OMRON

Industrial Ethernet Cables XS5/XS6

Cables and Connectors for EtherCAT[®] and Other Industrial Ethernet Networks

CAT6a Ethernet patch cables

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

CAT5e Ethernet patch cables

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

Connection Examples





Industrial Ethernet Cables

Features

Cables with Standard RJ45 Connectors

Refer to page 4 for details.

- The lineup features LSZH cables* for in-panel wiring and PUR cables for wiring outside of panels.
- The Standard RJ45 Connectors reduce cable routing space.
 - Outer diameter: 5.8 mm

5/XS6

- 4-pair AWG27 (LSZH) or AWG26 (PUR)
- Cable colors include blue, yellow, or green.
- LSZH cables are available in 12 lengths from 0.2 to 20 m and PUR cables are available in 10 lengths from 0.5 to 20 m.
- Double-shielded cables with overall braiding and individual foil shield on each wire pair to reduce EMC interference in industrial environments.
- * Low-smoke zero-halogen cables.



Cables with Rugged RJ45 Connectors

Refer to page 7 for details.

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



Assembly Connectors

You can easily assemble Ethernet cables onsite without crimping tools or other special tools.

Refer to page 14 for the assembly procedure.



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Cables with M12 Connectors

Refer to page 7 for details.

- Resistance to harsh environments with IP67 protection.
- SmartClick Connectors that provide one-step (1/8th turn) connection are used (compatible with standard M12 screw connectors).
- A wide range of variations, such as cables with right-angle connectors and PCB connectors.
- Cables with sockets and robot cables were added to the series.



Shield Effectiveness Data for Rugged RJ45 Connectors and Waterproof M12 Connectors

The following data is the results of OMRON testing. Shield effectiveness may vary for your environment and application conditions.

• Comparison of Shield Effectiveness with Product without a Double Shield

The following table shows the differences with a structure without a double shield. Higher numeric values show greater shield effectiveness.

Shield structure		Frequency (MHz)					
Shield structure	0.5	1	5	10	30		
Product with single shield	53 dB	49 dB	35 dB	25 dB	17 dB		
Product with a double shield (XS5 -T, Category 5E)	61 dB	58 dB	43 dB	31 dB	27 dB		
			1	I.	1		

SmartClick is registered trademark of OMRON Corporation.

• EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.





Cables with Standard RJ45 Connectors

Model Number Legend

Use this legend when determining the product specifications from the model number. Choose from the model numbers listed in *Ordering Information* when ordering.

123451Transmission Characteristics

- 5: Category 5
- 6: Category 6A
- ②Sheath Material LSZH: LSZH

PUR: PUR

③Number of Pins

8: 8 pins

(4) Cable Attachment Direction SS: Straight/Straight

5Cable Length*

20: 0.2 m 30: 0.3 m 50: 0.5 m 100: 1 m 150: 1.5 m 200: 2 m 300: 3 m 500: 5 m 750: 7.5 m 1000: 10 m 1500: 15 m 2000: 20 m

6Sheath Color

B: Blue

Y: Yellow

G: Green

* PUR cables are not available for 0.2-m and 0.3-m cables.

