

# Waterproof Sensor I/O Connectors XS5

## Waterproof 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 <sup>2</sup> 0.5 to 0.75mm <sup>2</sup>	0.5 mm <sup>2</sup> max.	0.18 to 0.75mm <sup>2</sup>
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)
	Standard cable	UL AWM2464, 6-mm dia. 4 cores × AWG20 (0.12/49)	—	
	Vibration-proof robot cable	UL AWM2464, 6-mm dia. 4 cores × AWG20 (0.08/110)	—	
	Oil-resistant polyurethane cable	6 dia. 4 cores × 0.5 mm <sup>2</sup> (0.12/45)	—	—
Seal Resin		—	Epoxy Resin (UL94V-0)	—
Power supply wires		—	UL 1007 AWG20	—

# ■ Problem Solving


## 1

Problem	Solution
It is troublesome to screw the connectors together.	<b>It's a twist-and-click connection.</b> An innovative new lock structure makes connection extremely simple. The lock mechanism is internal, so it will no longer become jammed by splattered fluids or dust. Also the use of a movable lock bolt makes it possible to connect the Smartclick XS5 to a screw-type M12 connector.

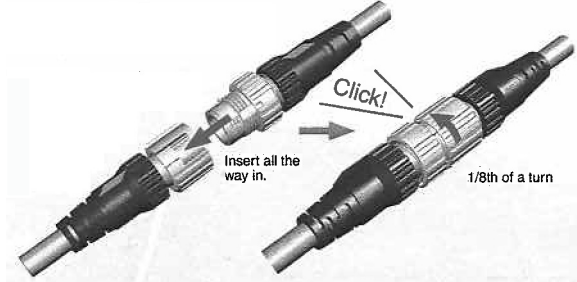
All combinations are connectable.

	XS5 Smartclick Plug Connector	M12 plug connector
XS5 Smartclick Socket Connector	Twist-and-click connection	Screw connection
M12 socket connector	Screw connection	Screw connection

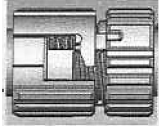
## 2

Problem	Solution
There's nothing to tell you that it's connected.	<b>The Smartclick XS5 "clicks" to tell you it's connected.</b> A positive clicking feel tells you for sure that the Connector is securely locked. 

## 3

Problem	Solution
It's difficult to keep track of locking torque values.	<b>Locking is done with approximately 1/8th of a turn.</b> The Smartclick XS5 has the industry's shortest locking rotation of 1/8th of a turn. There's no need to keep track of locking torque, and this greatly reduces time and effort when wiring. 

## 4

Problem	Solution
The connection sometimes vibrates loose.	<b>A bayonet lock mechanism is used.</b> By using a bayonet mechanism, which is a common locking method, the Smartclick XS5 eliminates any concerns about loosening. 

# Connectors Connected to Cable, Socket and Plug on Cable Ends XS5W

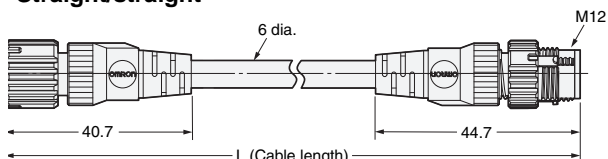
**XS5W-D42□-□81-A** Standard Cable  
**XS5W-D42□-□81-F** Vibration-proof Robot Cable  
**XS5W-D42□-□81-P** Oil-resistant Polyurethane Cable



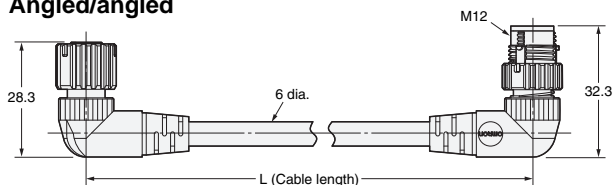
## Dimensions

(Unit: mm)

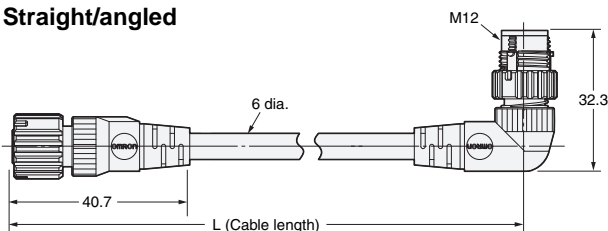
### Straight/straight



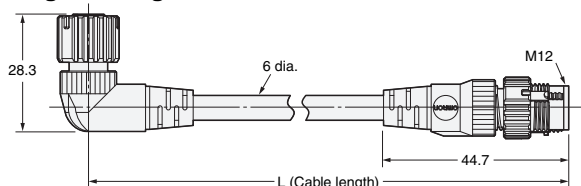
### Angled/angled



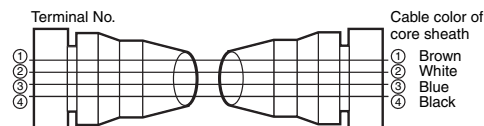
### Straight/angled



### 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	UL
		Straight/straight	Angled/angled		
Standard cable	1	XS5W-D421-C81-A	—	10	Yes
	2	XS5W-D421-D81-A	XS5W-D422-D81-A		
	3	XS5W-D421-E81-A	—		
	5	XS5W-D421-G81-A	XS5W-D422-G81-A	5	
	10	XS5W-D421-J81-A	—		
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	—	5	
	10	XS5W-D421-J81-F	—		
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	UL
		Straight/angled	Angled/straight		
Standard cable	2	XS5W-D423-D81-A	XS5W-D424-D81-A	5	Yes
	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

# Connector Connected to Cable, Socket on One Cable End

# XS5F

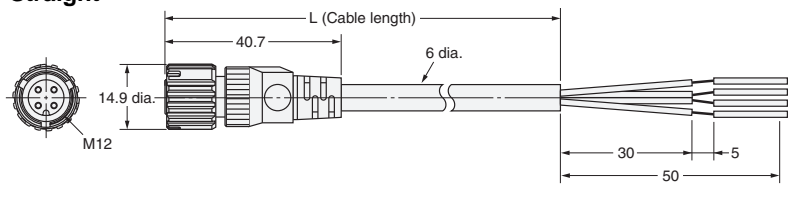
**XS5F-D42□-□80-A** Standard Cable  
**XS5F-D42□-□80-F** Vibration-proof Robot Cable  
**XS5F-D42□-□80-P** Oil-resistant Polyurethane Cable



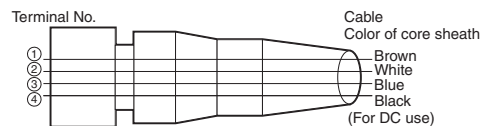
## ■ Dimensions

(Unit: mm)

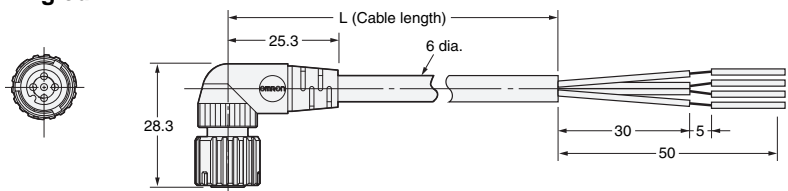
### Straight



### Wiring Diagram for 4 Cores



### Angled



**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	UL
		Straight	Angled		
Standard cable	1	XS5F-D421-C80-A	XS5F-D422-C80-A	10	Yes
	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- $\mu$ 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

# Connector Connected to Cable, Plug on One Cable End

# XS5H

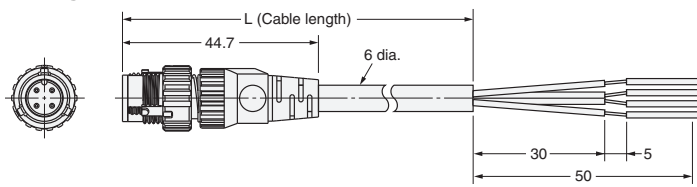
**XS5H-D42□-□80-A** Standard Cable  
**XS5H-D42□-□80-F** Vibration-proof Robot Cable  
**XS5H-D42□-□80-P** Oil-resistant Polyurethane Cable

**Smartclick™**

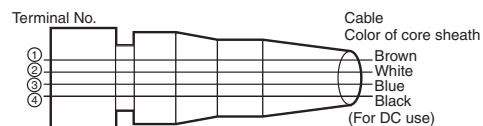
## ■ Dimensions

(Unit: mm)

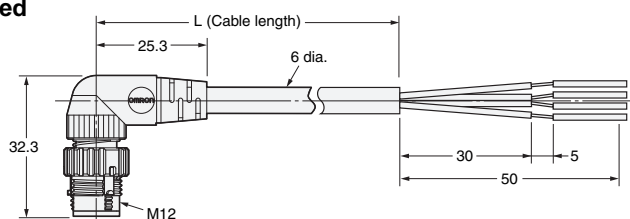
### Straight



### 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	UL
		Straight	Angled		
Standard cable	0.3	XS5H-D421-A80-A	XS5H-D422-A80-A	5	Yes
	1	XS5H-D421-C80-A	XS5H-D422-C80-A		
	2	XS5H-D421-D80-A	XS5H-D422-D80-A		
	5	XS5H-D421-G80-A	XS5H-D422-G80-A		
Vibration-proof robot cable	0.3	XS5H-D421-A80-F	XS5H-D422-A80-F	5	—
	1	XS5H-D421-C80-F	XS5H-D422-C80-F		
	2	XS5H-D421-D80-F	XS5H-D422-D80-F		
	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:** 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- $\mu$ 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



