

Round Water-resistive Smartclick Connectors That Reduce Installation Work

- A newly developed lock mechanism that is compatible with round M12 connectors.
- Simply insert the Connectors, then turn them approximately 1/8 of a turn to lock.
- A positive click indicates locking.
- Features the same degree of protection (IP67) as M12 connectors.
- A full line-up of models is planned.
- UL approval pending



Refer to Safety Precautions on page 8.



Ratings and Specifications

Rated current	4 A
Rated voltage	250 VDC
Contact resistance (connector)	40 mΩ max. (20 mV max., 100 mA max.)
Insulation resistance	1,000 MΩ min. (at 500 VDC)
Dielectric strength (connector)	1,500 VAC for 1 min (leakage current: 1 mA max.)
Degree of protection	IP67 (IEC60529)
Insertion tolerance	50 times min.
Lock strength	Tensile: 100 N/15 s, Torsion: 1 N·m/15 s
Cable holding strength	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 to 70°C

Materials and Finish

Item	Model	XS5F/H/W/R	XS5M/P
Contacts		Phosphor bronze/nickel base, 0.4-μm gold plating	
Fixtures		Nickel-plated zinc alloy	
Pin block		PBT resin (UL94V-0)	
Cover		Polyester elastomer (UL94V-0)	
Seal resin		---	Epoxy resin (UL94V-0)
O-ring		Rubber	
Cable	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 ² (0.12/45)	---
Power supply wires		---	UL1007 AWG20

Connection Combinations

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

⊗: Connected by twisting.
○: Connected by screwing.



Smartclick is a registered trademark of the OMRON Corporation.

XS5W



Connectors Connected to Cable, Socket and Plug on Cable Ends

- Standard Cable
- Vibration-proof Robot Cable
- Oil-resistant Polyurethane Cable

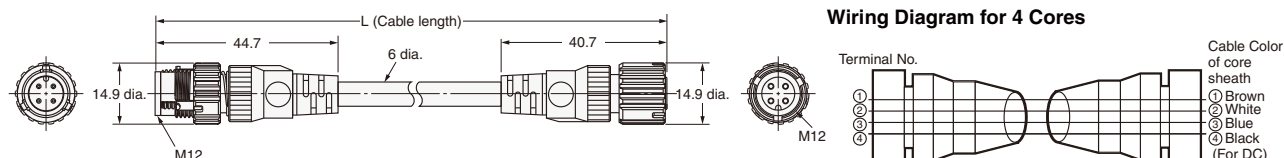
XS5W-D421-□81-A

XS5W-D421-□81-F

XS5W-D421-□81-P

Dimensions

(Unit: mm)



Note: The cover of the Standard Cable (XS5W-D421-□81-A) and the Oil-resistant Polyurethane Cable (XS5W-D421-□81-P) is black, and the cover of the Vibration-proof Robot Cable (XS5W-D421-□81-F) is warm gray.

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-D □ **2** □ - □ □ **1** - □

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

6. Cable Length

A: 0.3 m E: 3 m J: 10 m

B: 0.5 m F: 4 m K: 15 m

C: 1 m G: 5 m L: 20 m

D: 2 m H: 7 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

Ordering Information

Cable type	Cable connection directions	No. of cable cores	Cable length (m)	Model	Minimum order
Standard cable	Straight/straight	4	1	XS5W-D421-C81-A	10
			2	XS5W-D421-D81-A	
			3	XS5W-D421-E81-A	
			5	XS5W-D421-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	10
			5	XS5W-D421-G81-P	5
			10	XS5W-D421-J81-P	

Note: Ask your OMRON representative about other specifications.

XS5F Connector Connected to Cable, Socket on One Cable End

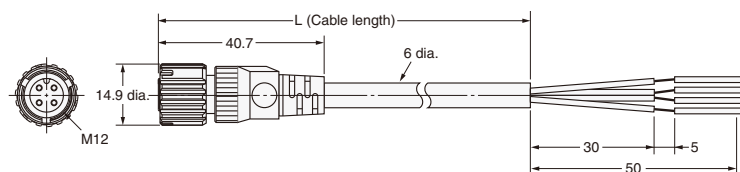


- Standard Cable
- Vibration-proof Robot Cable
- Oil-resistant Polyurethane Cable

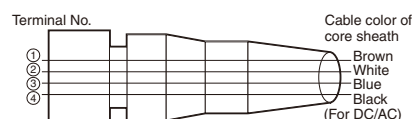
XS5F-D421-□80-A
XS5F-D421-□80-F
XS5F-D421-□80-P

Dimensions

(Unit: mm)



Wiring Diagram for 4 Cores



Note: The cover of the Standard Cable (XS5F-D421-□81-A) and the Oil-resistant Polyurethane Cable (XS5F-D421-□81-P) is black, and the cover of the Vibration-proof Robot Cable (XS5F-D421-□81-F) is warm gray.

