

Industrial Ethernet Cables XS5/XS6

Cables and Connectors for EtherCAT® and Other Industrial Ethernet Networks

CAT6a Ethernet patch cables

- For in-cabinet use
- LSZH with standard RJ45 plugs

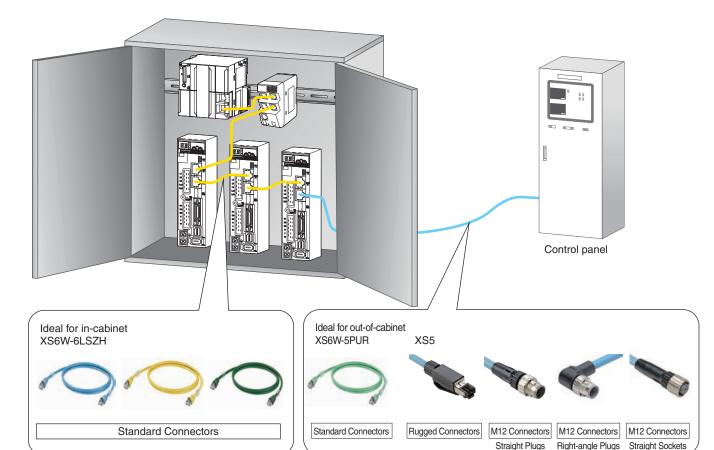
CAT5e Ethernet patch cables

- For out-of-cabinet use
- PUR with standard RJ45 plugs
- PVC with rugged RJ45 plugs
- PVC with M12 SmartClick plugs





Connection Examples

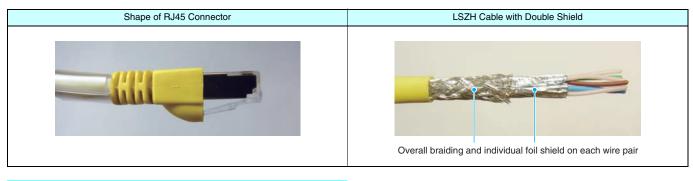


Features

Cables with Standard RJ45 Connectors

Refer to page 3 for details.

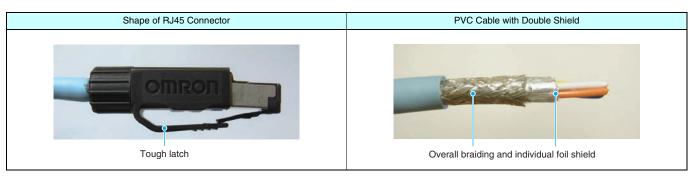
- The lineup features LSZH cables* for in-panel wiring and PUR cables for wiring outside of panels.
- The Standard RJ45 Connectors reduce cable routing space.
 - Outer diameter: 5.8 mm
 - 4-pair AWG27 (LSZH) or AWG26 (PUR)
- Cable colors include blue, yellow, or green.
- LSZH cables are available in 12 lengths from 0.2 to 20 m and PUR cables are available in 10 lengths from 0.5 to 20 m.
- Double-shielded cables with overall braiding and individual foil shield on each wire pair to reduce EMC interference in industrial environments.
- * Low-smoke zero-halogen cables.



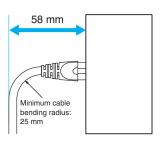
Cables with Rugged RJ45 Connectors

Refer to page 5 for details.

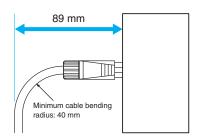
- Tough latches and RJ45 connectors with strong cable holding strength are used to enable connections outside of control panels.
- Quad AWG22 cable with PVC cover of 6.5 mm outer diameter.
- Double-shielded cables with overall braiding and individual foil shield to reduce EMC interference in industrial environments.



● Cable Extension Length Standard Connectors (RJ45 Connectors)



Rugged Connectors (RJ45 Connectors)



Cables with M12 Connectors

Refer to page 5 for details.

