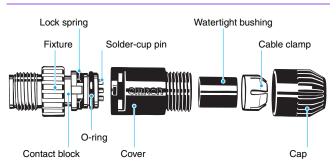
XS2

# 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 20.

# **Construction** (XS2G Soldering Connector Plug Assemblies)



# **Ratings and Specifications**

Rated current	3 A				
Rated voltage	For DC 125 VDC, for AC 250 VAC				
Contact resistance (Connector)	$40 \text{ m}\Omega \text{ max.}$ (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**

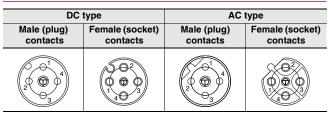
Cab	le outer	Core sizes				
diameter		Crimping models Soldering models		Screw-on models		
8 mm	7 to 8 mm					
7 mm	6 to 7 mm					
6 mm	5 to 6 mm	Two types of contacts		0.18 to 0.75 mm <sup>2</sup>		
4 mm	4 to 5 mm	are available. • 0.18 to 0.3 mm <sup>2</sup>	0.5 mm <sup>2</sup> max.	0.75 mm <sup>2</sup>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

# **Materials and Finish**

Iter	n	XS2F/H/W	XS2M/R/P	XS2C/G			
Contacts	Materials	Phosphor bronze	Brass				
	Finish	Nickel base, 0.4-	Nickel base, 0.4-µm gold plating				
Thread	Materials	Brass *					
bracket	Finish	Nickel plated *					
Pin block	Materials	PBT resin (UL94V-0)	PA resin (UL94V-0)	PBT resin (UL94V-0)			
	Finish	For DC: light gra	y; for AC: dark gr	ay			
O-ring/rubbe	er bushing	Rubber					
Cover		PBT resin (UL94V-0)		PBT resin (UL94V-0)			
Сар				PBT resin (UL94V-0)			
Cable clamp	)			PA resin (UL94V-0)			
Pin clamp				PBT resin (UL94V-0)			
Lock spring				LCP resin (UL94V-0)			
Watertight b	ushing			Rubber			
Ring				Steel			

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

### Socket Appearance



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

# **List of Products**

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



## 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					Term	inal 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

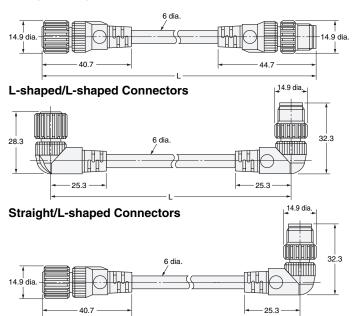
# XS2W Sockets and Plugs on Cable Ends

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

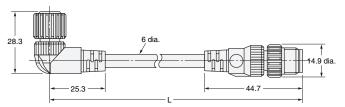
# Dimensions

(Unit: mm)

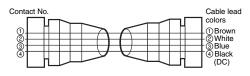
#### Straight/Straight Connectors



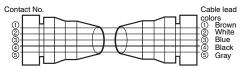
#### L-shaped/Straight Connectors



Wiring Diagram for 4 Cores



#### Wiring Diagram for 5 Cores



# **Ordering Information**

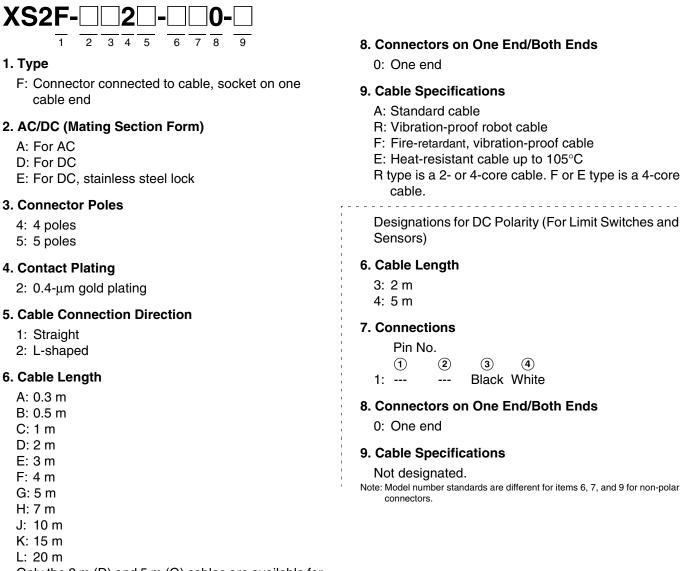
Cable type	Cable connection	No. of cable	Cable core cross-	Cable	DC		UL-listed	
	direction	cores	sectional area (mm <sup>2</sup> )	length (m)	Model	Minimum order	or noted	
Standard ca-	Straight/Straight			1	XS2W-D421-C81-A	10		
ble	0 0			2	XS2W-D421-D81-A	10		
			5	XS2W-D421-G81-A	5			
			10	XS2W-D421-J81-A	5			
	L-shaped/L-shaped			2	XS2W-D422-D81-A	10		
				5	XS2W-D422-G81-A	5		
	Straight/L-shaped	4	0.5	2	XS2W-D423-D81-A	10	Yes	
		4	0.5	5	XS2W-D423-G81-A	5	Tes	
	L-shaped/Straight			2	XS2W-D424-D81-A	10		
				5	XS2W-D424-G81-A	5		
Vibration- proof robot	Straight/Straight			1	XS2W-D421-C81-R	10		
			2	XS2W-D421-D81-R	10			
cable				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.



