

Round Water-resistant Connectors (M12)

XS5

Water-resistant Smartclick Connectors That Reduce Installation Work

- **New** - IDC Field-wiring versions of the XS5G and XS5C.
- A newly developed lock structure that maintains compatibility with 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	Tensile: 100 N/15 s, Torsion: 1 N-m/15 s
Cable holding strength	Tensile: 100 N/15 s, Torsion: 1 N-m/15 s (for cable diameter of 6 mm) (See note 2)
Lock operating force	0.1 N-m to 0.25 N-m
Ambient operating temperature range	-25°C to 70°C
Number of pressure-weld repairs (See note 1)	10 times max. (Limited to the same external diameter and wire diameter.)

Note: 1. Only XS5C/G (IDC models)
2. Refer to product specifications for details.

Recommended Cables

Cable outer diameter (mm)		Core sizes			
		Crimping models	Soldering models	Screw-on models	IDC 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	0.14 to 0.75 mm ² • Minimum Wire Diameter: 0.08mm • Outer diameter of wire covering: 0.7 to 2.6 mm • Sheath material: PVC, PE, PUR • Material of wire covering: PVC, PE
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	XS5R	XS5M/P	XS5C/G (Crimping, Soldering)	XS5C/G (Screw-on)	XS5C/G (IDC models)
Contacts	Materials	Phosphor bronze	Phosphorbronze or Brass	Phosphor bronze	Brass	Phosphor bronze or Brass	Phosphor bronze
	Finish	Nickel base, 0.4-μm gold-plating					Nickel base, 0.15-μm gold-plating
Fixtures		Nickel-plated zinc alloy					
Fixtures (Lock) (See note 3)		SUS					
Pin Block		PBT resin (UL94V-0)					
O-ring		Rubber					
Overmolding/Cover		Soft PBT resin (UL94V-0)		—	PBT resin(UL94V-0)		
Cable	Fire-retardant, robot cable	UL AWM2464 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
3. Only plug

4-Pin Connectors with Cable Attached

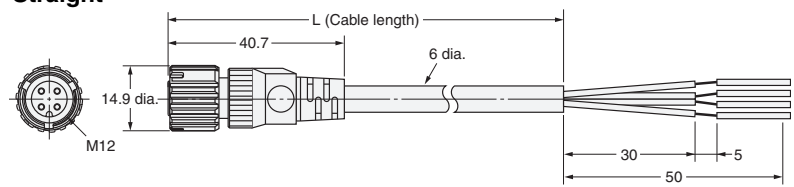
XS5F - Socket on One Cable End

XS5F-D42□-□80-F Fire-retardant, Robot Cable	 
XS5F-D42□-□80-P Oil-resistant Polyurethane Cable	

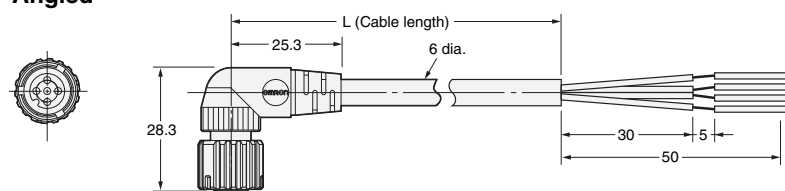
Dimensions

(Unit: mm)

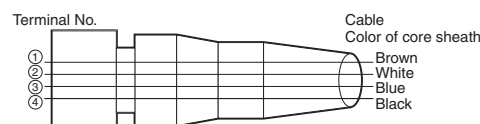
Straight



Angled



Wiring Diagram for 4 Cores



Note: The overmolding on the Oil-resistant Polyurethane Cable (XS5F-D42□-□80-P) is black, and the overmolding on the Fire-retardant, Robot Cable (XS5F-D42□-□80-F) is warm gray.