Ordering Information

Appearance	Туре	Category	Cable sheath material	Cable color	Cable length (m)	Model
					0.2	XS6W-6LSZH8SS20CM-B
					0.3	XS6W-6LSZH8SS30CM-B
					0.5	XS6W-6LSZH8SS50CM-B
					1	XS6W-6LSZH8SS100CM-B
					1.5	XS6W-6LSZH8SS150CM-B
				Dhue	2	XS6W-6LSZH8SS200CM-B
				Blue	3	XS6W-6LSZH8SS300CM-B
a.					5	XS6W-6LSZH8SS500CM-B
					7.5	XS6W-6LSZH8SS750CM-B
					10	XS6W-6LSZH8SS1000CM-B
					15	XS6W-6LSZH8SS1500CM-B
					20	XS6W-6LSZH8SS2000CM-B
					0.2	XS6W-6LSZH8SS20CM-Y
					0.3	XS6W-6LSZH8SS30CM-Y
					0.5	XS6W-6LSZH8SS50CM-Y
					1	XS6W-6LSZH8SS100CM-Y
					1.5	XS6W-6LSZH8SS150CM-Y
	Cable with Connectors on Both	Cat.6a	LSZH	Vollow	2	XS6W-6LSZH8SS200CM-Y
		Cal.ba		Yellow	3	XS6W-6LSZH8SS300CM-Y
a de la companya de					5	XS6W-6LSZH8SS500CM-Y
					7.5	XS6W-6LSZH8SS750CM-Y
					10	XS6W-6LSZH8SS1000CM-Y
					15	XS6W-6LSZH8SS1500CM-Y
	Ends (RJ45/RJ45)				20	XS6W-6LSZH8SS2000CM-Y
					0.2	XS6W-6LSZH8SS20CM-G
					0.3	XS6W-6LSZH8SS30CM-G
					0.5	XS6W-6LSZH8SS50CM-G
					1	XS6W-6LSZH8SS100CM-G
				Green	1.5	XS6W-6LSZH8SS150CM-G
					2	XS6W-6LSZH8SS200CM-G
				Green	3	XS6W-6LSZH8SS300CM-G
					5	XS6W-6LSZH8SS500CM-G
					7.5	XS6W-6LSZH8SS750CM-G
					10	XS6W-6LSZH8SS1000CM-G
					15	XS6W-6LSZH8SS1500CM-G
					20	XS6W-6LSZH8SS2000CM-G
					0.5	XS6W-5PUR8SS50CM-G
					1	XS6W-5PUR8SS100CM-G
					1.5	XS6W-5PUR8SS150CM-G
					2	XS6W-5PUR8SS200CM-G
		Cat.5	PUR	Green	3	XS6W-5PUR8SS300CM-G
		Cui.0	1.011	GIGGH	5	XS6W-5PUR8SS500CM-G
₿.					7.5	XS6W-5PUR8SS750CM-G
					10	XS6W-5PUR8SS1000CM-G
					15	XS6W-5PUR8SS1500CM-G
					20	XS6W-5PUR8SS2000CM-G

Specifications

Туре	Cable with Connectors on Both Ends (RJ45/RJ45)/LSZH	Cable with Connectors on Both Ends (RJ45/RJ45)/PUR				
Item Model	XS6W-6LSZH8SS	XS6W-5PUR8SS				
Rated current	d current 1 A (at 50°C)					
Withstand voltage	ge 1,000 VDC for 60 s (leakage current: 1 mA max.)					
Ambient operating tem- perature	-20 to 60°C	−40 to 85°C				
Ambient storage tempera- ture	-20 to 60°C	−40 to 85°C				
Ambient installation tem- perature	0 to 50°C	-10 to 60°C				
Protective structure	IP20					

Materials and Finish

Connectors

Туре	Cable with Connectors on Both Ends (RJ45/RJ45)/LSZH	Cable with Connectors on Both Ends (RJ45/RJ45)/PUR			
Item Model	XS6W-6LSZH8SSDDDCM-D	XS6W-5PUR8SS			
Connector housing	PC resin (UL94V-0)/transparent				
Contacts	Phosphor bronze/nickel base, gold plated (0.8 µm)				
Shield	Brass/nickel plated				
Cover (structured to prevent the tab from breaking)	LSZH: Blue, yellow, or green	PUR: Green			
Marking tube	PVC resin (UL94V-0)/transparent	sin (UL94V-0)/transparent			

• Cables

Туре	Cable with Connectors on Both Ends (RJ45/RJ45)/LSZH	Cable with Connectors on Both Ends (RJ45/RJ45)/PUR		
Item Model	XS6W-6LSZH8SS	XS6W-5PUR8SS		
Compliant standard	IEC 60332-1 /UL1581 FT2	IEC 60332-1 /UL1581 FT2		
Number of cores/gauge	$4 \times 2 \times AWG27 0.1 mm^2$	$4\times 2\times AWG26~0.13~mm^2$		
Outer diameter*1	5.8 mm			
Sheath color*2	Blue, yellow, or green	Green		
Sheath material	LSZH	PUR		
Shield structure	Double shield S/FTP	Double shield SF/UTP		