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

### 7. Connections

Terminal No.

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

#### Terminal No.

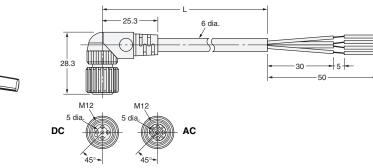
	1	2	3	4	5
G:	Brown	White	Blue	Black	Gray

# 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 $\int_{0}^{10} \int_{0}^{12} \int_{0}^{45^{\circ}} \int_{0}^{12} \int_{0}^{45^{\circ}} \int_{0}^{14^{\circ}} \int_{$

#### L-shaped Connectors



# Wiring Diagram

		Two-core model	Three-core model	Four-core model
Standard cable Vibration- proof robot cable	XS2F42 0-A XS2F42 0-R	Contact No. Contact No. Contact No. Contact No. Contact No. Contact No. Contact No. Contact No. Colors Blue (DC) Brown Blue Colors Brown Blue (DC) Contact No. Cable lead Colors Brown Blue (DC) Contact No. Cable lead Colors Brown Blue (DC) Contact No. Cable lead Colors Contact No. Cable lead Colors Brown Brown Blue Colors Colo	Contact No. Cable lead colors Brown Blue (DC)	Contact No. Cable lead colors Brown Bluck (DC/AC)
Standard cable (non-polar DC)	XS2F-0420 -00	Contact No. Cable lead colors Black White		
Standard cable (E2E models with conventional connector pin)	XS2F-D42 - D0	Contact No. Cable lead Colors Blue Brown		

# **Ordering Information**

Cable true	Cable	No. of cable	Cable core	Cable	DC	AC	Minimum	UL-	
Cable type	connection direction	cable	cross-sectional area (mm <sup>2</sup> )	length (m)	Model	Model	order	listed	
		2			XS2F-D421-CA0-A	XS2F-A421-CB0-A			
		3		1	XS2F-D421-CC0-A				
		4			XS2F-D421-C80-A	XS2F-A421-C90-A	10		
		2			XS2F-D421-DA0-A	XS2F-A421-DB0-A	10		
		3		2	XS2F-D421-DC0-A				
	Ctusiabt	4			XS2F-D421-D80-A	XS2F-A421-D90-A			
	Straight	2			XS2F-D421-GA0-A	XS2F-A421-GB0-A			
		3		5	XS2F-D421-GC0-A				
		4			XS2F-D421-G80-A	XS2F-A421-G90-A	F		
		2			XS2F-D421-JA0-A	XS2F-A421-JB0-A	Э		
Vibration-proof robot cable		3		10	XS2F-D421-JC0-A				
Ctandard cable		4			XS2F-D421-J80-A	XS2F-A421-J90-A	10         5         10         5		
Standard cable		2			XS2F-D422-CA0-A	XS2F-A422-CB0-A	5 10 5 10 5 10 5 10 5 10 5 10 5 10 5 10		
		3	-	$0.5 \\ \begin{array}{ c c c c c c c c c c c c c c c c c c c$					
		4	-	-	XS2F-D422-C80-A		10		
	-	2	-		XS2F-D422-DA0-A	XS2F-A422-DB0-A	10		
		3	-	2	XS2F-D422-DC0-A				
		4	-	-	XS2F-D422-D80-A		-		
	L-shaped	2	-		XS2F-D422-GA0-A	XS2F-A422-GB0-A			
		3 5	5	XS2F-D422-GC0-A					
		4	-	-	XS2F-D422-G80-A		5	Yes	
		2			XS2F-D422-JA0-A	XS2F-A422-JB0-A			
		3	-	10					
		4							
			2				XS2F-A421-CB0-R		-
		4	-				10		
		2	0.5						
		<b>a</b>	4		2				
Vibration-proof robot cable Standard cable (non-polar) Standard cable (E2E models with conventional	Straight	2						-	
	proof	4		5					
			2					5	
		4		10					
		2	_	length (m)         Model         Model         Model         orda           1         XS2F-D421-CA0-A         XS2F-A421-CB0-A          10           2         XS2F-D421-CA0-A         XS2F-A421-CB0-A          10           2         XS2F-D421-DA0-A         XS2F-A421-DB0-A          10           2         XS2F-D421-DA0-A         XS2F-A421-DB0-A          10           3         XS2F-D421-GA0-A         XS2F-A421-GB0-A          XS2F-D421-GB0-A           3         XS2F-D421-GB0-A         XS2F-A421-GB0-A             XS2F-D421-JA0-A         XS2F-A421-JB0-A              10         XS2F-D421-GB0-A               XS2F-D421-JA0-A         XS2F-A421-JB0-A               11         XS2F-D422-CB0-A                2         XS2F-D422-GB0-A                10         XS2F-D422-GB0-A </td <td></td> <td>-</td>		-			
		4		1 -					
Standard cable Vibration-proof robot cable Standard cable (non-polar) Standard cable (E2E models with conventional connector pin)		2	-			XS2F-A422-DB0-B	10		
		4		2					
	L-shaped	2				XS2F-4422-GB0-B		-	
		4		5					
		2				XS2F-4422-JB0-B	5		
		4		10					
		2		2		XS2F-0421-310	10		
Standard cable	Straight	2						-	
		2	ł	-			_		
(non polar)	L-shaped	2						-	
Otomole and a state		2	-	-			_		
	Straight	2	-					-	
<b>`</b>		2	ł	-			_		
/ibration-proof obot cable Standard cable non-polar) Standard cable E2E models vith conventional onnector pin)	L-shaped	2	1					-	
/ibration-proof obot cable Standard cable non-polar) Standard cable E2E models with conventional connector pin)		۷	4	-			-		
	Straight							-	
		4							
Cable	L-shaped							4	
	-			5	XS2F-E422-G80-E		5		

