

# Round Water-resistant Connectors (M8)

## XS3

### Compact, Watertight, Round Connectors

- Water-resistive, compact connector meets IP67 requirements.
- Ideal for a wide variety of FA and OA applications.
- Using connectors for wiring ensures ease of equipment maintenance and reduces downtime required for equipment maintenance.



### ■ Ratings and Specifications

Rated current	3A
Rated voltage	125 VDC
Contact resistance	60 mΩ max. (20 mV max., 100 mA max.)
Insulation resistance	1,000 MΩ min. (at 500 VDC)
Dielectric strength	1,000 VAC for 1 min (leakage current: 1 mA max.)
Degree of protection	IP67 (IEC60529)
Insertion tolerance	200 times min.

### ■ Material

Contact / Surface	Copper Alloy / Nickel base, Au0.4 μm
Connector housing	PBT resin (UL94V-0)
Nut / Surface	Copper Alloy / Nickel plated
Cover	PBT resin (UL94V-0)

### ■ PVC Cable

Item	3 cores	4 cores
Color	Black	
Outer diameter	5 mm dia.	4.8 mm dia.
Conductor size	AWG22 0.34 mm <sup>2</sup> (43 × 0.1)	0.25 mm <sup>2</sup> (32 × 0.1)
Approvals	AWM	
Features	Flame retardant	
Temperature range	-25 to +70°C	

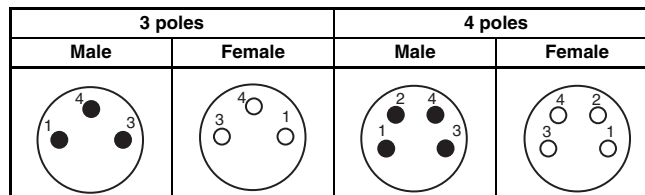
### ■ PVC Cable(For IP69K)

Item	Standard
Color	Dark Gray
Outer diameter	4 mm dia.
Conductor size	AWG24 0.2 mm <sup>2</sup> (18 × 0.12)
Approvals	- - -
Features	- - -
Temperature range	-25 to +70°C

### ■ PUR Cable

Item	3 cores	4 cores
Color	Black	
Outer diameter	4.3 mm dia.	4.7 mm dia.
Conductor size	AWG22 0.34 mm <sup>2</sup> (43 × 0.1)	
Approvals	AWM	
Features	Flame retardant Halogen free Oil resistance	
Temperature range	Cable fixed: -50 to +80°C / Cable moved: -25 to +80°C	

### ■ Socket Appearance



# Connectors with Cable Attached

## ■ XS3F - M8 Socket on One Cable End

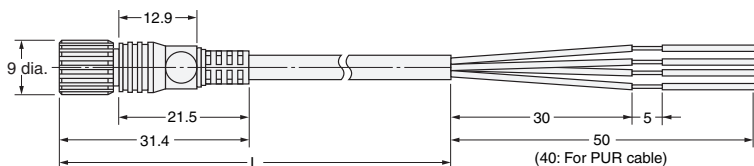
XS3F-M8PVC□□□□M PVC Cable  
 XS3F-M8PUR□□□□M PUR Cable



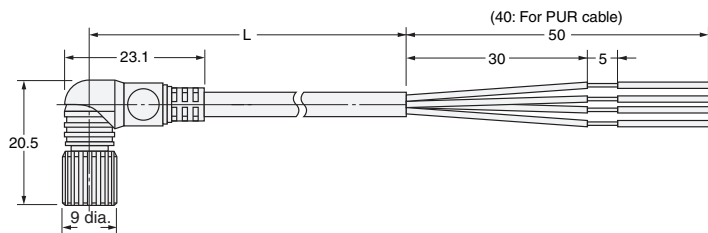
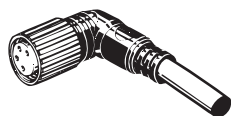
### Dimensions

(Unit: mm)

