Chipsmall

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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Round Water-resistant Connectors (M12)
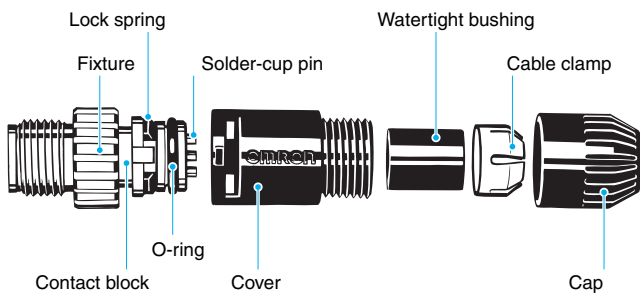
XS2

Water- and Environment-resistive 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 (IEC 60947-5-2) and NECA 4202.

⚠ Refer to *Safety Precautions* on page 26.

Construction (XS2G Soldering Connector Plug Assemblies)

Lock spring
Fixture
Watertight bushing
Solder-cup pin
Cable clamp
O-ring
Contact block
Cover
Cap

Ratings and Specifications

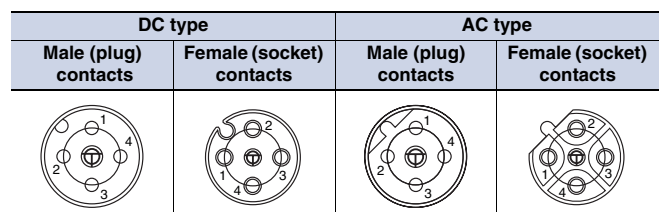|	
Rated current	3 A
Rated voltage	For DC 125 VDC, for AC 250 VAC
Contact resistance (Connector)	40 mΩ max. (20 mV max., 100 mA max.)
Insulation resistance	1,000 MΩ min. (at 500 VDC)
Dielectric strength (Connector)	1,500 VAC for 1 min (leakage current: 1 mA max.).
Degree of protection	IP67 (IEC529)
Insertion tolerance	200 times min.
Assembled fixture strength	Tensile: 98 N/15 s Torsion: 0.98 N·m/15 s

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	Operating: −25°C to 70°C
Ambient humidity range	20% to 85%

Recommended Cables

Cable outer diameter		Core sizes		
		Crimping models	Soldering models	Screw-on models
8 mm	7 to 8 mm	---	---	0.18 to 0.75 mm^2
7 mm	6 to 8 mm			
6 mm	5 to 6 mm	Two types of contacts are available. • 0.18 to 0.3 mm^2 • 0.5 to 0.75 mm^2	0.5 mm^2 max.	
4 mm	4 to 5 mm			
3 mm	3 to 4 mm			

Materials and Finish

Item		XS2F/H/W	XS2M/R/P	XS2C/G
Contacts	Materials	Phosphor bronze	Brass	
	Finish	Nickel base, 0.4-μm gold plating		
Thread bracket	Materials	Brass *		
	Finish	Nickel plated *		
Pin block	Materials	PBT resin (UL94V-0)	PA resin (UL94V-0)	PBT resin (UL94V-0)
	Finish	For DC: light gray; for AC: dark gray		
O-ring/rubber bushing		Rubber		
Cover		Polyester elastomer	---	PBT resin (UL94V-0)
Cap		---	---	PBT resin (UL94V-0)
Cable clamp		---	---	PA resin (UL94V-0)
Pin clamp		---	---	PBT resin (UL94V-0)
Lock spring		---	---	LCP resin (UL94V-0)
Watertight bushing		---	---	Rubber
Ring		---	---	Steel
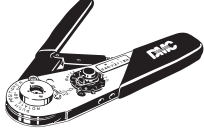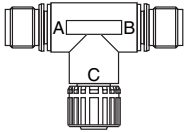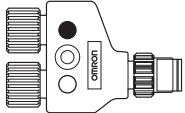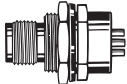
*The T-joint of the XS2R is aluminum/white.

Socket Appearance

DC type		AC type	
Male (plug) contacts	Female (socket) contacts	Male (plug) contacts	Female (socket) contacts

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

List of Products

Name	Model		Appearance
1. Connectors attached to Cable	XS2W Sockets and Plugs on Cable Ends		
	XS2F Sockets on One Cable End		
	XS2H Plugs on One Cable End		
2. Connector Assemblies (Crimping, Soldering, or Screw-on) **Used to enable using connectors for sensor cables and relay cables.**	XS2G Plug Assemblies		
	XS2C Socket Assemblies		
	XY2F Crimp Tool (for Crimping Connectors)		
	XW4Z Screwdriver (for Screw-on Connectors)		
3. Terminal Box Connectors **Used to enable using connectors for terminal boxes.**	XS2P Panel-mounting Sockets		
4. T-Joints and Y-Joints **Used for branching and for daisy-chain connections.**	XS2R T-Joint/Y-Joint Plug/Socket Connectors	T-Joints	
		Y-Joints	
5. Sensor Connector Assemblies **Used to enable using connectors in sensors.**	XS2M Plugs	Embedded Plugs with Screw Threads	
		Embedded Plugs with No Screw Threads	
6. Panel-mounting Connectors **Used to enable using I/O box connectors mounted to panels.**	XS2M Plugs	Flange-mounting Plugs	
		Screw-mounting Plugs	

XS2W Sockets and Plugs on Cable Ends

Model Number Legend

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

XS2W-D□2□-□□1-□
   1 2 3 4 5 6 7 8 9

1. Type

W: Connectors connected to cable, socket and plug on cable ends

2. AC/DC (Mating Section Form)

D: For DC

3. Connector Poles

4: 4 poles
5: 5 poles

4. Contact Plating

2: 0.4-μm gold plating

5. Cable Connection Direction

1: Straight/straight
2: L-shaped/L-shaped
3: Straight (XS2F)/L-shaped (XS2H)
4: L-shaped (XS2F)/straight (XS2H)

6. Cable Length

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

7. Connections

Pin No.					Terminal No.				
①	②	③	④		①	②	③	④	⑤
8: Brown	White	Blue	Black (for DC)		G: Brown	White	Blue	Black	Gray

8. Connectors on One End/Both Ends

1: Both ends

9. Cable Specifications

A: Standard cable
R: Vibration-proof robot cable (straight/straight only)
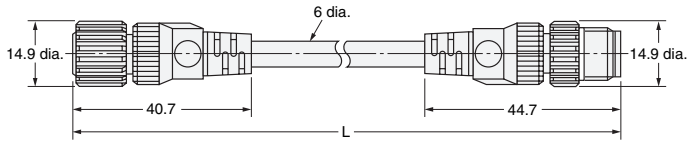F: Fire-retardant, vibration-proof cable

XS2W Sockets and Plugs on Cable Ends

● **Connectors with Standard Cable**   **XS2W-D42□-□81-A**
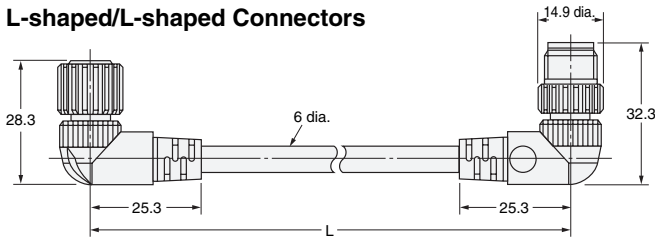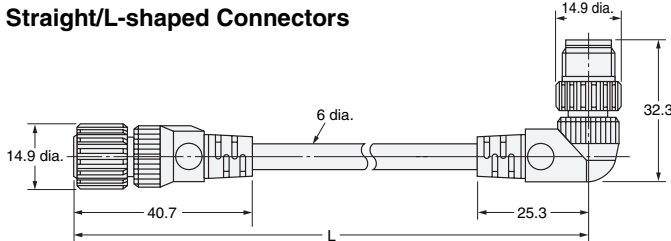● **Connectors with Vibration-proof Robot Cable (Straight/Straight)** **XS2W-D421-□81-R**

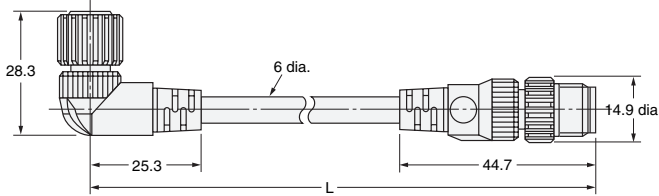## Dimensions

(Unit: mm)

Straight/Straight Connectors

14.9 dia.   6 dia.   14.9 dia.
40.7   44.7
L

L-shaped/L-shaped Connectors

14.9 dia.
28.3   6 dia.   32.3
25.3   25.3
L

Straight/L-shaped Connectors

14.9 dia.
6 dia.   32.3
14.9 dia.
40.7   25.3
L

L-shaped/Straight Connectors

28.3   6 dia.
14.9 dia.
25.3   44.7
L

Wiring Diagram for 4 Cores

Contact No.
① ② ③ ④

Cable lead colors
① Brown
② White
③ Blue
④ Black
(DC)
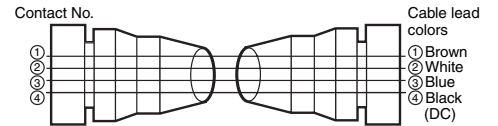
Wiring Diagram for 5 Cores
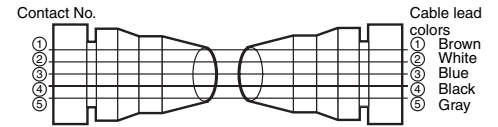
Contact No.
① ② ③ ④ ⑤

Cable lead colors
① Brown
② White
③ Blue
④ Black
⑤ Gray

Ordering Information

Cable type	Cable connection direction	No. of cable cores	Cable core cross-sectional area (mm²)	Cable length (m)	DC		UL-listed
					Model	Minimum order	
Standard cable	Straight/Straight	4	0.5	1	XS2W-D421-C81-A	10	Yes
				2	XS2W-D421-D81-A	10	
				5	XS2W-D421-G81-A	5	
				10	XS2W-D421-J81-A	5	
	L-shaped/L-shaped			2	XS2W-D422-D81-A	10	
				5	XS2W-D422-G81-A	5	
	Straight/L-shaped			2	XS2W-D423-D81-A	10	
				5	XS2W-D423-G81-A	5	
	L-shaped/Straight			2	XS2W-D424-D81-A	10	
				5	XS2W-D424-G81-A	5	
Vibration-proof robot cable	Straight/Straight			1	XS2W-D421-C81-R	10	
				2	XS2W-D421-D81-R	10	
				5	XS2W-D421-G81-R	5	
				10	XS2W-D421-J81-R	5	

Note: Ask your OMRON representative about other cable lengths, and about 5-core cables.

XS2F Socket on One Cable End

Model Number Legend

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 connected to cable, 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: 0.4-μm gold plating

5. Cable Connection Direction

1: Straight
2: L-shaped

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
Only the 2 m (D) and 5 m (G) cables are available for cables with 5 poles.

