

Round Water-resistant Connectors (M12) XS5

Water-resistant Smartclick Connectors That Reduce Installation Work

- A newly developed lock structure that maintains compatibility with conventional, screw-type M12 connectors.
- Simply insert the Connectors, then turn them approximately 1/8 of a turn to lock.
- A positive click indicates locking.
- Features the same degree of protection (IP67) as conventional, screw-type M12 connectors.
- Connector with cable are UL approved



Specifications

Rated current	4 A
Rated voltage	250 VDC
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 (IEC60529)
Insertion tolerance	50 times min.
Lock strength	Pulling: 100 N/15 s, Twisting: 1 N·m/15 s
Cable holding strength	100 N/15 s (for cable diameter of 6 mm)
Lock operating force	0.1 N·m to 0.25 N·m
Ambient operating temperature range	-25°C to 70°C

Recommended Cables

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

Connection Combinations

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

Note: Smartclick™ is a registered trademark of the OMRON Corporation.

⊗: Connected by Smartclick™ twisting. ○: Connected by screwing.

Materials and Finish

Item	Model	XS5F/H/W/R	XS5M/P	XS5C/G
Contacts	Materials	Phosphor bronze		Brass
	Finish	Nickel base, 0.4-μm gold-plating		
Fixtures		Nickel-plated zinc alloy		
Pin Block		PBT resin (UL94V-0)		
O-ring		Rubber		
Overmolding/Cover		Polyester elastomer	—	PBT resin (UL94V-0)
Cable	Standard cable	UL AWM2464, 6-mm dia. 4 cores × AWG20 (0.12/49)	—	—
	Vibration-proof robot cable	UL CL3, 6-mm dia. 4 cores × AWG20 (0.08/110)	—	—
	Oil-resistant polyurethane cable	6 dia. 4 cores × 0.5 mm ² (0.12/45)	—	—
Seal Resin		—	Epoxy Resin (UL94V-0)	—
Power supply wires		—	UL 1007 AWG20	—

- Note: 1. See "XS5/XS2 - Assembly Tooling and Accessories" datasheet for information regarding assembly, tooling and accessories that are common to the XS5 and XS2 connectors
2. See "XS2" datasheet for specifics regarding those connectors

4-Pin Connectors with Cable Attached

■ XS5F - Socket on One Cable End

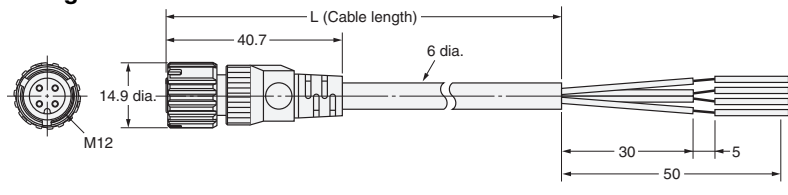
- XS5F-D42□-□80-A Standard Cable
- XS5F-D42□-□80-F Vibration-proof Robot Cable
- XS5F-D42□-□80-P Oil-resistant Polyurethane Cable



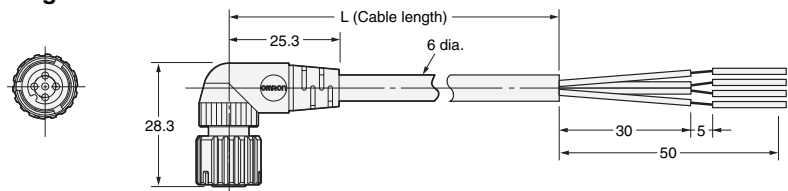
Dimensions

(Unit: mm)

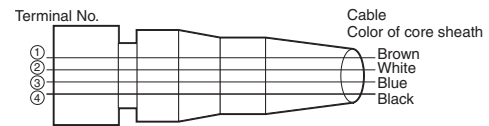
Straight



Angled



Wiring Diagram for 4 Cores



Note: The overmolding on the Standard Cable (XS5F-D42□-□80-A) and the Oil-resistant Polyurethane Cable (XS5F-D42□-□80-P) is black, and the overmolding on the Vibration-proof Robot Cable (XS5F-D42□-□80-F) is gray.

Ordering Information

Cable type	Cable length L (m)	Model		Standard pack quantity
		Straight	Angled	
Standard cable	1	XS5F-D421-C80-A	XS5F-D422-C80-A	10
	2	XS5F-D421-D80-A	XS5F-D422-D80-A	
	3	XS5F-D421-E80-A	XS5F-D422-E80-A	
	5	XS5F-D421-G80-A	XS5F-D422-G80-A	
	10	XS5F-D421-J80-A	XS5F-D422-J80-A	
Vibration-proof robot cable	1	XS5F-D421-C80-F	XS5F-D422-C80-F	10
	2	XS5F-D421-D80-F	XS5F-D422-D80-F	
	3	XS5F-D421-E80-F	XS5F-D422-E80-F	
	5	XS5F-D421-G80-F	XS5F-D422-G80-F	
	10	XS5F-D421-J80-F	XS5F-D422-J80-F	
Oil-resistant polyurethane cable	2	XS5F-D421-D80-P	XS5F-D422-D80-P	5
	5	XS5F-D421-G80-P	XS5F-D422-G80-P	
	10	XS5F-D421-J80-P	XS5F-D422-J80-P	

Note: Ask your OMRON representative about other specifications.