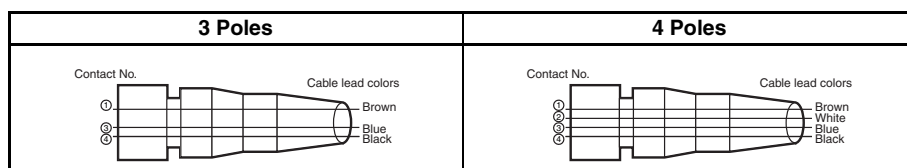
#### Straight



#### Angled



### Wiring Diagram



## Ordering Information

Connector	Size	Cable material	Poles	Type	Length (m)	Product description
Socket	M8	PVC	3	Angled	2	XS3F-M8PVC3A2M
					5	XS3F-M8PVC3A5M
					10	XS3F-M8PVC3A10M
			Straight	2	XS3F-M8PVC3S2M	
				5	XS3F-M8PVC3S5M	
				10	XS3F-M8PVC3S10M	
		PUR	3	Angled	2	XS3F-M8PUR3A2M
					5	XS3F-M8PUR3A5M
					10	XS3F-M8PUR3A10M
			Straight	2	XS3F-M8PUR3S2M	
				5	XS3F-M8PUR3S5M	
				10	XS3F-M8PUR3S10M	
		PUR	4	Angled	2	XS3F-M8PUR4A2M
					5	XS3F-M8PUR4A5M
					10	XS3F-M8PUR4A10M
			Straight	2	XS3F-M8PUR4S2M	
				5	XS3F-M8PUR4S5M	
				10	XS3F-M8PUR4S10M	

## 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*.

**XS3F - M8**    **M**

1      2      3 4      5

### 1. Screw Type

M8: M8 size

### 2. Cable type

PVC: PVC cable

PUR: PUR cable

### 3. Number of Poles

3: 3 poles

4: 4 poles

### 4. Shape

A: Angled

S: Straight

### 5. Cable Length

2M: 2 m

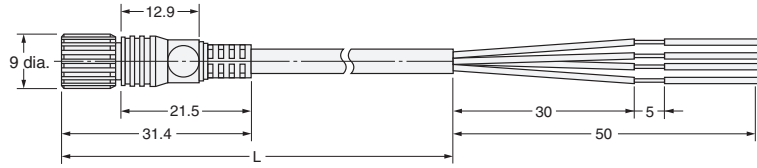
5M: 5 m

10M: 10 m

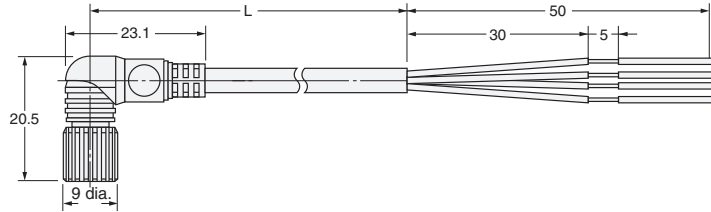
# ■ XS3F - Sockets on One Cable End with IP69K rating

## Dimensions

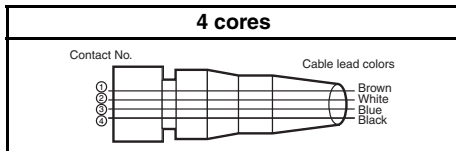
### Straight



### Angled



## Wiring Diagram



## Ordering Information

Connector	Size	Cable material	Cores	Shape	Length (m)	Product description
Socket	M8	PVC	4	Angled	2	XS3F-E422-402-A
					5	XS3F-E422-405-A
					10	XS3F-E422-410-A
				Straight	2	XS3F-E421-402-A
					5	XS3F-E421-405-A
					10	XS3F-E421-410-A