7. Connections

Terminal No.					Terminal No.					
①	②	③	④		①	②	③	④	⑤
A: Brown	---	---	Blue (for DC)		G: Brown	White	Blue	Black	Gray
B: ---	---	Brown	Blue (for DC)						
C: Brown	---	Blue	Black						
D: ---	---	Blue	Brown						
8: Brown	White	Blue	Black (for DC)						
9: Brown	White	Blue	Black (for AC)						

8. Connectors on One End/Both Ends

0: One end

9. Cable Specifications

A: Standard cable
R: Vibration-proof robot cable
F: Fire-retardant, vibration-proof cable
E: Heat-resistant cable up to 105°C
R type is a 2- or 4-core cable. F or E type is a 4-core cable.

Designations for DC Polarity (For Limit Switches and Sensors)

6. Cable Length

3: 2 m
4: 5 m

7. Connections

Pin No.			
①	②	③	④
1: ---	---	Black	White

8. Connectors on One End/Both Ends

0: One end

9. Cable Specifications

Not designated.

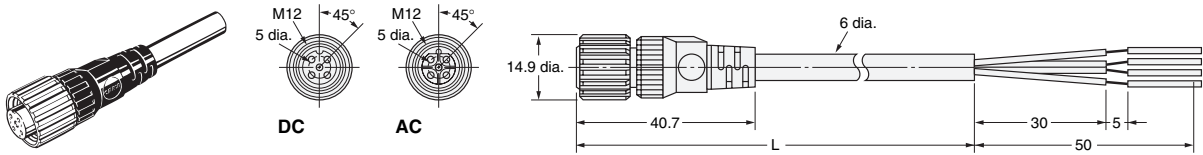Note: Model number standards are different for items 6, 7, and 9 for non-polar connectors.

XS2F Sockets on One Cable End

● **Connectors with Standard Cable   XS2F-□42□-□□0-A**
● **Connectors with Vibration-proof Robot Cable   XS2F-□42□-□□0-R**
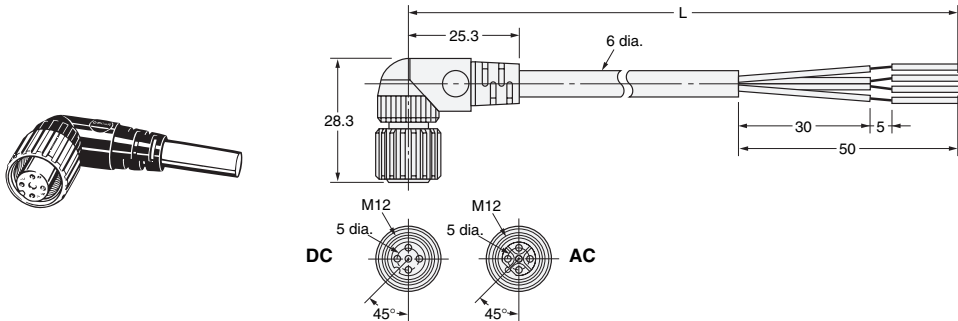● **Non-polar DC Connectors with Standard Cable   XS2F-□42□-□□0**

Dimensions

(Unit: mm)

Straight Connectors

M12 45°   M12 45°
5 dia.   5 dia.
DC   **AC**

14.9 dia.
40.7
L
6 dia.
30   5
50

L-shaped Connectors

L
25.3
6 dia.
28.3
30   5
50

M12   M12
5 dia.   5 dia.
DC   **AC**
45°   45°

Wiring Diagram

		Two-core model	Three-core model	Four-core model
Standard cable	XS2F-□42□ -□□0-A	Contact No. ① ② ③ ④ — Cable lead colors — Brown — Blue (DC)	Contact No. ① ② ③ ④ — Cable lead colors — Brown — Blue — Black (DC)	Contact No. ① ② ③ ④ — Cable lead colors — Brown — White — Blue — Black (DC/AC)
Vibration-proof robot cable	XS2F-□42□ -□□0-R	Contact No. ① ② ③ ④ — Cable lead colors — Brown — Blue (AC)		
Standard cable (non-polar DC)	XS2F-□42□ -□□0	Contact No. ① ② ③ ④ — Cable lead colors — Black — White	---	---
Standard cable (E2E models with conventional connector pin)	XS2F-D42□ -□D0	Contact No. ① ② ③ ④ — Cable lead colors — Blue — Brown	---	---

Ordering Information

Cable type	Cable connection direction	No. of cable cores	No. of cable cores	Cable length (m)	DC Model	AC Model	Minimum order	UL-listed
Standard cable	Straight	2		1	XS2F-D421-CA0-A	XS2F-A421-CB0-A	10	Yes
		3			XS2F-D421-CC0-A	---		
		4			XS2F-D421-C80-A	XS2F-A421-C90-A		
		2		2	XS2F-D421-DA0-A	XS2F-A421-DB0-A		
		3			XS2F-D421-DC0-A	---		
		4			XS2F-D421-D80-A	XS2F-A421-D90-A		
		2		5	XS2F-D421-GA0-A	XS2F-A421-GB0-A	5	
		3			XS2F-D421-GC0-A	---		
		4			XS2F-D421-G80-A	XS2F-A421-G90-A		
		2		10	XS2F-D421-JA0-A	XS2F-A421-JB0-A		
		3			XS2F-D421-JC0-A	---		
		4			XS2F-D421-J80-A	XS2F-A421-J90-A		
	L-shaped	2		1	XS2F-D422-CA0-A	XS2F-A422-CB0-A	10	
		3			XS2F-D422-CC0-A	---		
		4			XS2F-D422-C80-A	---		
		2		2	XS2F-D422-DA0-A	XS2F-A422-DB0-A		
		3			XS2F-D422-DC0-A	---		
		4			XS2F-D422-D80-A	---		
		2		5	XS2F-D422-GA0-A	XS2F-A422-GB0-A	5	
		3			XS2F-D422-GC0-A	---		
		4			XS2F-D422-G80-A	---		
		2		10	XS2F-D422-JA0-A	XS2F-A422-JB0-A		
		3			XS2F-D422-JC0-A	---		
		4			XS2F-D422-J80-A	---		
Vibration-proof robot cable	Straight	2	0.5	1	XS2F-D421-CA0-R	XS2F-A421-CB0-R	10	
		4			XS2F-D421-C80-R	XS2F-A421-C90-R		
		2		2	XS2F-D421-DA0-R	XS2F-A421-DB0-R		
		4			XS2F-D421-D80-R	XS2F-A421-D90-R		
		2		5	XS2F-D421-GA0-R	XS2F-A421-GB0-R	5	
		4			XS2F-D421-G80-R	XS2F-A421-G90-R		
		2		10	XS2F-D421-JA0-R	XS2F-A421-JB0-R		
		4			XS2F-D421-J80-R	XS2F-A421-J90-R		
	L-shaped	2		1	XS2F-D422-CA0-R	XS2F-A422-CB0-R	10	
		4			XS2F-D422-C80-R	---		
		2		2	XS2F-D422-DA0-R	XS2F-A422-DB0-R		
		4			XS2F-D422-D80-R	---		
		2		5	XS2F-D422-GA0-R	XS2F-A422-GB0-R	5	
		4			XS2F-D422-G80-R	---		
		2		10	XS2F-D422-JA0-R	XS2F-A422-JB0-R		
		4			XS2F-D422-J80-R	---		
Standard cable (non-polar)	Straight	2		2	XS2F-D421-310	XS2F-A421-310	10	---
		2		5	XS2F-D421-410	XS2F-A421-410	5	
	L-shaped	2		2	XS2F-D422-310	XS2F-A422-310	10	
		2		5	XS2F-D422-410	XS2F-A422-410	5	
Standard cable (E2E models with conventional connector pin)	Straight	2		2	XS2F-D421-DD0	---	10	---
		2		5	XS2F-D421-GD0	---	5	
	L-shaped	2		2	XS2F-D422-DD0	---	10	
		2		5	XS2F-D422-GD0	---	5	
Heat-resistant cable *	Straight	4		2	XS2F-E421-D80-E	---	10	---
				5	XS2F-E421-G80-E	---	5	
	L-shaped			2	XS2F-E422-D80-E	---	10	
				5	XS2F-E422-G80-E	---	5	

Note: Ask your OMRON representative about other cable lengths.
*The heat-resistant fixture material is SUS316L stainless steel without surface treatment.

Applicable Proximity Sensors

Refer to page the *E2E Datasheet* for information on connecting to E2E Proximity Sensors
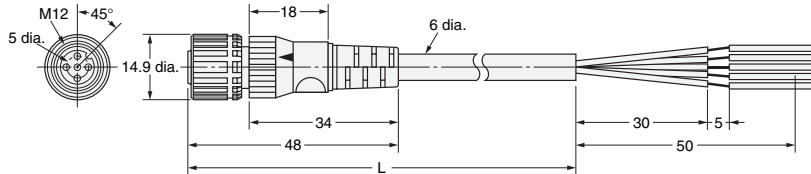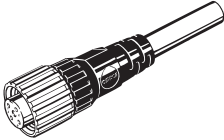
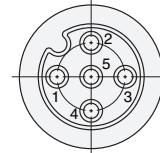## ● 5-pole Connectors for DC   XS2F-D521-□G0-A
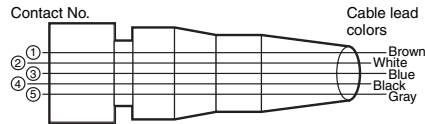
Dimensions

(Unit: mm)

Straight Connectors

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

M12   45°
5 dia.
14.9 dia.
18
6 dia.
34
48
L
30
5
50

Wiring Diagram

Contact No.
Cable lead colors
① Brown
② White
③ Blue
④ Black
⑤ Gray

Pin Arrangements (Engagement Side)

Ordering Information

No. of cable cores	Cable core cross-sectional area (mm²)	Cable length (m)	DC	
			Model	Minimum order
5	0.3 mm²	2	**XS2F-D521-DG0-A**	10
		5	**XS2F-D521-GG0-A**	5

Note: Ask your OMRON representative about other cable lengths.

XS2H Plugs on One Cable End

Model Number Legend

XS2H-□□21-□□0-□
      1 2 3 4 5 6 7 8 9

1. Type

H: Connector connected to cable, plug on one cable end

2. AC/DC

A: For AC
D: For DC

3. Connector Poles

4: 4 poles
5: 5 poles

4. Contact Plating

2: 0.4-μm gold plating

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

5. Cable Connection Direction

1: Straight

6. Cable Length

A: 0.3 m
B: 0.5 m
C: 1 m
D: 2 m
G: 5 m

7. Connections

Terminal No.	①	②	③	④
8:	Brown	White	Blue	Black (for DC)
9:	Brown	White	Blue	Black (for AC)

Terminal No.	①	②	③	④
A:	Brown	---	---	Blue (for DC)
B:	---	---	Brown	Blue (for AC)
C:	Brown	---	Blue	Black (for DC)

Terminal No.	①	②	③	④	⑤
G:	Brown	White	Blue	Black	Gray

8. Connectors on One End/Both Ends

0: One end

9. Cable Specifications

A: Standard cable
F: Fire-retardant, vibration-proof cable
R: Vibration-proof robot cable
R type is a 2 or 4-core cable. F type is a 4-core cable.

XS2H Plugs on One Cable End

● Connectors on Standard Cable   XS2H-□421-□□0-A

Dimensions
(Unit: mm)

Straight Connectors

5 dia. 45°   5 dia. 45°

14.9 dia.

DC   **AC**

44.7

6 dia.