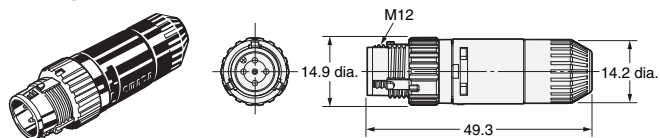
# Assembly Connector Plugs

# XS5G NEW

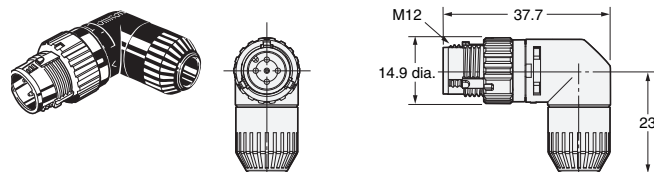
Smartclick™  
(Unit: mm)

## ■ Dimensions

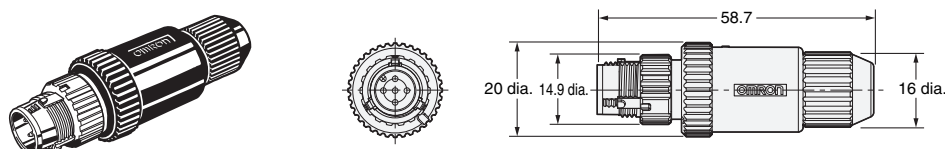
XS5G-D4C□ (Crimping Model)  
XS5G-D42□ (Soldering Model)  
Straight Connectors



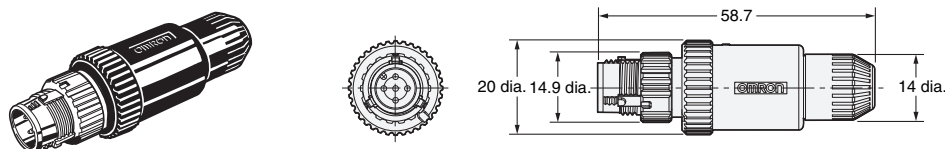
XS5G-D42□ (Soldering Model)  
Angled Connectors



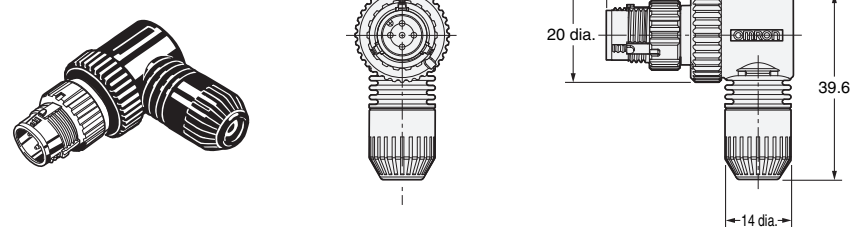
XS5G-D□S□ (Screw-on Connectors, Applicable Cable Outer Diameter: 7 or 8mm)  
Straight Connectors



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

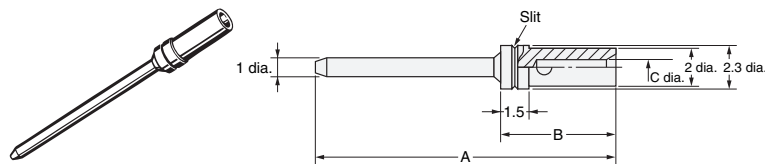
# XS5U

(Crimping pin for XS5G)

## Dimensions

(Unit: mm)

XS5U-312□  
Plug Pin



Dimensions

Model	Suitable core size (mm <sup>2</sup> )	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 section of this datasheet entitled "Tools".  
2. AWG size is based on UL1007 wire.

## Ordering Information

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

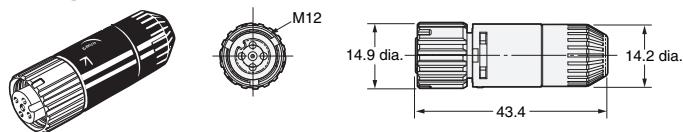
# Assembly Connector Sockets

# XS5C NEW

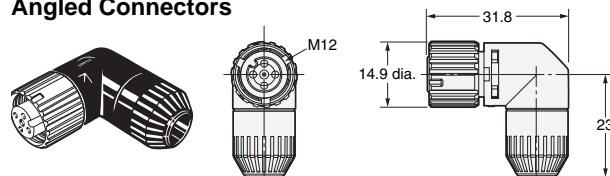
Smartclick™  
(Unit: mm)

## ■ Dimensions

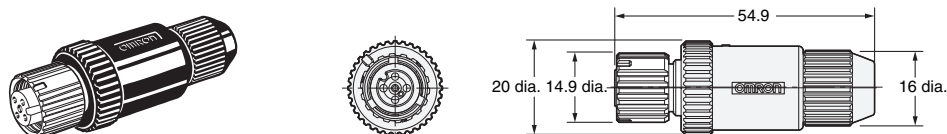
XS5C-D4C□ (Crimping Model)  
XS5C-D42□ (Soldering Model)  
Straight Connectors



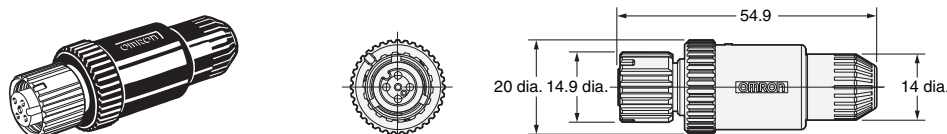
XS5C-D42C□ (Soldering Model)  
XS5C-D42□ (Soldering Model)  
Angled Connectors



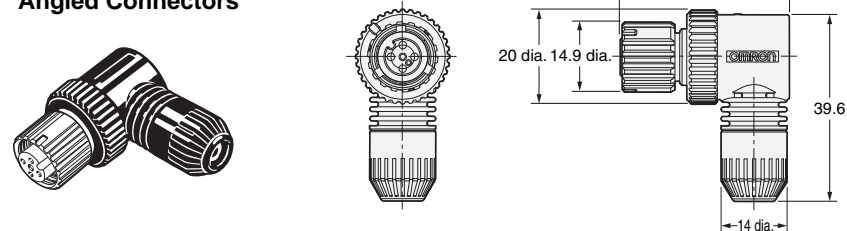
XS5C-D□S□ (Screw-on Connectors, Applicable Cable Outer Diameter: 7 or 8mm)  
Straight Connectors



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	—	

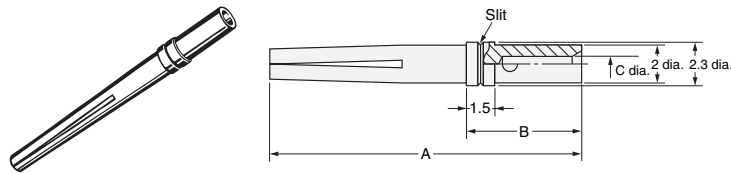
# XS5U

(Crimping pin for XS5C)

## Dimensions

(Unit: mm)

XS5U-222□  
Socket Pin



Dimensions

Model	Suitable core size (mm <sup>2</sup> )	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 section of this datasheet entitled "Tools".  
2. AWG size is based on UL1007 wire.

## Ordering Information

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

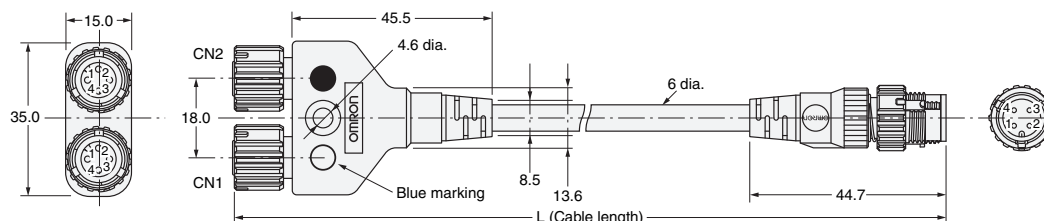
# Y-Joint Plug/Socket Connectors XS5R

Smartclick™  
(Unit: mm)

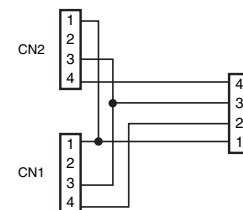
## ■ Dimensions

XS5R-D426-□11-F

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

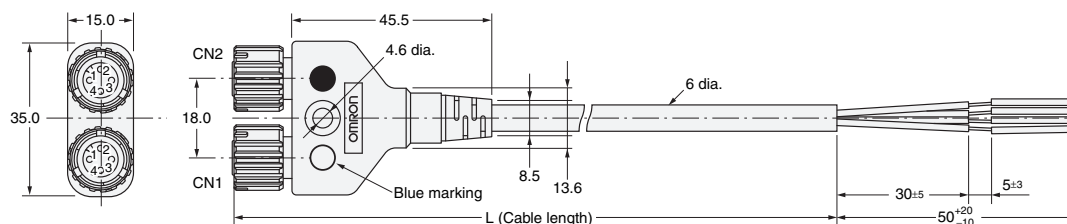


Wiring Diagram

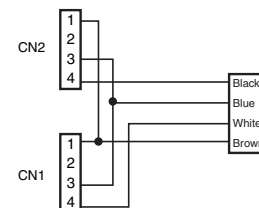


XS5R-D426-□10-F

Connectors on One Cable End (Y-Joint Socket)

