R (plug side), XS2M	XS5H, XS5G, XS5W (plug side), XS5R (plug side), XS5M
M12 Socket Connectors	XS2F, XS2C, XS2W (socket side), XS2R (socket side), XS2P	○	○
Smartclick Socket Connectors	XS5F, XS5C, XS5W (socket side), XS5R (socket side), XS5P	○	⊗

⊗: Connected by twisting.

○: Connected by screwing.

Note: The XS□M and XS□P cannot mate with each other.

XS2F Socket on One Cable End

Model Number Structure

Model Number Legend

Use this model number legend to identify products from their model number. Use this model number legend to identify products from their model number. When ordering, use a model number from the table in *Ordering Information*.

XS2F-□□2□-□□0-□□

1 2 3 4 5 6 7 8 9

1. Type

F: Connector with cables, socket on one cable end

2. AC/DC (Mating Section Form)

A: For AC
D: For DC
E: For DC, stainless steel lock

3. Connector Poles

4: 4 poles
5: 5 poles

4. Contact Plating

2: Gold plating

5. Cable Connection Direction

1: Straight
2: Right-angle

6. Cable Length

A : 0.3 m
B : 0.5 m
C : 1 m
D : 2 m
E : 3 m
F : 4 m
G : 5 m
H : 7 m
J : 10 m
K : 15 m
L : 20 m

Note: Only the 2 m (D), 5 m (G) and 10 m (J) cables are available for cables with 5 poles.

7. Connections

(Numbers inside circles are terminal numbers)

A : ① Brown, ② ---, ③ ---, ④ Blue (for DC)
B : ① ---, ② ---, ③ Brown, ④ Blue (for AC)
C : ① Brown, ② ---, ③ Blue, ④ Black
D : ① ---, ② ---, ③ Blue, ④ Brown
8 : ① Brown, ② White, ③ Blue, ④ Black (for DC)
9 : ① Brown, ② White, ③ Blue, ④ Black (for AC)
G : ① Brown, ② ---, ③ Blue, ④ Black, ⑤ Gray

8. Connectors on One End/Both Ends

0: One end

9. Cable Specifications

F: Fire-retardant, PVC robot cable
E: Heat-resistant cable up to 105°C
SA: Spatter-resistant cable
A: Standard PVC cable
Note: E type and SA type is a 4-core cable.

Designations for Non-polar DC
(For Limit Switches and Sensors)

6. Cable Length

3: 2 m
4: 5 m

7. Connections

(Numbers inside circles are terminal numbers)

1: ① ---, ② ---, ③ Black, ④ White

8. Connectors on One End/Both Ends

0: One end

9. Cable Specifications

Not designated.

Note: DC non-polarity models have different specific codes. (6, 7 and 9)

XS2F Socket on One Cable End

Ordering Information

Cable specifications	Cable connection direction	No. of cable cores	Cable diameter (mm)	Cable core cross-sectional area (mm ²)	Cable length L (m)	DC	AC	UL	
						Model	Model		
Fire-retardant, PVC robot cable	Straight	2	6.0 dia.	0.5	1	XS2F-D421-CA0-F	XS2F-A421-CB0-F	UL 2238 certified (File No. E207683)	
		3				XS2F-D421-CC0-F	—		
		4				XS2F-D421-C80-F	XS2F-A421-C90-F		
		2			2	XS2F-D421-DA0-F	XS2F-A421-DB0-F		
		3				XS2F-D421-DC0-F	—		
		4				XS2F-D421-D80-F	XS2F-A421-D90-F		
		4			3	XS2F-D421-E80-F	—		
		2				5	XS2F-D421-GA0-F		XS2F-A421-GB0-F
		3					XS2F-D421-GC0-F		—
		4			XS2F-D421-G80-F		XS2F-A421-G90-F		
	2	10			XS2F-D421-JA0-F	XS2F-A421-JB0-F			
	3				XS2F-D421-JC0-F	—			
	4				XS2F-D421-J80-F	XS2F-A421-J90-F			
	Right-angle	2			2	1	XS2F-D422-CA0-F		XS2F-A422-CB0-F
					3		XS2F-D422-CC0-F		—
					4		XS2F-D422-C80-F		—
		3			2	XS2F-D422-DA0-F	XS2F-A422-DB0-F		
						4	XS2F-D422-DC0-F		—
						4	XS2F-D422-D80-F		—
		4			3	XS2F-D422-E80-F	—		
5			XS2F-D422-GA0-F	XS2F-A422-GB0-F					
			3	XS2F-D422-GC0-F		—			
			4	XS2F-D422-G80-F		—			
2	10	XS2F-D422-JA0-F	XS2F-A422-JB0-F						
		3	XS2F-D422-JC0-F	—					
		4	XS2F-D422-J80-F	—					
Non-polar DC Connectors with Standard PVC cable	Straight	2	6.6 dia.	0.3	2	XS2F-D421-310	XS2F-A421-310	—	
		2			5	XS2F-D421-410	XS2F-A421-410		
	Right-angle	2			2	XS2F-D422-310	—		
		2			5	XS2F-D422-410	XS2F-A422-410		
E2E models with conventional connector pin with Fire-retardant, PVC robot cable	Straight	2	6.0 dia.	0.3	2	XS2F-D421-DD0	—	—	
		2			5	XS2F-D421-GD0	—		
	Right-angle	2			2	XS2F-D422-DD0	—		
		2			5	XS2F-D422-GD0	—		
Heat-resistant cable up to 105°C *	Straight	4	6.6 dia.	0.3	2	XS2F-E421-D80-E	—	—	
					5	XS2F-E421-G80-E	—		
	Right-angle				2	2	XS2F-E422-D80-E		—
					5	5	XS2F-E422-G80-E		—
Spatter-resistant cable	Straight	4	6.6 dia.	0.3	2	XS2F-D421-D80-SA	—	—	
					5	5	XS2F-D421-G80-SA		—
Standard PVC cable	Straight	5	6.0 dia.	0.3	2	XS2F-D521-DG0-A	—	—	
					5	5	XS2F-D521-GG0-A		—
	Right-angle				2	10	XS2F-D521-JG0-A		—
					5	2	XS2F-D522-DG0-A		—
					5	5	XS2F-D522-GG0-A	—	

Note: Ask your OMRON representative about other cable lengths.

