XS5

CSM_XS5_DS_E_14_4

Round Water-resistive Smartclick Connectors That Reduce Installation Work

- Conforms to IP67. A lock mechanism that is compatible with round M12 connectors.
- Simply insert the Connectors, then turn them approximately 1/8 of a turn to lock.
- A positive click indicates locking.
- XS5-F series, connectors with cables are UL certified.
- Easy-to-wire thin robot cable with a diameter of 4 mm is available.
- Four types of assembly connectors are available, including IDC, crimping, soldering and screw-on types.

Refer to *Safety Precautions* on page 25.

Smartclick

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Model Number Structure

Connectors with Cables Model Number Legend

Connector	Cable specifications	XS5: One-touch Smartclick Connection (compatible with M12 connectors)			XS2: M12 Screw Connection*	
		Cable length (m)	Model	Reference page	Cable length (m)	Model
Connectors on both cable ends	Fire-retardant, PVC robot cable	0.5	**XS5W-D421-B81-F**	4	0.5	**XS2W-D421-B81-F**
		1	**XS5W-D421-C81-F**		1	**XS2W-D421-C81-F**
		2	**XS5W-D421-D81-F**		2	**XS2W-D421-D81-F**
		3	**XS5W-D421-E81-F**		3	**XS2W-D421-E81-F**
		4	**XS5W-D421-F81-F**		4	**XS2W-D421-F81-F**
		5	**XS5W-D421-G81-F**		5	**XS2W-D421-G81-F**
		10	**XS5W-D421-J81-F**		10	**XS2W-D421-J81-F**
		15	**XS5W-D421-K81-F**		15	**XS2W-D421-K81-F**
		20	**XS5W-D421-L81-F**		20	**XS2W-D421-L81-F**
	Oil-resistant polyurethane robot cable	1	**XS5W-D42B-C81-PR**		1	—
		2	**XS5W-D42B-D81-PR**		2	—
		5	**XS5W-D42B-G81-PR**		5	—
		10	**XS5W-D42B-J81-PR**		10	—
	Spatter-resistant Cable	2	**XS5W-D421-D81-SA**		2	**XS2W-D421-D81-SA**
		5	**XS5W-D421-G81-SA**		5	**XS2W-D421-G81-SA**
Connector on one cable end (Socket)	Fire-retardant, PVC robot cable	1	**XS5F-D421-C80-F**	6	1	**XS2F-D421-C80-F**
		2	**XS5F-D421-D80-F**		2	**XS2F-D421-D80-F**
		3	**XS5F-D421-E80-F**		3	**XS2F-D421-E80-F**
		5	**XS5F-D421-G80-F**		5	**XS2F-D421-G80-F**
		10	**XS5F-D421-J80-F**		10	**XS2F-D421-J80-F**
		15	**XS5F-D421-K80-F**		15	**XS2F-D421-K80-F**
		20	**XS5F-D421-L80-F**		20	**XS2F-D421-L80-F**
	Oil-resistant polyurethane robot cable	2	**XS5F-D42B-D80-PR**		2	—
		5	**XS5F-D42B-G80-PR**		5	—
		10	**XS5F-D42B-J80-PR**		10	—
	Spatter-resistant Cable	2	**XS5F-D421-D80-SA**		2	**XS2F-D421-D80-SA**
		5	**XS5F-D421-G80-SA**		5	**XS2F-D421-G80-SA**
Connector on one cable end (Plug)	Fire-retardant, PVC robot cable	0.3	**XS5H-D421-A80-F**	8	0.3	**XS2H-D421-A80-F**
		0.5	**XS5H-D421-B80-F**		0.5	**XS2H-D421-B80-F**
		1	**XS5H-D421-C80-F**		1	**XS2H-D421-C80-F**
		2	**XS5H-D421-D80-F**		2	**XS2H-D421-D80-F**
		3	**XS5H-D421-E80-F**		3	—
		5	**XS5H-D421-G80-F**		5	**XS2H-D421-G80-F**
	Spatter-resistant Cable	0.3	**XS5H-D421-A80-SA**		0.3	**XS2H-D421-A80-SA**
		1	**XS5H-D421-C80-SA**		1	**XS2H-D421-C80-SA**

*For details, refer to the data sheet of the XS2 Round Water-resistant Connectors (M12 Threads).

Note 1. Only DC, straight, and 4-core types are shown in this table. Refer to the relevant pages for other products.