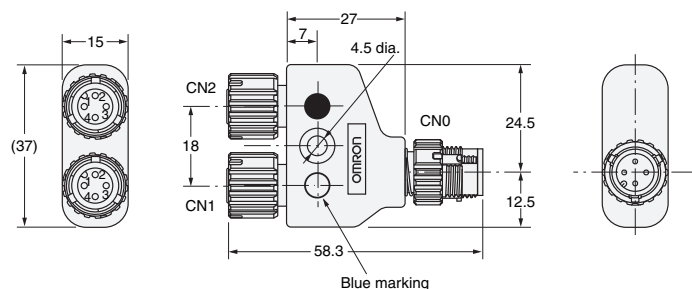


Wiring Diagram



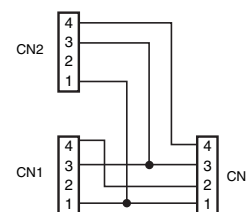
XS5R-D426-□

Y-Joint Plug/Socket without Cable

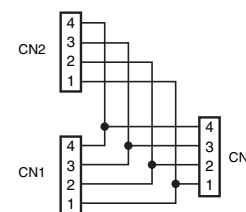


Wiring Diagram

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: 1. Ask your OMRON representative about other models and additional data.

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

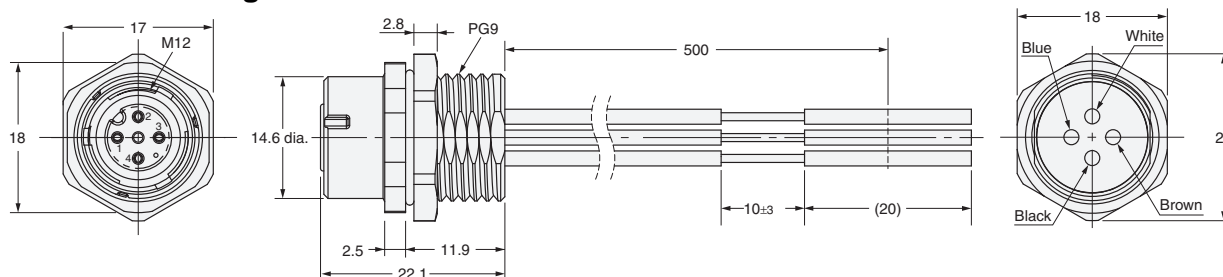
# Panel-mounting Sockets XS5P

Smartclick™  
(Unit: mm)

## ■ Dimensions

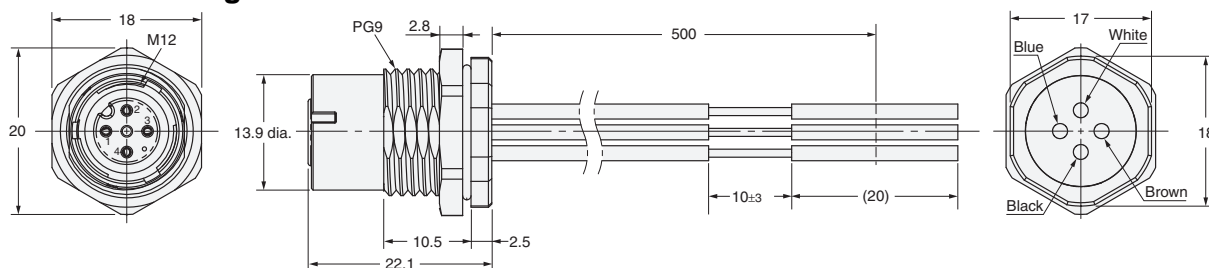
### XS5P-D426-5

#### Front Panel-mounting Sockets for Rear Lock Nuts

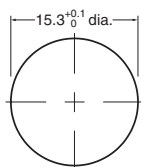


### XS5P-D427-5

#### Rear Panel-mounting Sockets 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	XS5P-D426-5	10
	Front lock		XS5P-D427-5	

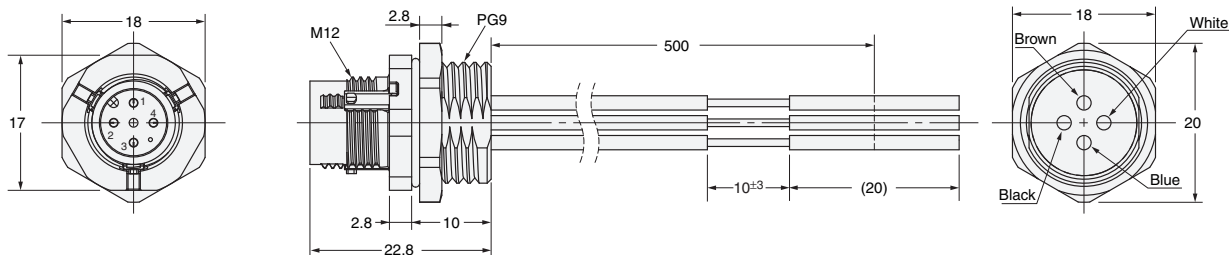
# Panel-mounting Plugs XS5M

Smartclick™  
(Unit: mm)

## ■ Dimensions

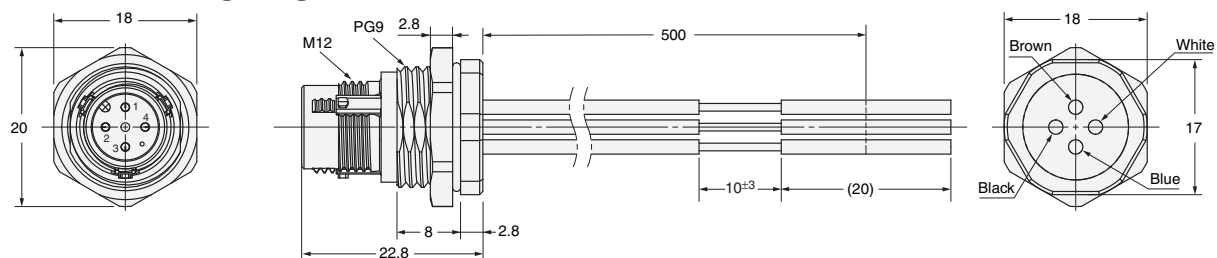
### XS5M-D426-5

#### Front Panel-mounting Plugs for Rear Lock Nuts

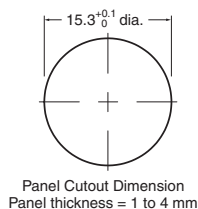


### XS5M-D427-5

#### 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

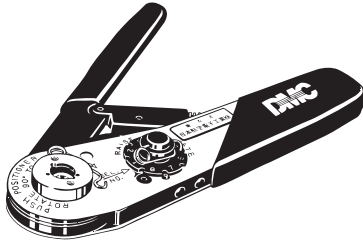
Item	Specification	
Specification	UL1007	
Nominal size	AWG20	
Configuration	Number of wires	21
	Wire diameter	0.18
	Standard outer diameter	1.8

## ■ 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	

## Tools

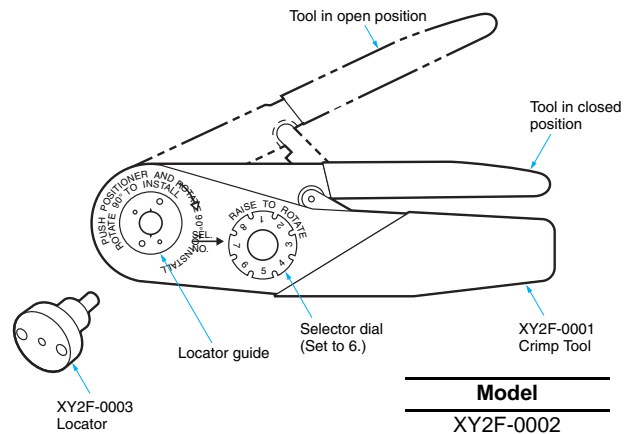
### Crimp Tool XY2F-0002



Use the Crimp Tool to crimp a cable core to the XS5U or XS2U Crimping Pin used with the XS□C or XS□G 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.