*The heat-resistant fixture material is SUS316L stainless steel without surface treatment.

Dimensions

Straight Connectors

Fire-retardant, PVC robot cable

XS2F-D421-□□0-F

XS2F-A421-□□0-F

Non-polar DC Connectors with Standard PVC cable

XS2F-D421-□□0

XS2F-A421-□□0

E2E models with conventional connector pin with Fire-retardant, PVC robot cable

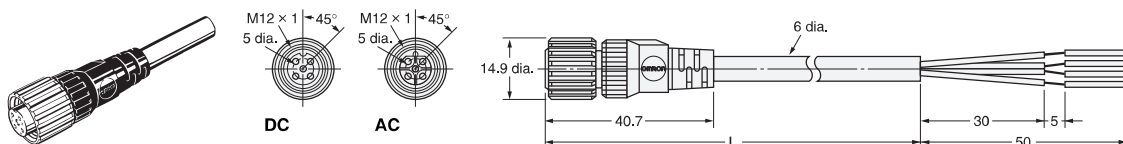
XS2F-D421-□□0

Heat-resistant cable up to 105°C

XS2F-E421-□80-E

Spatter-resistant cable

XS2F-D421-□80-SA



Right-angle Connectors

Fire-retardant, PVC robot cable

XS2F-D422-□□0-F

XS2F-A422-□□0-F

Non-polar DC Connectors with Standard PVC cable

XS2F-D422-□□0

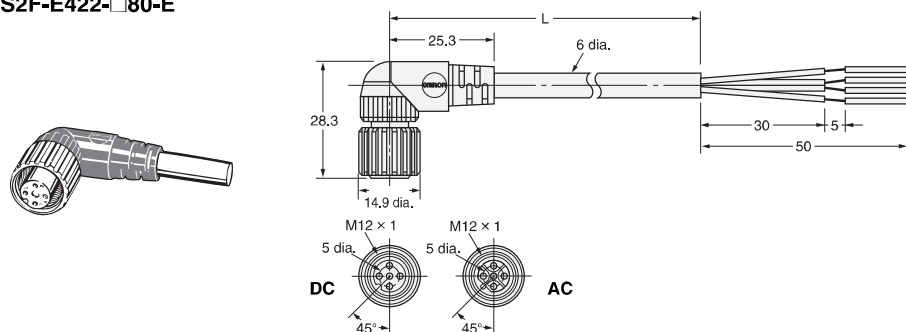
XS2F-A422-□□0

E2E models with conventional connector pin with Fire-retardant, PVC robot cable

XS2F-D422-□□0

Heat-resistant cable up to 105°C

XS2F-E422-□80-E



Wiring Diagram

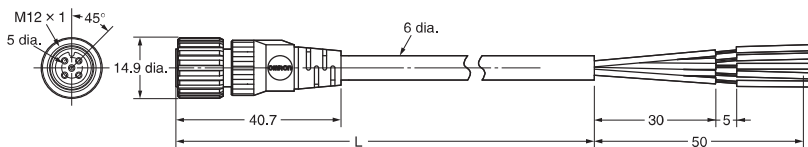
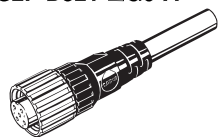
		Two-core	Three-core	Four-core
Fire-retardant, PVC robot cable	XS2F-□42□-□□0-F			
Spatter-resistant cable *	XS2F-D421-□80-SA			
Heat-resistant cable up to 105°C *	XS2F-E42□-□80-E			
Non-polar DC Connectors with Standard PVC cable	XS2F-□42□-□□0		—	—
E2E models with conventional connector pin with Fire-retardant, PVC robot cable	XS2F-D42□-□D0		—	—

*Spatter-resistant Cables and Heat-resistant Cables (105°C) are available only for four cores and DC.

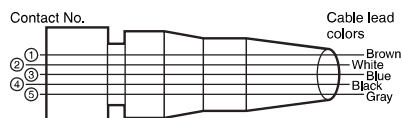
Dimensions

Straight
Standard PVC cable
XS2F-D521-□G0-A

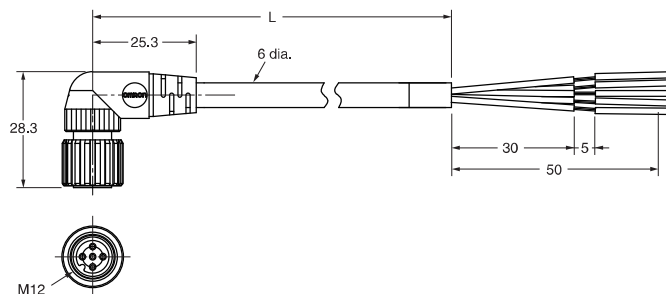
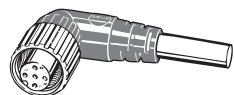
Note:
 Use the XS2H-D521-□G0-A in combination
 with the XS2F-D521-□G0-A.



Wiring Diagram



Right-angle
Standard PVC cable
XS2F-D522-□G0-A



For details on connecting with E2E Proximity Sensors, refer to E2E Small-diameter Proximity Sensor Data Sheet (Cat. No.: SCEC-044).