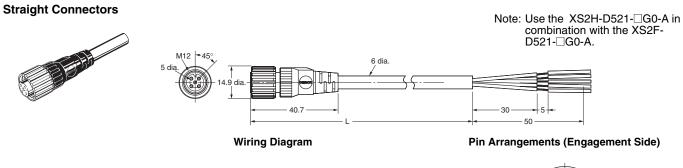
Note: Ask your OMRON representative about other cable lengths. \*The heat-resistant fixture material is SUS316L stainless steel without surface treatment.

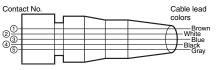
Refer to page the E2E Datasheet for information on connecting to E2E Proximity Sensors

# ● 5-pole Connectors for DC XS2F-D521-□G0-A

## Dimensions

(Unit: mm)





1022

# **Ordering Information**

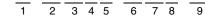
No. of cable	Cable core	Cable length	DC	
cores	cross-sectional area (mm²)	(m)	Model	Minimum order
5	0.3 mm <sup>2</sup>	2	XS2F-D521-DG0-A	10
5		5	XS2F-D521-GG0-A	5

Note: Ask your OMRON representative about other cable lengths.

# XS2H Plugs on One Cable End

# **Model Number Legend**





### 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

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

### 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.

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

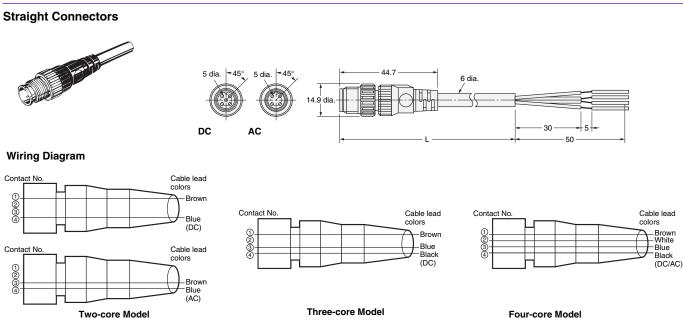
XS2

(Unit: mm)

# XS2H Plugs on One Cable End

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

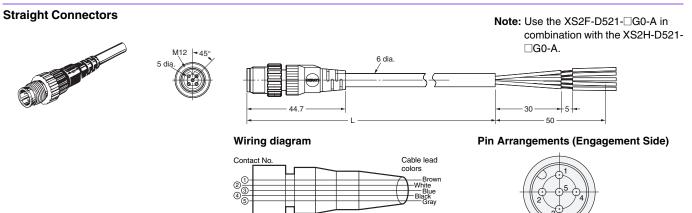
## Dimensions



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

# Dimensions

(Unit: mm)



**Five-core Model** 

# Ordering Information

No. of con-	Cable connec-	No. of	Cable core cross-	Cable	DC	AC	Minimum	UL-			
nector poles	tion direction	cable cores	s sectional area length (m) Model Model order	listed							
		2			XS2H-D421-AA0-A	XS2H-A421-AB0-A					
		3	- 0.5 mm <sup>2</sup> -		0.3	XS2H-D421-AC0-A		_			
4	Ohasiaha	4			n) Model Model order XS2H-D421-AA0-A XS2H-A421-AB0-A	Vaa					
4		2		0.5 mm	0.5 mm	0.5 mm	0.5 mm		XS2H-D421-CA0-A	XS2H-A421-CB0-A	10
	Straight	3		1	XS2H-D421-CC0-A		10				
		4			XS2H-D421-C80-A	XS2H-A421-C90-A					
F	1	F	0.2 mm <sup>2</sup>	0.3	XS2H-D521-AG0-A						
5		5	0.3 mm <sup>2</sup>	0.3 mm²	1	XS2H-D521-CG0-A		1			

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

# **Ordering Information**

Connector type	Cable connection direction	Number of cores	Cable length (m)	Model
Banal mounting applyat				XS2P-D821-2
Panel-mounting socket				XS2P-D822-2
Panel-mounting plug				XS2M-D824-4
Diverse and solds and		8	0.3	XS2H-D821-AH0-C
Plug on one cable end			1	XS2H-D821-CH0-C
Socket on one cable end	Ctraight		2	XS2F-D821-DH0-C
Socket on one cable end	Straight		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	1	2	3	4	5	6	7	8
colors	White	Brown	Green	Yellow	Gray	Pink	Blue	Shield

# **Ratings and Characteristics**

Rated current	1.5 A	
Rated voltage	36 VDC	
Contact resistance	40 M $\Omega$ 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	

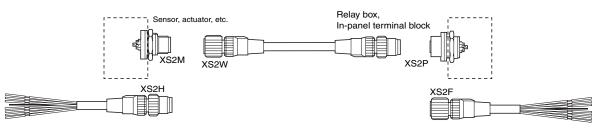
# **Materials and Finish**

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	PBT resin (UL94V-0)
Seal rubber and O-ring *2	Rubber

\*1. XS2F/XS2H/XS2W only.