30   5

L

50

Wiring Diagram

Contact No.
①②③④
Cable lead colors
Brown
Blue (DC)

Contact No.
①②③④
Cable lead colors
Brown
Blue (AC)

Two-core Model

Contact No.
①②③④
Cable lead colors
Brown
Blue
Black (DC)

Three-core Model

Contact No.
①②③④
Cable lead colors
Brown
White
Blue
Black (DC/AC)

Four-core Model
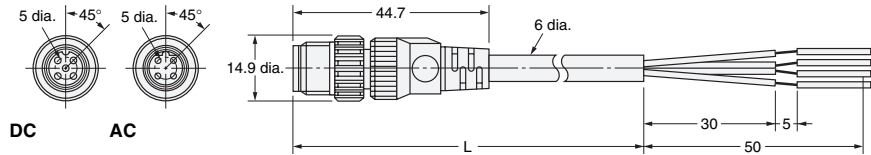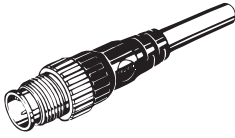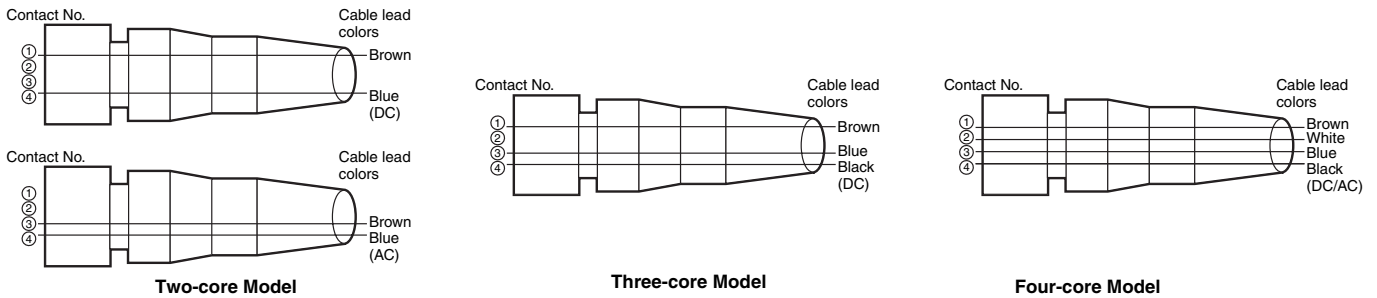
● Connectors on DC Cable (Five Poles)   XS2H-D521-□G0-A (for DC)

Dimensions
(Unit: mm)

Straight Connectors

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

5 dia. 45°   M12   18

16 dia.

34

52

L

6 dia.

30   5

50

Wiring diagram

Contact No.
①②③④⑤
Cable lead colors
Brown
White
Blue
Black
Gray

Five-core Model
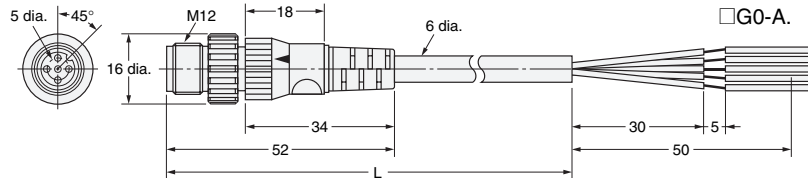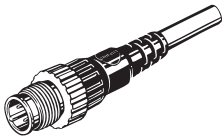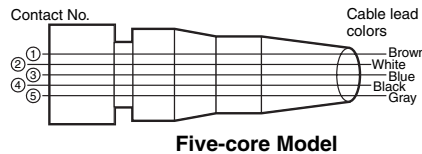
Pin Arrangements (Engagement Side)
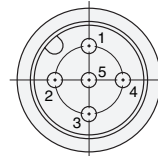
Ordering Information

No. of connector poles	Cable connection direction	No. of cable cores	Cable core cross-sectional area	Cable length (m)	DC Model	AC Model	Minimum order	UL-listed
4	Straight	2	0.5 mm²	0.3	XS2H-D421-AA0-A	XS2H-A421-AB0-A	10	Yes
		3			XS2H-D421-AC0-A	---		
		4			XS2H-D421-A80-A	XS2H-A421-A90-A		
		2		1	XS2H-D421-CA0-A	XS2H-A421-CB0-A		
		3			XS2H-D421-CC0-A	---		
		4			XS2H-D421-C80-A	XS2H-A421-C90-A		
5		5	0.3 mm²	0.3	XS2H-D521-AG0-A	---		---
				1	XS2H-D521-CG0-A	---		

XS2□ Sensor I/O Connectors on Cables (8-pole)

Ordering Information

Connector type	Cable connection direction	Number of cores	Cable length (m)	Model
Panel-mounting socket	---	---	---	XS2P-D821-2
				XS2P-D822-2
Panel-mounting plug				XS2M-D824-4
Plug on one cable end	Straight	8	0.3	XS2H-D821-AH0-C
			1	XS2H-D821-CH0-C
Socket on one cable end			2	XS2F-D821-DH0-C
			5	XS2F-D821-GH0-C
Plug and socket on cable ends			2	XS2W-D821-DH1-C
			5	XS2W-D821-GH1-C

Pin Numbers and Cable Lead Colors

	Pin number							
XS2F/XS2H/XS2W cable lead colors	1	2	3	4	5	6	7	8
	White	Brown	Green	Yellow	Gray	Pink	Blue	Shield

Ratings and Characteristics

Rated current	1.5 A
Rated voltage	36 VDC
Contact resistance	40 MΩ max. (at 20 mVDC max. and 100 mA max.)
Insulation resistance	1,000 MΩ min. (at 500 VDC)
Dielectric strength	1,000 VAC for 1 min (leakage current: 1 mA max.)
Degree of protection	IP67
Insertion durability	200 times min.
Operating temperature	−25 to 70°C

Materials and Finish

Contacts	Brass/nickel base, 0.4-μm goldplating
Bracket, body, M16 nuts	Brass/nickel plated
Pin block	PBT resin (UL94V-0)/light gray
Cover *1	Polyester elastomer (UL94V-0)/black
Seal rubber and O-ring *2	Rubber

*1. XS2F/XS2H/XS2W only.
*2. O-rings are on sockets only.

Wiring Example

Dimensions

(Unit: mm)
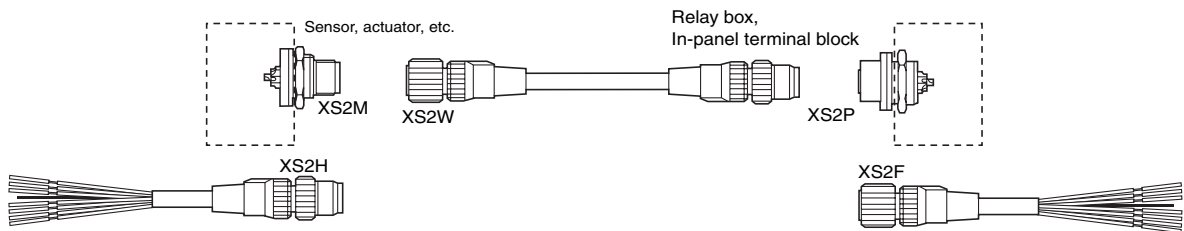
XS2H Plug on One Cable End (M12)
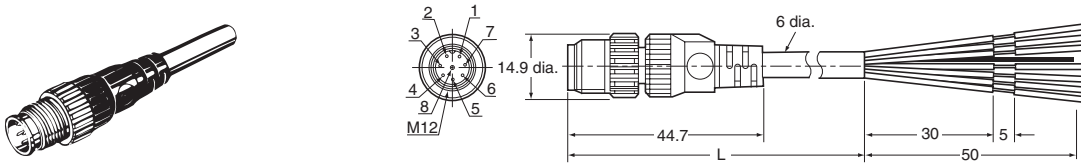
XS2F Socket on One Cable End (M12)
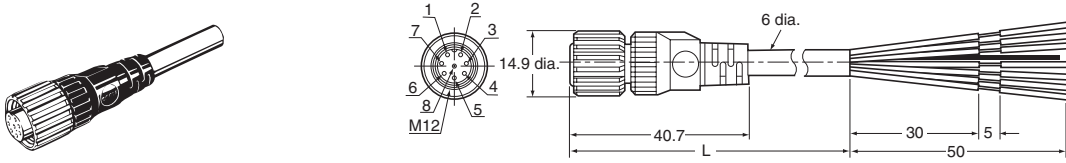
XS2W Plug and Socket on Cable Ends (M12)
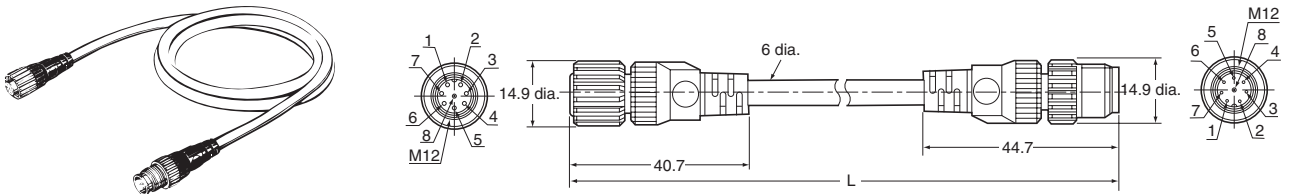
XS2P-D821-2 Panel-mounting Socket (M12) with Solder Cup Pins and Rear Lock
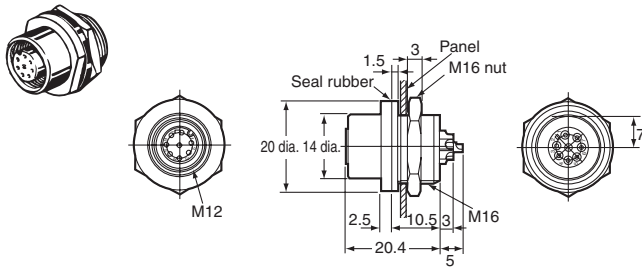
XS2M-D824-4 Panel-mounting Plug (M12) with Solder Cup Pins and Front Lock
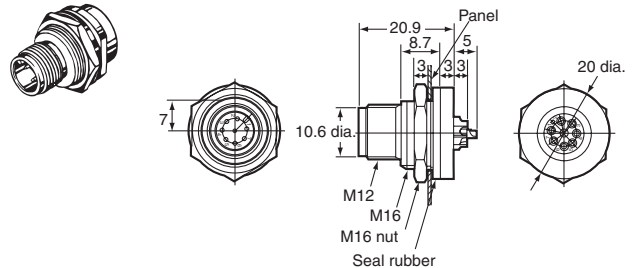
XS2P-D822-2 Panel-mounting Socket (M12) with Solder Cup Pins and Front Lock
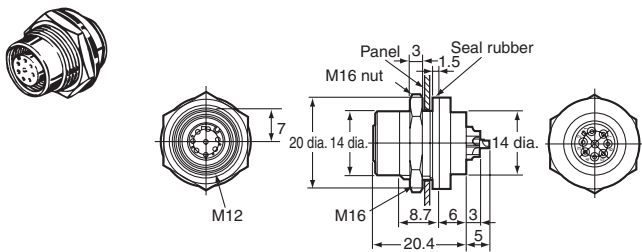
Panel Cutouts
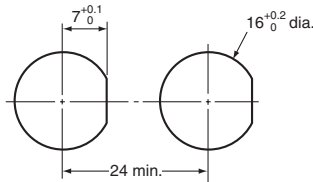
Connector Pin Numbers (from Mating Side)

Plug   Socket
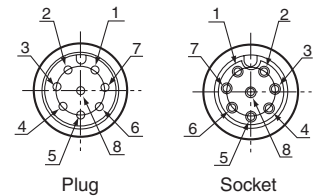
Note 1. Mounting panel thickness: 1 to 4 mm.
2. Applicable core wire size for solder cup pins: 0.5 mm^2 max.
3. The M16 nut and seal rubber are included.