Dimensions

● Cable with Connectors on Both Ends (RJ45/RJ45) XS6W-6LSZH8SS□□□CM-□ XS6W-5PUR8SS□□□CM-G



(Unit: mm)



Cables with Rugged RJ45 Connectors and Cables with M12 Connectors

Model Number Legend

Use this legend when determining the product specifications from the model number. Choose from the model numbers listed in *Ordering Information* when ordering.

• Cable with Connectors



()Connector Shape

H: Cable with plug on one end W: Cable with connectors on both ends

2 Type

T: Ethernet (mating part: M12 D coding)

③Number of Pins

4: 4 pins

(4)Contact Plating Specification

2: Gold plating, 0.4 µm

5Cable Attachment Direction (M12 Connectors)

- 1: Straight
- 2: Right angle

6Cable Length

- A: 0.3 m
- B: 0.5 m
- C: 1 m
- D: 2 m
- E: 3 m
- G: 5 m
- J: 10 m K: 15 m

(7)Connector Shape

- 0: M12 plug on one end
- 1: Connectors on both ends: M12 socket/M12 plug
- 2: Connectors on both ends: M12 plug/M12 plug
- C: Connectors on both ends: M12 plug/RJ45 plug
- D: Connectors on both ends: RJ45 plug/RJ45 plug
- E: Connectors on both ends: M12 socket/RJ45 plug

®Cable Specification

- K: Standard cable
- KR: Robot cable

RJ45 Assembly Connectors

XS6G-T 4 2 1-1

12345

①**Type** T: Ethernet

2Number of Pins

4: 4 pins

③Contact Plating Specification

2: Gold plating, 0.4 μm

④Cable Attachment Direction

- 1: Straight
- **5 Degree of Protection**
- 1: IP20

• M12 Connectors for Panel Mounting

(1)Type

T: Ethernet (mating part: M12 D coding)

②Number of Pins

4: 4 pins

③Plating Specification

2: Gold plating, 0.4 µm

④Mounting Method

- 6: Rear lockingt
- 7: Front locking

⑤Terminal Shape

- 1: DIP terminalst
- 5: Cable with loose wires (0.5 m)