2. Other than the M12 sizes introduced in this table, M8-sized (XS3) products and M8-M12 conversion cables are also available. For details, refer to the data sheet of the XS3 Round Water-resistant Connectors (M8/S8).

XS5: One-touch Smartclick Connection (compatible with M12 screws)

Note:Screw connections will be made if connecting with a screw type.

Socket side

Plug side

Turn approx. 1/8 of a turn to connect

Connections can be checked using markings

XS2: M12 Screw Connection*

Socket side

Plug side

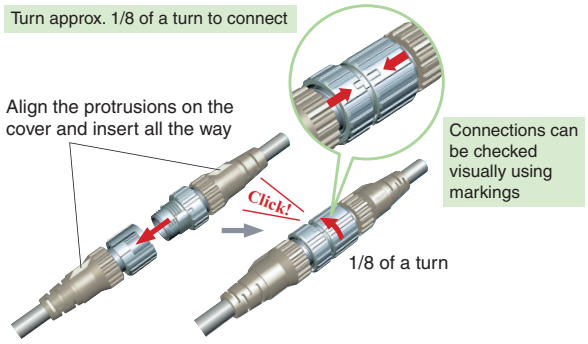
*For details, refer to the data sheet of the XS2 Round Water-resistant Connectors (M12 Threads).

Smartclick is a registered trademark of the OMRON Corporation.

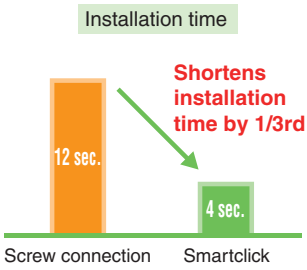
Features

Featuring a Lock Mechanism that Connects and Disconnects with One-touch

It can be used easily by anyone, significantly reducing man-hours spent on wiring.



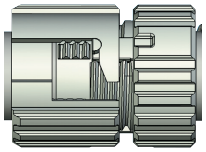
Connections are complete when an audible click sound can be heard.



According to reference values obtained by OMRON.

It does not become loose due to machine vibration, meaning periodic re-tightening is unnecessary.

Featuring a bayonet locking mechanism



Enlarged view of bayonet locking mechanism

Compatibility with M12 Screws

Can also be connected to M12 screw sensors and actuators

	XS5 Smartclick Plug Connectors	M12 Screw Plug Connectors
XS5 Smartclick Socket Connectors	One-touch connection	Screw connection
M12 Screw Socket Connectors	Screw connection	Screw connection

All types of combinations can be connected.
Screw connections will be made if connecting Smartclick with a screw type.

Ratings and Specifications

Item / Model	XS5-F, XS5C/G, XS5P/M	XS5-S/PR	XS5-P/SA
Rated current	4 A	3 A	3 A
Rated voltage	250 VDC	250 VDC	125 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		
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) *2		
Lock operating force	0.1 to 0.25 N·m		
Ambient operating temperature range	−25 to 70°C *3		
Ambient humidity range	20% to 85%		
Number of pressure-weld repairs *1	10 times max. (Limited to the same external diameter and wire diameter.)		

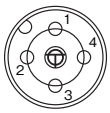
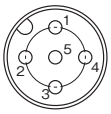
*1. Only XS5C/G (IDC models)
*2. Connectors with cables only. Refer to product specifications for details.
*3. Use the robot cable within a temperature range between 0°C and 70°C to prevent the wires inside the cable from being broken when bending it.

Materials and Finish

Item	Model	XS5F/H/W	XS5R	XS5M/P	XS5C/G (Crimping, Soldering)	XS5C/G (Screw-on)	XS5C/G (IDC)
Contacts		Copper alloy/Nickel plated					
Fixture		Nickel plated zinc alloy					
Fixtures (Lock) *		Stainless					
Pin block		PBT resin					
O-ring		Rubber					
Cover		PBT resin		—	PBT resin		
Cable	Fire-retardant, PVC robot cable	UL AWM2464 CL3, 6 mm dia., AWG20 Sheath color: light gray		—			
	Fire-retardant, thin PVC robot cable	UL CL3, 4 mm dia., AWG20 Sheath color: black	—				
	Oil-resistant polyurethane robot cable	4.7 mm dia. AWG23 Sheath color: black	—				
	Oil-resistant polyurethane cable	6 mm dia. AWG20 Sheath color: dark gray	—				
	Spatter-resistant Cable	6.6 mm dia. AWG20 Sheath color: blue	—				

*Only plug

Pin Arrangement (Engaged Side)

Item	No. of poles	4 poles	5 poles
A-coding (DC type)	Male (plug) contacts		
	Female (socket) contacts		

Connection

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

◎: Connected by twisting.
❍: Connected by screwing.
Note: The XS□M and XS□P cannot mate with each other.