Ordering Information

Cable type	Cable length L (m)	Model		Standard pack quantity
		Straight	Angled	
Fire-retardant, robot cable	1	XS5F-D421-C80-F	XS5F-D422-C80-F	10
	2	XS5F-D421-D80-F	XS5F-D422-D80-F	5
	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	1
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	1

Note: 1. Ask your OMRON representative about other specifications.

2. XS5F-D42□ models with -F are cRUus approved.

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-μm 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

F: Fire-retardant, robot cable

P: Oil-resistant polyurethane cable

■ XS5H - Plug on One Cable End

XS5H-D42□-□80-F Fire-retardant, Robot Cable
XS5H-D42□-□80-P Oil-resistant Polyurethane Cable

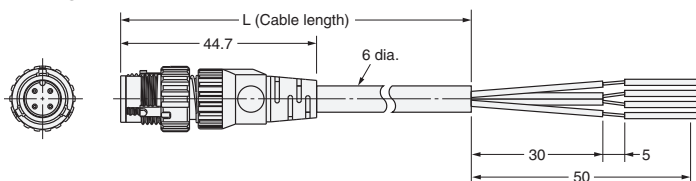
cRU[®] US

Smartclick™

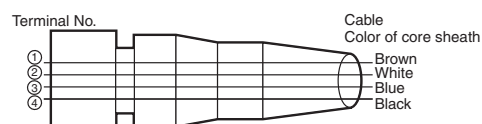
Dimensions

(Unit: mm)

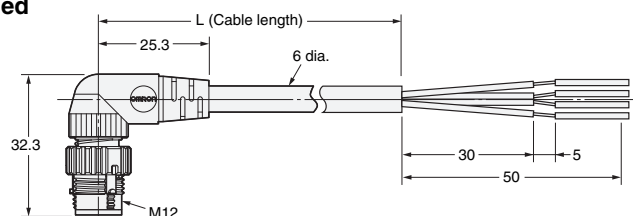
Straight



Wiring Diagram for 4 Cores



Angled



Note: The overmolding on the Oil-resistant Polyurethane Cable (XS5H-D42□-□80-P) is black, and the overmolding of the Fire-retardant, Robot Cable (XS5H-D42□-□80-F) is warm gray

Ordering Information

Cable type	Cable length L (m)	Model		Standard pack quantity
		Straight	Angled	
Fire-retardant, robot cable	0.3	XS5H-D421-A80-F	XS5H-D422-A80-F	10
	1	XS5H-D421-C80-F	XS5H-D422-C80-F	
	2	XS5H-D421-D80-F	XS5H-D422-D80-F	5
	5	XS5H-D421-G80-F	XS5H-D422-G80-F	
Oil-resistant polyurethane cable	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: 1. Ask your OMRON representative about other specifications.
2. XS5H-D42□ models with -F are cRUus approved.

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-μm 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

F: Fire-retardant, robot cable

P: Oil-resistant polyurethane cable

■ XS5W - Socket and Plug on Cable Ends

XS5W-D42□-□81-F Fire-retardant, Robot Cable
XS5W-D42□-□81-P Oil-resistant Polyurethane Cable

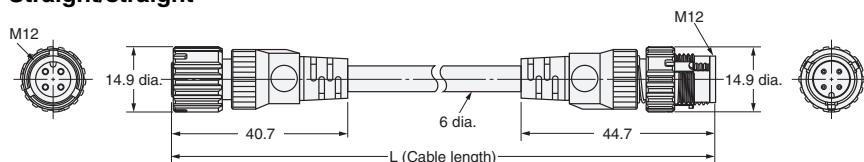
CALUS

Smartclick™

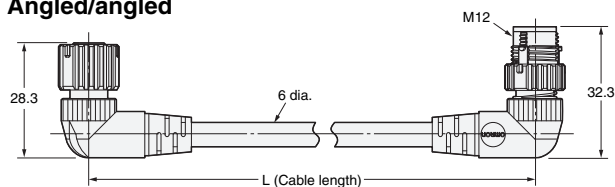
Dimensions

(Unit: mm)