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*.

XS5F - **D42**□ - □**80** - □
 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)

D: DC

3. Connector Poles

4: 4 poles

4. Contact Plating

2: 0.4- μ m gold plating

5. Cable Connection Direction

1: Straight

2: Angled

6. Cable Length

A: 0.3 m G: 5 m

B: 0.5 m H: 7 m

C: 1 m J: 10 m

D: 2 m K: 15 m

E: 3 m L: 20 m

F: 4 m

7. Connections

8: ① Brown, ② White, ③ Blue, ④ Black
(Numbers inside circles are terminal numbers.)

8. Connectors on One End/Both Ends

0: One end

9. Cable Specification

A: Standard cable

F: Vibration-proof robot cable

P: Oil-resistant polyurethane cable

■ XS5H - Plug on One Cable End

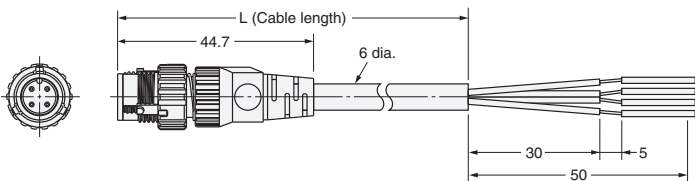
XS5H-D42□-□80-A Standard Cable
XS5H-D42□-□80-F Vibration-proof Robot Cable
XS5H-D42□-□80-P Oil-resistant Polyurethane Cable



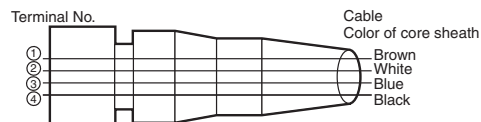
Dimensions

(Unit: mm)

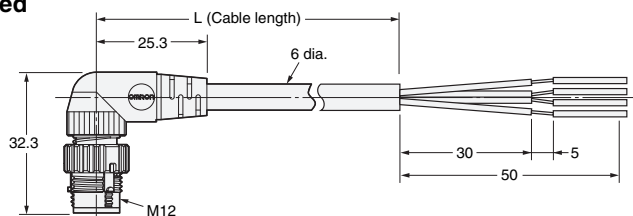
Straight



Wiring Diagram for 4 Cores



Angled



Note: The overmolding on the Standard Cable (XS5H-D42□-□80-A) and the Oil-resistant Polyurethane Cable (XS5H-D42□-□80-P) is black, and the overmolding of the Vibration-proof Robot Cable (XS5H-D42□-□80-F) is gray

Ordering Information

Cable type	Cable length L (m)	Model		Standard pack quantity
		Straight	Angled	
Standard cable	0.3	XS5H-D421-A80-A	XS5H-D422-A80-A	5
	1	XS5H-D421-C80-A	XS5H-D422-C80-A	
	2	XS5H-D421-D80-A	XS5H-D422-D80-A	
Vibration-proof robot cable	5	XS5H-D421-G80-A	XS5H-D422-G80-A	
	0.3	XS5H-D421-A80-F	XS5H-D422-A80-F	
	1	XS5H-D421-C80-F	XS5H-D422-C80-F	
Oil-resistant polyurethane cable	2	XS5H-D421-D80-F	XS5H-D422-D80-F	
	5	XS5H-D421-G80-F	XS5H-D422-G80-F	
	0.3	XS5H-D421-A80-P	XS5H-D422-A80-P	10
	2	XS5H-D421-D80-P	XS5H-D422-D80-P	5
5	XS5H-D421-G80-P	XS5H-D422-G80-P		

Note: Ask your OMRON representative about other specifications.

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*.

XS5H - D42 - **80** -

1 2 3 4 5 6 7 8 9

1. Type

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

2. AC/DC (Mating Section Form)

D: DC

3. Connector Poles

4: 4 poles

4. Contact Plating

2: 0.4- μ m gold plating

5. Cable Connection Direction

1: Straight

2: Angled

6. Cable Length

A: 0.3 m G: 5 m

B: 0.5 m H: 7 m

C: 1 m J: 10 m

D: 2 m K: 15 m

E: 3 m L: 20 m

F: 4 m

7. Connections

8: ① Brown, ② White, ③ Blue, ④ Black
(Numbers inside circles are terminal numbers)