\*2. O-rings are on sockets only.

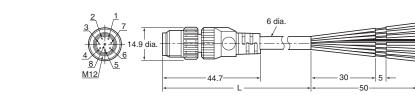
# Wiring Example



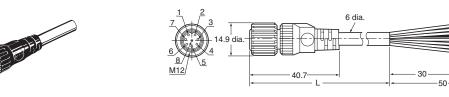
# Dimensions

5

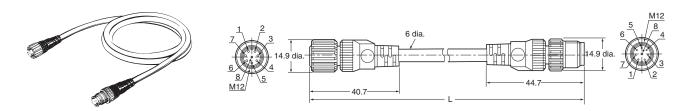
### XS2H Plug on One Cable End (M12)

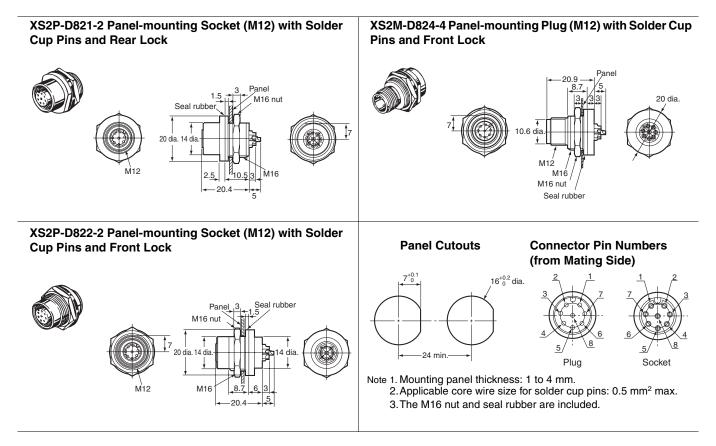


### XS2F Socket on One Cable End (M12)



#### XS2W Plug and Socket on Cable Ends (M12)

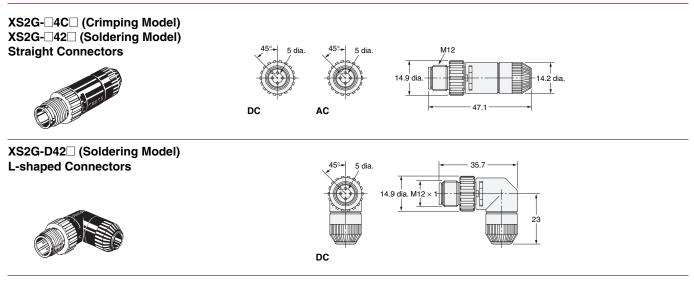




# XS2G Crimping/Soldering Plug Assemblies

## Dimensions

(Unit: mm)



# **Ordering Information**

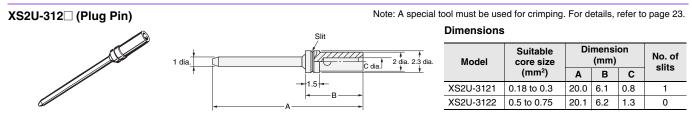
Suitable cable dia.	Cable connection	Connection	DC	AC	Minimum
(mm)	direction	method	Model	Model	order
C mana dia maadal	Straight	Crimping	XS2G-D4C1	XS2G-A4C1	
6-mm-dia. model (5 to 6 mm dia.)	Straight	Soldering	XS2G-D421	XS2G-A421	
(5 to 6 min dia.)	L-shaped	Soldering	XS2G-D422		
	Straight	Crimping	XS2G-D4C3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



# **Ordering Information**

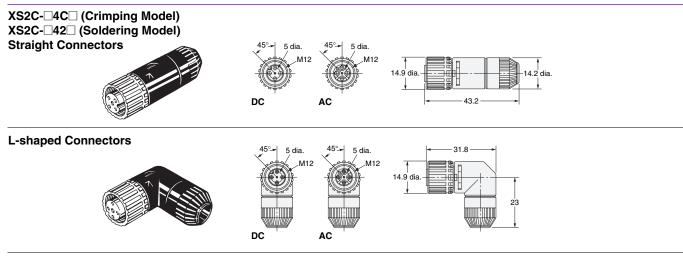
Suitable core size (mm <sup>2</sup> )	Model	Minimum order	
0.18 to 0.3	XS2U-3121	100	
0.5 to 0.75	XS2U-3122	100	

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

# XS2C Crimping/Soldering Socket Assemblies

# Dimensions

(Unit: mm)



# **Ordering Information**

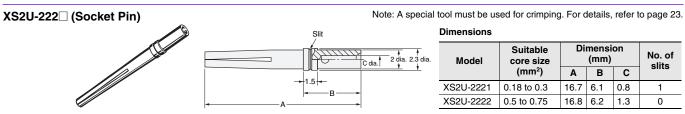
Suitable cable dia.	Cable connection	Connection method	DC	AC	Minimum order
(mm)	direction	Connection method	Model	Model	Minimum order
	Straight	Crimping	XS2C-D4C1	XS2C-A4C1	
6-mm-dia. model	Straight	Soldering	XS2C-D421	XS2C-A421	
(5 to 6 mm dia.)	Labanad	Crimping	XS2C-D4C2	XS2C-A4C2	
	L-shaped	Soldering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

Note: Crimping plug contacts are sold separately.