XS2G Crimping/Soldering Plug Assemblies

Dimensions

(Unit: mm)

XS2G-□4C□ (Crimping Model)
XS2G-□42□ (Soldering Model)
Straight Connectors

45° 5 dia.   45° 5 dia.

DC   AC

M12

14.9 dia.   14.2 dia.

47.1
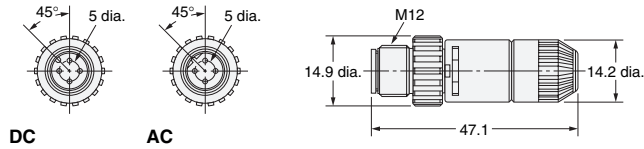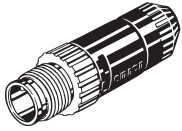
XS2G-D42□ (Soldering Model)
L-shaped Connectors
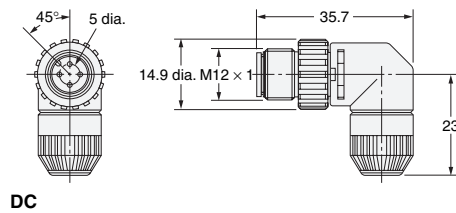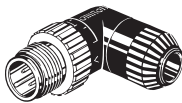
45° 5 dia.

35.7

14.9 dia. M12 × 1

23

DC

Ordering Information

Suitable cable dia. (mm)	Cable connection direction	Connection method	DC	AC	Minimum order
			Model	**Model**	
6-mm-dia. model (5 to 6 mm dia.)	Straight	Crimping	**XS2G-D4C1**	**XS2G-A4C1**	
		Soldering	**XS2G-D421**	**XS2G-A421**	
	L-shaped	Soldering	**XS2G-D422**	---	
4-mm-dia. model (4 to 5 mm dia.)	Straight	Crimping	**XS2G-D4C3**	**XS2G-A4C3**	50
		Soldering	**XS2G-D423**	**XS2G-A423**	
	L-shaped	Soldering	**XS2G-D424**	---	
3-mm-dia. model (3 to 4 mm dia.)	Straight	Crimping	**XS2G-D4C5**	**XS2G-A4C5**	
		Soldering	**XS2G-D425**	**XS2G-A425**	
	L-shaped	Soldering	**XS2G-D426**	---	

Note: Crimping plug contacts are sold separately.

XS2U Crimping Pin for XS2G

Dimensions

(Unit: mm)

XS2U-312□ (Plug Pin)

Note: A special tool must be used for crimping. For details, refer to page 23.

Slit

1 dia.   C dia.   2 dia. 2.3 dia.

1.5

B

A
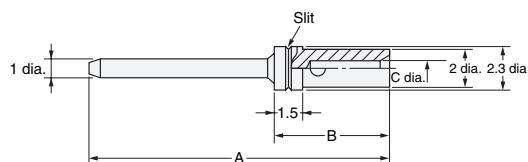
Dimensions

Model	Suitable core size (mm^2)	Dimension (mm)			No. of slits
		A	**B**	**C**	
XS2U-3121	0.18 to 0.3	20.0	6.1	0.8	1
XS2U-3122	0.5 to 0.75	20.1	6.2	1.3	0

Ordering Information

Suitable core size (mm^2)	Model	Minimum order
0.18 to 0.3	**XS2U-3121**	100
0.5 to 0.75	**XS2U-3122**	

Note: Orders are accepted in multiples of the minimum order.

XS2C Crimping/Soldering Socket Assemblies

Dimensions

(Unit: mm)

XS2C-☐4C☐ (Crimping Model)
XS2C-☐42☐ (Soldering Model)
Straight Connectors

DC   AC

14.9 dia.   14.2 dia.

43.2

L-shaped Connectors

DC   AC

31.8

14.9 dia.

23

Ordering Information

Suitable cable dia. (mm)	Cable connection direction	Connection method	DC Model	AC Model	Minimum order
6-mm-dia. model (5 to 6 mm dia.)	Straight	Crimping	XS2C-D4C1	XS2C-A4C1	50
		Soldering	XS2C-D421	XS2C-A421	
	L-shaped	Crimping	XS2C-D4C2	XS2C-A4C2	
		Soldering	XS2C-D422	XS2C-A422	
4-mm-dia. model (4 to 5 mm dia.)	Straight	Crimping	XS2C-D4C3	XS2C-A4C3	
		Soldering	XS2C-D423	XS2C-A423	
	L-shaped	Crimping	XS2C-D4C4	XS2C-A4C4	
		Soldering	XS2C-D424	XS2C-A424	
3-mm-dia. model (3 to 4 mm dia.)	Straight	Crimping	XS2C-D4C5	XS2C-A4C5	
		Soldering	XS2C-D425	XS2C-A425	
	L-shaped	Crimping	XS2C-D4C6	XS2C-A4C6	
		Soldering	XS2C-D426	XS2C-A426	

Note: Crimping plug contacts are sold separately.

XS2U Crimping Pin for XS2C

Dimensions

(Unit: mm)

XS2U-222☐ (Socket Pin)

Note: A special tool must be used for crimping. For details, refer to page 23.

Slit

2 dia.   2.3 dia.
C dia.
1.5
B
A
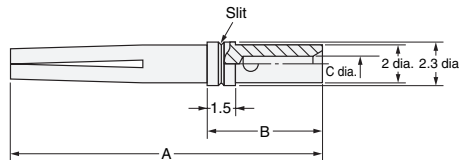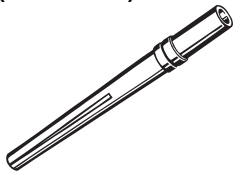
Dimensions

Model	Suitable core size (mm²)	Dimension (mm)			No. of slits
		A	B	C	
XS2U-2221	0.18 to 0.3	16.7	6.1	0.8	1
XS2U-2222	0.5 to 0.75	16.8	6.2	1.3	0

Ordering Information

Suitable core size (mm²)	Model	Minimum order
0.18 to 0.3	XS2U-2221	100
0.5 to 0.75	XS2U-2222	

Note: Orders are accepted in multiples of the minimum order.

XS2G Screw-on Plug Assemblies

Dimensions

XS2G-D5S7 (5-pole, Straight, Applicable Cable Outer Diameter: 8 mm)
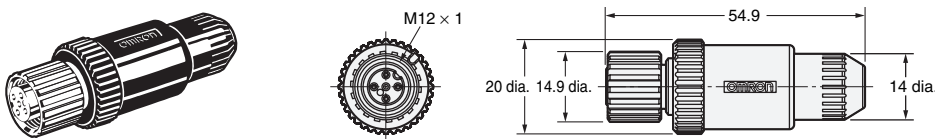**XS2G-D5S9 (5-pole, Straight, Applicable Cable Outer Diameter: 7 mm)**
XS2G-D4S7 (4-pole, Straight, Applicable Cable Outer Diameter: 8 mm)
**XS2G-D4S9 (4-pole, Straight, Applicable Cable Outer Diameter: 7 mm)**
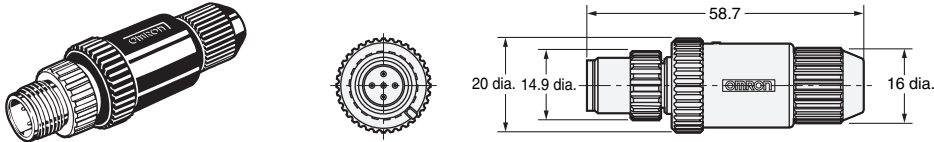
XS2G-D5S1 (5-pole, Straight, Applicable Cable Outer Diameter: 6 mm)
XS2G-D4S□ (4-pole, Straight, Applicable Cable Outer Diameter: 3, 4, or 6 mm)
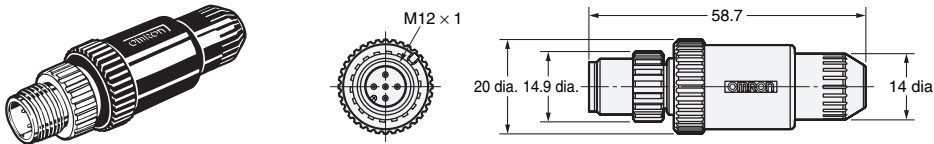
XS2G-D5S2 (5-pole, L-shaped, Applicable Cable Outer Diameter: 6 mm)
XS2G-D4S□ (4-pole, L-shaped, Applicable Cable Outer Diameter: 3, 4, or 6 mm)
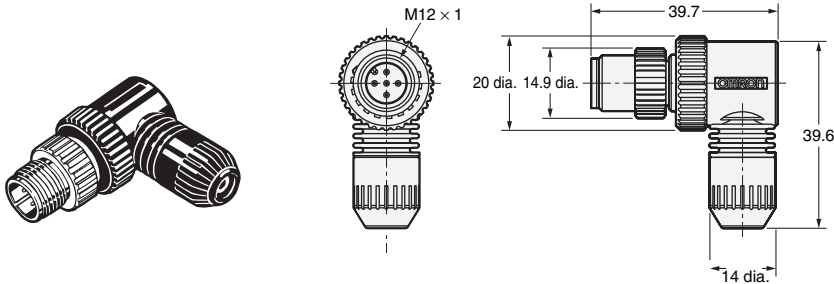
Ordering Information

No. of poles	Suitable cable dia. (mm)	Straight connectors (for DC)	L-shaped connectors (for DC)	Minimum order
		Model	Model	
5	8-mm-dia. model (7 to 8 mm dia.)	XS2G-D5S7	---	50
	7-mm-dia. model (6 to 7 mm dia.)	XS2G-D5S9	---	
	6-mm-dia. model (5 to 6 mm dia.)	XS2G-D5S1	XS2G-D5S2	
4	8-mm-dia. model (7 to 8 mm dia.)	XS2G-D4S7	---	
	7-mm-dia. model (6 to 7 mm dia.)	XS2G-D4S9	---	
	6-mm-dia. model (5 to 6 mm dia.)	XS2G-D4S1	XS2G-D4S2	
	4-mm-dia. model (4 to 5 mm dia.)	XS2G-D4S3	XS2G-D4S4	
	3-mm-dia. model (3 to 4 mm dia.)	XS2G-D4S5	XS2G-D4S6	

Note: XS2G Screw-on Plugs cannot be connected to side by side to the CN1 and CN2 connectors of XS2R Y-Joint Sockets/Plugs.