Ordering Information

Appearance	Cable type	Туре	Cable length (m)	Model
			0.5	XS5H-T421-BM0-K
			1	XS5H-T421-CM0-K
			2	XS5H-T421-DM0-K
		Cable with Plug on One End	3	XS5H-T421-EM0-K
		(M12 Straight)	5	XS5H-T421-GM0-K
			10	XS5H-T421-JM0-K
			15	XS5H-T421-KM0-K
	Cable v			
			0.5	XS5W-T421-BM2-K
			1	XS5W-T421-CM2-K
		Cable with Plugs on Both Ends	2	XS5W-T421-DM2-K
		(M12 Straight/M12 Straight)	3	XS5W-T421-EM2-K
		(0	5	XS5W-T421-GM2-K
			10	XS5W-T421-JM2-K
			15	XS5W-T421-KM2-K
			0.3	XS5W-T421-AMC-K
			0.5	XS5W-T421-BMC-K
D Connect			1	XS5W-T421-CMC-K
		Cable with Plugs on Both Ends	2	XS5W-T421-DMC-K
		(M12 Straight/RJ45)	3	XS5W-T421-EMC-K
			5	XS5W-T421-EMC-K
			10	XS5W-T421-GMC-K XS5W-T421-JMC-K
			10	XS5W-T421-SMC-K
			0.5	XS5W-1421-KMC-K XS5H-T422-BM0-K
			1	XS5H-T422-CM0-K
		Cable with Plug on One End	2	XS5H-T422-DM0-K
		(M12 Right-angle)	3	XS5H-T422-EM0-K
			5	XS5H-T422-GM0-K
			10	XS5H-T422-JM0-K
			15	XS5H-T422-KM0-K
			0.5	XS5W-T422-BM2-K
	Standard Cables	Cable with Plugs on Both Ends (M12 Right-angle/M12 Right-angle)	1	XS5W-T422-CM2-K
			2	XS5W-T422-DM2-K
			3	XS5W-T422-EM2-K
			5	XS5W-T422-GM2-K
			10	XS5W-T422-JM2-K
			15	XS5W-T422-KM2-K
			0.3	XS5W-T422-AMC-K
Carried .			0.5	XS5W-T422-BMC-K
			1	XS5W-T422-CMC-K
		Cable with Plugs on Both Ends	2	XS5W-T422-DMC-K
		(M12 Right-angle/RJ45)	3	XS5W-T422-EMC-K
e.			5	XS5W-T422-GMC-K
			10	XS5W-T422-JMC-K
			15	XS5W-T422-KMC-K
			0.3	XS5W-T421-AMD-K
			0.5	XS5W-T421-BMD-K
C. Contract			1	XS5W-T421-CMD-K
		Cable with Plugs on Both Ends	2	XS5W-T421-DMD-K
		(RJ45/RJ45)	3	XS5W-T421-EMD-K
			5	XS5W-T421-GMD-K
			10	XS5W-T421-JMD-K
_			15	XS5W-T421-KMD-K
			0.5	XS5W-T421-RMD-R XS5W-T421-BM1-K
			1	XS5W-T421-CM1-K
			2	XS5W-T421-DM1-K
		Cable with Plug on One End and Socket on Other End	3	XS5W-T421-DM1-K XS5W-T421-EM1-K
		(M12 Straight/M12 Straight)	5	
				XS5W-T421-GM1-K
			10	XS5W-T421-JM1-K
			15	XS5W-T421-KM1-K
			0.5	XS5W-T421-BME-K
			1	XS5W-T421-CME-K
		Cable with Plug on One End and Socket on	2	XS5W-T421-DME-K
		Other End	3	XS5W-T421-EME-K
		(M12 Straight/RJ45)	5	XS5W-T421-GME-K
			10	XS5W-T421-JME-K

Industrial Ethernet Cables

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

Cable Bending Data for Robot Cables (XS5W-T421- M -KR) The following data is the results of OMRON testing for cable bending test conditions. The number of bends may vary for your environment and application conditions.

Cableveyor Test

Number of bends: 20 million min.



90° Bending Test

Number of bends: 6 million min.





Specifications

Туре	Cable with Plug on One End (M12)	Cable with Plugs on Both Ends (M12/M12)	Cable with Plug on One End and Socket on Other End (M12/M12)	Cable with Plugs on Both Ends (M12/RJ45)	Cable with Plug on One End and Socket on Other End (M12/RJ45)	Cable with Plugs on Both Ends (RJ45/RJ45)	RJ45 Assembly Connector	M12 Connec- tor for Panel Mounting	M12 Panel- mounting PCB Straight Ter- minals
Item Model	XS5H -T42⊡-⊡M0-K	XS5W -T42⊡-⊡M2-K, -KR	XS5W -T42⊡-⊡M1-K, -KR	XS5W -T42⊡-⊡MC-K, -KR	XS5W -T421-⊡ME-K	XS5W -T421-⊡MD-K, -KR	XS6G -T421-1	XS5P-T42□-5	XS5P -T426-1
Rated current	3 A			2.5 A				4 A	
Rated voltage	30 V	30 V						125 VDC	
Contact resistance	40 m Ω max.							•	
Insulation resis- tance	1,000 MΩ min.			500 M Ω min.				1,000 MΩ min.	
Withstand voltage	1,000 VAC for 6	60 s (leakage cu	rrent: 1 mA max)				1,500 VAC for ((leakage currer	
Ambient operating temperature	–25 to 70°C	-25 to 70°C							
Ambient storage temperature	–25 to 70°C	-25 to 70°C							
Protective struc- ture	M12: IEC IP67	112: IEC IP67, RJ45: IEC IP20							