8. Connectors on One End/Both Ends

0: One end

9. Cable Specifications

A: Standard cable

F: Vibration-proof robot cable

P: Oil-resistant polyurethane cable

■ XS5W - Socket and Plug on Cable Ends

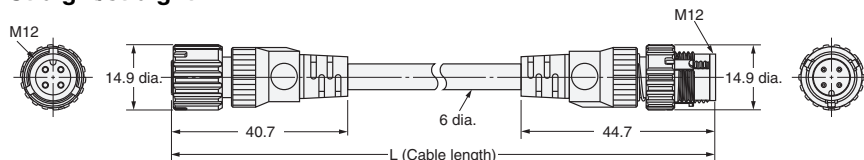
XS5W-D42□-□81-A Standard Cable
 XS5W-D42□-□81-F Vibration-proof Robot Cable
 XS5W-D42□-□81-P Oil-resistant Polyurethane Cable



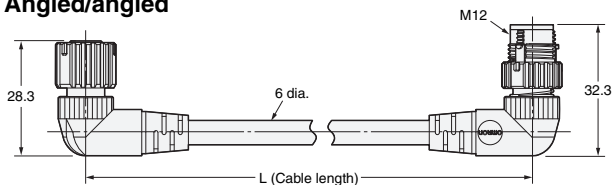
Dimensions

(Unit: mm)

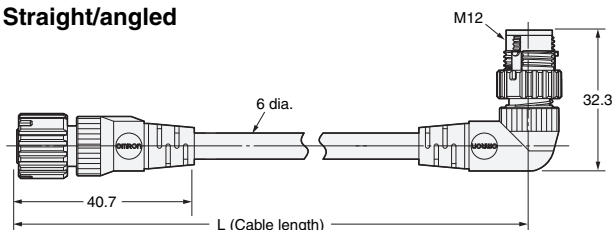
Straight/straight



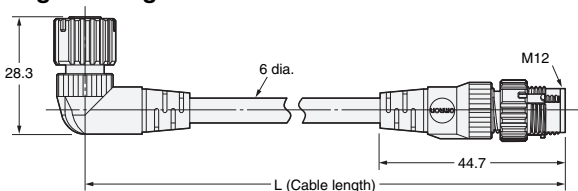
Angled/angled



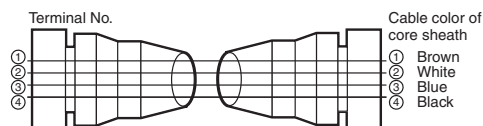
Straight/angled



Angled/straight



Wiring Diagram for 4 Cores



Note: The overmolding on the Standard Cable (XS5W-D42□-□81-A) and the Oil-resistant Polyurethane Cable (XS5W-D42□-□81-P) is black, and the overmolding of the Vibration-proof Robot Cable (XS5W-D42□-□81-F) is gray.

Ordering Information

Cable type	Cable length L (m)	Model		Standard pack quantity
		Straight/straight	Angled/angled	
Standard cable	1	XS5W-D421-C81-A	—	10
	2	XS5W-D421-D81-A	XS5W-D422-D81-A	
	3	XS5W-D421-E81-A	—	
	5	XS5W-D421-G81-A	XS5W-D422-G81-A	
	10	XS5W-D421-J81-A	—	5
Vibration-proof robot cable	1	XS5W-D421-C81-F	—	10
	2	XS5W-D421-D81-F	—	
	3	XS5W-D421-E81-F	—	
	5	XS5W-D421-G81-F	—	
	10	XS5W-D421-J81-F	—	5
Oil-resistant polyurethane cable	2	XS5W-D421-D81-P	—	5
	5	XS5W-D421-G81-P	—	1
	10	XS5W-D421-J81-P	—	

Cable type	Cable length L (m)	Model		Standard pack quantity
		Straight/angled	Angled/straight	
Standard cable	2	XS5W-D423-D81-A	XS5W-D424-D81-A	5
	5	XS5W-D423-G81-A	XS5W-D424-G81-A	

Note: Ask your OMRON representative about other specifications.

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*.

XS5W - D42

□

 -

□

81 -

□

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: DC

3. Connector Poles

4: 4 poles

4. Contact Plating

2: 0.4-μm gold plating

5. Cable Connection Directions

- 1: Straight/straight
- 2: Angled/angled
- 3: Straight (XS5F)/angled (XS5H)
- 4: Angled (XS5F)/straight (XS5H)

6. Cable Length

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

7. Connections

- 8: ① Brown, ② White, ③ Blue, ④ Black
(Numbers inside circles are terminal numbers.)

8. Connectors on One End/Both Ends

- 1: Both ends

9. Cable Specifications

- A: Standard cable
- F: Vibration-proof robot cable
- P: Oil-resistant polyurethane cable

4-Pin and 5-Pin Assembly Connector

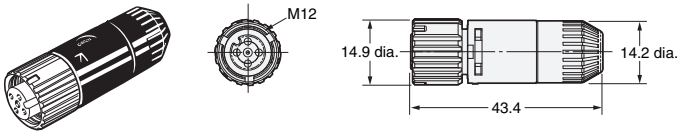
■ XS5C Sockets



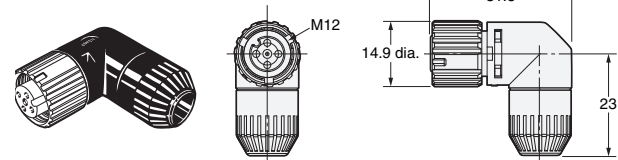
Dimensions

(Unit: mm)