# XS2U Crimping Pin for XS2C

# Dimensions

(Unit: mm)



# **Ordering Information**

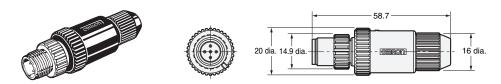
Suitable core size (mm <sup>2</sup> )	Model	Minimum order
0.18 to 0.3	XS2U-2221	100
0.5 to 0.75	XS2U-2222	100

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

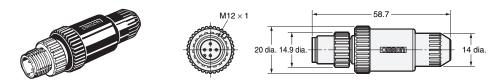
# XS2G Screw-on Plug Assemblies

### **Dimensions**

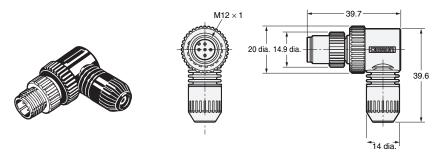
XS2G-D5S7 (5-pole, Straight, Applicable Cable Outer Diameter: 8 mm) XS2G-D5S9 (5-pole, Straight, Applicable Cable Outer Diameter: 7 mm) XS2G-D4S7 (4-pole, Straight, Applicable Cable Outer Diameter: 8 mm) XS2G-D4S9 (4-pole, Straight, Applicable Cable Outer Diameter: 7 mm)



XS2G-D5S1 (5-pole, Straight, Applicable Cable Outer Diameter: 6 mm) XS2G-D4S<sup>(1)</sup> (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<sup>(1)</sup> (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
No. of poles	Suitable cable dia. (IIIII)	Model	Model	Minimum order
	8-mm-dia. model (7 to 8 mm dia.)	XS2G-D5S7		
5	7-mm-dia. model (6 to 7 mm dia.)	XS2G-D5S9		
	6-mm-dia. model (5 to 6 mm dia.)	XS2G-D5S1	XS2G-D5S2	
	8-mm-dia. model (7 to 8 mm dia.)	XS2G-D4S7		50
	7-mm-dia. model (6 to 7 mm dia.)	XS2G-D4S9		50
4	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	

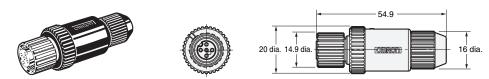
Note: XS2G Screw-on Plugs cannot be connected to side by side to the CN1 and CN2 connectors of XS2R Y-Joint Sockets/Plugs.

(Unit: mm)

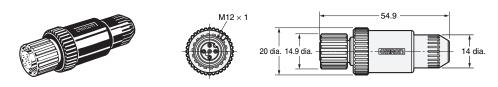
# XS2C Screw-on Socket Assemblies

## **Dimensions**

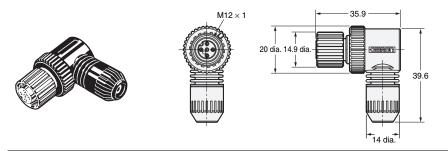
XS2C-D5S7 (5-pole, Straight, Applicable Cable Outer Diameter: 8 mm) XS2C-D5S9 (5-pole, Straight, Applicable Cable Outer Diameter: 7 mm) XS2C-D4S7 (4-pole, Straight, Applicable Cable Outer Diameter: 8 mm) XS2C-D4S9 (4-pole, Straight, Applicable Cable Outer Diameter: 7 mm)



XS2C-D5S1 (5-pole, Straight, Applicable Cable Outer Diameter: 6 mm) XS2C-D4S<sup>(4-pole, Straight, Applicable Cable Outer Diameter: 3, 4, or 6 mm)</sup>



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
No. of poles	Sunable cable dia. (mm)	Model	Model	winning order
	8-mm-dia. model (7 to 8 mm dia.)	XS2C-D5S7		
5	7-mm-dia. model (6 to 7 mm dia.)	XS2C-D5S9		
	6-mm-dia. model (5 to 6 mm dia.)	XS2C-D5S1	XS2C-D5S2	
	8-mm-dia. model (7 to 8 mm dia.)	XS2C-D4S7		50
	7-mm-dia. model (6 to 7 mm dia.)	XS2C-D4S9		50
	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	

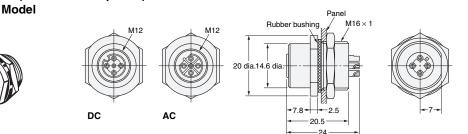
(Unit: mm)

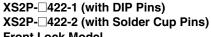
# XS2P Panel-mounting Sockets for Terminal Boxes

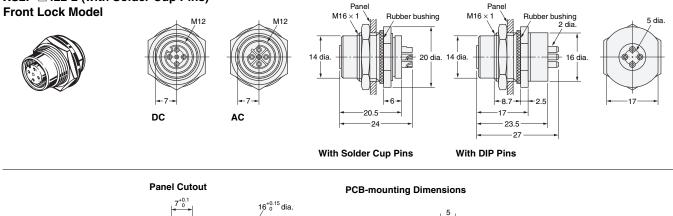
## Dimensions

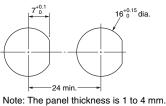
(Unit: mm)