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-□□2□-□□0-□

1 2 3 4 5 6 7 8 9

1. Type

F: Connector connected to cable, socket on one cable end

2. AC/DC (Mating Section Form)

D: DC

3. Connector Poles

4: 4 poles

4. Contact Plating

2: 0.4-μm gold plating

5. Cable Connection Direction

1: Straight

6. Cable Length

A: 0.3 m E: 3 m J: 10 m
B: 0.5 m F: 4 m K: 15 m
C: 1 m G: 5 m L: 20 m
D: 2 m H: 7 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

Ordering Information

Cable type	Cable connection direction	No. of cable cores	Cable length (m)	Model	Minimum order
Standard cable	Straight	4	1	XS5F-D421-C80-A	10
			2	XS5F-D421-D80-A	
			3	XS5F-D421-E80-A	
			5	XS5F-D421-G80-A	5
			10	XS5F-D421-J80-A	
Vibration-proof robot cable			1	XS5F-D421-C80-F	10
			2	XS5F-D421-D80-F	
			3	XS5F-D421-E80-F	
			5	XS5F-D421-G80-F	5
			10	XS5F-D421-J80-F	
Oil-resistant polyurethane cable			2	XS5F-D421-D80-P	10
			5	XS5F-D421-G80-P	5
			10	XS5F-D421-J80-P	

Note: Ask your OMRON representative about other specifications.

XS5H Connector Connected to Cable, Plug on One Cable End

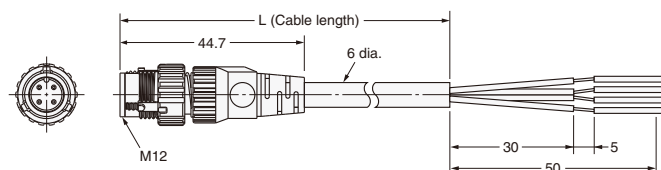


- Standard Cable
- Vibration-proof Robot Cable
- Oil-resistant Polyurethane Cable

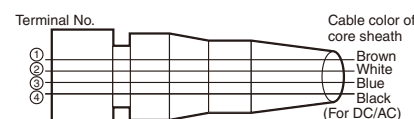
XS5H-D421-□80-A
XS5H-D421-□80-F
XS5H-D421-□80-P

Dimensions

(Unit: mm)



Wiring Diagram for 4 Cores



Note: The cover of the Standard Cable (XS5H-D421-□81-A) and the Oil-resistant Polyurethane Cable (XS5H-D421-□81-P) is black, and the cover of the Vibration-proof Robot Cable (XS5H-D421-□81-F) is warm gray.

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-□□21-□□0-□
1 2 3 4 5 6 7 8 9

1. Type

H: Connector connected to cable, plug on one cable end

2. AC/DC (Mating Section Form)

D: DC

3. Connector Poles

4: 4 poles

4. Contact Plating

2: 0.4-μm gold plating

5. Cable Connection Direction

1: Straight

6. Cable Length

A: 0.3 m E: 3 m J: 10 m
B: 0.5 m F: 4 m K: 15 m
C: 1 m G: 5 m L: 20 m
D: 2 m H: 7 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

Ordering Information

Cable type	Cable connection direction	No. of cable cores	Cable length (m)	Model	Minimum order
Standard cable	Straight	4	0.3	XS5H-D421-A80-A	10
			1	XS5H-D421-C80-A	
			2	XS5H-D421-D80-A	
			5	XS5H-D421-G80-A	5
Vibration-proof robot cable			0.3	XS5H-D421-A80-F	10
			1	XS5H-D421-C80-F	
			2	XS5H-D421-D80-F	
			5	XS5H-D421-G80-F	5
Oil-resistant polyurethane cable			0.3	XS5H-D421-A80-P	10
			2	XS5H-D421-D80-P	
			5	XS5H-D421-G80-P	5

Note: Ask your OMRON representative about other specifications.