## 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*.

**XS3F - E42□□ - 4□□□ - A**  
1 2 3 4    5 6    7

**1. Nut Material**

E: Stainless

**2. Number of Poles**

4: 4 cores

**3. Contact Plating**

2: 0.4-μm gold plating

**4. Shape**

1: Straight

2: Angled

**5. Connections**

4: Brown, White, Blue, Black

**6. Cable Length**

02: 2 m

05: 5 m

10: 10 m

**7. Cable Specification**

A: Standard Cable

## ■ XS3H - M8 Plugs on One Cable End

XS3H-M8PVC□□□□M PVC Cable

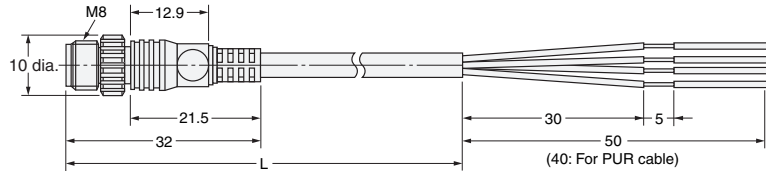
XS3H-M8PUR□□□□M PUR Cable



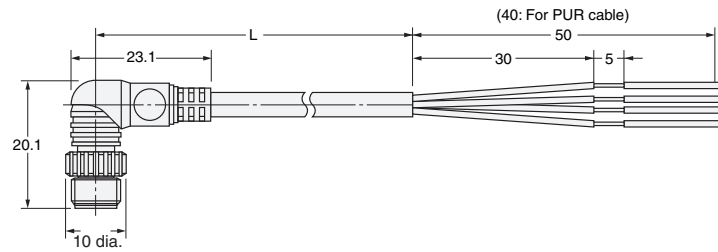
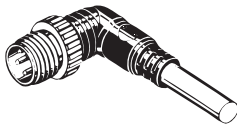
### Dimensions

(Unit: mm)

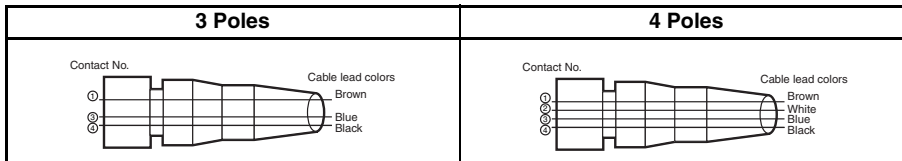
#### Straight



#### Angled



### Wiring Diagram



## Ordering Information

Connector	Size	Cable material	Poles	Type	Length (m)	Product description
plug	M8	PVC	3	Angled	0.3	XS3H-M8PVC3A03M
					1	XS3H-M8PVC3A1M
				Straight	0.3	XS3H-M8PVC3S03M
					1	XS3H-M8PVC3S1M
			4	Angled	0.3	XS3H-M8PVC4A03M
					1	XS3H-M8PVC4A1M
				Straight	0.3	XS3H-M8PVC4S03M
					1	XS3H-M8PVC4S1M
		PUR	3	Angled	0.3	XS3H-M8PUR3A03M
					1	XS3H-M8PUR3A1M
				Straight	0.3	XS3H-M8PUR3S03M
					1	XS3H-M8PUR3S1M
			4	Angled	0.3	XS3H-M8PUR4A03M
					1	XS3H-M8PUR4A1M
				Straight	0.3	XS3H-M8PUR4S03M
					1	XS3H-M8PUR4S1M

## 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*.

**XS3H - M8**        **M**

1    2    3    4    5

### 1. Screw Type

M8: M8 size

### 2. Cable type

PVC: PVC cable

PUR: PUR cable

### 3. Number of Poles

3: 3 poles

4: 4 poles

### 4. Shape

A: Angled

S: Straight

### 5. Cable Length

03M: 0.3 m

1M: 1 m

# ■ XS3W - M8 Sockets and M8 Plugs on Cable Ends

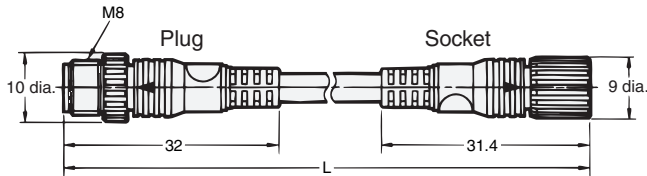
XS3W-M8PVC□□□□M PVC Cable  
 XS3W-M8PUR□□□□M PUR Cable



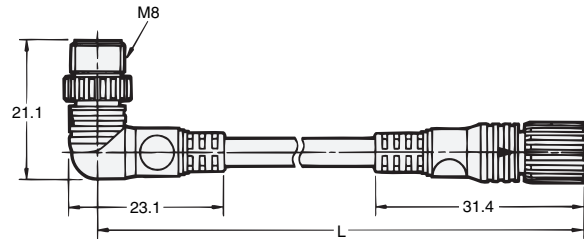
## Dimensions

(Unit: mm)