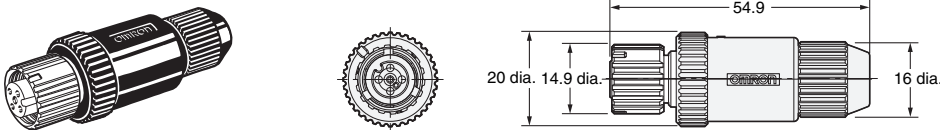
XS5C-D4C□ (Crimping Model)
 XS5C-D42□ (Soldering Model)
 Straight Connectors



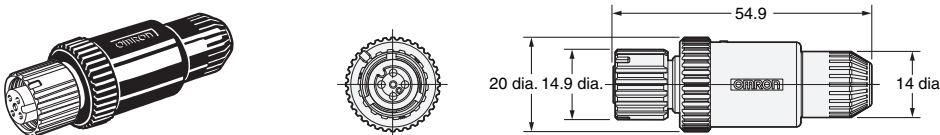
XS5C-D4C□ (Soldering Model)
 XS5C-D42□ (Soldering Model)
 Angled Connectors



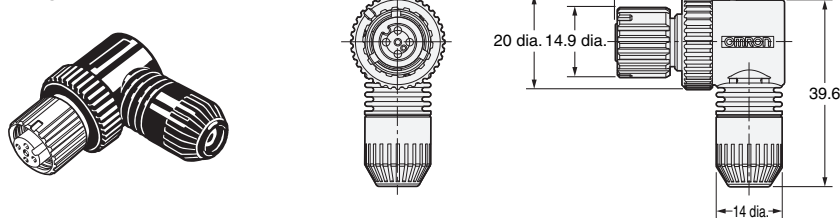
XS5C-D□S□ (Screw-on Connectors, Applicable Cable Outer Diameter: 7 or 8mm)
 Straight Connectors



XS5C-D□S□ (Screw-on Connectors, Applicable Cable Outer Diameter: 3, 4, or 6mm)
 Straight Connectors



XS5C-D□S□ (Screw-on Connectors)
 Angled Connectors



Ordering Information

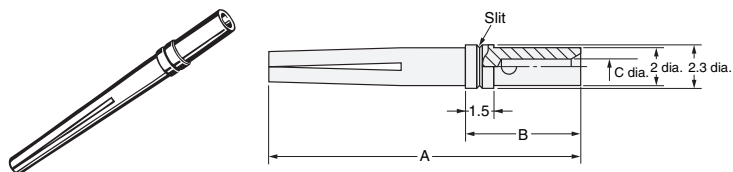
No. of Poles	Connection Method	Suitable cable dia. (mm)	Model		Standard pack quantity
			Straight	Angled	
4	Crimping	6 mm (5 to 6)	XS5C-D4C1	XS5C-D4C2	10
		4 mm (4 to 5)	XS5C-D4C3	XS5C-D4C4	
		3 mm (3 to 4)	XS5C-D4C5	XS5C-D4C6	
	Soldering	6 mm (5 to 6)	XS5C-D421	XS5C-D422	
		4 mm (4 to 5)	XS5C-D423	XS5C-D424	
		3 mm (3 to 4)	XS5C-D425	XS5C-D426	
	Screw-on	6 mm (5 to 6)	XS5C-D4S1	XS5C-D4S2	
		4 mm (4 to 5)	XS5C-D4S3	XS5C-D4S4	
		3 mm (3 to 4)	XS5C-D4S5	XS5C-D4S6	
		8 mm (7 to 8)	XS5C-D4S7	—	
		7 mm (6 to 7)	XS5C-D4S9	—	
	5	Screw-on	6 mm (5 to 6)	XS5C-D5S1	
4 mm (4 to 5)			XS5C-D5S3	—	
3 mm (3 to 4)			XS5C-D5S5	—	
8 mm (7 to 8)			XS5C-D5S7	—	
7 mm (6 to 7)			XS5C-D5S9	—	

■ XS5U (Crimping pin for XS5C)

Dimensions

(Unit: mm)

XS5U-222□
Socket Pin



Dimensions

Model	Suitable core size (mm ²)	Dimension (mm)			No. of slits
		A	B	C	
XS5U-2221	0.18 to 0.3 (22 to 24 AWG)	16.7	6.1	0.8	1
XS5U-2222	0.5 to 0.7 (18 to 20 AWG)	16.8	6.2	1.3	0

- Note:** 1. A special tool must be used for crimping. For details, refer to the "XS5/XS2 - Assembly Tooling and Accessories" datasheet.
2. AWG size is based on UL1007 wire.