XS2C Screw-on Socket Assemblies

Dimensions

(Unit: mm)

XS2C-D5S7 (5-pole, Straight, Applicable Cable Outer Diameter: 8 mm)
XS2C-D5S9 (5-pole, Straight, Applicable Cable Outer Diameter: 7 mm)
XS2C-D4S7 (4-pole, Straight, Applicable Cable Outer Diameter: 8 mm)
XS2C-D4S9 (4-pole, Straight, Applicable Cable Outer Diameter: 7 mm)
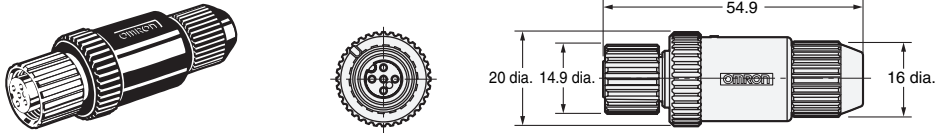
XS2C-D5S1 (5-pole, Straight, Applicable Cable Outer Diameter: 6 mm)
XS2C-D4S□ (4-pole, Straight, Applicable Cable Outer Diameter: 3, 4, or 6 mm)

XS2C-D5S2 (5-pole, L-shaped, Applicable Cable Outer Diameter: 6 mm)
XS2C-D4S□ (4-pole, L-shaped, Applicable Cable Outer Diameter: 3, 4, or 6 mm)
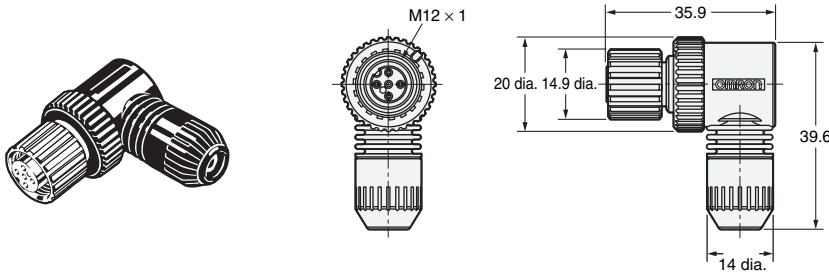
Ordering Information

No. of poles	Suitable cable dia. (mm)	Straight connectors (for DC)	L-shaped connectors (for DC)	Minimum order
		Model	Model	
5	8-mm-dia. model (7 to 8 mm dia.)	XS2C-D5S7	---	50
	7-mm-dia. model (6 to 7 mm dia.)	XS2C-D5S9	---	
	6-mm-dia. model (5 to 6 mm dia.)	XS2C-D5S1	XS2C-D5S2	
4	8-mm-dia. model (7 to 8 mm dia.)	XS2C-D4S7	---	
	7-mm-dia. model (6 to 7 mm dia.)	XS2C-D4S9	---	
	6-mm-dia. model (5 to 6 mm dia.)	XS2C-D4S1	XS2C-D4S2	
	4-mm-dia. model (4 to 5 mm dia.)	XS2C-D4S3	XS2C-D4S4	
	3-mm-dia. model (3 to 4 mm dia.)	XS2C-D4S5	XS2C-D4S6	

XS2P Panel-mounting Sockets for Terminal Boxes

Dimensions

(Unit: mm)

XS2P-□421-2 (with Solder Cup Pins)
Rear Lock Model

M12

M12

DC   **AC**

Rubber bushing   Panel   M16 × 1

20 dia. 14.6 dia.

7.8   2.5

20.5

24

7
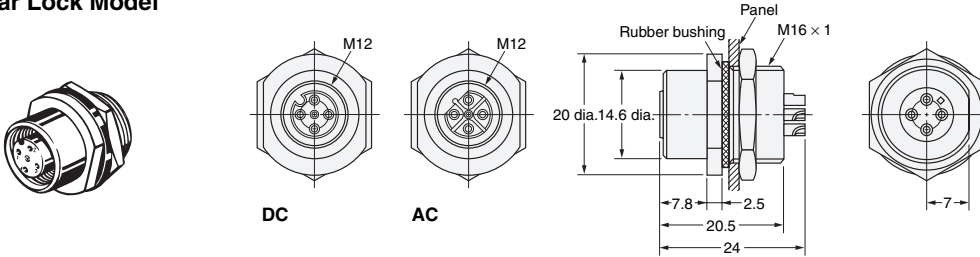
XS2P-□422-1 (with DIP Pins)
XS2P-□422-2 (with Solder Cup Pins)
Front Lock Model

M12

M12

7   7

DC   **AC**

Panel   M16 × 1   Rubber bushing

14 dia.   20 dia.

6

20.5

24

With Solder Cup Pins

Panel   M16 × 1   Rubber bushing   2 dia.

14 dia.   16 dia.

8.7   2.5

17

23.5

27

With DIP Pins

5 dia.

17

Panel Cutout

$7^{+0.1}_{0}$

$16^{+0.15}_{0}$ dia.

24 min.

Note: The panel thickness is 1 to 4 mm.

PCB-mounting Dimensions

5

Land

5

24 min.

Four, 2.2-dia. holes
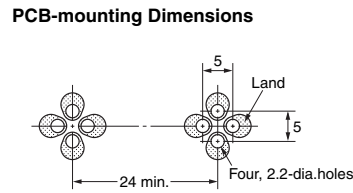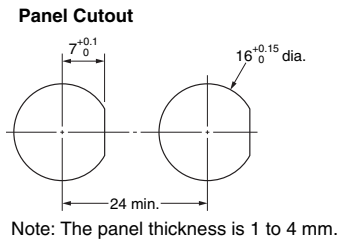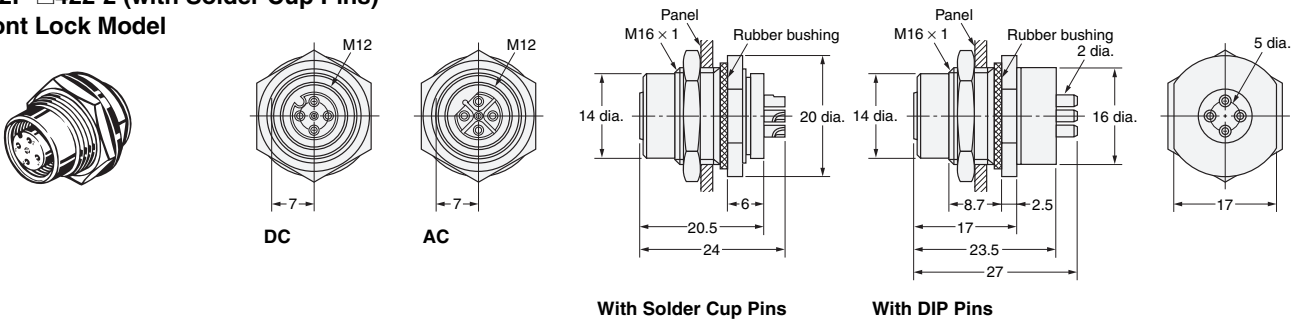
Ordering Information

Lock method	Pin shape	DC	AC	Minimum order
		Model	Model	
Rear lock	Solder cup pin	XS2P-D421-2	XS2P-A421-2	50
Front lock	Solder cup pin	XS2P-D422-2	XS2P-A422-2	
	DIP pin	XS2P-D422-1	XS2P-A422-1	

XS2R Y-Joint Plug/Socket Connectors

Dimensions

XS2R-D426-□11-F
Connectors on Both Cable Ends (Y-Joint Plug/Socket)

Wiring Diagram

- 15.0
- 35.0
- CN2
- 18.0
- CN1
- 45.5
- 4.6 dia.
- 6 dia.
- 8.5
- 13.6
- 44.7
- L
- Blue marking

CN2 — 1 2 3 4 | 4 3 2 1
CN1 — 1 2 3 4
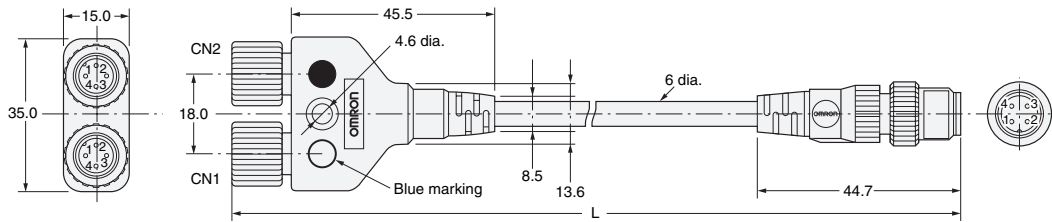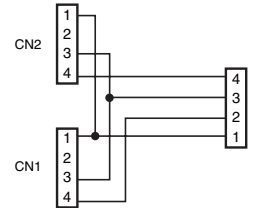
XS2R-D426-□10-F
Connectors on One Cable End (Y-Joint Plug/Socket)

Wiring Diagram

- 15.0
- 35.0
- CN2
- 18.0
- CN1
- 45.5
- 4.6 dia.
- 6 dia.
- 8.5
- 13.6
- 30
- 5
- 50
- L
- Blue marking

CN2 — 1 2 3 4 | Black / Blue / White / Brown
CN1 — 1 2 3 4
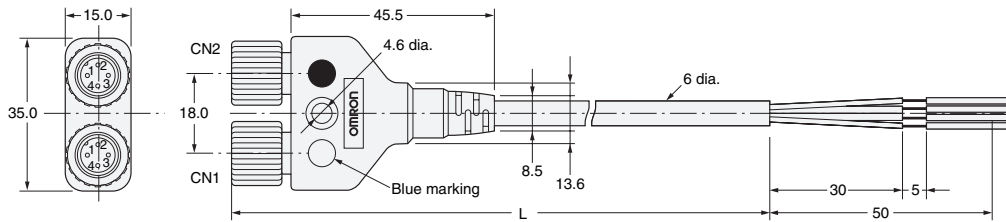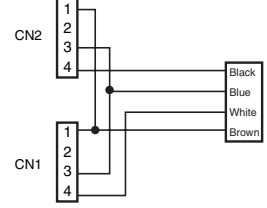
XS2R-D426-1
Y-Joint Plug/Socket without Cable

Wiring Diagram

- 15
- (37)
- CN2
- 18
- CN1
- 27
- 7
- 4.5 dia.
- CN0
- 24.5
- 12.5
- 58.3
- Blue marking

XS2R-D426-1
CN2 — 4 3 2 1
CN1 — 4 3 2 1 | 4 3 2 1 — CN0

XS2R-D426-5
CN2 — 4 3 2 1
CN1 — 4 3 2 1 | 4 3 2 1 — CN0

XS2R-D426-81
CN2 — 4 3 2 1
CN1 — 4 3 2 1 | 4 3 2 1 — CN0
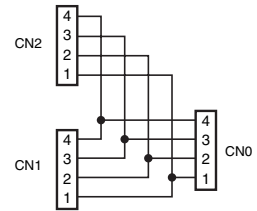
XS2R-D426-82
CN2 — 4 3 2 1
CN1 — 4 3 2 1 | 4 3 2 1 — CN0
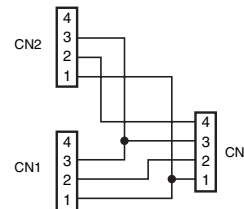
Ordering Information

Type	Connector	Cable length L (m)	DC Model	Minimum order
With cable	Connectors on both cable ends	0.5	XS2R-D426-B11-F	5
		1	XS2R-D426-C11-F	
		2	XS2R-D426-D11-F	
		3	XS2R-D426-E11-F	
	Connector on one cable end	2	XS2R-D426-D10-F	
		5	XS2R-D426-G10-F	
Without cable	Y-Joint plug/socket	---	XS2R-D426-1	10
			XS2R-D426-5	
			XS2R-D426-81	
			XS2R-D426-82	

Note: XS2G Screw-on Plugs cannot be connected side-by-side to the CN1 and CN2 connectors.
Consider using a crimping or soldering model instead. Refer to page 13 for details.