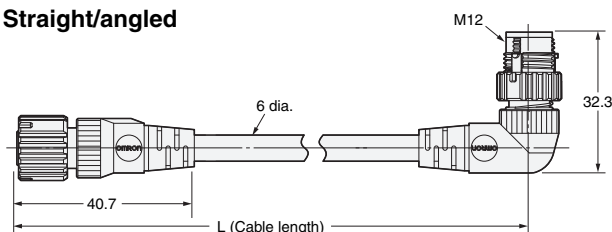
Straight/straight



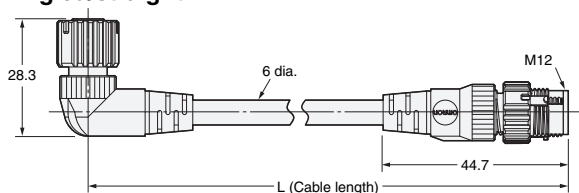
Angled/angled



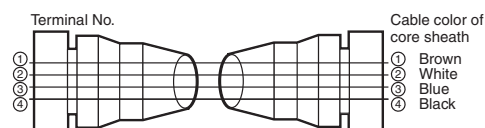
Straight/angled



Angled/straight



Wiring Diagram for 4 Cores



Note: The overmolding on the Oil-resistant Polyurethane Cable (XS5W-D42□-□81-P) is black, and the overmolding of the Fire-retardant, Robot Cable (XS5W-D42□-□81-F) is warm gray.

Ordering Information

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

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

Note: 1. Ask your OMRON representative about other specifications.

2. XS5W-D42□ models with -F are cRUus approved.

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

- F: Fire-retardant, robot cable
- P: Oil-resistant polyurethane cable

4-Pin and 5-Pin Assembly Connector

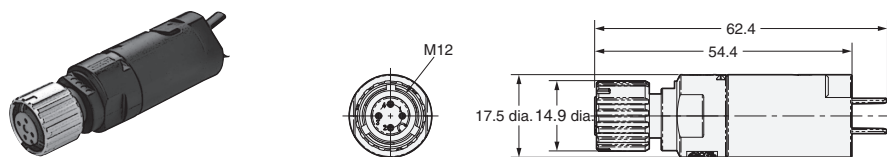
■ XS5C Sockets



Dimensions

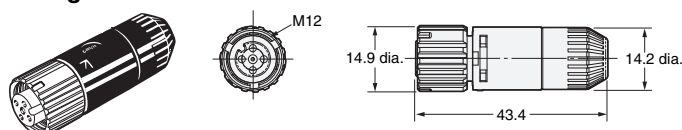
(Unit: mm)

XS5C-D418 (IDC Model)
Straight Connectors

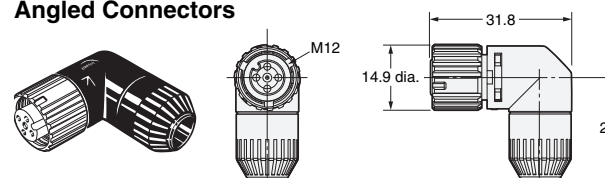


NEW

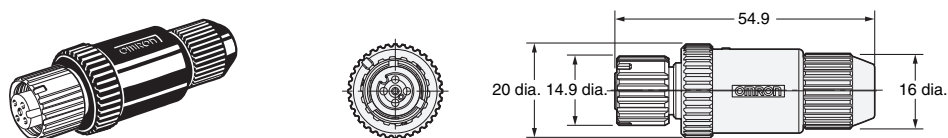
XS5C-D4C□ (Crimping Model)
XS5C-D42□ (Soldering Model)
Straight Connectors