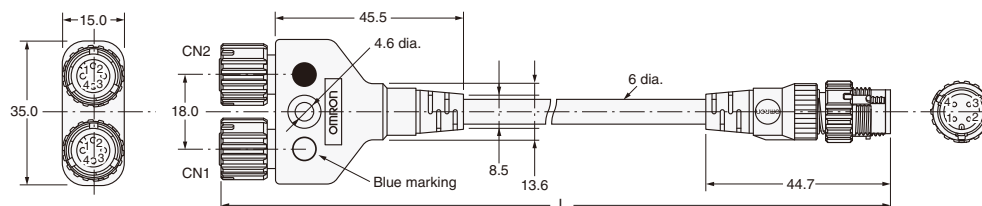
XS5R Y-Joint Plug/Socket Connectors

Dimensions

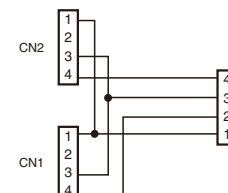
(Unit: mm)

XS5R-D426-□11-F

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

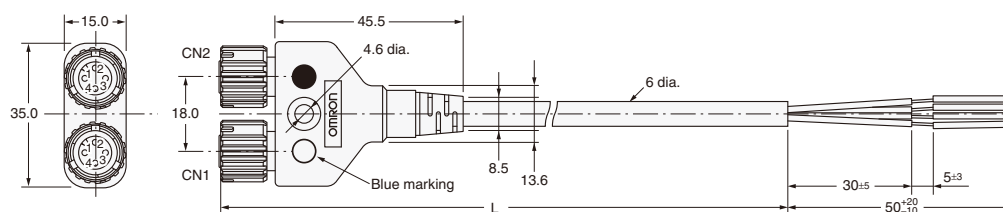


Wiring Diagram

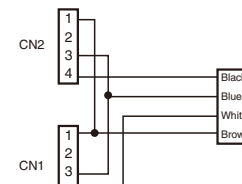


XS5R-D426-□10-F

Connectors on One Cable End (Y-Joint Socket)

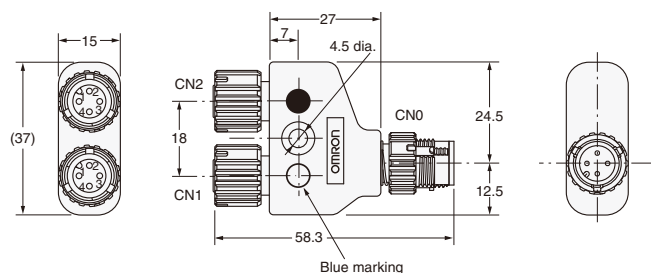


Wiring Diagram



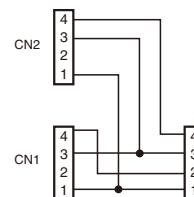
XS5R-D426-□

Y-Joint Plug/Socket without Cable

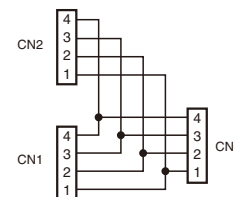


Wiring Diagram

XS5R-D426-1



XS5R-D426-5



Ordering Information

Cable	Connector	Cable length (m)	Model	Minimum order
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 To Be Released Soon	

Note 1. Ask your OMRON representative about other specifications.

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

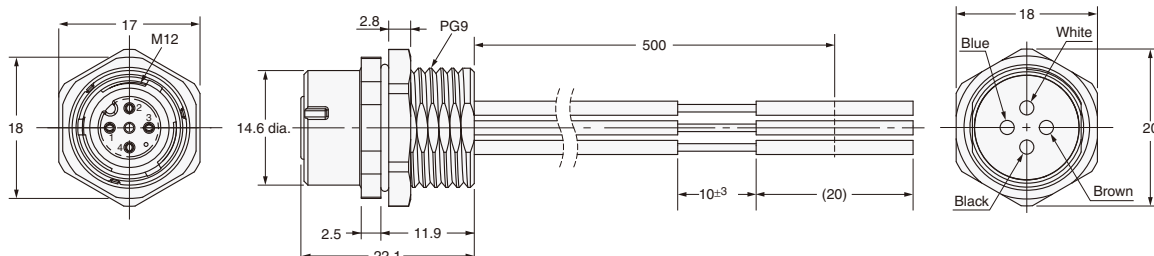
XS5P Panel-mounting Sockets

Dimensions

(Unit: mm)