XS2R T-Joint Plug/Socket Connectors

Dimensions
(Unit: mm)

XS2R-D422-1
XS2R-D422-5
Aggregate Models

50.6
24.6
M12
14.6 dia.
A B
C
M12
29
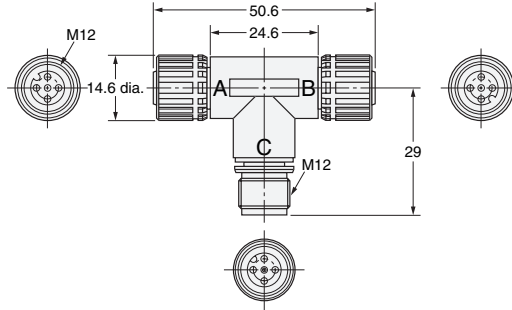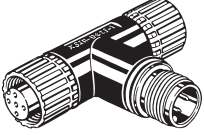
Wiring Diagram
XS2R-D422-1
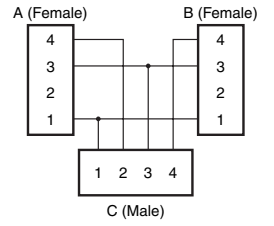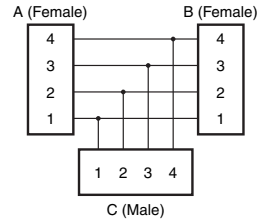
A (Female) | B (Female)
4 3 2 1 | 4 3 2 1
1 2 3 4
C (Male)

XS2R-D422-5

A (Female) | B (Female)
4 3 2 1 | 4 3 2 1
1 2 3 4
C (Male)

XS2R-D423-1
Bifurcated Model

50.6
24.6
A B
C
M12
29
14.6 dia.
M12

Wiring Diagram

A (Male) | B (Male)
4 3 2 1 | 4 3 2 1
1 2 3 4
C (Female)

XS2R-D424-1
Daisy-chain Model

50.6
24.6
M12
14.6 dia.
A B
C
M12
29

Wiring Diagram

A (Female) | B (Male)
4 3 2 1 | 4 3 2 1
1 2 3 4
C (Female)
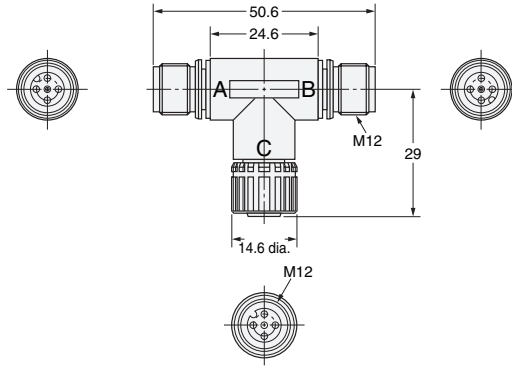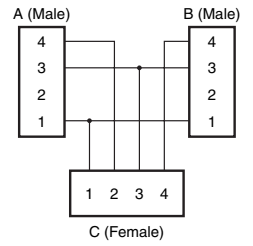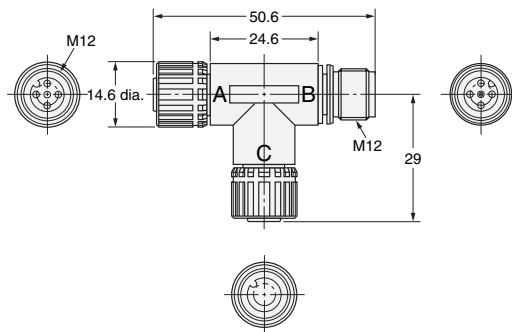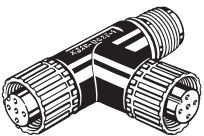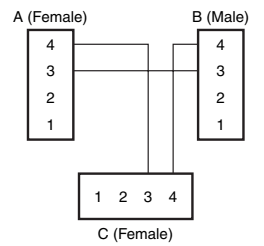
Ordering Information

Type	DC	
	Model	**Minimum order**
Aggregate model	**XS2R-D422-1**	20
	XS2R-D422-5	
Bifurcated model	**XS2R-D423-1**	
Daisy-chain model	**XS2R-D424-1**	

XS2R Application Examples

XS2R-D422-1 (Aggregate Model)
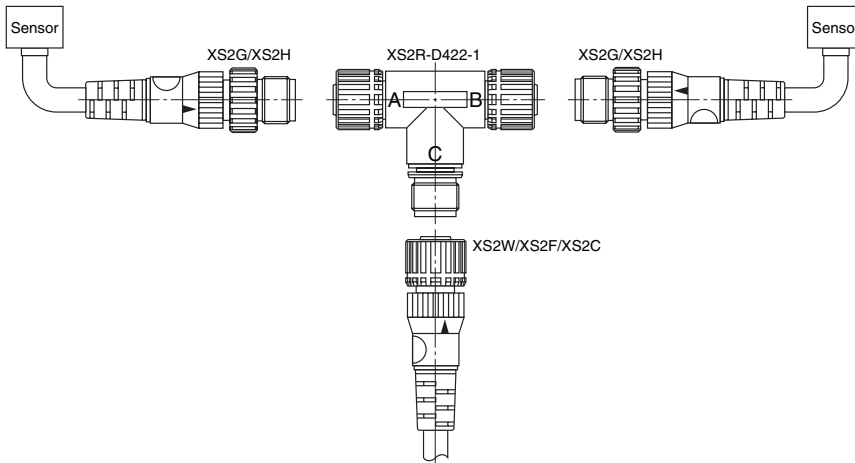
- A pair of Two-wire Sensors or Three-wire Sensors can be connected as shown in the illustration.
- The XS2R-D422-5 has feedthrough connections, thus working as a connector for the extension cable.
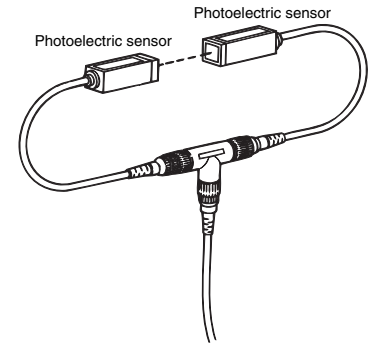
XS2R-D423-1 (Bifurcated Model)
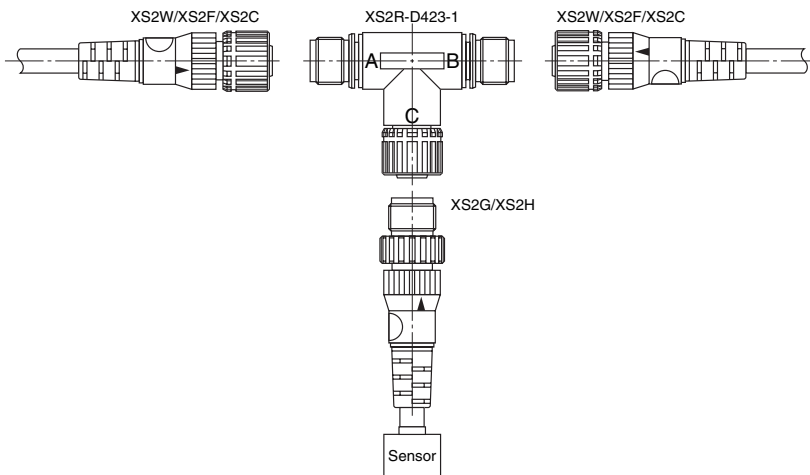
- Two or Three-wire Sensor signals can be bifurcated.
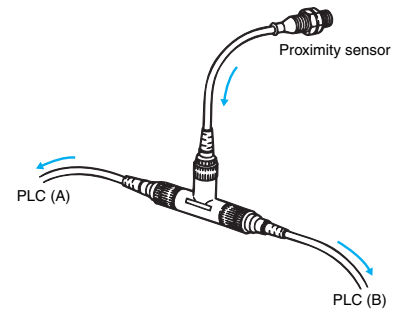
XS2R-D424-1 (Daisy Chain Model)
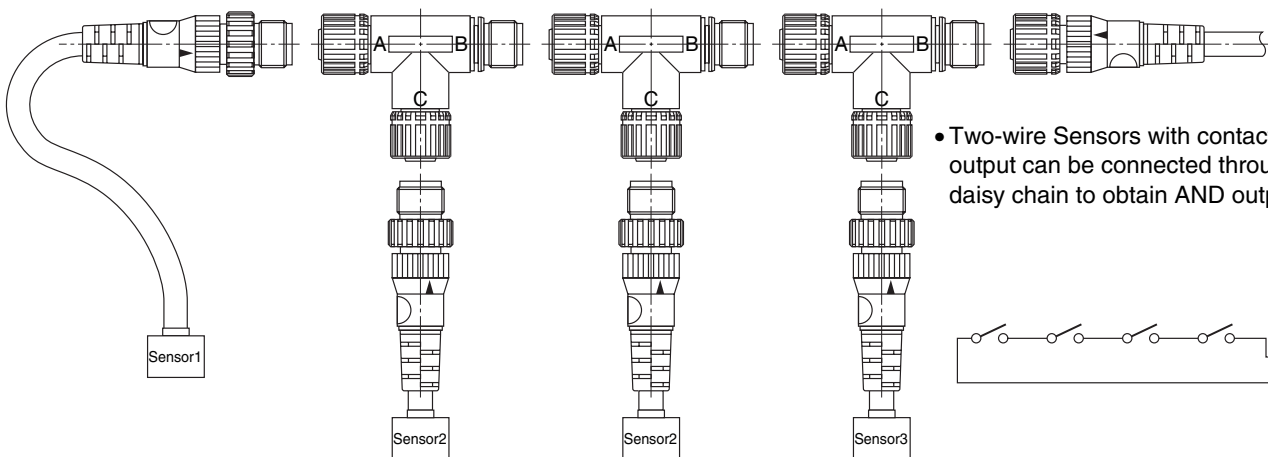
- Two-wire Sensors with contact output can be connected through a daisy chain to obtain AND output.
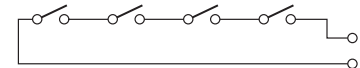
Safety Precautions

Precautions for Correct Use

Do not use this product under ambient conditions that exceed the ratings.

Before using the XS2R for Sensors, make sure that the wiring of the Sensors and the internal connections of the XS2R are correct.

XS2M Sensor-embedded Plugs

Dimensions (Unit: mm)

XS2M-D421 (DC)
XS2M-A421 (AC)
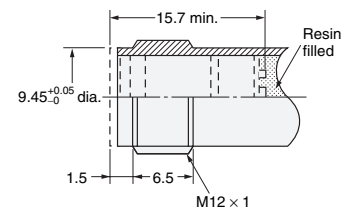### (Embedded Plug with Screw Threads)
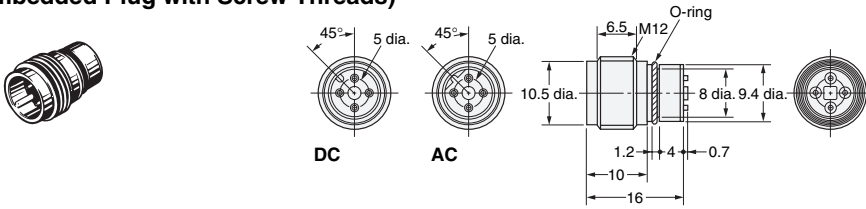
Mounted Dimensions

Resin filled

$9.45^{+0.05}_{-0}$ dia.