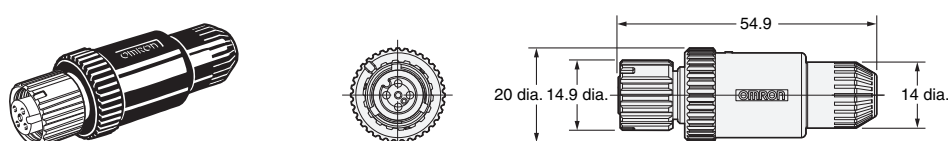
XS5C-D4C□ (Soldering Model)
XS5C-D42□ (Soldering Model)
Angled Connectors



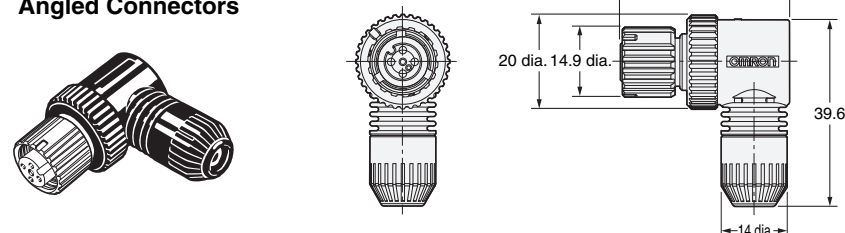
XS5C-D□S□ (Screw-on Connectors, Applicable Cable Outer Diameter: 7 or 8mm)
Straight Connectors



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



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



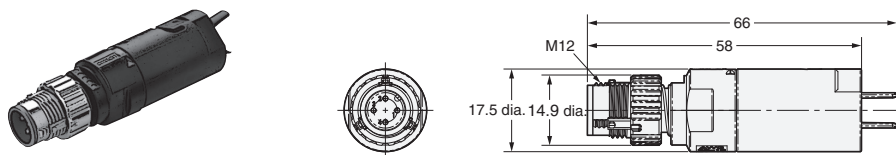
■ XS5G - Plugs



Dimensions

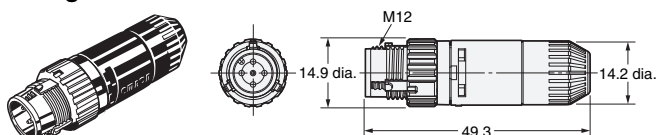
(Unit: mm)

XS5G-D418 (IDC Model)
Straight Connectors

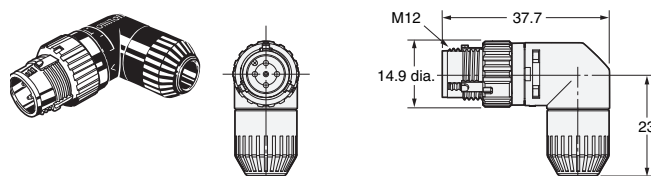


NEW

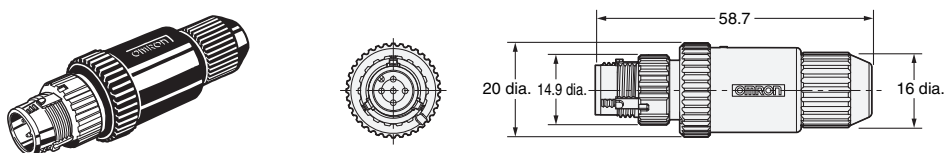
XS5G-D4C (Crimping Model)
XS5G-D42 (Soldering Model)
Straight Connectors



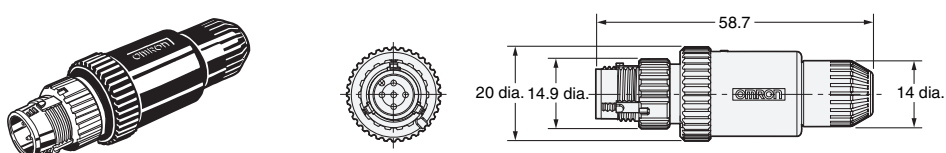
XS5G-D42 (Soldering Model)
Angled Connectors