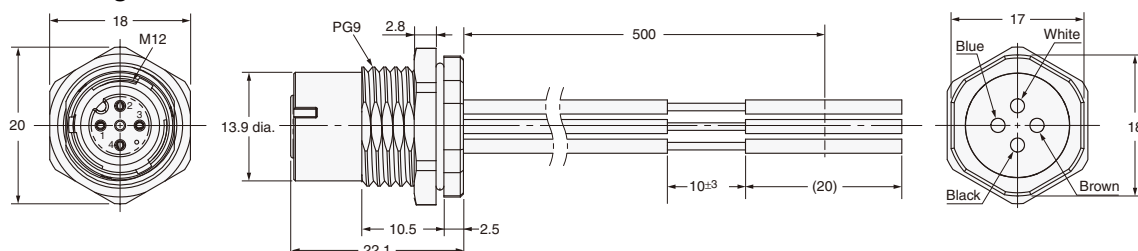
XS5P-D426-5

Panel-mounting Sockets with Rear Locks

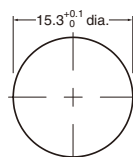


XS5P-D427-5

Panel-mounting Sockets with Front Locks



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
	Wire diameter
	Standard outer diameter
	21
	0.18
	1.8

Ordering Information

Type	Lock	Cable length (m)	Model	Minimum order
With cable	Rear lock	0.5	XS5P-D426-5	10
	Front lock		XS5P-D427-5 To Be Released Soon	

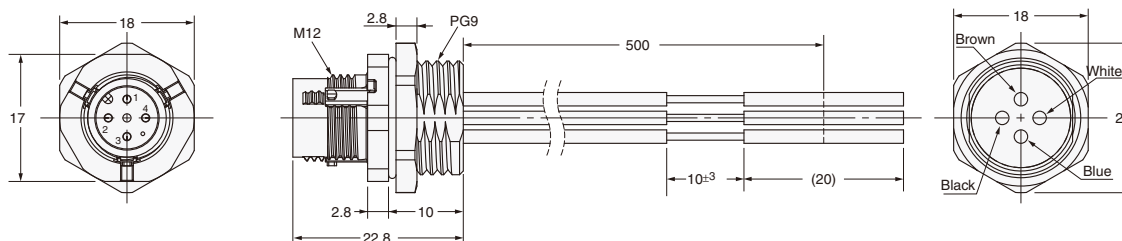
XS5M Panel-mounting Plugs

Dimensions

(Unit: mm)

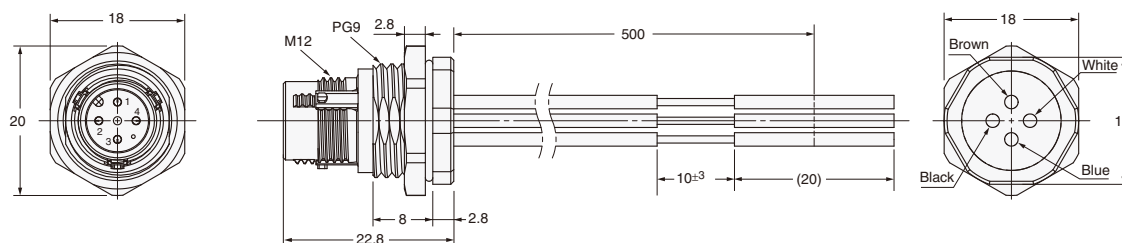
XS5M-D426-5

Panel-mounting Plugs with Rear Locks



XS5M-D427-5

Panel-mounting Plugs with Front Locks



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	Minimum order
With cable	Rear lock	0.5	XS5M-D426-5	10
	Front lock		XS5M-D427-5 To Be Released Soon	

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 joining Connectors, be sure to insert the plug all the way to the back of the socket before attempting to lock the Connectors.
- Do not use tools of any sort to join the Connectors. Always use your hands. Pliers or other tools may damage the Connectors.
- When joining 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.

Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS, OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the product.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear 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.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS 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.

Disclaimers

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the product may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased product.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

ERRORS AND OMISSIONS

The information in this catalog has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

COPYRIGHT AND COPY PERMISSION

This catalog shall not be copied for sales or promotions without permission.

This catalog is protected by copyright and is intended solely for use in conjunction with the product. Please notify us before copying or reproducing this catalog in any manner, for any other purpose. If copying or transmitting this catalog to another, please copy or transmit it in its entirety.