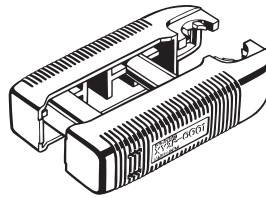
### Locator XY2F-0003



Model
XY2F-0002
XY2F-0003

### 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 (XS□C/XS□G, soldering/crimping).

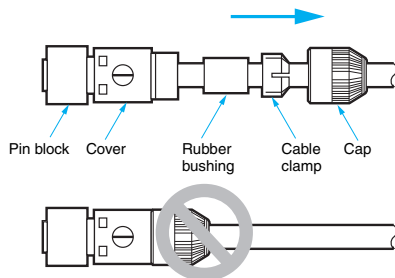


Model
XY2F-0001

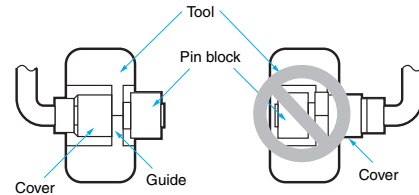
## Extraction Procedure

### 1. Disconnecting Components

- Disconnect all components on the cap side from the cover.



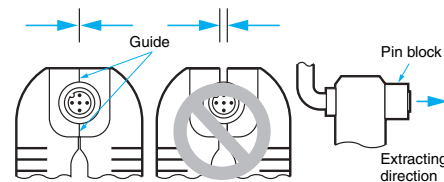
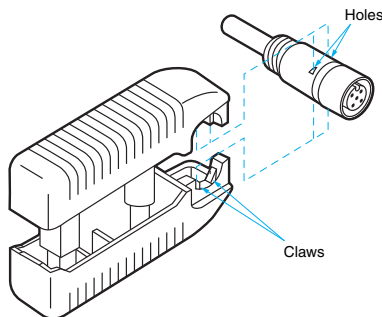
- Make sure that the pin block is outside the Tool.



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

### 2. Extracting Pin Block

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



### Precaution for Safe Use

- 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 XS5C/XS5G Connector Assemblies

## 1. Connector and Cable External Diameters

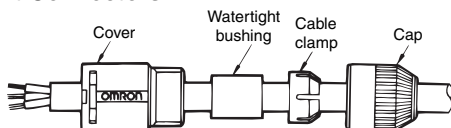
- Connectors for 6-, 4-, and 3-mm-diameter Cables (i.e., Cables that are 5 to 6, 4 to 5, and 3 to 4 mm in diameter respectively) are available. When assembling a Connector used with a cable, make sure that the external diameter of the Connector is suited to that of the cable.
- Connectors for 6-mm-diameter 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.

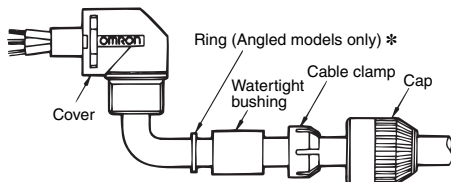
## 2. Component Insertion

### Crimping/Soldering Connectors

#### Straight Connectors



#### Angled Connectors

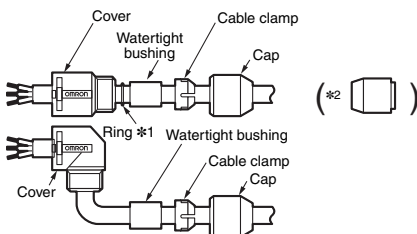


\* A ring is not required for Screw-on Connectors.

- 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.

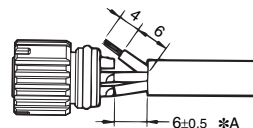


Insulation caps and insulation tubes are included with 5-pole Connectors (XS2C-D5S□ and XS2G-D5S□).

- Rings are not required with 7-mm and 8-mm cables.
- Insert the waterproof bushing for 7-mm and 8-mm cables in the direction shown in the diagram.

## 3. Wiring (Processing Cable Ends)

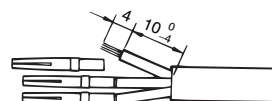
### Soldering Connectors



- Strip 10 mm of the Cable sheath and 4 mm of each core.
- Before soldering cores and solder cup pins together, solder-coat 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.

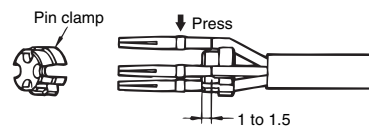
### Crimping Connectors

#### 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 XY2F-0002 Crimping Tool, both of which are sold separately, and set the selector dial of the Crimping Tool to 6 for the XS5U-□□21 and to 7 for the XS5U-□□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.)

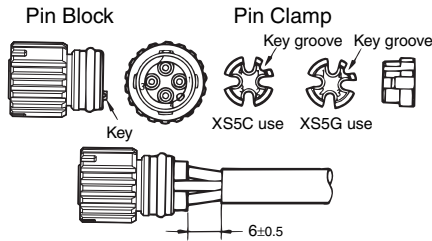
#### Wiring



- 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.

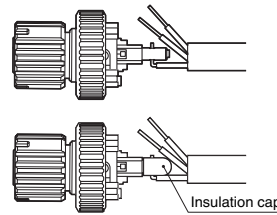
# Assembly Procedure (continued)

## 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.

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

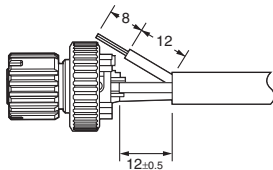


- Connect the cores to pins 1 to 4.

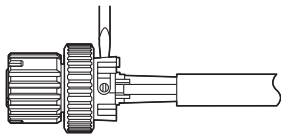
## Screw-on Connectors

### Cable End Processing

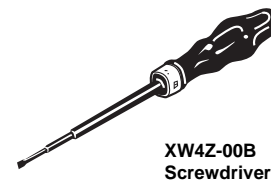
#### • Four-pole Connectors



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

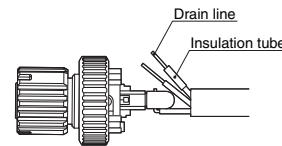


- Use the dedicated Screwdriver (XW4Z-00B)\* and tighten the screws securely so that the cores do not pull out (tightening torque: 0.15 to 0.2 N·m).



### Connecting Shielded Cables to Five-pole Connectors

- Place the insulation tub on the drain line of the shield and connect it to the terminal.
- Tighten the screw and then check visually to see if there is insulation between the cores.

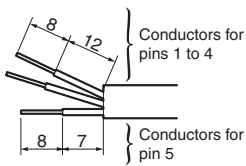


- Connect the cores to pins 1 to 4.

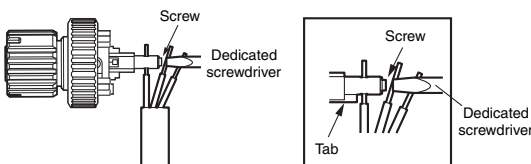
- \* When tightening the screws, use the dedicated XW4Z-00B Screwdriver that matches with the screw-slot dimensions.

#### • 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.



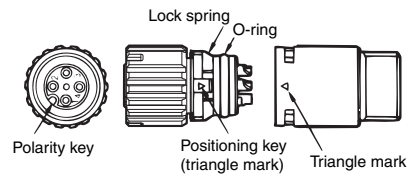
- Connect the core to pin 5 (in the center) first.
- Insert the core from the side of the hold with the tab and tighten the screw securely (tightening torque: 0.15 to 0.2 N·m), and then cut off the excess wire with wire cutters.



## 4. Inserting Pin Block

### Pin Block (Soldering Model)

### Cover (Straight Model)

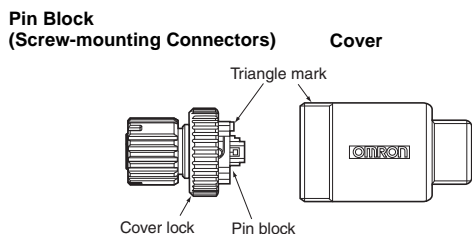


### (Crimping Model)

### (Angled 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 Angled 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.

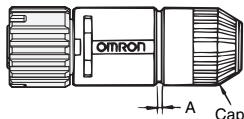


- Align the triangular marks on the pin block and cover and insert the pin block into the cover.
- Press them together firmly (0.39 to 0.49 N·m) until the pin block does not come out of the cover.

### 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)			
	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

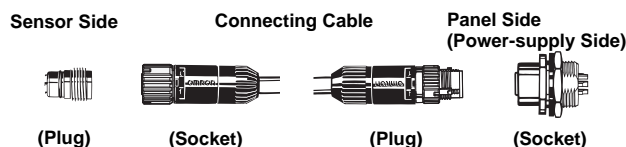
- Confirm the insulation between cores after completing assembly.

## 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

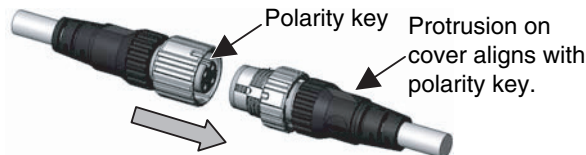
For safety, when constructing a connection system between a Sensor and panel with a connector, make sure that the connector plug is on the Sensor side and the connector socket is on the panel side (i.e., the female pins are located on the power-supply side).



## Connecting the XS5

### 1. Connecting the XS5 Plug and Socket

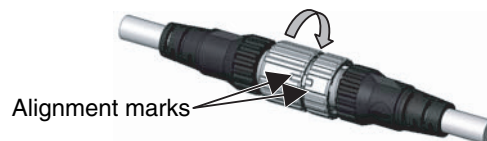
- Align the projection on the plug cover with the polarity key on the socket, then insert the plug all the way in.



- 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.