Land Land 5 Four, 2.2-dia.holes

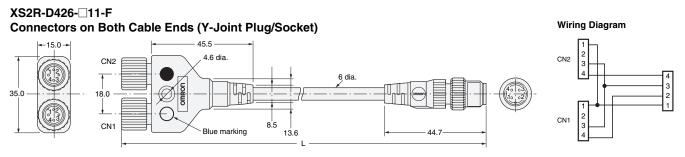
# **Ordering Information**

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

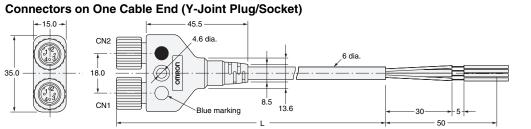
# XS2R Y-Joint Plug/Socket Connectors

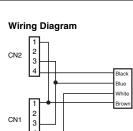
# Dimensions

(Unit: mm)

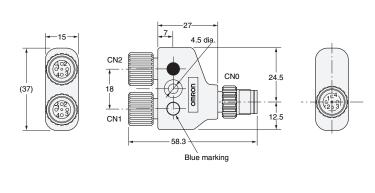


#### XS2R-D426-010-F





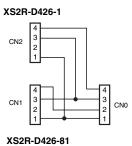
#### XS2R-D426-1 Y-Joint Plug/Socket without Cable



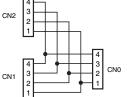
# Wiring Diagram

CN2

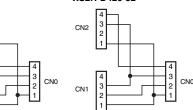
CN1







XS2R-D426-82



# **Ordering Information**

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

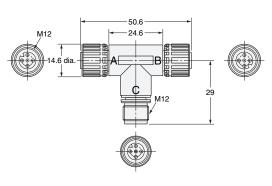
(Unit: mm)

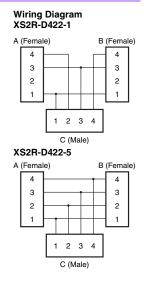
# XS2R T-Joint Plug/Socket Connectors

## Dimensions

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

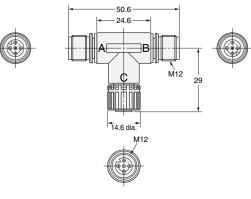




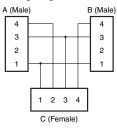


XS2R-D423-1 Bifurcated Model



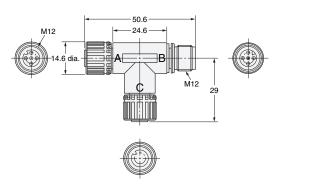




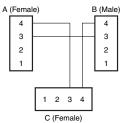


#### XS2R-D424-1 Daisy-chain Model





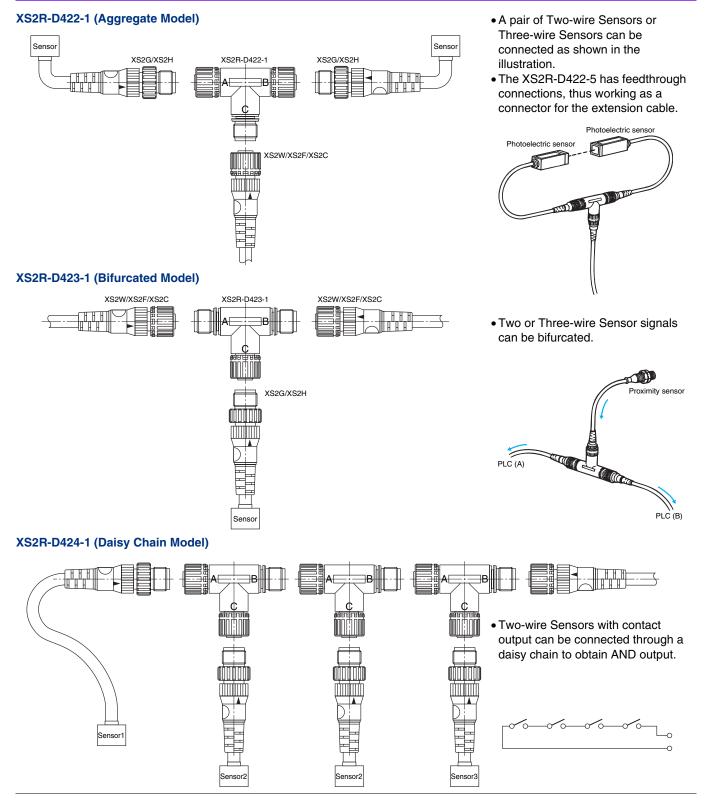




# **Ordering Information**

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

# **XS2R Application Examples**



# **Safety Precautions**

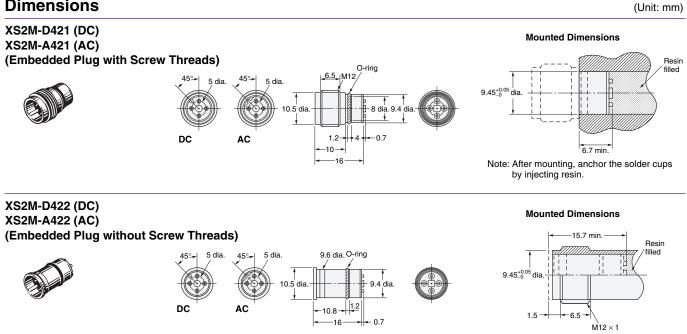
### Precautions for Correct Use

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**



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

Panel Cutouts

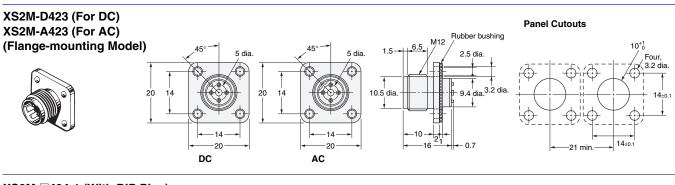
7<sup>+0.2</sup>

(Unit: mm)

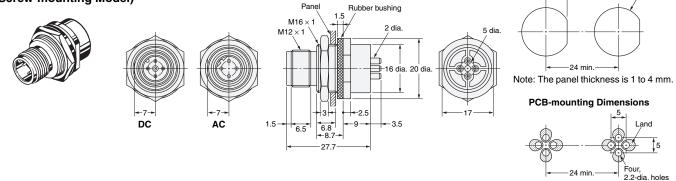
16<sup>+0.3</sup> dia.