XS5W Connectors with Cables, Socket and Plug on Both Cable Ends

Model Number Structure

Model Number Legend

XS5W-D42□-□81-□□

1 2 3 4 5 6 7 8 9

Use this model number legend to identify products from their model number.
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 with cables, socket and plug on both cable ends

2. Mating Section Form
D: A-coding (DC type)

3. Connector Poles
4: 4 poles

4. Contact Plating
2: Gold plating

5. Cable Connection Direction
1: Straight (Socket)/straight (Plug)
2: Right-angle (Socket)/right-angle (Plug)
3: Straight (Socket)/right-angle (Plug)
4: Right-angle (Socket)/straight (Plug)
5: Straight (Socket)/straight (Plug) 4 dia.
B: Straight (Socket)/straight (Plug) 4.7 dia.

6. Cable Length
A: 0.3 m B: 0.5 m C: 1 m D: 2 m
E: 3 m F: 4 m G: 5 m J: 10 m
K: 15 m L: 20 m

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

8. Connectors on One Cable End/Both Ends
1: Connectors on both cable ends

9. Cable Specifications
F: Fire-retardant, PVC robot cable
S: Fire-retardant, thin PVC robot cable
PR: Oil-resistant polyurethane robot cable
P: Oil-resistant Polyurethane Cable
SA: Spatter-resistant cable

Ordering Information

Cable specifications	Cable length L (m)	Cable diameter (mm)	Straight (Socket)/ Straight (Plug)	Right-angle (Socket)/ Right-angle (Plug)	UL
			Model	Model	
Fire-retardant, PVC Robot Cable	0.5	6 dia.	**XS5W-D421-B81-F**	—	UL2238 certified (File no. E207683)
	1		**XS5W-D421-C81-F**	—	
	2		**XS5W-D421-D81-F**	**XS5W-D422-D81-F**	
	3		**XS5W-D421-E81-F**	—	
	4		**XS5W-D421-F81-F**	—	
	5		**XS5W-D421-G81-F**	**XS5W-D422-G81-F**	
	10		**XS5W-D421-J81-F**	—	
	15		**XS5W-D421-K81-F**	—	
	20		**XS5W-D421-L81-F**	—	
Fire-retardant, thin PVC Robot Cable	0.5	4 dia.	**XS5W-D425-B81-S**	—	—
	1		**XS5W-D425-C81-S**	—	
	2		**XS5W-D425-D81-S**	—	
	3		**XS5W-D425-E81-S**	—	
	4		**XS5W-D425-F81-S**	—	
	5		**XS5W-D425-G81-S**	—	
	10		**XS5W-D425-J81-S**	—	
Oil-resistant polyurethane robot cable	1	4.7 dia.	**XS5W-D42B-C81-PR**	—	—
	2		**XS5W-D42B-D81-PR**	—	
	5		**XS5W-D42B-G81-PR**	—	
	10		**XS5W-D42B-J81-PR**	—	
Oil-resistant polyurethane cable	2	6 dia.	**XS5W-D421-D81-P**	—	—
	5		**XS5W-D421-G81-P**	—	
	10		**XS5W-D421-J81-P**	—	
Spatter-resistant Cable	2	6.6 dia.	**XS5W-D421-D81-SA**	—	—
	5		**XS5W-D421-G81-SA**	—	

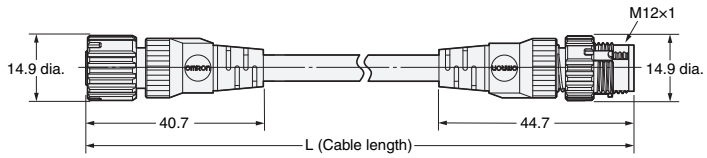
Cable specifications	Cable length L (m)	Cable diameter (mm)	Straight (Socket)/ Right-angle (Plug)	Right-angle (Socket)/ Straight (Plug)	UL
			Model	Model	
Fire-retardant, PVC Robot Cable	2	6 dia.	**XS5W-D423-D81-F**	**XS5W-D424-D81-F**	UL2238 certified (File no. E207683)
	5		**XS5W-D423-G81-F**	**XS5W-D424-G81-F**	

Note: Ask your OMRON representative about other cable lengths.