## 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 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.

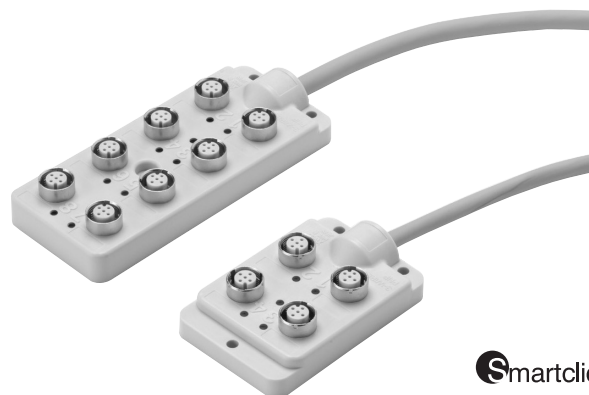
## General Precautions

- 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 or XS2Z-14/15 Dust Cover.

# Connector Terminal Boxes XW3D

## Simple Wiring of Sensor Actuators

- Greatly reduces wiring work in combination with the XS5 Smartclick.
- Insert the connector and turn 1/8 of a turn to lock the connectors.
- Higher rated current to enable output applications.
- Compatible with other M12 screw connectors.
- Degree of protection : IP67 (IEC60529)



Smartclick™

## ■ Ratings and Specifications

Rated current	4 A/port, 12 A/Box (power line)
Rated voltage	10 to 30 VDC
Contact resistance (connector)	40 mΩ max. (20 mV max., 100 mA max.)
Insulation resistance	100 MΩ min. (at 500 VDC)
Dielectric strength (connector)	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
Lock operating force	0.1 N·m to 0.25 N·m
Ambient operating temperature range	-25 to 70°C

## ■ Materials and Finish

Item	Materials/finish
Contacts	Brass/nickel base, 0.4-μm gold-plating
Fixtures	Nickel-plated zinc alloy
Case	PBT resin (UL94V-0), light gray
Bushing	Rubber
O-ring	Rubber
PCB	Glass epoxy board
Sealing resin	Urethane resin (UL94V-0)
Cable	UL AWM2464 Signal lines: AWG22 Power and ground lines: AWG18

## ■ Connection Combinations

OMRON Model No.	Twist-and-Click Plug Connectors	M12 Plug Connectors
	XS5H, XS5G XS5W (plug end) XS5R (plug end)	XS2H, XS2G XS2W (plug end) XS2R (plug end)
Connector Terminal Box XW3D	⊗	○

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

⊗: Connected by Smartclick twisting.

○: Connected by screwing.

## Ordering Information

Sensor type and wiring		3-Wire DC NPN/2-Wire DC 3-4	2-Wire DC 1-4/Without polarity 3-4	3-Wire DC PNP/2-Wire DC 1-4
Actuator wiring		Actuator wiring 1-4	—	Actuator wiring 3-4
No. of ports	No. of I/O	Model	Model	Model
4	4	XW3D-P455-G11	XW3D-P452-G11	XW3D-P453-G11
8	8	XW3D-P855-G11	XW3D-P852-G11	XW3D-P853-G11
4	8	XW3D-P458-G11	—	XW3D-P457-G11

- Note: 1. "1-4" and "3-4" are the connector pin numbers that are wired.  
 2. All cables are 5 m long.

### Waterproof Cover (Sold Separately) XS2Z-22



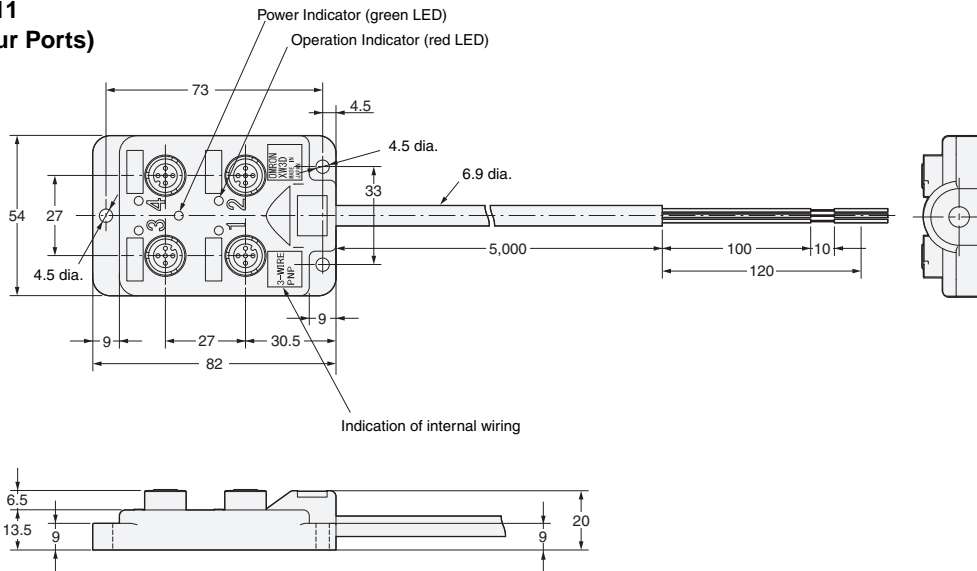
Model	No. per box	Material
XS2Z-22	50	Brass with Ni plating

Note: 1. The XW3D/XW3B/XW3A comes with a dust cover. Use the optional XS2Z-22 Waterproof Cover when an IP67 degree of protection is required.

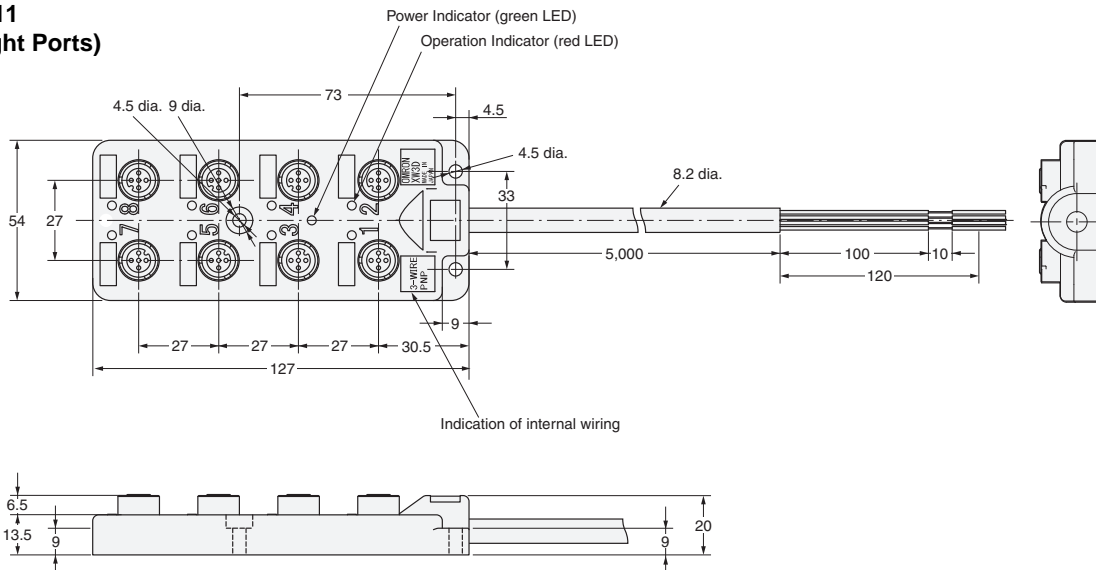
## Dimensions

(Unit : mm)

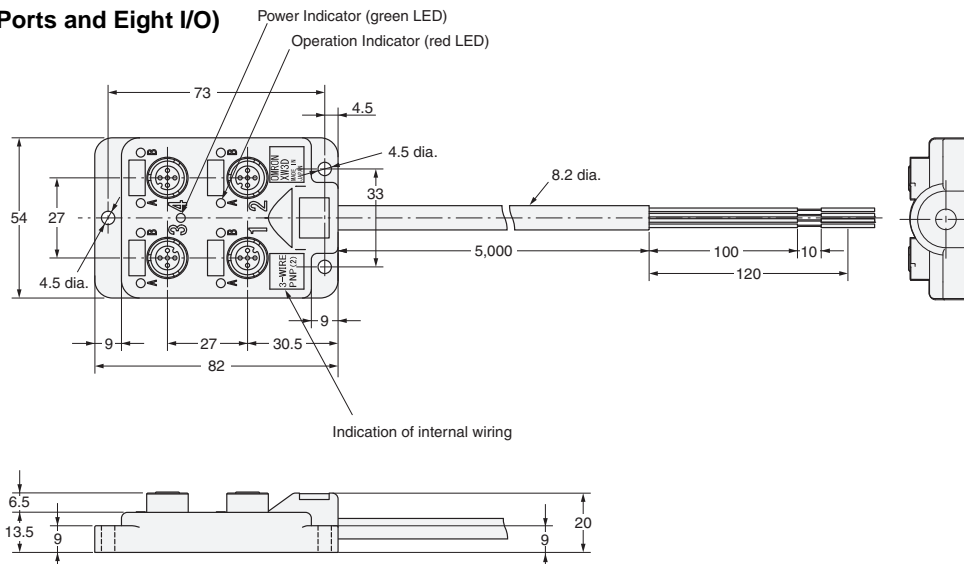
### XW3D-P45□-G11 (Model with Four Ports)