- Resistance to harsh environments with IP67 protection.
- SmartClick Connectors that provide one-step (1/8th turn) connection are used (compatible with standard M12 screw connectors).
- A wide range of variations, such as cables with right-angle connectors and PCB connectors.
- Cables with sockets and robot cables were added to the series.
- SmartClick is registered trademark of OMRON Corporation.
- EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

Cables with Standard RJ45 Connectors

Ordering Information

Appearance	Туре	Category	Cable sheath material	Cable color	Cable length (m)	Model
					0.2	XS6W-6LSZH8SS20CM-B
					0.3	XS6W-6LSZH8SS30CM-B
					0.5	XS6W-6LSZH8SS50CM-B
					1	XS6W-6LSZH8SS100CM-B
					1.5	XS6W-6LSZH8SS150CM-B
				Blue	2	XS6W-6LSZH8SS200CM-B
				Dide	3	XS6W-6LSZH8SS300CM-B
					5	XS6W-6LSZH8SS500CM-B
					7.5	XS6W-6LSZH8SS750CM-B
					10	XS6W-6LSZH8SS1000CM-B
					15	XS6W-6LSZH8SS1500CM-B
					20	XS6W-6LSZH8SS2000CM-B
					0.2	XS6W-6LSZH8SS20CM-Y
					0.3	XS6W-6LSZH8SS30CM-Y
					0.5	XS6W-6LSZH8SS50CM-Y
					1	XS6W-6LSZH8SS100CM-Y
					1.5	XS6W-6LSZH8SS150CM-Y
		Cat.6a	LSZH	Yellow	2	XS6W-6LSZH8SS200CM-Y
		Oat.oa	LOZII		3	XS6W-6LSZH8SS300CM-Y
					5	XS6W-6LSZH8SS500CM-Y
					7.5	XS6W-6LSZH8SS750CM-Y
					10	XS6W-6LSZH8SS1000CM-Y
	Cable with Connectors on Both				15	XS6W-6LSZH8SS1500CM-Y
	Ends (RJ45/RJ45)				20	XS6W-6LSZH8SS2000CM-Y
				Green	0.2	XS6W-6LSZH8SS20CM-G
					0.3	XS6W-6LSZH8SS30CM-G
					0.5	XS6W-6LSZH8SS50CM-G
					1	XS6W-6LSZH8SS100CM-G
					1.5	XS6W-6LSZH8SS150CM-G
					2	XS6W-6LSZH8SS200CM-G
					3	XS6W-6LSZH8SS300CM-G
					5	XS6W-6LSZH8SS500CM-G
					7.5	XS6W-6LSZH8SS750CM-G
					10	XS6W-6LSZH8SS1000CM-G
					15	XS6W-6LSZH8SS1500CM-G
					20	XS6W-6LSZH8SS2000CM-G
					0.5	XS6W-5PUR8SS50CM-G
					1	XS6W-5PUR8SS100CM-G
					1.5	XS6W-5PUR8SS150CM-G
					2	XS6W-5PUR8SS200CM-G
		Cat.5	PUR	Green	3	XS6W-5PUR8SS300CM-G
		Jailo	1 011	GIEGII	5	XS6W-5PUR8SS500CM-G
					7.5	XS6W-5PUR8SS750CM-G
					10	XS6W-5PUR8SS1000CM-G
					15	XS6W-5PUR8SS1500CM-G
					20	XS6W-5PUR8SS2000CM-G

Specifications

Cable with Connectors on Both Ends (RJ45/RJ45)/LSZH	Cable with Connectors on Both Ends (RJ45/RJ45)/PUR			
XS6W-6LSZH8SS□□□□CM-□	XS6W-5PUR8SS□□□□CM-G			
1 A (at 50°C)				
1,000 VDC for 60 s (leakage current: 1 mA max.)				
−20 to 60°C	-40 to 85°C			
−20 to 60°C	-40 to 85°C			
0 to 50°C -10 to 60°C				
IP20				
	(RJ45/RJ45)/LSZH XS6W-6LSZH8SS CM-CM- 1 A (at 50°C) 1,000 VDC for 60 s (leakage current: 1 mA m -20 to 60°C -20 to 60°C 0 to 50°C			