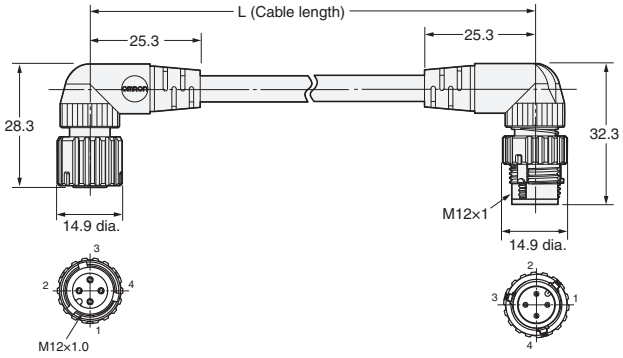
Dimensions

(Unit: mm)

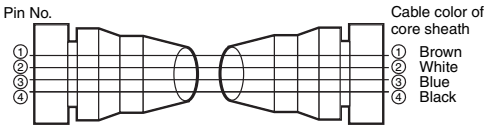
Straight (Socket)/Straight (Plug)
Fire-retardant, PVC Robot Cable
XS5W-D421-□81-F
Fire-retardant, thin PVC Robot Cable
XS5W-D425-□81-S
Oil-resistant Polyurethane Cable
XS5W-D421-□81-P
Spatter-resistant Cable
XS5W-D421-□81-SA



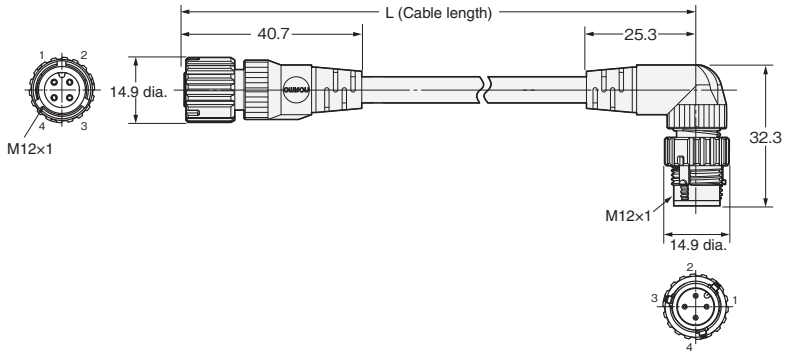
Right-angle (Socket)/Right-angle (Plug)
Fire-retardant, PVC Robot Cable
XS5W-D422-□81-F



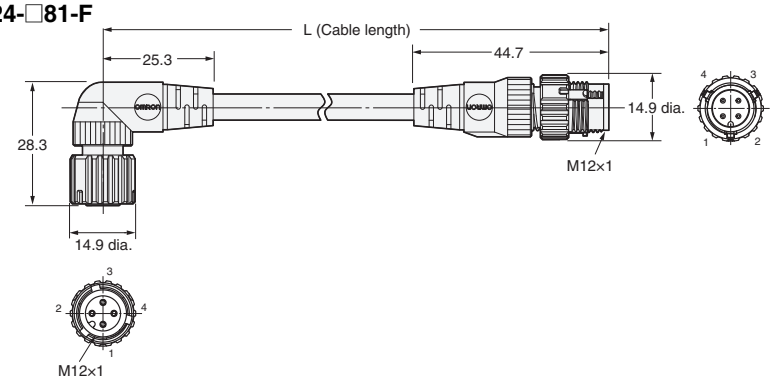
Wiring Diagram for 4 Cores



Straight (Socket)/Right-angle (Plug)
Fire-retardant, PVC Robot Cable
XS5W-D423-□81-F



Right-angle (Socket)/Straight (Plug)
Fire-retardant, PVC Robot Cable
XS5W-D424-□81-F



Note: Oil-resistant polyurethane cables (XS5W-D42□-□81-P) and spatter-resistant cables (XS5W-D421-□81-SA) have black covers.
Fire-retardant, PVC robot cables (XS5W-D42□-□81-F), fire-retardant, thin PVC robot cables (XS5W-D425-□81-S), oil-resistant (polyurethane) robot cables (XS5W-D42B-□81-PR) have warm gray covers.