### XW3D-P85□-G11 (Model with Eight Ports)



**XW3D-P457-G11**  
**(Model with Four Ports and Eight I/O)**



**Wiring Diagrams**

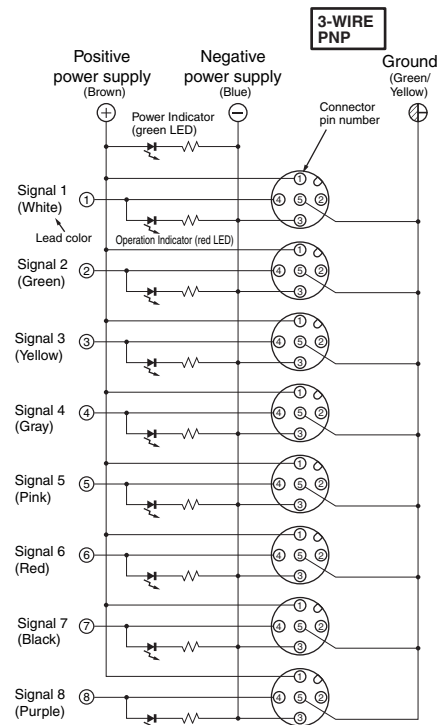
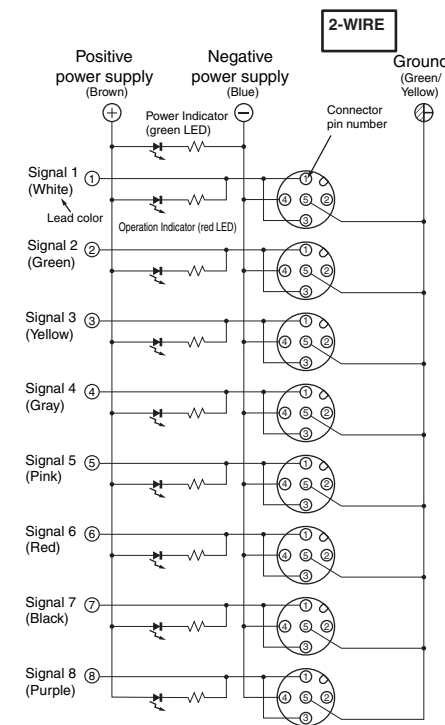
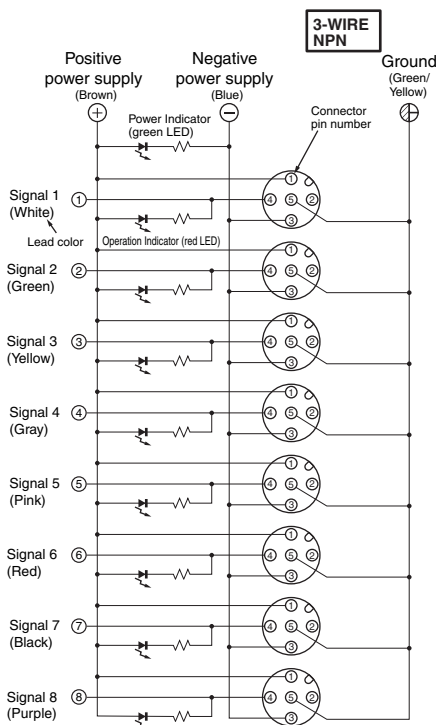
**Models with One I/O and One Port**

**NPN Sensor Specifications**  
**XW3D-P□55-□11**  
**for 3-Wire DC NPN,**  
**2-Wire DC (Without polarity 3-4), and**  
**Actuator (1-4)**

**2-Wire Sensor Specifications**  
**XW3D-P□52-□11**  
**for 2-Wire DC (polarity 1-4, without**  
**polarity 3-4)**

**PNP Sensor Specifications**  
**XW3D-P□53-□11**  
**for 3-Wire DC PNP,**  
**2-Wire DC (with polarity 1-4), and**  
**Actuator (3-4)**

**Note:** Cannot be used with NPN-type Photoelectric and Proximity Sensors. Cannot be used with Proximity Sensors with polarity 3-4.

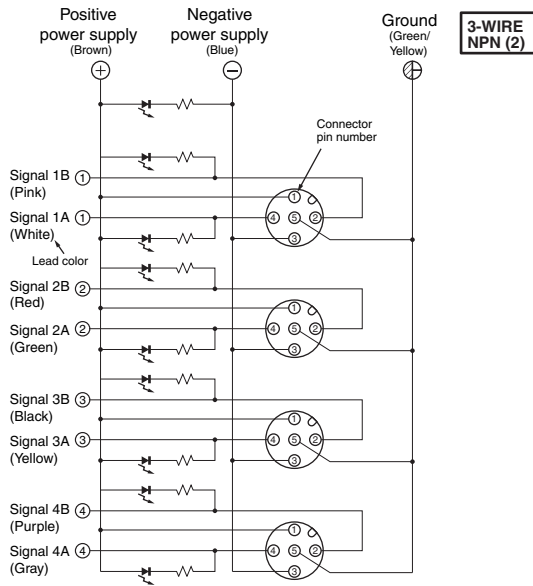


- Note:**
1. The above wiring diagrams are for eight-port use.
  2. Figures in parentheses indicate lead colors.
  3. The expression "white/red" means white and red stripes.
  4. Here, "1-4" and "3-4" are pin numbers.
  5. Contact numbers 5 through 8 in the above diagrams do not exist on Terminal Boxes with four ports. The lead colors for signals 1 through 4, power supply, and ground are the same.

**Models with Two I/O and One Port**

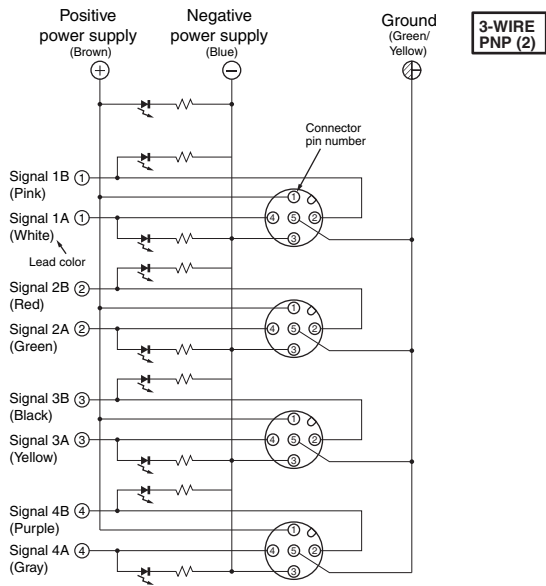
**XW3D-P458-G11**

for 3-Wire DC NPN and Actuator (1-4 or 1-2)



**XW3D-P457-G11**

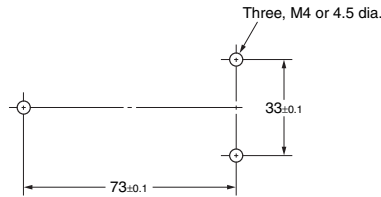
for 3-Wire PNP and Actuator (3-4 or 3-2)



**Note:** Colors given in the connection diagram are lead colors.

**Mounting Dimensions**

(Unit: mm)



**Note:** Mounting dimensions are the same for any models.

**Safety Precautions**

**Precautions for Correct Use**

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

**Connector Connection and Disconnection**

- Mate the connectors according to the procedure given in this datasheet.
- 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 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.
- Confirm in the catalog that sensors and actuators are applicable before using them.
- Always turn OFF the power supply before connecting or disconnecting connectors.
- Do not touch the mating surface of the connectors with wet hands.
- Wipe away any water around the connectors.
- Do not allow metal scraps or dust to enter the mating section.

**Cable Lead Polarity**

- Connect the cables leads using the correct polarity (Blue: Negative power supply, Brown: Positive power supply).
- If the polarity is not correct, the load may not operate or the operation indicator may not light.
- Always connect a load to the signal lines to operate a sensor or actuator.

**Applicable Connectors**

- Always mount a Waterproof Cover (XS2Z-22) or Dust Cover (XS2Z-15) to any unused connector on the Connector Terminal Box.

**Power Supply and Operation Indicators**

- The power supply indicator will be lit green while power is being supplied. The operation indicator will be lit red while the sensor or actuator is operating.
- The XW3D is for a DC sensor or actuator. Do not use it for an AC sensor or actuator.
- Connector Terminal Boxes are available with either 2-wire or 3-wire internal connections, as indicated on the case.