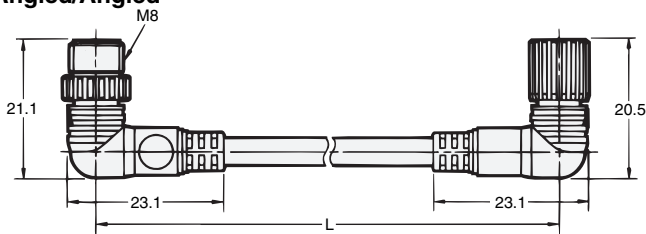
### Straight/Straight



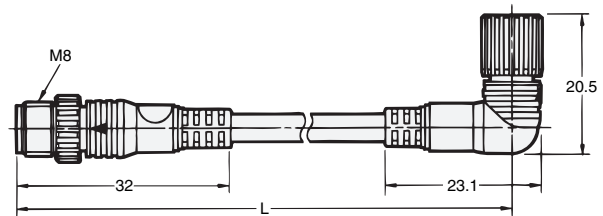
### Straight/Angled



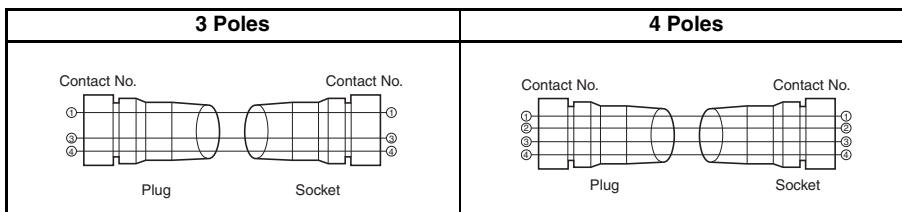
### Angled/Angled



### Angled/Straight



## Wiring Diagram



## 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*.

XS3W - M8 □□□□ □ □ □ □ M  
 1 2 3 4 5

### 1. Screw Type

M8: M8 size

### 2. Cable type

PVC: PVC cable

PUR: PUR cable

### 3. Number of Poles

3: 3 poles

4: 4 poles

### 4. Shape

SS: Straight / Straight

AA: Angled / Angled

SA: Straight / Angled

AS: Angled / Straight

### 5. Cable Length

2M: 2 m

5M: 5 m

1M: 10 m



**Ordering Information**

Connector	Size	Cable material	Poles	Shape		Length (m)	Product description	
				Plug	Socket			
Both	M8	PVC	3	Angled	Angled	2	XS3W-M8PVC3AA2M	
						5	XS3W-M8PVC3AA5M	
						10	XS3W-M8PVC3AA10M	
				Straight	Straight	2	XS3W-M8PVC3SS2M	
						5	XS3W-M8PVC3SS5M	
						10	XS3W-M8PVC3SS10M	
				Angled	Straight	2	XS3W-M8PVC3AS2M	
						5	XS3W-M8PVC3AS5M	
						10	XS3W-M8PVC3AS10M	
			Straight	Angled	2	XS3W-M8PVC3SA2M		
					5	XS3W-M8PVC3SA5M		
					10	XS3W-M8PVC3SA10M		
			4	Angled	Angled	2	XS3W-M8PVC4AA2M	
						5	XS3W-M8PVC4AA5M	
						10	XS3W-M8PVC4AA10M	
				Straight	Straight	2	XS3W-M8PVC4SS2M	
						5	XS3W-M8PVC4SS5M	
						10	XS3W-M8PVC4SS10M	
				Angled	Straight	2	XS3W-M8PVC4AS2M	
						5	XS3W-M8PVC4AS5M	
						10	XS3W-M8PVC4AS10M	
				Straight	Angled	2	XS3W-M8PVC4SA2M	
						5	XS3W-M8PVC4SA5M	
						10	XS3W-M8PVC4SA10M	
		PUR		3	Angled	Angled	2	XS3W-M8PUR3AA2M
							5	XS3W-M8PUR3AA5M
							10	XS3W-M8PUR3AA10M
			Straight		Straight	2	XS3W-M8PUR3SS2M	
						5	XS3W-M8PUR3SS5M	
						10	XS3W-M8PUR3SS10M	
			Angled		Straight	2	XS3W-M8PUR3AS2M	
						5	XS3W-M8PUR3AS5M	
						10	XS3W-M8PUR3AS10M	
			Straight	Angled	2	XS3W-M8PUR3SA2M		
					5	XS3W-M8PUR3SA5M		
					10	XS3W-M8PUR3SA10M		
			4	Angled	Angled	2	XS3W-M8PUR4AA2M	
						5	XS3W-M8PUR4AA5M	
						10	XS3W-M8PUR4AA10M	
		Straight		Straight	2	XS3W-M8PUR4SS2M		
					5	XS3W-M8PUR4SS5M		
					10	XS3W-M8PUR4SS10M		
		Angled	Straight	2	XS3W-M8PUR4AS2M			
				5	XS3W-M8PUR4AS5M			
				10	XS3W-M8PUR4AS10M			
		Straight	Angled	2	XS3W-M8PUR4SA2M			
				5	XS3W-M8PUR4SA5M			
				10	XS3W-M8PUR4SA10M			