# XS2M Panel-mounting Plugs

## **Dimensions**



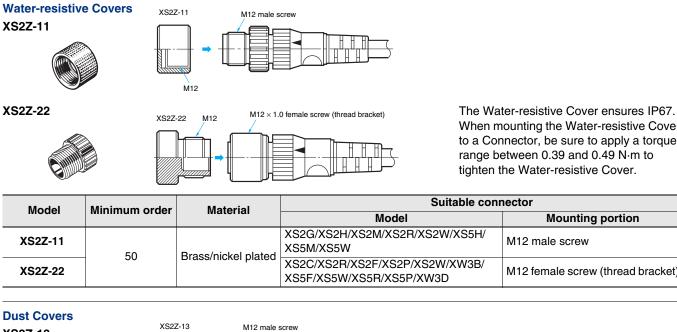
XS2M-2424-1 (With DIP Pins) XS2M424-2 (With Solder Cup Pins) (Screw-mounting Model)



# **Ordering Information**

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

# **Connector Covers**

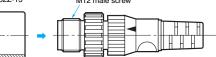


When mounting the Water-resistive Cover to a Connector, be sure to apply a torque range between 0.39 and 0.49 N·m to tighten the Water-resistive Cover.

Model	Minimum order	Material	Suitable connector		
Woder			Model	Mounting portion	
XS2Z-11	50	Brass/nickel plated	XS5M/XS5W	M12 male screw	
XS2Z-22	- 30		XS2C/XS2R/XS2F/XS2P/XS2W/XW3B/ XS5F/XS5W/XS5R/XS5P/XW3D	M12 female screw (thread bracket)	

XS2Z-13





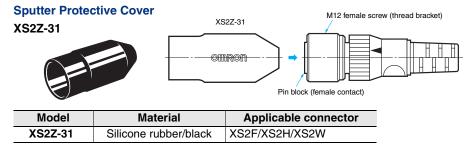
XS2Z-15/XS2Z-14



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



The Sputter Protective Cover protects the connector from weld sputter.

Make sure it covers the entire connector.

# Tools

# Crimp Tool XY2F-0002 XY2F-0003

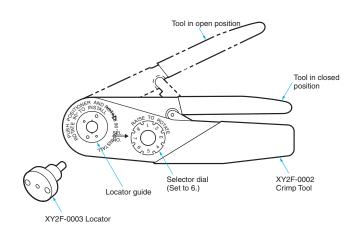
Use the Crimp Tool to crimp a cable core to the XS2U Crimping Pin used with the XS2C or XS2G Crimping Connector.

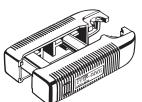
- The XY2F-0002 Crimp Tool is DMC's AFM8 (M22520/2-01).
- Mount the XY2F-0003 Locator (sold separately) to the locator guide of the Crimp Tool with a screw provided with the XY2F-0003 Locator.

### **Pin-block Extraction Tool**

#### XY2F-0001

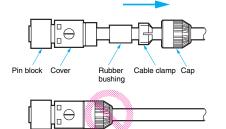
Use this tool to extract a Pin Block from the covers in order to make wiring changes or corrections after the cover has been mounted to the pin block for Connector Assemblies (XS2C/XS2G, soldering/crimping).





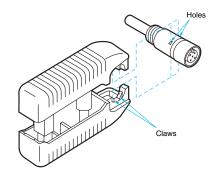
# **Extraction Procedure**

- (1) Disconnecting Components
- Disconnect all components on the cap side from the cover.

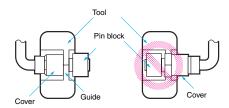


(2) Extracting Pin Block

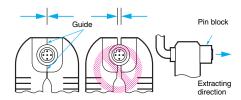
• Insert the claws of the Tool into the four holes of the cover.



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



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



# 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.

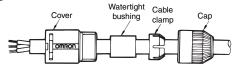
A watertight bushing for 6-mm-diameter Cable has no stripe, that for 4-mm-diameter Cable has a single stripe, and that for 3-mm-diameter Cable has two stripes.

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<sup>2</sup> for crimping connectors and 0.5 mm<sup>2</sup> maximum for soldering connectors.

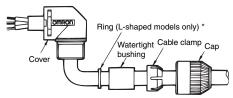
#### (2) Component Insertion

#### Crimping/Soldering Connectors

#### **Straight Connectors**



#### L-shaped Connectors

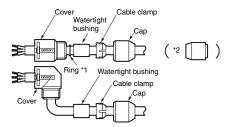


\*A ring is not required for Screw-on Connectors.

• 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.

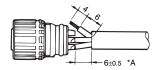


Insulation caps and insulation tubes are included with 5-pole Connectors (XS2C-D5S and XS2G-D5S).