3-WIRE NPN

2-WIRE

3-WIRE PNP

3-WIRE NPN (2)

3-WIRE PNP (2)









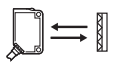

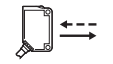


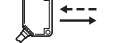

# XS5 Smartclick™ Compatible Products

## Photoelectric Sensors

Oil-resistant, Robust, Compact Photoelectric Sensor (Stainless Housing and Built-in Amplifier)

### E3ZM-C

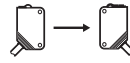
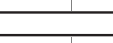
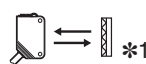


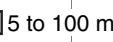
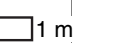

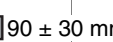
 Orange light  Red light  Infrared light

Sensing method	Appearance	Sensing distance	Model	
			NPN output	PNP output
Through-beam		 15 m	E3ZM-CT61-M1TJ	E3ZM-CT81-M1TJ
		 20 m	E3ZM-CT62B-M1TJ	E3ZM-CT82B-M1TJ
Retro-reflective		 4 m [100 mm] * (Using E39-R1S)	E3ZM-CR61-M1TJ	E3ZM-CR81-M1TJ
Diffuse reflective		 1 m	E3ZM-CD62-M1TJ	E3ZM-CD82-M1TJ
BGS reflective		 10 to 100 mm	E3ZM-CL61H-M1TJ	E3ZM-CL81H-M1TJ
		 10 to 150 mm	E3ZM-CL62H-M1TJ	E3ZM-CL82H-M1TJ
		 10 to 200 mm	E3ZM-CL64H-M1TJ	E3ZM-CL84H-M1TJ

\*Separate the Sensor and Reflector by at least the distance given in parentheses.

### Compact Photoelectric Sensor (Built-in Amplifier)

### E3Z


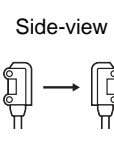

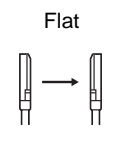

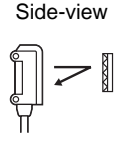

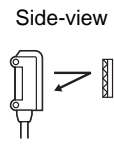

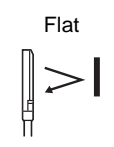

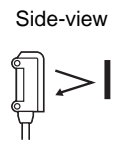

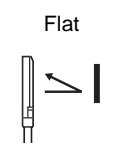
Sensing method	Appearance	Sensing distance	Model	
			NPN output	PNP output
Through-beam		 15 m	E3Z-T61-M1TJ	E3Z-T81-M1TJ
Retro-reflective with MSR function	 *1	 4 m *2 [100 mm]	E3Z-R61-M1TJ	E3Z-R81-M1TJ
Diffuse reflective		 5 to 100 mm (wide view)	—	E3Z-D81-M1TJ
		 1 m	E3Z-D62-M1TJ	E3Z-D82-M1TJ
Narrow-beam Reflective		 90 ± 30 mm	E3Z-L61-M1TJ	E3Z-L81-M1TJ

\*1. The Reflector is sold separately. Select the Reflector model most suited to the application.

\*2. The sensing distance specified is possible when the E39-R1S used. Values in parentheses indicate the minimum required distance between the Sensor and Reflector.

"Mini" Photoelectric Sensor with Built-in Amplifier


E3T ■ Red light

Sensing method	Appearance		Sensing distance	Operating mode	Model	
					NPN output	PNP output
Through-beam			1 m	Light-ON	E3T-ST11-M1TJ	E3T-ST13-M1TJ
				Dark-ON	E3T-ST12-M1TJ	E3T-ST14-M1TJ
			300 mm	Light-ON	E3T-ST21-M1TJ	E3T-ST23-M1TJ
				Dark-ON	E3T-ST22-M1TJ	E3T-ST24-M1TJ
			500 mm	Light-ON	E3T-FT11-M1TJ	E3T-FT13-M1TJ
				Dark-ON	E3T-FT12-M1TJ	E3T-FT14-M1TJ
			300 mm	Light-ON	E3T-FT21-M1TJ	E3T-FT23-M1TJ
				Dark-ON	E3T-FT22-M1TJ	E3T-FT24-M1TJ
Retro-reflective			200 mm [10 mm] *	Light-ON	E3T-SR21-M1TJ	E3T-SR23-M1TJ
				Dark-ON	E3T-SR22-M1TJ	E3T-SR24-M1TJ
			100 mm [10 mm] *	Light-ON	E3T-SR31-M1TJ	E3T-SR33-M1TJ
				Dark-ON	E3T-SR32-M1TJ	E3T-SR34-M1TJ
Diffuse reflective			5 to 30 mm	Light-ON	E3T-FD11-M1TJ	E3T-FD13-M1TJ
				Dark-ON	E3T-FD12-M1TJ	E3T-FD14-M1TJ
Convergent reflective			5 to 15 mm	Light-ON	E3T-SL11-M1TJ	E3T-SL13-M1TJ
				Dark-ON	E3T-SL12-M1TJ	E3T-SL14-M1TJ
			5 to 30 mm	Light-ON	E3T-SL21-M1TJ	E3T-SL23-M1TJ
				Dark-ON	E3T-SL22-M1TJ	E3T-SL24-M1TJ
BGS reflective			1 to 15 mm	Light-ON	E3T-FL11-M1TJ	E3T-FL13-M1TJ
				Dark-ON	E3T-FL12-M1TJ	E3T-FL14-M1TJ
			1 to 30 mm	Light-ON	E3T-FL21-M1TJ	E3T-FL23-M1TJ
				Dark-ON	E3T-FL22-M1TJ	E3T-FL24-M1TJ

\*Separate the Sensor and Reflector by at least the distance given in parentheses.



## Proximity Sensors

### Proximity Sensors with Oil-resistant Cables (PUR Cables)

Appearance	Sensing distance	Output configuration	Operating mode	Model	
 Shielded	M8	2 mm	2-wire DC with polarity 1, 4 Pin Specifications	NO	E2E-X2D1-M1TGJ-U
	M12	3 mm			E2E-X3D1-M1TGJ-U
	M18	7 mm			E2E-X7D1-M1TGJ-U
	M30	10 mm			E2E-X10D1-M1TGJ-U
	M8	2 mm	2-wire DC with polarity 1, 2 Pin Specifications	NC	E2E-X2D2-M1TGJ-U
	M12	3 mm			E2E-X3D2-M1TGJ-U
	M18	7 mm			E2E-X7D2-M1TGJ-U
	M30	10 mm			E2E-X10D2-M1TGJ-U


**Note:** Other models are also available that can be used with the Twist-and-Click Connectors. Ask your OMRON representative for details.

### Standard Proximity Sensor (PVC Cable)

Appearance	Sensing distance	Output configuration	Operating mode	Model	
 Shielded	M8	2 mm	2-wire DC with polarity 1, 4 Pin Specifications	NO	E2E-X2D1-M1TGJ
	M12	3 mm			E2E-X3D1-M1TGJ
	M18	7 mm			E2E-X7D1-M1TGJ
	M30	10 mm			E2E-X10D1-M1TGJ
 Non-shielded	M12	8 mm	2-wire DC with polarity 1, 4 Pin Specifications	NO	E2E-X8MD1-M1TGJ
	M18	14 mm			E2E-X14MD1-M1TGJ
	M30	20 mm			E2E-X20MD1-M1TGJ


**Note:** Other models are also available that can be used with the Twist-and-Click Connectors. Ask your OMRON representative for details.

### Spatter-Immune Proximity Sensor (Fire-retardant PVC Cable)

Appearance	Sensing distance	Output configuration	Operating mode	Model	
 Shielded	M12	3 mm	2-wire DC with polarity 1, 4 Pin Specifications	NO	E2EQ-X3D1-M1TGJ
	M18	7 mm			E2EQ-X7D1-M1TGJ
	M30	10 mm			E2EQ-X10D1-M1TGJ
	M12	4 mm	2-wire DC with polarity 3, 4 Pin Specifications	NO	E2EQ-X4X1-M1TJ
	M18	8 mm			E2EQ-X8X1-M1TJ
	M30	15 mm			E2EQ-X15X1-M1TJ


**Note:** Other models are also available that can be used with the Twist-and-Click Connectors. Ask your OMRON representative for details.

### Proximity Sensor with All-stainless Housing (Fire-retardant PVC Cable)

Appearance	Sensing distance	Output configuration	Operating mode	Model	
 Shielded	M8	1.5 mm	2-wire DC with polarity 1, 4 Pin Specifications	NO	E2FM-X1R5D1-M1TGJ
	M12	2 mm			E2FM-X2D1-M1TGJ
	M18	5 mm			E2FM-X5D1-M1TGJ
	M30	10 mm			E2FM-X10D1-M1TGJ


**Note:** Other models are also available that can be used with the Twist-and-Click Connectors. Ask your OMRON representative for details.

### Chip-Immune Inductive Proximity Sensor (PVC Cable)

Appearance	Sensing distance	Output configuration	Operating mode	Model
 Shielded	M12	2 mm	2-wire DC with polarity 1, 4 Pin Specifications	E2EZ-X2D1-M1TGJ
	M18	4 mm		E2EZ-X4D1-M1TGJ
	M30	8 mm		E2EZ-X8D1-M1TGJ
	M12	2 mm	2-wire DC with polarity 3, 4 Pin Specifications	E2EZ-X2D1-M1TJ
	M18	4 mm		E2EZ-X4D1-M1TJ
	M30	8 mm		E2EZ-X8D1-M1TJ


**Note:** Other models are also available that can be used with the Twist-and-Click Connectors. Ask your OMRON representative for details.