# Y-Joint M8 Plug / M8 Socket Connectors

## ■ XS3R

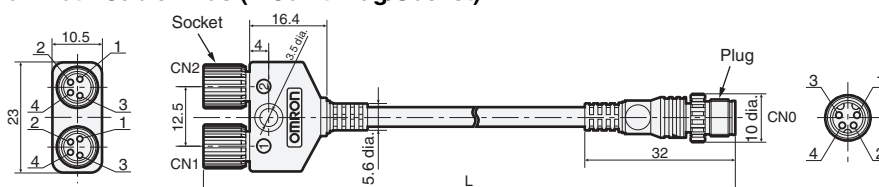
**XS3R-M426-1□□□-A With Standard Cable**  
**XS3R-M426-□ Without Cable**

### Dimensions

(Unit: mm)

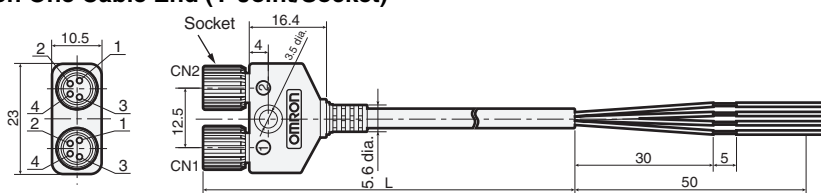
#### XS3R-M426-1□□1-A

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



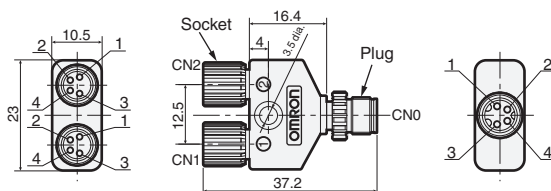
#### XS3R-M426-1□□0-A

Connector on One Cable End (Y-Joint/Socket)



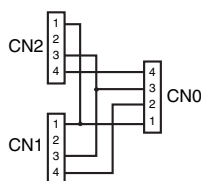
#### XS3R-M426-□

Connector on Both Ends (Y-Joint Plug/Socket) without Cable

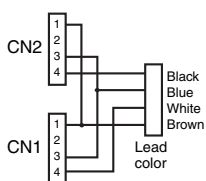


### Wiring Diagram

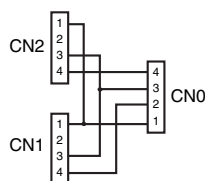
#### XS3R-M426-1□□1-A



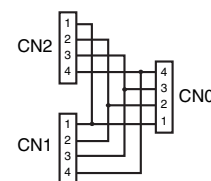
#### XS3R-M426-1□□0-A



#### XS3R-M426-1



#### XS3R-M426-5



### Mating Connectors

Item	Model
XS3R(M8)	XS3F(M8)
	XS3H(M8)
	XS3W(M8)
	XS3P(M8)

### Ordering Information For M8 Connectors

Cable	Connector	Cable length L (m)	Model	Minimum order
With cable	Connectors on both cable ends	0.5	XS3R-M426-1C51-A	5
		1	XS3R-M426-1011-A	
		2	XS3R-M426-1021-A	
		3	XS3R-M426-1031-A	
	Connector on one cable end	2	XS3R-M426-1020-A	
		5	XS3R-M426-1050-A	
Without cable	Connectors on both cable ends	—	XS3R-M426-1	10
			XS3R-M426-5	

# Panel-mount Connectors

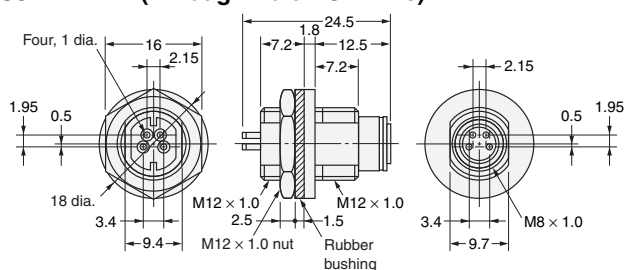
## ■ XS3P - M8 Sockets

**XS3P-M421-1** M8 Screw-mount sockets with Through-hole PCB Pins (front or rear lock)  
**XS3P-M421-2** M8 Screw-mount sockets with Solder Cup Pins (front or rear lock)  
**XS3P-M422-2** M8 Screw-mount sockets with Solder Cup Pins (rear lock, slim model)