- \*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



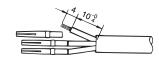
- Strip 10 mm of the Cable sheath and 4 mm of each core.
- Before soldering cores and solder cup pins together, soldercoat each of them.
- The following conditions are recommended for soldering each solder cup pin.

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**

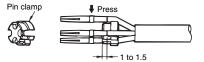
#### Crimping



- 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.

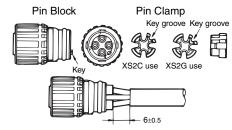
(Squeeze the handle firmly until the handle automatically returns to the release position.)

#### 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

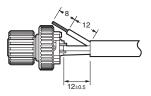


• Tentatively insert the pins to the pin block holes so that the key on the pin block will coincide with the key groove on the pin clamp. Then insert the cable along with the pin clamp.

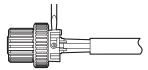
#### **Screw-on Connectors**

#### **Cable End Processing**

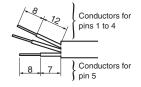
Four-pole Connectors



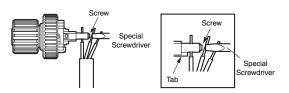
. Loosen the screws on pins 1 to 4 and insert the cores according to the pin numbers.



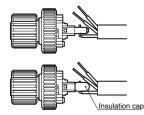
- Use the special Screwdriver (XW4Z-00B) \* and tighten the screws securely so that the cores do not pull out (tightening torque: 0.15 to 0.2 N·m).
- Five-pole Connectors
- Strip the cable sheath for a total of 15 mm and strip the core covering for 8 mm for the core to connect to pin 5.



- 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.



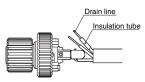
 Bend the cable as shown below, attached the enclosed insulation cap, and then strip the other cores.



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.

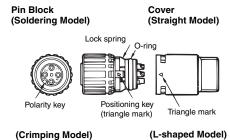


Connect the cores to pins 1 to 4.

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



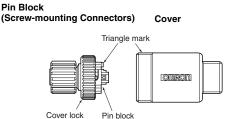
#### (4) Inserting Pin Block



(Crimping Model)



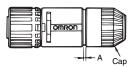
- Mount the cover to the pin block so that the triangle mark on the pin block will coincide with the triangle mark on the cover
- If the cover is used for an L-shaped model, the relationship between the position of the polarity key on the engaged side and cable connection direction will be determined 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.



- Align the triangular marks on the pin block and cover and insert the pin block into the cover.
- Press them together firmly (0.39 to 0.49 N·m) until the pin block does not come out of the cover.

#### (5) Mounting Cap

- After mounting the cover to the pin block and the cover snaps into place, tighten the cap securely by hand within a torque of 0.39 and 0.49 N·m.
- Note: If the cap is not tighten securely enough, the degree of protection (IP67) may not be maintained or vibration may cause the cap to become loose. Do not tighten the cap with pliers or similar tools; they may damage the cap.



• After fully tightening the cap, length A should be approximately one of the following according to the cable external diameter and the Connector model.

Connector	Cable external diameter (mm)			
Connector	6 mm	5 mm	4 mm	3 mm
For 6-mm-dia. cable	1	0		
For 4-mm-dia. cable		2	1	
For 3-mm-dia. cable			2	1

#### (6) After Assembly

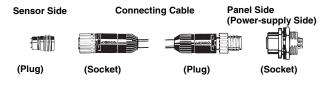
• Confirm the insulation between cores after completing assembly.

# **Recommended Cables**

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<sup>2</sup> for crimping connectors and 0.5 mm<sup>2</sup> maximum for soldering connectors.

# **Connector Arrangement**

For safety, when constructing a connection system between a Sensor and panel with a connector, make sure that the connector plug is on the Sensor side and the connector socket is on the panel side (i.e., the female pins are located on the power-supply side).



# **Safety Precautions**

### Precautions for Correct Use

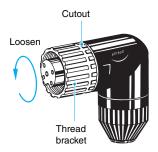
Do not use the product in atmospheres or environments that exceed product ratings.

#### **Tightening Cap (Connector Assemblies)**

- 1. Do not use pliers to tighten caps, otherwise the caps may be damaged. Be sure to tighten each cap by hand within a torque range between 0.39 and 0.49 N·m.
- 2. If caps are not tightened securely, the Connectors may not maintain their proper degree of protection (i.e., IP67) or the caps may become loose due to vibration.

#### **Connector Connection and Disconnection**

- When connecting or disconnecting Connectors, be sure to hold the Connectors by hand.
- Do not hold the cable part when disconnecting Connectors.
- Connectors mating with sockets must be fully inserted into the sockets. Tighten the thread bracket carefully so that the threads will not be damaged.
- Fully tighten thread bracket within a torque range between 0.39 and 0.49 N·m and be sure that the threads of the opposite parts are hidden by the thread bracket.
- When disconnecting Connectors, be sure to loosen the thread brackets first. Do not loosen the caps.
- Thread brackets must be loosened in the cutout direction.



#### **Degree of Protection**

- Do not impose external force continuously on the joints of pin blocks and covers, otherwise the Connectors may not keep its proper degree of protection (i.e., IP67).
- The degree of protection of connectors (IP67) is not for a fully watertight structure. Do not use them underwater.
- Connectors are of resin mold construction. Do not impose excessive force on them.

#### Setup

- Do not make any cable bends near the base of the Unit.
- Any bends made must have a minimum radius of 40 mm.

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#### 2012.2

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