Ordering Information

Suitable core size (mm ²)	Model	Standard Pack Quantity
0.18 to 0.3	XS5U-2221	100
0.5 to 0.75	XS5U-2222	

■ XS5G - Plugs



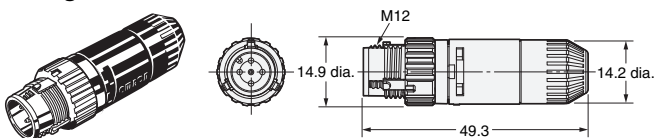
Dimensions

(Unit: mm)

XS5G-D4C (Crimping Model)

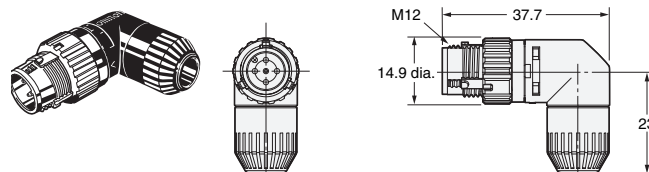
XS5G-D42 (Soldering Model)

Straight Connectors



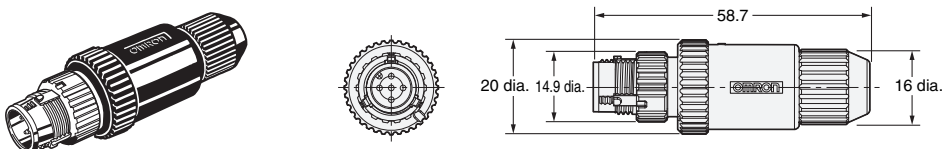
XS5G-D42 (Soldering Model)

Angled Connectors



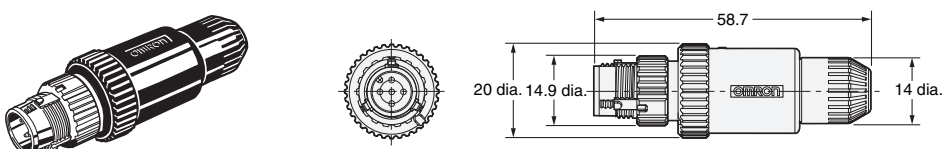
XS5G-D□S (Screw-on Connectors, Applicable Cable Outer Diameter: 7 or 8mm)

Straight Connectors



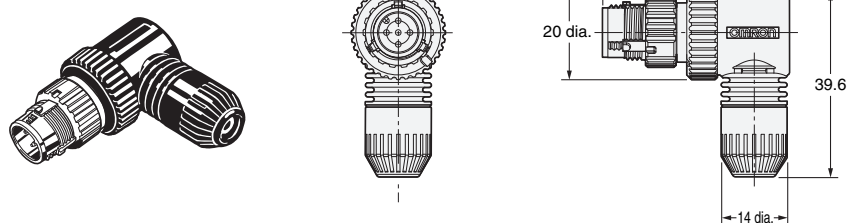
XS5G-D□S (Screw-on Connectors, Applicable Cable Outer Diameter: 3, 4, or 6mm)

Straight Connectors



XS5G-D□S (Screw-on Connectors)

Angled Connectors



Ordering Information

No. of Poles	Connection Method	Suitable cable dia. (mm)	Model		Standard pack quantity
			Straight	Angled	
4	Crimping	6 mm (5 to 6)	XS5G-D4C1	—	10
		4 mm (4 to 5)	XS5G-D4C3	—	
		3 mm (3 to 4)	XS5G-D4C5	—	
	Soldering	6 mm (5 to 6)	XS5G-D421	XS5G-D422	
		4 mm (4 to 5)	XS5G-D423	XS5G-D424	
		3 mm (3 to 4)	XS5G-D425	XS5G-D426	
	Screw-on	6 mm (5 to 6)	XS5G-D4S1	XS5G-D4S2	
		4 mm (4 to 5)	XS5G-D4S3	XS5G-D4S4	
		3 mm (3 to 4)	XS5G-D4S5	XS5G-D4S6	
		8 mm (7 to 8)	XS5G-D4S7	—	
5	Screw-on	7 mm (6 to 7)	XS5G-D4S9	—	
		6 mm (5 to 6)	XS5G-D5S1	—	
		4 mm (4 to 5)	XS5G-D5S3	—	
		3 mm (3 to 4)	XS5G-D5S5	—	
		8 mm (7 to 8)	XS5G-D5S7	—	
		7 mm (6 to 7)	XS5G-D5S9	—	

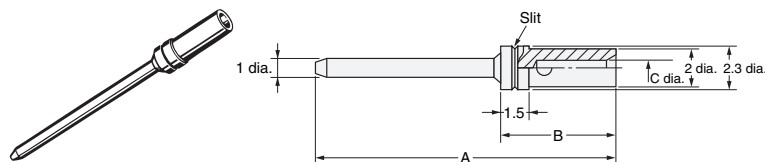
Note: XS5G Screw-on Plugs cannot be connected side-by-side to the CN1 and CN2 connectors of XS2R or XS5R Y-Joint Sockets / Plugs

■ XS5U (Crimping pin for XS5G)

Dimensions

(Unit: mm)

XS5U-312□
Plug Pin



Dimensions

Model	Suitable core size (mm ²)	Dimension (mm)			No. of slits
		A	B	C	
XS5U-3121	0.18 to 0.3 (22 to 24 AWG)	22.6	6.1	0.8	1
XS5U-3122	0.5 to 0.7 (18 to 20 AWG)	22.7	6.2	1.3	0

- Note:** 1. A special tool must be used for crimping. For details, refer to the "XS5/XS2 - Assembly Tooling and Accessories" datasheet.
2. AWG size is based on UL1007 wire.