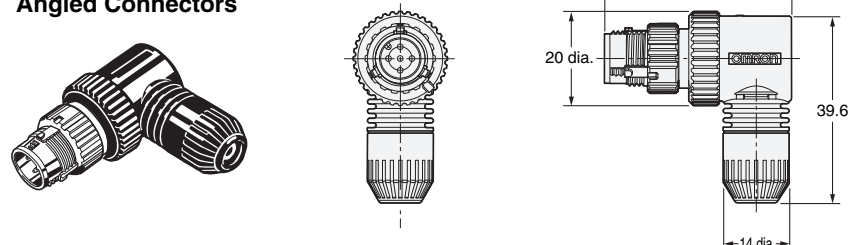
XS5G-D S (Screw-on Connectors, Applicable Cable Outer Diameter: 7 or 8mm)
Straight Connectors



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	IDC	3 to 8 mm	XS5G-D418	—	1
		6 mm (5 to 6)	XS5G-D4C1	—	
	Crimping	4 mm (4 to 5)	XS5G-D4C3	—	
		3 mm (3 to 4)	XS5G-D4C5	—	
		6 mm (5 to 6)	XS5G-D421	XS5G-D422	
	Soldering	4 mm (4 to 5)	XS5G-D423	XS5G-D424	
		3 mm (3 to 4)	XS5G-D425	XS5G-D426	
		6 mm (5 to 6)	XS5G-D4S1	XS5G-D4S2	
	Screw-on	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	—	
		7 mm (6 to 7)	XS5G-D4S9	—	
5	Screw-on	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	—	

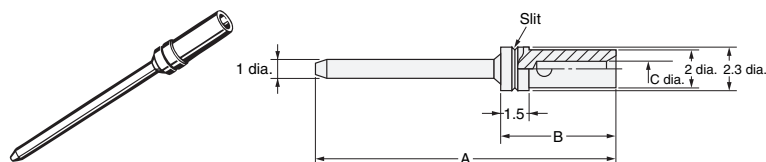
Note: 1. XS5G Screw-on Plugs cannot be connected side-by-side to the CN1 and CN2 connectors of XS2R or XS5R Y-Joint Sockets / Plugs
 2. 4 pole XS5G models are *cRU*s approved. IDC version (XS5G-D418) is pending approval.

■ 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

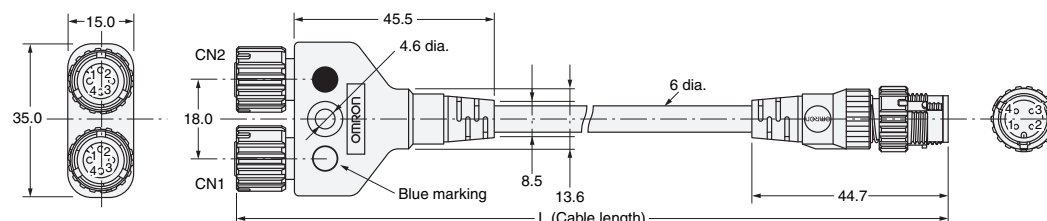


Dimensions

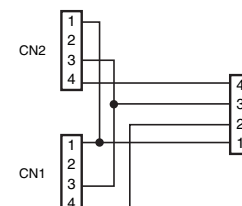
(Unit: mm)

XS5R-D426-□11-F

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

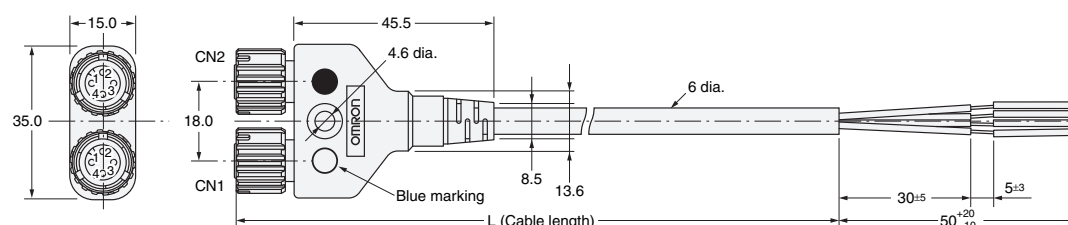


Wiring Diagram

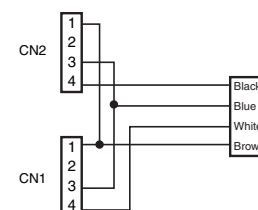


XS5R-D426-□10-F

Connectors on One Cable End (Y-Joint Socket)