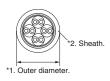
■ Materials and Finish

Connectors

-	Туре	Cable with Connectors on Both Ends (RJ45/RJ45)/LSZH	Cable with Connectors on Both Ends (RJ45/RJ45)/PUR			
Item Mo	odel	XS6W-6LSZH8SS□□□□CM-□	XS6W-5PUR8SS□□□□CM-G			
Connector housing	onnector housing PC resin (UL94V-0)/transparent					
Contacts		Phosphor bronze/nickel base, gold plated (0.8 μm)				
Shield		Brass/nickel plated				
Cover (structured to prevent tab from breaking)	t the	LSZH: Blue, yellow, or green	PUR: Green			
Marking tube		PVC resin (UL94V-0)/transparent	n (UL94V-0)/transparent			

Cables

Туре	Cable with Connectors on Both Ends (RJ45/RJ45)/LSZH	Cable with Connectors on Both Ends (RJ45/RJ45)/PUR	
Item Model	XS6W-6LSZH8SS□□□□CM-□	XS6W-5PUR8SS□□□□CM-G	
Compliant standard	IEC 60332-1 /UL1581 FT2	IEC 60332-1 /UL1581 FT2	
Number of cores/gauge	4x2xAWG27 0.1 mm ²	4x2xAWG26 0.13 mm ²	
Outer diameter*1	5.8 mm		
Sheath color*2	Blue, yellow, or green	Green	
Sheath material	LSZH	PUR	
Shield structure	Double shield S/FTP	Double shield SF/UTP	



Dimensions (Unit: mm)

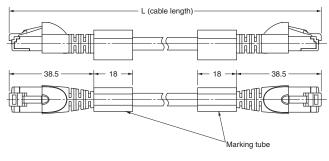
● Cable with Connectors on Both Ends (RJ45/RJ45) XS6W-6LSZH8SS

XS6W-5PUR8SS CM-G









Note. External dimensions are the same for all cable materials.

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Cables with Rugged RJ45 Connectors and Cables with M12 Connectors

Ordering Information

Appearance	Cable type	Type	Cable length (m)	Model
т фроможно		7,72	0.5	XS5H-T421-BM0-K
			1	XS5H-T421-CM0-K
			2	XS5H-T421-DM0-K
		Cable with Plug on One End	3	XS5H-T421-EM0-K
		(M12 Straight)	5	XS5H-T421-GM0-K
			10	XS5H-T421-JM0-K
			15	XS5H-T421-KM0-K
			0.5	XS5W-T421-BM2-K
			1	XS5W-T421-CM2-K
		Cable with Plugs on Both Ends	2	XS5W-T421-DM2-K
		(M12 Straight/M12 Straight)	3	XS5W-T421-EM2-K
		(W12 OttaightW12 Ottaight)	5	XS5W-T421-GM2-K
			10	XS5W-T421-JM2-K
			15	XS5W-T421-KM2-K
			0.3	XS5W-T421-AMC-K
			0.5	XS5W-T421-BMC-K
2000			1	XS5W-T421-CMC-K
		Cable with Plugs on Both Ends	2	XS5W-T421-DMC-K
		(M12 Straight/RJ45)	3	XS5W-T421-EMC-K
		(===== ,	5	XS5W-T421-GMC-K
			10	XS5W-T421-JMC-K
			15	XS5W-T421-KMC-K
			0.5	XS5H-T422-BM0-K
			1	XS5H-T422-CM0-K
		Cable with Plug on One End	2	XS5H-T422-DM0-K XS5H-T422-EM0-K
		(M12 Right-angle)	3	
8			5	XS5H-T422-GM0-K
			10	XS5H-T422-JM0-K
	Standard Cables	Cable with Plugs on Both Ends (M12 Right-angle/M12 Right-angle)	15	XS5H-T422-KM0-K
			0.5	XS5W-T422-BM2-K
			1	XS5W-T422-CM2-K
-			2	XS5W-T422-DM2-K
			3	XS5W-T422-EM2-K
			5	XS5W-T422-GM2-K
			10	XS5W-T422-JM2-K
			15	XS5W-T422-KM2-K
			0.3	XS5W-T422-AMC-K
			0.5	XS5W-T422-BMC-K
D carry			1	XS5W-T422-CMC-K
		Cable with Divers on Both Ends	2	XS5W-T422-DMC-K
		Cable with Plugs on Both Ends (M12 Right-angle/RJ45)	3	XS5W-T422-DMC-K
		(WITZ Flight-aligle/Flo45)		
			5	XS5W-T422-GMC-K
			10	XS5W-T422-JMC-K
			15	XS5W-T422-KMC-K
			0.3	XS5W-T421-AMD-K
V Jacob			0.5	XS5W-T421-BMD-K
			1	XS5W-T421-CMD-K
		Cable with Plugs on Both Ends	2	XS5W-T421-DMD-K
		(RJ45/RJ45)	3	XS5W-T421-EMD-K
			5	XS5W-T421-GMD-K
			10	XS5W-T421-JMD-K
			15	XS5W-T421-KMD-K
			0.5	XS5W-T421-BM1-K
			1	XS5W-T421-CM1-K
		Cable with Plug on One End and Socket on	2	XS5W-T421-DM1-K
		Other End	3	XS5W-T421-EM1-K
		(M12 Straight/M12 Straight)	5	XS5W-T421-GM1-K
			10	XS5W-T421-JM1-K
			15	XS5W-T421-KM1-K
			0.5	XS5W-T421-BME-K
			1	XS5W-T421-CME-K
		Coble with Plus on One End and One is	2	XS5W-T421-DME-K
		Cable with Plug on One End and Socket on Other End	3	XS5W-T421-DME-K
		Other End (M12 Straight/RJ45)		
		(MTZ Offalgrivi 1043)	5	XS5W-T421-GME-K
			10	XS5W-T421-JME-K
			15	XS5W-T421-KME-K