Ordering Information

Suitable core size (mm ²)	Model	Standard Pack Quantity
0.18 to 0.3	XS5U-3121	100
0.5 to 0.75	XS5U-3122	

4-Pin Y-Joint Plug/Socket Connectors

■ XS5R

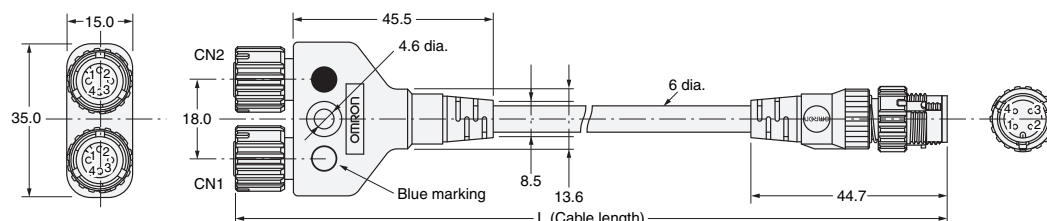


Dimensions

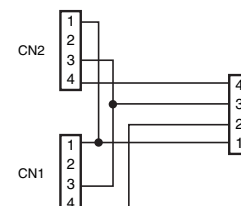
(Unit: mm)

XS5R-D426-□11-F

Connectors on Both Ends (Y-Joint Plug/Socket)

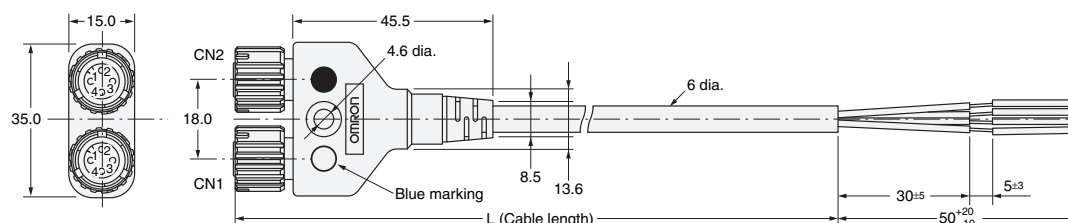


Wiring Diagram

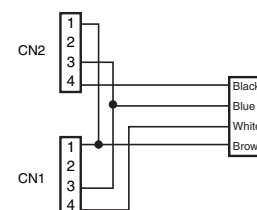


XS5R-D426-□10-F

Connectors on One Cable End (Y-Joint Socket)

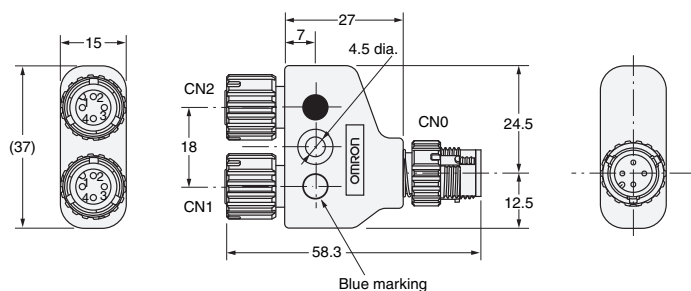


Wiring Diagram



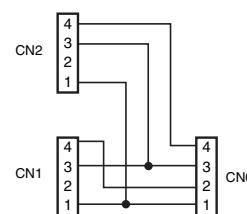
XS5R-D426-□

Y-Joint Plug/Socket without Cable

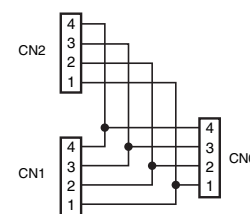


Wiring Diagram

XS5R-D426-1



XS5R-D426-5



Ordering Information

Cable	Connector	Cable length (m)	Model	Standard pack quantity
With cable	Connectors on both cable ends	0.5	XS5R-D426-B11-F	5
		1	XS5R-D426-C11-F	
		2	XS5R-D426-D11-F	
		3	XS5R-D426-E11-F	
	Connector on one cable end	2	XS5R-D426-D10-F	
		5	XS5R-D426-G10-F	
With no cable	Y-Joint Plug/Socket	---	XS5R-D426-1	10
		---	XS5R-D426-5	

Note: XS2G and XS5G Assembled Connectors with screw connections cannot be connected to both CN1 and CN2 at the same time.