**Pulse Response Proximity Sensor**

Appearance	Sensing distance	Output configuration	Operating mode	Model
 Shielded	M12	4 mm	3-wire DC with PNP 1, 4, 3 Pin Specifications	E2V-X4B1-M1TJ
	M18	8 mm		E2V-X8B1-M1TJ
	M30	15 mm		E2V-X15B1-M1TJ
	M12	4 mm	3-wire DC with NPN 1, 4, 3 Pin Specifications	E2V-X4C1-M1TJ
	M18	8 mm		E2V-X8C1-M1TJ
	M30	15 mm		E2V-X15C1-M1TJ

**Note:** Other models are also available that can be used with the Twist-and-Click Connectors. Ask your OMRON representative for details.

**Cable Amplifier Proximity Sensor**

Appearance	Sensing distance	Output configuration	Operating mode	Model
 Shielded	3 dia.	0.8 mm	2-wire DC polarity 1, 4 Pin Specifications	E2EC-CR8D1-M1TGJ
	5.4 dia.	1.5 mm		E2EC-C1R5D1-M1TGJ
	8 dia.	3 mm		E2EC-C3D1-M1TGJ
	8 dia.	2 mm	2-wire DC no polarity 3, 4 Pin Specifications	E2EC-QC2D1-M1TGJ-T

**Note:** Other models are also available that can be used with the Twist-and-Click Connectors. Ask your OMRON representative for details.

# Omron Electronic Components, LLC

## Terms and Conditions of Sales

### I. GENERAL

- Definitions:** The words used herein are defined as follows.
  - Terms:** These terms and conditions
  - Seller:** Omron Electronic Components LLC and its subsidiaries
  - Buyer:** The buyer of Products, including any end user in section III through VI
  - Products:** Products and/or services of Seller
  - Including:** Including without limitation
- Offer/Acceptance:** These Terms are deemed part of all quotations, acknowledgments, invoices, purchase orders and other documents, whether electronic or in writing, relating to the sale of Products by Seller. Seller hereby objects to any Terms proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
- Distributor:** Any distributor shall inform its customer of the contents after and including section III of these Terms.

### II. SALES

- Prices/Payment:** All prices stated are current, subject to change without notice by Seller. Buyer agrees to pay the price in effect at the time the purchase order is accepted by Seller. Payments for Products received are due net 30 days unless otherwise stated in the invoice. Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice.
- Discounts:** Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (a) the invoice is paid according to Seller's payment terms and (b) Buyer has no past due amounts owing to Seller.
- Interest:** Seller, at its option, may charge Buyer 1.5% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms.
- Orders:** Seller will accept no order less than 200 U.S. dollars net billing.
- Currencies:** If the prices quoted herein are in a currency other than U.S. dollars, Buyer shall make remittance to Seller at the then current exchange rate most favorable to Seller; provided that if remittance is not made when due, Buyer will convert the amount to U.S. dollars at the then current exchange rate most favorable to Seller available during the period between the due date and the date remittance is actually made.
- Governmental Approvals:** Buyer shall be responsible for all costs involved in obtaining any government approvals regarding the importation or sale of the Products.
- Taxes:** All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Seller or required to be collected directly or indirectly by Seller for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Seller.
- Financial:** If the financial position of Buyer at any time becomes unsatisfactory to Seller, Seller reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Seller may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts.
- Cancellation/Etc:** Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Seller fully against all costs or expenses arising in connection therewith.
- Force Majeure:** Seller shall not be liable for any delay or failure in delivery resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the requirements of any government authority.
- Shipping/Delivery:** Unless otherwise expressly agreed in writing by Seller:
  - All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Seller), at which point title to and all risk of loss of the Products shall pass from Seller to Buyer, provided that Seller shall retain a security interest in the Products until the full purchase price is paid by Buyer;
  - Delivery and shipping dates are estimates only; and
  - Seller will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
- Claims:** Any claim by Buyer against Seller for shortage or damage to the Products occurring before delivery to the carrier or any claim related to pricing or other charges must be presented in detail in writing to Seller within 30 days of receipt of shipment.

### III. PRECAUTIONS

- Suitability:** IT IS THE BUYER'S SOLE RESPONSIBILITY TO ENSURE THAT ANY OMRON PRODUCT IS FIT AND SUFFICIENT FOR USE IN A MOTORIZED VEHICLE APPLICATION. BUYER SHALL BE SOLELY RESPONSIBLE FOR DETERMINING APPROPRIATENESS OF THE PARTICULAR PRODUCT WITH RESPECT TO THE BUYER'S APPLICATION INCLUDING (A) ELECTRICAL OR ELECTRONIC COMPONENTS, (B) CIRCUITS, (C) SYSTEM ASSEMBLIES, (D) END PRODUCT, (E) SYSTEM, (F) MATERIALS OR SUBSTANCES OR (G) OPERATING ENVIRONMENT. Buyer acknowledges that it alone has determined that the Products will meet their requirements of the intended use in all cases. Buyer must know and observe all prohibitions of use applicable to the Product/s.
- Use with Attention:** The followings are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible use of any Product, nor to imply that any use listed may be suitable for any Product:
  - Outdoor use, use involving potential chemical contamination or electrical interference.

- Use in consumer Products or any use in significant quantities.
  - Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
  - Systems, machines, and equipment that could present a risk to life or property.
- Prohibited Use:** NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
  - Motorized Vehicle Application:** USE OF ANY PRODUCT/S FOR A MOTORIZED VEHICLE APPLICATION MUST BE EXPRESSLY STATED IN THE SPECIFICATION BY SELLER.
  - Programmable Products:** Seller shall not be responsible for the Buyer's programming of a programmable Product.

### IV. WARRANTY AND LIMITATION

- Warranty:** Seller's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Seller (or such other period expressed in writing by Seller). SELLER MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT ALL OTHER WARRANTIES, NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS.
- Buyer Remedy:** Seller's sole obligation hereunder shall be to replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product or, at Seller's election, to repay or credit Buyer an amount equal to the purchase price of the Product; provided that there shall be no liability for Seller or its affiliates unless Seller's analysis confirms that the Products were correctly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Seller before shipment.
- Limitation on Liability:** SELLER AND ITS AFFILIATES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY. FURTHER, IN NO EVENT SHALL LIABILITY OF SELLER OR ITS AFFILIATES EXCEED THE INDIVIDUAL PRICE OF THE PRODUCT ON WHICH LIABILITY IS ASSERTED.
- Indemnities:** Buyer shall indemnify and hold harmless Seller, its affiliates and its employees from and against all liabilities, losses, claims, costs and expenses (including attorney's fees and expenses) related to any claim, investigation, litigation or proceeding (whether or not Seller is a party) which arises or is alleged to arise from Buyer's acts or omissions under these Terms or in any way with respect to the Products.

### V. INFORMATION; ETC.

- Intellectual Property:** The intellectual property embodied in the Products is the exclusive property of Seller and its affiliates and Buyer shall not attempt to duplicate it in any way without the written permission of Seller. Buyer (at its own expense) shall indemnify and hold harmless Seller and defend or settle any action brought against Seller to the extent that it is based on a claim that any Product made to Buyer specifications infringed intellectual property rights of another party.
- Property/Confidentiality:** Notwithstanding any charges to Buyer for engineering or tooling, all engineering and tooling shall remain the exclusive property of Seller. All information and materials supplied by Seller to Buyer relating to the Products are confidential and proprietary, and Buyer shall limit distribution thereof to its trusted employees and strictly prevent disclosure to any third party.
- Performance Data:** Performance data is provided as a guide in determining suitability and does not constitute a warranty. It may represent the result of Seller's test conditions, and the users must correlate it to actual application requirements.
- Change In Specifications:** Product specifications and descriptions may be changed at any time based on improvements or other reasons. It is Seller's practice to change part numbers when published ratings or features are changed, or when significant engineering changes are made. However, some specifications of the Product may be changed without any notice.
- Errors And Omissions:** The information on Seller's website or in other documentation has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.
- Export Controls:** Buyer shall comply with all applicable laws, regulations and licenses regarding (a) export of the Products or information provided by Seller; (b) sale of Products to forbidden or other proscribed persons or organizations; (c) disclosure to non-citizens of regulated technology or information.

### VI. MISCELLANEOUS

- Waiver:** No failure or delay by Seller in exercising any right and no course of dealing between Buyer and Seller shall operate as a waiver of rights by Seller.
- Assignment:** Buyer may not assign its rights hereunder without Seller's written consent.
- Law:** These Terms are governed by Illinois law (without regard to conflict of laws). Federal and state courts in Cook County, Illinois have exclusive jurisdiction for any dispute hereunder.
- Amendment:** These Terms constitute the entire agreement between Buyer and Seller relating to the Products, and no provision may be changed or waived unless in writing signed by the parties.
- Severability:** If any provision hereof is rendered ineffective or invalid, such provision shall not invalidate any other provision.

## Certain Precautions on Specifications and Use

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  - (i) Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
  - (ii) Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
  - (iii) Use in consumer products or any use in significant quantities.
  - (iv) Systems, machines and equipment that could present a risk to life or property. Please know and observe all prohibitions of use applicable to this product.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
2. **Programmable Products.** Seller shall not be responsible for the user's programming of a programmable product, or any consequence thereof.
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