Appearance	Cable type	Туре		Cable length (m)	Model
				0.5	XS5W-T421-BM1-KR
				1	XS5W-T421-CM1-KR
		Cable with Plug on One I	End and Socket on	2	XS5W-T421-DM1-KR
			Other End		XS5W-T421-EM1-KR
100		(M12 Straight/M1	2 Straight)	5	XS5W-T421-GM1-KR
				10	XS5W-T421-JM1-KR
				15	XS5W-T421-KM1-KR
				0.5	XS5W-T421-BM2-KR
				1	XS5W-T421-CM2-KR
				2	XS5W-T421-DM2-KR
		Cable with Plugs o		3	XS5W-T421-EM2-KR
		(M12 Straight/M1	2 Straight)	5	XS5W-T421-GM2-KR
0				10	XS5W-T421-JM2-KR
				15	XS5W-T421-KM2-KR
500	Robot Cables			0.5	XS5W-T421-BMC-KR
S Const				1	XS5W-T421-CMC-KR
				2	XS5W-T421-DMC-KR
			Cable with Plugs on Both Ends		XS5W-T421-EMC-KR
		(M12 Straight/RJ45)		3 5	XS5W-T421-GMC-KR
				10	XS5W-T421-JMC-KR
				15	XS5W-T421-KMC-KR
				0.5	XS5W-T421-BMD-KR
				1	XS5W-T421-CMD-KR
0				2	XS5W-T421-DMD-KR
		Cable with Plugs o		3	XS5W-T421-EMD-KR
		(RJ45/RJ45)		5	XS5W-T421-GMD-KR
() () () () () ()				10	XS5W-T421-JMD-KR
				15	XS5W-T421-KMD-KR
				.0	7.00 11 1 12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
OMROII		RJ45 Assembly Connector			XS6G-T421-1
	Standard Cables	M12 Connector for Panel	Rear locking	0.5	XS5P-T426-5
		Mounting	Front locking	0.5	XS5P-T427-5
		M12 Panel-mounting PCB Straight Terminals			XS5P-T426-1