4-Pin Panel-mount Connectors

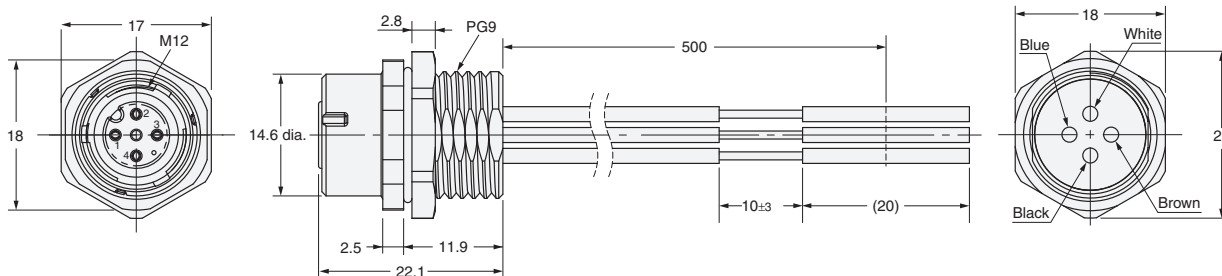
■ XS5P - Sockets



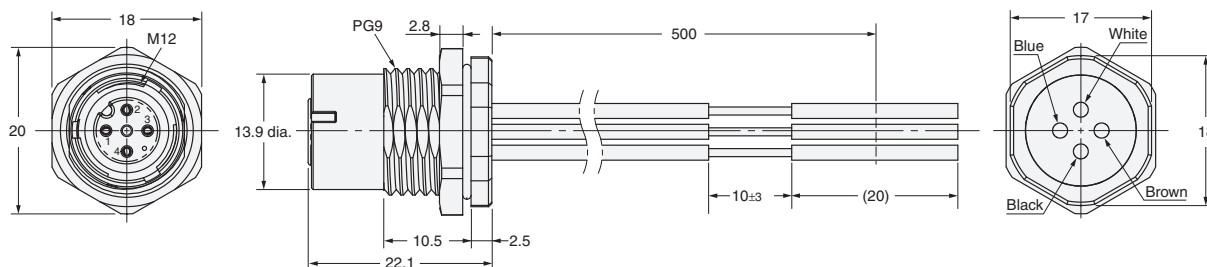
Dimensions

(Unit: mm)

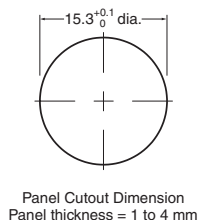
XS5P-D426-5 Front Panel-mounting Sockets for Rear Lock Nuts



XS5P-D427-5 Rear Panel-mounting Sockets for Front Lock Nuts



Panel Cutout



- Note:**
1. The panel cutout dimension is the same for Front-locking and Rear-locking Sockets.
 2. Rotational positioning is not possible for connector rotation.

Wiring and Wire Specifications

Wiring

Pin number	Color
1	Brown
2	White
3	Blue
4	Black

Wire Specifications

Item	Specification	
Specification	UL1007	
Nominal size	AWG20	
Configuration	Number of wires	21
	Wire diameter	0.18
	Standard outer diameter	1.8

Ordering Information

Type	Lock	Cable length (m)	Model	Standard pack, quantity
With cable	Rear lock	0.5	XS5P-D426-5	10
	Front lock		XS5P-D427-5	

■ XS5M - Plugs

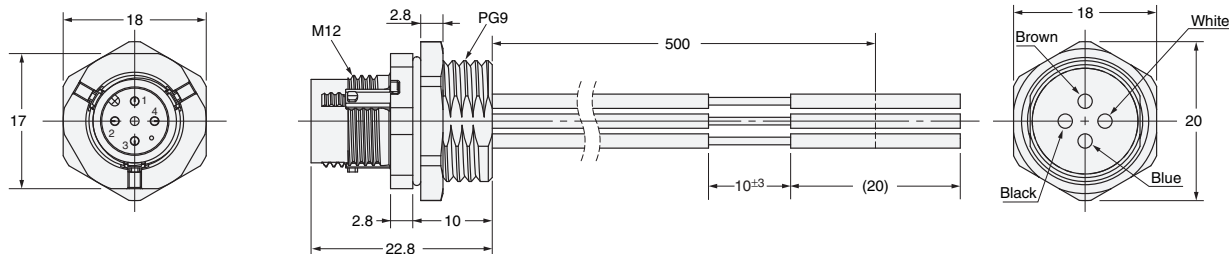


Dimensions

(Unit: mm)