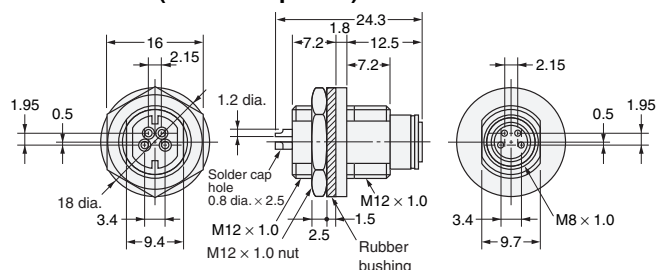
### Dimensions

(Unit: mm)

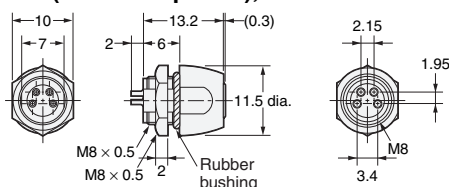
#### XS3P-M421-1 (Through-hole PCB Pins)



#### XS3P-M421-2 (Solder Cup Pins)



#### XS3P-M422-2 (Solder Cup Pins), Rear Lock Slim Models

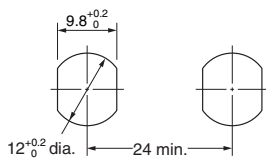


### Mounting Dimensions for XS3P Screw-on Models and Snap-in Models

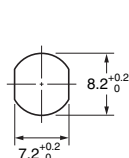
(Unit: mm)

#### Panel Cutouts

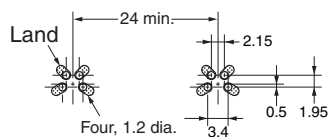
##### XS3P-□421



##### XS3P-M422-2

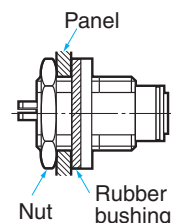


#### PCB-mounting Dimensions

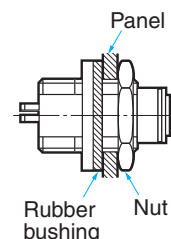


#### Panel-mounting Configuration

##### Rear Lock



##### Front Lock



Note: The panel thickness is 1 to 3 mm.

Note: The panel thickness is 2.4 mm maximum.

### Ordering Information

Connection method	Panel mounting	Pin shape	Model	Minimum order
M8 screw-mounting	Front lock or rear lock	Through-hole PCB pins	XS3P-M421-1	50
		Solder cup pins	XS3P-M421-2	
	Rear lock	Solder cup pins	XS3P-M422-2	

Note: Orders are accepted in multiples of the minimum order.

### Safety Precautions

In addition to the following information, also refer to the 'Precautions' section at the end of this datasheet

#### ■ Correct Use - Panel Mounting

- When mounting XS3P Panel-mount Connectors to panels, refer to *Panel-mounting Configuration* and provide rubber bushings and nuts for the Connectors. Apply a tightening torque of between 0.4 and 0.6 N·m to mount the Connectors.

# Connectors for Embedding in Sensors

## ■ XS3M - Plugs

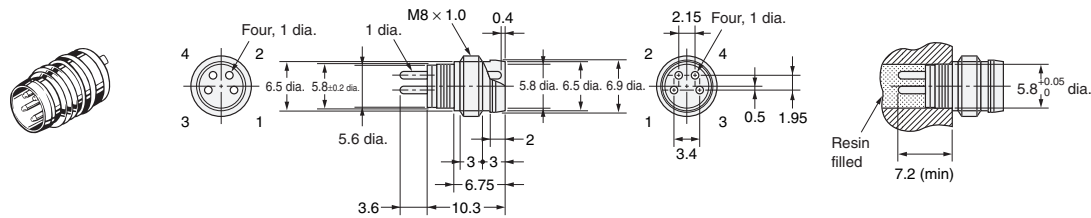
**XS3M-K421-1** Embedded Plugs with Screw Threads and Through-hole PCB Pins  
**XS3M-K421-2** Embedded plugs with Screw Threads and Solder Cup Pins