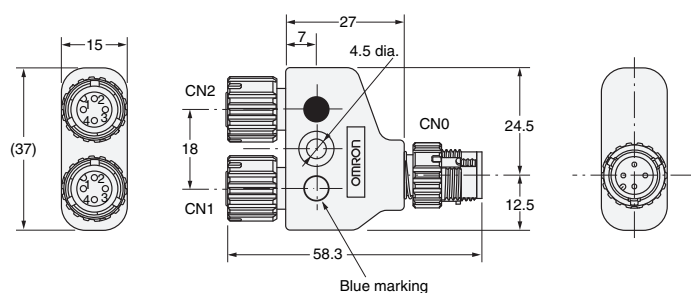


Wiring Diagram



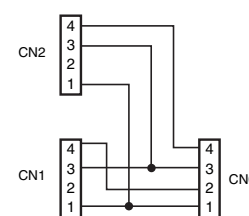
XS5R-D426-□

Y-Joint Plug/Socket without Cable

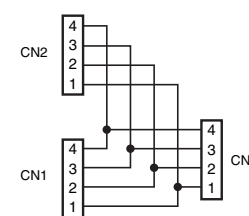


Wiring Diagram

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	10
		1	XS5R-D426-C11-F	
		2	XS5R-D426-D11-F	5
		3	XS5R-D426-E11-F	
	Connector on one cable end	2	XS5R-D426-D10-F	5
		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

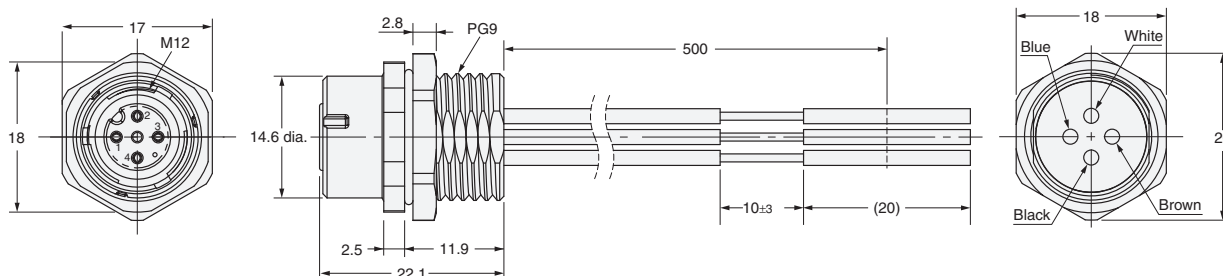


Dimensions

(Unit: mm)