6.7 min.

Note: After mounting, anchor the solder cups by injecting resin.

45° 5 dia. 45° 5 dia. 6.5 M12 O-ring
10.5 dia. 8 dia. 9.4 dia.
DC **AC**
1.2 4 0.7
10
16
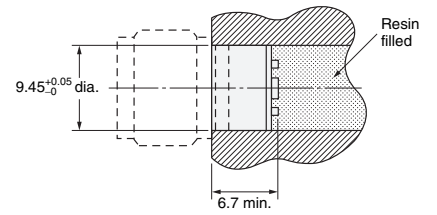
XS2M-D422 (DC)
XS2M-A422 (AC)
(Embedded Plug without Screw Threads)
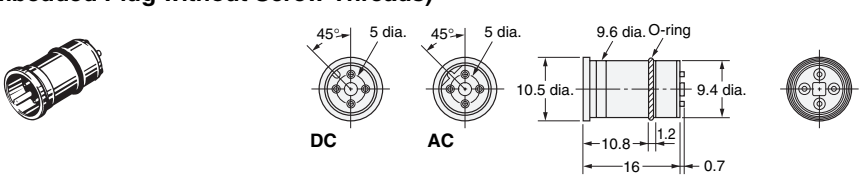
Mounted Dimensions

15.7 min.

Resin filled

$9.45^{+0.05}_{-0}$ dia.

1.5 6.5 M12 × 1

Note: After mounting, anchor the solder cups by injecting resin.

45° 5 dia. 45° 5 dia. 9.6 dia. O-ring
10.5 dia. 9.4 dia.
DC **AC**
10.8 1.2
16 0.7

XS2M Panel-mounting Plugs

Dimensions (Unit: mm)

XS2M-D423 (For DC)
XS2M-A423 (For AC)
(Flange-mounting Model)

Panel Cutouts

10^{+1}_{0} Four, 3.2 dia.

14±0.1

21 min. 14±0.1

45° 5 dia. 45° 5 dia. 1.5 6.5 M12 Rubber bushing 2.5 dia.
20 14 20 14 10.5 dia. 9.4 dia. 3.2 dia.
14 14 10 2 1
DC **AC** 16 0.7
20 20
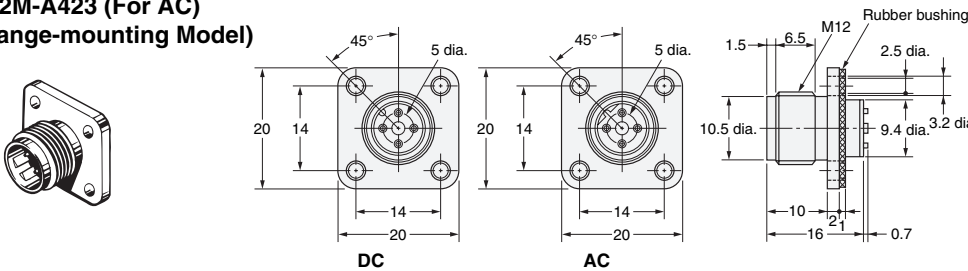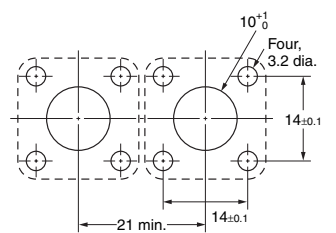
XS2M-□424-1 (With DIP Pins)
XS2M-□424-2 (With Solder Cup Pins)
(Screw-mounting Model)
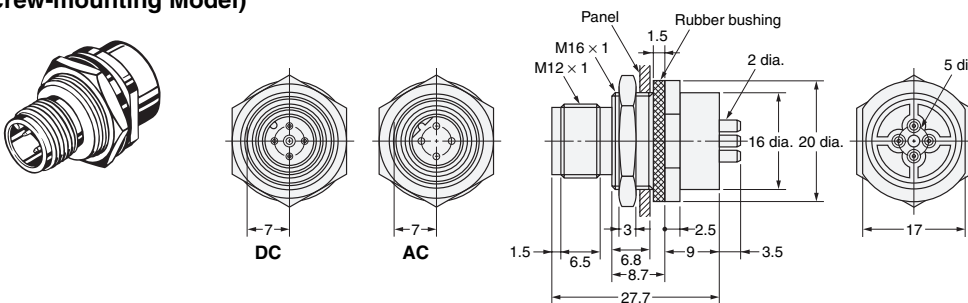
Panel Cutouts

$7^{+0.2}_{0}$ $16^{+0.3}_{0}$ dia.

24 min.

Note: The panel thickness is 1 to 4 mm.

PCB-mounting Dimensions

5 Land 5

24 min. Four, 2.2-dia. holes

Panel Rubber bushing
M16 × 1 1.5 2 dia. 5 dia.
M12 × 1
16 dia. 20 dia.
7 7 3 2.5 17
DC **AC** 1.5 6.5 6.8 9 3.5
8.7
27.7
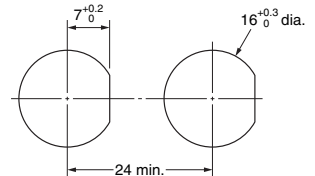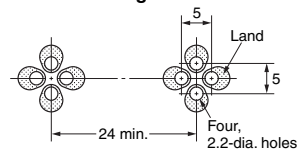
Ordering Information

Mounting method	Pin shape	DC	AC	Minimum order
		Model	Model	
Embedded with screw threads	Solder cup pin	**XS2M-D421**	**XS2M-A421**	50
Embedded with no screw threads		**XS2M-D422**	**XS2M-A422**	
Flange-mounting		**XS2M-D423**	**XS2M-A423**	
Screw-mounting	DIP pin	**XS2M-D424-1**	**XS2M-A424-1**	
	Solder cup pin	**XS2M-D424-2**	**XS2M-A424-2**	

Connector Covers

Water-resistive Covers

XS2Z-11

XS2Z-11   M12 male screw   M12

XS2Z-22

XS2Z-22   M12   M12 × 1.0 female screw (thread bracket)
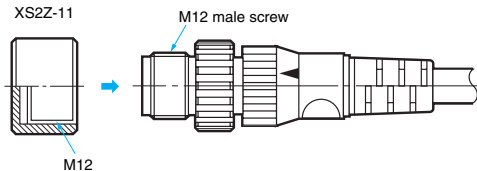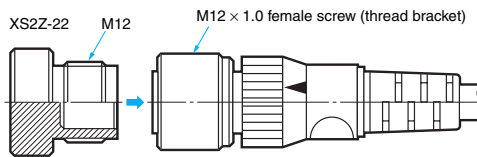
The Water-resistive Cover ensures IP67. When mounting the Water-resistive Cover to a Connector, be sure to apply a torque range between 0.39 and 0.49 N·m to tighten the Water-resistive Cover.

Model	Minimum order	Material	Suitable connector	
			Model	Mounting portion
XS2Z-11	50	Brass/nickel plated	XS2G/XS2H/XS2M/XS2R/XS2W/XS5H/XS5M/XS5W	M12 male screw
XS2Z-22			XS2C/XS2R/XS2F/XS2P/XS2W/XW3B/XS5F/XS5W/XS5R/XS5P/XW3D	M12 female screw (thread bracket)

Dust Covers

XS2Z-13

XS2Z-13   M12 male screw

XS2Z-15/XS2Z-14

XS2Z-15   XS2Z-14   M12 female screw (thread bracket)   Pin block (female pins)
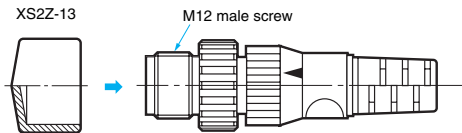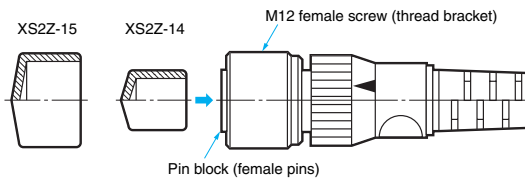
The Dust Cover is for dust prevention and does not ensure IP67 degree of protection. When mounting the Dust Cover to a connector, be sure to press the Dust Cover onto the Connector until the Connector is fully inserted into the Dust Cover.

Model	Minimum order	Material	Suitable connector	
			Model	Mounting portion
XS2Z-13	50	Rubber/black	XS2G/XS2H/XS2M/XS2R	M12 male screw
XS2Z-14			XS2C/XS2R/XS2F/XS2P/XW3A/XW3B	Pin block (female pins)
XS2Z-15				M12 female screw (thread bracket)

Sputter Protective Cover

XS2Z-31

XS2Z-31   omron   M12 female screw (thread bracket)   Pin block (female contact)
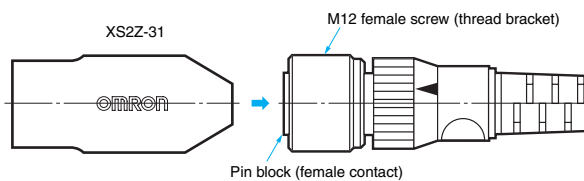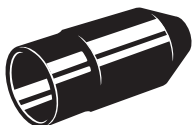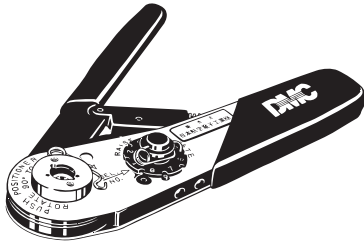
The Sputter Protective Cover protects the connector from weld sputter.
Make sure it covers the entire connector.

Model	Material	Applicable connector
XS2Z-31	Silicone rubber/black	XS2F/XS2H/XS2W

Tools

Crimp Tool
XY2F-0002

Locator
XY2F-0003

Tool in open position

Tool in closed position

PUSH POSITIONER AND ROTATE 90 TO INSTALL

RAISE TO ROTATE

Selector dial (Set to 6.)

XY2F-0001 Crimp Tool

Locator guide

XY2F-0003 Locator
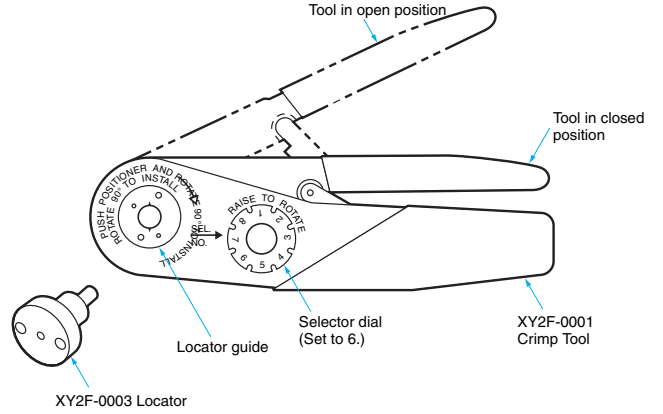
Use the Crimp Tool to crimp a cable core to the XS2U Crimping Pin used with the XS2C or XS2G Crimping Connector.