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Specifications

Туре	Cable with Plug on One End (M12)	Cable with Plugs on Both Ends (M12/M12)	Cable with Plug on One End and Socket on Other End (M12/M12)	Cable with Plugs on Both Ends (M12/RJ45)	Cable with Plug on One End and Socket on Other End (M12/RJ45)	Cable with Plugs on Both Ends (RJ45/RJ45)	RJ45 Assembly Connector	M12 Connector for Panel Mounting	M12 Panel- mounting PCB Straight Ter- minals
Item Model	XS5H -T42□-□M0-K	XS5W -T42□-□M2-K, -KR	XS5W -T42□-□M1-K, -KR	XS5W -T42□-□MC-K, -KR	XS5W -T421-□ME-K	XS5W -T421-□MD-K, -KR	XS6G -T421-1	XS5P-T42□-5	XS5P -T426-1
Rated current	3 A			2.5 A				4 A	
Rated voltage	30 V							125 VDC	
Contact resistance	40 mΩ max.								
Insulation resistance	1,000 MΩ min.				500 MΩ min.			1,000 MΩ min.	
Withstand voltage	1,000 VAC for 6	1 (IOU VAC; for 60 s (leakage current 1 mA max)						1,500 VAC for (leakage current	
Ambient operating temperature	−25 to 70°C	–25 to 70°C							
Ambient storage temperature	−25 to 70°C								
Protective structure	M12: IEC IP67	M12: IEC IP67, RJ45: IEC IP20							IEC IP67

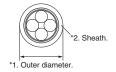
■ Materials and Finish

Connectors

Model		RJ45				
Item	XS5H and XS5W	XS5P-T42□-5	XS5W and XS6G			
Contact blocks	PBT resin (UL94V-0)/light gray		PA resin (UL94V-0)/black	PC resin (UL94V-0)/black		
Contacts	Phosphor bronze/nickel base, go	ld plated (0.4 μm)	nickel base, gold plated Phosphor bronze/nickel base, gold plated (1.4 μm)			
Anchors	Zinc diecast/nickel plating					
Anchors (tabs)	SUS					
Cover	Straight connector: Soft PBT resin (UL94V-0)/black Right-angle connector: TPC resin/black					
Sealing resin		Epoxy resin				
O-rings	Rubber					
Grounding fixture		Phosphor bronze/nickel base, tin plated (2.0 μm)				
Anchor cover						
Nuts		Bronze/nickel plated				

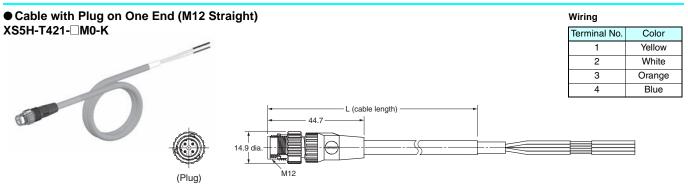
● Cables

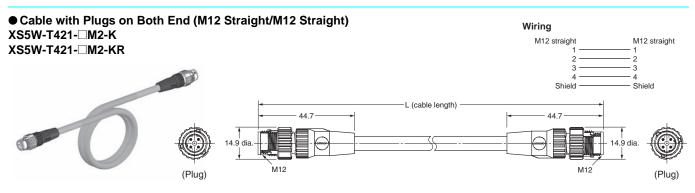
Model Item	Standard Cables	Robot Cables			
Compliant standard	UL CM				
Category	Category 5e				
Number of cores/color	AWG22 (7/0.26): Yellow, orange, white, and blue	AWG22 (7/24/0.05): Yellow, orange, white, and blue			
Outer diameter*1	6.5 dia.				
Sheath color*2	Light gray				
Sheath material	PVC				
Shield structure	Double shield SF/UTP				

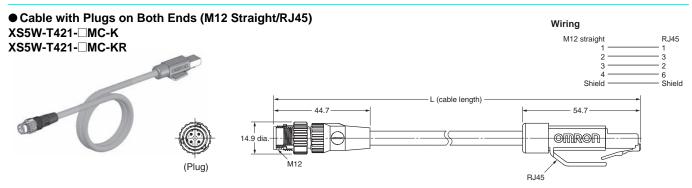


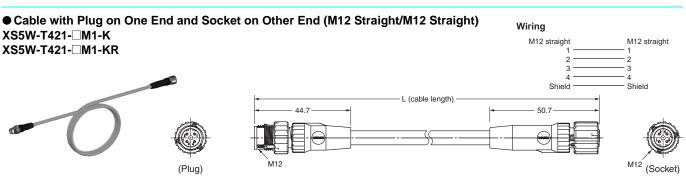
Note. For the XS5H and XS5W, cables are available only with connectors attached.