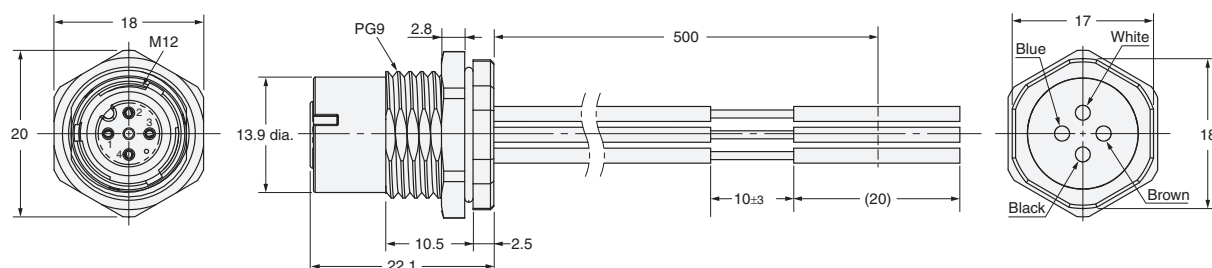
XS5P-D426-5

Front Panel-mounting Sockets for Rear Lock Nuts

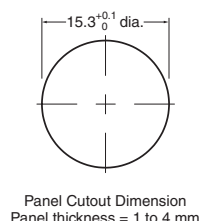


XS5P-D427-5

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

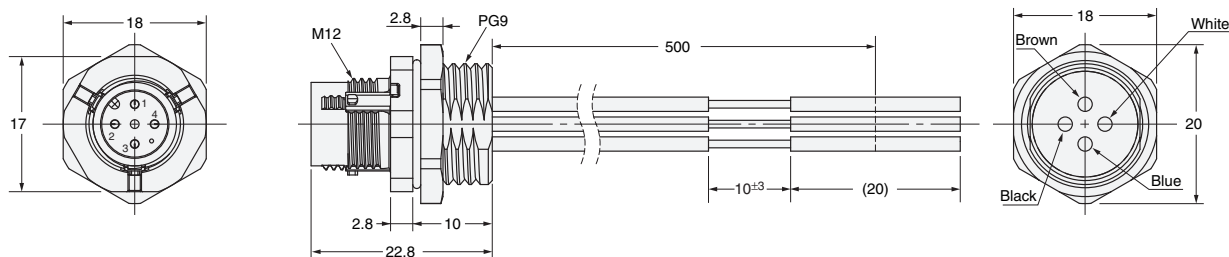


Dimensions

(Unit: mm)

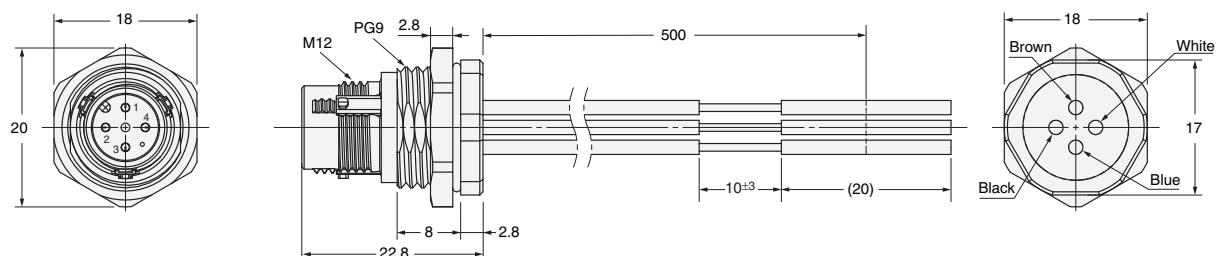
XS5M-D426-5

Front Panel-mounting Plugs for Rear Lock Nuts

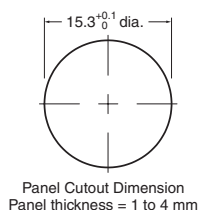


XS5M-D427-5

Rear Panel-mounting Plugs for Front Lock Nuts



Panel Cutout



- 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, along with assembly details for the **NEW** IDC Field-wiring versions of the XS5C and XS5G 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.

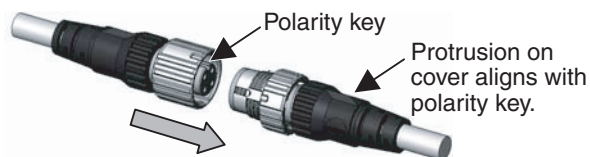
■ General Precautions

- 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

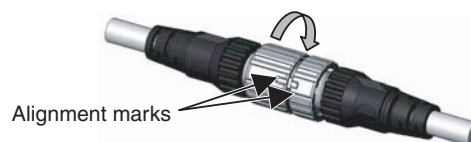
- Align the projection on the plug cover with the polarity key on the socket, then insert the plug all the way in.



- 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.

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ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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