- The XY2F-0002 Crimp Tool is DMC's AFM8 (M22520/2-01).
- Mount the XY2F-0003 Locator (sold separately) to the locator guide of the Crimp Tool with a screw provided with the XY2F-0003 Locator.

Pin-block Extraction Tool

XY2F-0001

Use this tool to extract a Pin Block from the covers in order to make wiring changes or corrections after the cover has been mounted to the pin block for Connector Assemblies (XS2C/XS2G, soldering/crimping).
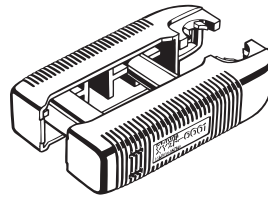
Extraction Procedure
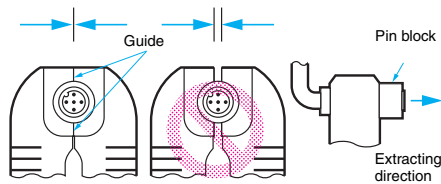
(1) Disconnecting Components
- Disconnect all components on the cap side from the cover.

Pin block Cover Rubber bushing Cable clamp Cap

(2) Extracting Pin Block
- Insert the claws of the Tool into the four holes of the cover.
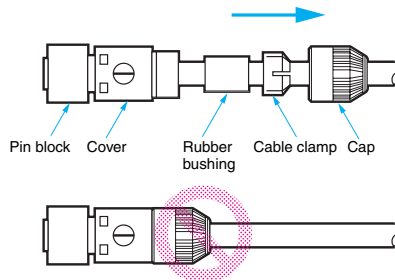
Holes

Claws

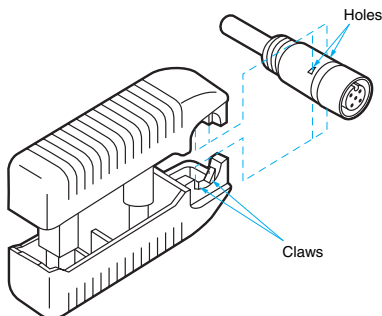- Make sure that the pin block is outside the Tool.

Tool Pin block

Cover Guide Cover
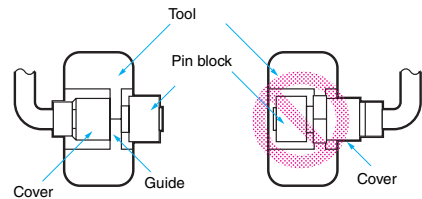
- Press the Tool so that the guides of the Tool are in close contact. Then pull the pin block straight.

Guide Pin block

Extracting direction

Precaution

- The pin block must not be extracted from the same Connector more than 3 times, otherwise the proper degree of protection of the pin block or Connector will not be maintained.

Assembly Procedure for XS2C/XS2G Connector Assemblies

## (1) Connector and Cable External Diameters

- Connectors for 6-, 4-, and 3-mm-diameter Cables (i.e., Cables that are 5 to 6, 4 to 5, and 3 to 4 mm in diameter respectively) are available. When assembling a Connector used with a cable, make sure that the external diameter of the Connector is suited to that of the cable.
- Connectors for 6-mm-diameter Cables use white cable clamps. Connectors for 4- and 3-mm-diameter Cables use black cable clamps.
  A watertight bushing for 6-mm-diameter Cable has no stripe, that for 4-mm-diameter Cable has a single stripe, and that for 3-mm-diameter Cable has two stripes.

Note: When connecting a commercially available cable to a connector assembly, use a cable with an outside diameter of 3 to 6 mm and core sizes of 0.18 to 0.75 mm^2 for crimping connectors and 0.5 mm^2 maximum for soldering connectors.
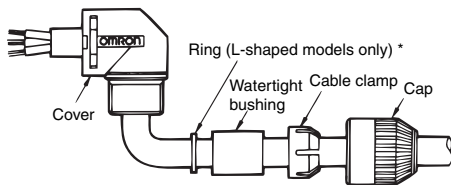
(2) Component Insertion

Crimping/Soldering Connectors

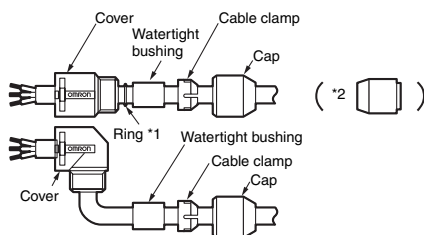**Straight Connectors**
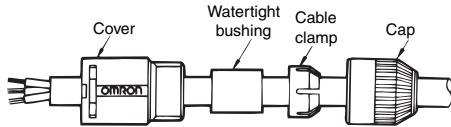
L-shaped Connectors

*A ring is not required for Screw-on Connectors.

- As shown in the above illustration, connect the above components to the Cable with its end processed.

Screw-on Connectors

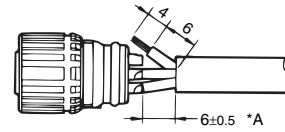**Confirm that you have all of the required parts.**

Insulation caps and insulation tubes are included with 5-pole Connectors (XS2C-D5S☐ and XS2G-D5S☐).

*1. Rings are not required with 7-mm and 8-mm cables.
*2. Insert the waterproof bushing for 7-mm and 8-mm cables in the direction shown in the diagram.

(3) Wiring (Processing Cable Ends)

Soldering Connectors

- Strip 10 mm of the Cable sheath and 4 mm of each core.
- Before soldering cores and solder cup pins together, solder-coat each of them.
- The following conditions are recommended for soldering each solder cup pin.
  Soldering iron: 30 to 60 W
  Soldering temperature: 280°C to 340°C
  Soldering period: 3 s max.
- The length marked *A should be 6.5 mm max., otherwise the proper degree of protection of the connector will not be maintained.

Crimping Connectors

Crimping
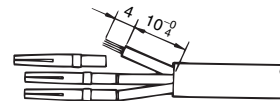
- Strip 14 mm of the Cable sheath and 4 mm of each core.
- Make sure that each core is not damaged and its end strands are not spread out.
- Mount the XY2F-0003 Locator to DMC's AFM8 (M25520/2-01) Crimping Tool, both of which are sold separately, and set the selector dial of the Crimping Tool to 6 for the XS2U-☐☐21 and to 7 for the XS2U-☐☐22.
- After mounting the crimping pins to the Locator, fully insert the cores to the crimping pins.
- Squeeze the handle of the Crimp Tool to press-fit the cores to the crimping pins.
  (Squeeze the handle firmly until the handle automatically returns to the release position.)

Wiring
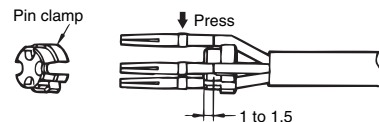
- After press-fitting the cores to the pins, insert the pins into the pin clamp as shown in the illustration. Then make sure that the lead colors correspond to the pin clamp numbers that are identical to the connector pin numbers.

Insertion

Pin Block   Pin Clamp
                      Key groove Key groove
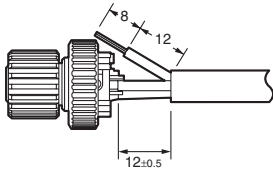
XS2C use   XS2G use

Key

6±0.5
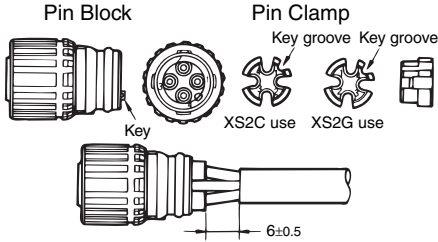
- Tentatively insert the pins to the pin block holes so that the key on the pin block will coincide with the key groove on the pin clamp. Then insert the cable along with the pin clamp.
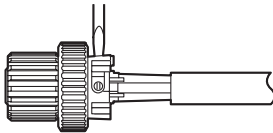
Screw-on Connectors

Cable End Processing
- **Four-pole Connectors**

8
12
12±0.5

- Loosen the screws on pins 1 to 4 and insert the cores according to the pin numbers.

- Use the special Screwdriver (XW4Z-00B) * and tighten the screws securely so that the cores do not pull out (tightening torque: 0.15 to 0.2 N·m).
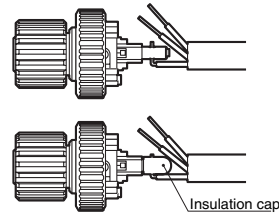
- **Five-pole Connectors**
- Strip the cable sheath for a total of 15 mm and strip the core covering for 8 mm for the core to connect to pin 5.

8   12   Conductors for pins 1 to 4

8   7   Conductors for pin 5
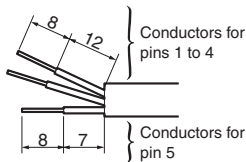
- Connect the core to pin 5 (in the center) first.
- Insert the core from the side of the hold with the tab and tighten the screw securely (tightening torque: 0.15 to 0.2 N·m), and then cut off the excess wire with wire cutters.
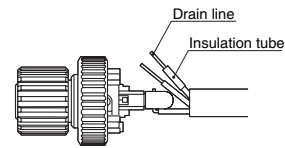
Screw
Special Screwdriver
Screw
Special Screwdriver
Tab
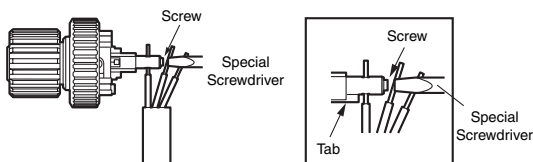
- Bend the cable as shown below, attached the enclosed insulation cap, and then strip the other cores.

Insulation cap

- Connect the cores to pins 1 to 4.

Connecting Shielded Cables to Five-pole Connectors
- Place the insulation tub on the drain line of the shield and connect ti to the terminal.
- Tighten the screw and then check visually to see if there is insulation between the cores.

Drain line
Insulation tube

- Connect the cores to pins 1 to 4.

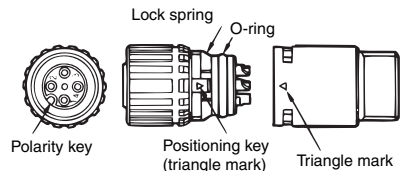*When tightening the screws, use the dedicated XW4Z-00B Screwdriver that matches with the screw-slot dimensions.
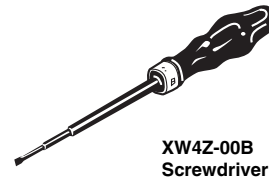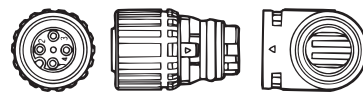
**XW4Z-00B
Screwdriver**

(4) Inserting Pin Block

**Pin Block
(Soldering Model)**   **Cover
(Straight Model)**

Lock spring   O-ring

Polarity key   Positioning key
(triangle mark)   Triangle mark

(Crimping Model)   **(L-shaped Model)**

- Mount the cover to the pin block so that the triangle mark on the pin block will coincide with the triangle mark on the cover.
- If the cover is used for an L-shaped model, the relationship between the position of the polarity key on the engaged side and cable connection direction will be determined by the direction in which the positioning key is inserted into the cover, which can be rotated by 90°.
- Fully insert the positioning key until the positioning key is hidden by the casing.