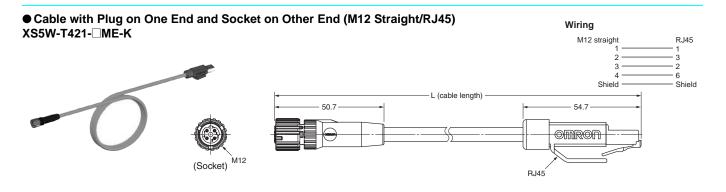
■ Dimensions (Unit: mm)

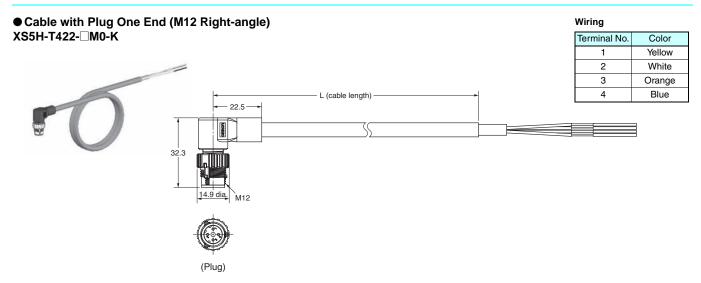


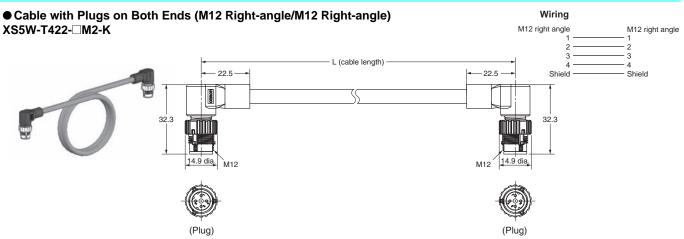






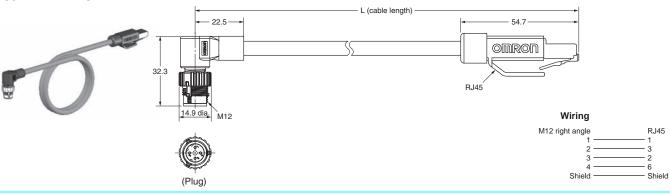


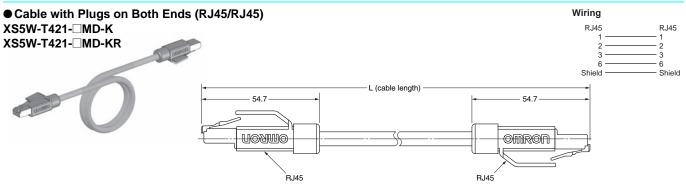




● Cable with Plugs on Both Ends (M12 Right-angle/RJ45)



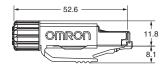


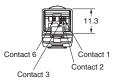


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● RJ45 Assembly Connector XS6G-T421-1









Applicable wires

Sheath outer diameter: 6.1 to 6.9 mm Core size: AWG22 to AWG24 (stranded wires) AWG22 to AWG23 (solid wires)

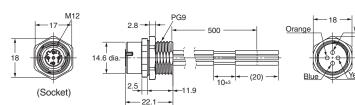
Insulation outer diameter: 1.6 mm max.

● M12 Connector for Panel Mounting

XS5P-T42□-5

XS5P-T426-5 (Rear Locking)

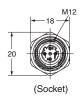


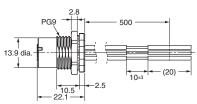


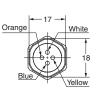
Wiring

Terminal No.	Color	
1	Yellow	
2	White	
3	Orange	
4	Blue	

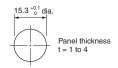
XS5P-T427-5 (Front Locking)







Panel Cutout Dimension



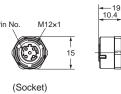
Note 1: The panel cutout dimension is the same for Front-locking and Rearlocking Connectors.