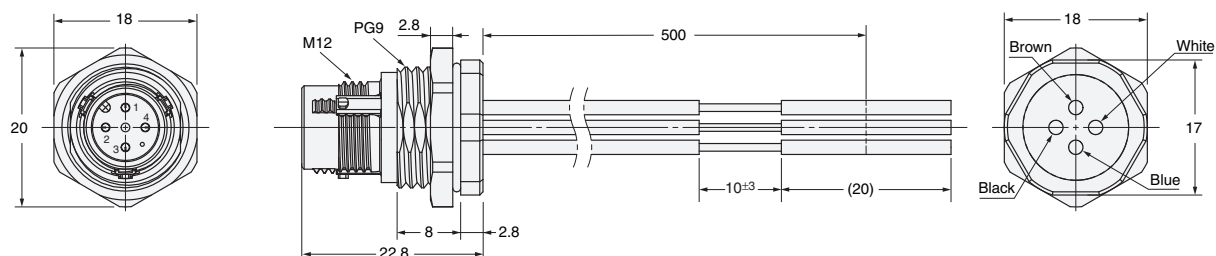
XS5M-D426-5

Front Panel-mounting Plugs for Rear Lock Nuts

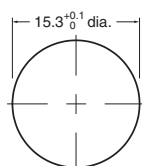


XS5M-D427-5

Rear Panel-mounting Plugs for Front Lock Nuts



Panel Cutout



Panel Cutout Dimension
Panel thickness = 1 to 4 mm

- Note:**
1. The panel cutout dimension is the same for Front-locking and Rear-locking Sockets.
 2. Rotational positioning is not possible for connector rotation.

Wiring and Wire Specifications

Wiring

Pin number	Color
1	Brown
2	White
3	Blue
4	Black

Wire Specifications

Item	Specification	
Specification	UL1007	
Nominal size	AWG20	
Configuration	Number of wires	21
	Wire diameter	0.18
	Standard outer diameter	1.8

Ordering Information

Type	Lock	Cable length (m)	Model	Standard pack, quantity
With cable	Rear lock	0.5	XS5M-D426-5	10
	Front lock		XS5M-D427-5	

Precautions

- Note:** 1. See "XS5/XS2 - Assembly Tooling and Accessories" datasheet for information and precautions regarding assembly, tooling and accessories that are common to the XS5 and XS2 connectors
2. See "XS2" datasheet for specifics regarding those connectors

■ Correct Use

Do not use the Connectors in an atmosphere or environment that exceeds the specifications.

Connector Connection and Disconnection

- When connecting or disconnecting Connectors, be sure to hold the Connectors by hand.
- Do not hold the cable when disconnecting Connectors.
- When mating Connectors, be sure to insert the plug all the way to the back of the socket before attempting to lock the Connectors.
- Do not use tools of any sort to mate the Connectors. Always use your hands. Pliers or other tools may damage the Connectors.
- When mating the Connectors to XS2 or other M12 Connectors, tighten the lock by hand to a torque of 0.39 to 0.49 N·m.

Wiring

- Always confirm wiring diagrams before wiring sensors, limit switches, or other devices.
- Lay the cables so that external force is not applied to the Connectors. Otherwise, the degree of protection (IP67) may not be achieved.

Degree of Protection

- The degree of protection of Connectors (IP67) is not for a fully watertight structure. Do not use the Connectors underwater.
- Do not step on or place any objects on the Connectors. Doing so may damage the Connectors.

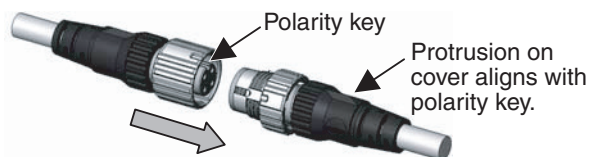
■ General Precautions

- Do not pull excessively on the Connectors or cables. Do not install the Connectors or cables in any way that would place a load directly on the mating section or cable connections. Doing so can damage the Connectors or break the wires inside the cables.
- Install the Connectors and cables where they will not be stepped on to prevent the wires inside the cables from being broken and to prevent the Connectors from being damaged. If the Connectors or cables must be installed where they might be stepped on, protect them with covers.
- Refer to the specifications for your cables before bending the cables and do not bend them past their minimum bending radius.
- If sensors or switches are not attached during installation, protect the mating surface of the Connector with a XS2Z-22 Waterproof Cover of XS2Z-14/15 Dust Cover.

■ Connecting the XS5

1. Connecting the XS5 Plug and Socket

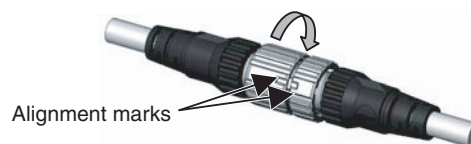
- Align the projection on the plug cover with the polarity key on the socket, then insert the plug all the way in.



- Hold the knurled socket grip, then insert the projection on the plug into the groove of the socket.



- Turn the knurled grips of the socket clockwise approximately 45 degrees in respect to the plug. A click will indicate that the Connectors are locked. The locking condition can also be confirmed by the alignment marks on the plug and socket.



2. Connecting the XS5 and XS2

- Align the projection on the plug cover with the polarity key on the socket, then insert the plug all the way in.
- In the same way as when connecting two XS2 Connectors, screw the knurled grip in the clockwise direction.
- Use your fingers to tighten the Connectors sufficiently.

MEMO

A large grid of dashed lines for taking notes, with a vertical bar on the left side.

Omron Electronic Components, LLC

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