### Dimensions

(Unit: mm)

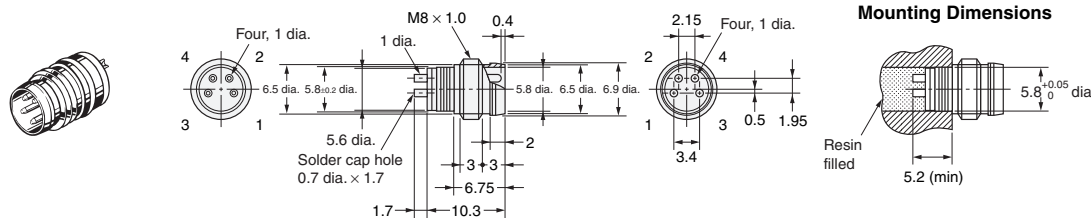
#### XS3M-K421-1

Embedded Model with Through-hole PCB Pins



#### XS3M-K421-2

Embedded Model with Solder Cup Pins



### Mating Connectors

Item	Model
XS3M	XS3F, XS3W

### Ordering Information

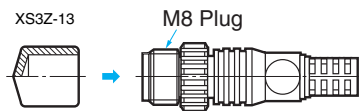
Connection method	Pin shape	Model	Minimum order
Embedded model	Through-hole PCB pins	<b>XS3M-K421-1</b>	200
	Solder cup pins	<b>XS3M-K421-2</b>	

**Note:** Orders are accepted in multiples of the minimum order.

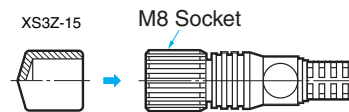
## Accessories

### Dust Covers

XS3Z-13



XS3Z-15



Model	Material	Suitable connector	
		Model	Mounting portion
<b>XS3Z-13</b>	Acrylic resin/transparent	XS3H/XS3M	M8 plug
<b>XS3Z-15</b>		XS3F	M8 socket

**Note:** The Dust Covers are for dust prevention and do not ensure IP67 sealability. When mounting a Dust Cover to a Connector, be sure to press the Dust Cover onto the Connector until the Connector is fully inserted into the Dust Cover.

# Precautions

## ■ Correct Use

Do not use the product in atmospheres or environments that exceed product ratings.

### Connections

- The XS3 and XS2 Sensor I/O Connectors cannot be connected to each other.
- When using Sensors with Connectors or Limit Switches, use the Sensor I/O Connectors specified in the catalog.

### Connector Connection and Disconnection

- Before connecting or disconnecting Connectors, make sure that no power is being supplied to the Connectors.
- When connecting or disconnecting Connectors, be sure to hold the Connectors by hand. Do not disconnect the Connectors by pulling the cable.
- Do not touch the engagement side of any Connector with wet hands. If there is any water on the Connector or near the Connector, be sure to wipe off the water before connecting or disconnecting the Connector, otherwise the Connector may short-circuit internally or not ensure good insulation.
- Make sure that engagement side of any Connector is free of metal dust or power.
- Do not use pliers to tighten mounting the thread bracket, otherwise the thread bracket may be damaged. Be sure to tighten each thread bracket by hand within a torque of 0.2 N·m. If the thread bracket is not tightened securely, the Connector may not maintain its proper degree of protection or the thread bracket may fall off due to vibration.

### Cable Wire Color

- The M8 Sensor I/O Connectors use the following lead wire colors.

Model		Pin No.			
		1	2	3	4
For DC	8-mm-dia. DC4	Brown	White	Blue	Black

### Degree of Protection

- Do not impose external force continuously on the joints of pin blocks and covers, otherwise the Connectors may not keep its proper degree of protection (i.e., IP67).
- Connectors are not fully watertight. Do not use them underwater.
- The Connectors are not oil-resistant. Do not use them where they would be subject to oil.
- If Connectors are used in places with vibration or shock, secure the engaged side of each Connector, otherwise the Connectors may be disconnected or fail to maintain their proper degree of protection.
- Connectors are of resin mold construction. Do not impose excessive force on them.

### Storage

Do not store Connectors for long periods of time in the following locations

- Locations subject to dust or high humidity
- Locations subject to ammonia gas or sulfide gas

### Installation

- Do not make any cable bends near the base of the Unit.
- Any bends made must have a minimum radius of 36 mm.

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**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

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

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