Note 2: Rotational positioning is not possible for connector rotation.

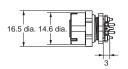
● M12 Panel-mounting PCB Straight Terminals XS5P-T426-1



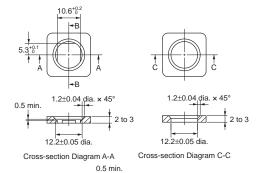






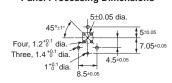


Mounting Hole Dimensions Mounting Hole Dimensions (D Cut Structure)



Panel Processing Dimensions

Cross-section Diagram B-B



Assembly Procedure

RJ45 Assembly Connectors XS6G-T421-1

- 1. Pass the cable through the cable clamp and the connector housing
- Strip the cable sheath and ground braiding to the correct lengths.

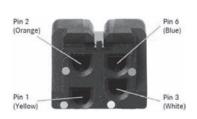
+13 mm>

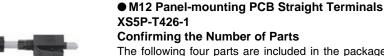
- 3. Follow the color codes and prepare to insert the wires into the splice piece.
- Insert the wires into the splice piece for the length of the splice piece.
- Place the splice piece into the RJ45 data module and engage it.
- Place the data module and the splice piece on the IDC assembly housing.
- 7. Press the data module and the IDC assembly housing together and use pliers or a similar device to make the insulation displacement contact.
- Remove the data module from the IDC assembly housing.
- Place the upper screen plate on the data module and press it over the ground braiding of the cable.
- 10. Place the lower screen plate on the bottom of the data module, align it with the upper screen place, and latch it until you hear it click into place.
- 11. Slide the housing that you placed around the cable in step 1 up to the data module and latch it until you hear it click into place.
- 12. Tighten the cable clamp.

Pin Assignments

Pin Assignments for Fast Ethernet 10/100 Mbps

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Function/Signal	Industrial Ethernet	EIA/TIA 568A	EIA/TIA 568B	Pin No.
Transmission Data+/TD+	YE	WH/GN	WH/OG	1
Transmission Data-/TD-	OG	GN	OG	2
Receiver Data/RD+	WH	WH/OG	WH	3
Receiver Data/RD-	BU	OG	GN	6



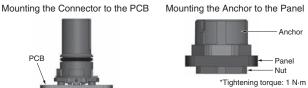


The following four parts are included in the package when it is delivered.

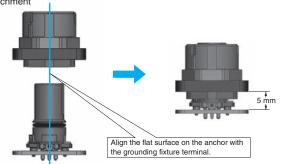


Assembly Procedure

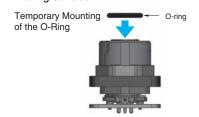
- 1. Mount the connector to the PCB.
- 2. Attach the anchor to the panel with the nut.



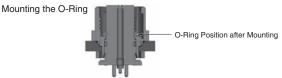
- 3. Attach the connector that you mounted to the PCB to the panel.
- * Make sure that the connector and anchor are oriented correctly. Attachment



4. Temporarily mount the O-ring to the top of the connector at the mating surface.



5. Mate the Connector Waterproof Cover (XS2Z-22, sold separately) or the Partner Connector Plug (XS5H-T42□-□M0-K, sold separately) and press the O-ring to the O-ring position after mounting.



Connector Waterproof Cover (Sold Separately) XS2Z-22



* Tightening torque: 0.39 to 0.49 N·m

Safety Precautions

Precautions for 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.
- Do not hold the cable when disconnecting Connectors.
- When joining 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 join the Connectors. Always use your hands. Pliers or other tools may damage the Connectors.

Wiring

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 for M12/Smartclick Connectors

- 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.

Handling Precautions

- Do not pull on the Connectors or cables with excessive force.
 Do not install the Connectors with a load placed directly on the joint or at the point where the wires connect to the Connector.
 The Connector may be damaged or the wires in the cable may be disconnected.
- Lay the cable where it will not be stepped on to prevent the wires in the cable from being disconnected and to protect the Connectors from being damaged. If the cable must be placed where it will be stepped on, install a protective cover.
- When bending cables, do not exceed the cable specifications.

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