Materials and Finish

Connectors

Model		M12		RJ45	
Item	XS5H and XS5W	XS5P-T42□-5	XS5P-T426-1	XS5W and XS6G	
Contact blocks	PBT resin (UL94V-0)/light gray		PA resin (UL94V-0)/black	PA resin (UL94V-0)/black	
Contacts	Phosphor bronze/nickel base, go	ld plated (0.4 μm)	led (0.4 μm) Brass/nickel base, gold plated (0.4 μm) Phosphor bronze/nickel l gold plated (1.4 μm)		
Anchors	Zinc diecast/nickel plating				
Anchors (tabs)	SUS				
Cover	Straight connector: Soft PBT resin (UL94V-0)/black Right-angle connector: TPC resin/black				
Sealing resin		Epoxy resin			
O-rings	Rubber				
Grounding fixture			Phosphor bronze/nickel base, tin plated (2.0 μm)		
Anchor cover	SUS				
Nuts		Brass/nickel plated	•		

Cables

Model Item	Standard Cables	Robot Cables				
Compliant standard	ULCM					
Category	Category 5e					
Number of cores/gauge	4 × AWG22 0.3 mm ² (7/0.26)	$4 \times AWG22 \ 0.3 \ mm^2 \ (7/24/0.05)$				
Outer diameter*1	6.5 dia.					
Sheath color*2	Light blue					
Sheath material	PVC					
Shield structure	Double shield SF/UTP					



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









● Cable with Plugs on Both Ends (M12 Right-angle/RJ45) XS5W-T422-□MC-K



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Insulation outer diameter: 1.6 mm max.

• M12 Connector for Panel Mounting XS5P-T42-5



XS5P-T427-5 (Front Locking)



Wiring

Color
Yellow
White
Orange
Blue

Panel Cutout Dimension



Note 1: The panel cutout dimension is the same for Front-locking and Rearlocking Connectors. Note 2: Rotational positioning is not possible for connector rotation.

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



Panel Processing Dimensions



Mounting Hole Dimensions Mounting Hole Dimensions (D Cut Structure)

White

18

1

2 to 3

1.2±0.04 dia. × 45°

12 2+0 05 dia

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Assembly Procedure

RJ45 Assembly Connectors XS6G-T421-1

- Pass the cable through the cable 1. clamp and the connector housing
- Strip the cable sheath and ground 2. braiding to the correct lengths.
- Follow the color codes and prepare З. to insert the wires into the splice piece.
- Insert the wires into the splice piece 4. for the length of the splice piece.
- Place the splice piece into the RJ45 5. data module and engage it.
- 6. Place the data module and the splice piece on the IDC assembly housing
- 7. Press the data module and the IDC assembly housing together and use pliers or a similar device to make the insulation displacement contact.
- Remove the data module from the 8. IDC assembly housing.
- 9. Place the upper screen plate on the data module and press it over the ground braiding of the cable.
- 10. Place the lower screen plate on the bottom of the data module, align it with the upper screen place, and latch it until you hear it click into place.
- 11. Slide the housing that you placed around the cable in step 1 up to the data module and latch it until you hear it click into place.
- 12. Tighten the cable clamp.

Pin Assignments

Pin Assignments for Fast Ethernet 10/100 Mbps

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



















• M12 Panel-mounting PCB Straight Terminals XS5P-T426-1 **Confirming the Number of Parts**

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

Panel-mounting Parts 1. Anchor

2. O-Ring

PCB-mounting Part





Assembly Procedure

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

Mounting the Connector to the PCB Mounting the Anchor to the Panel





3. Attach the connector that you mounted to the PCB to the panel.

* Make sure that the connector and anchor are oriented correctly. Attachment



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



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



Connector Waterproof Cover (Sold Separately) XS2Z-22



* Tightening torque: 0.39 to 0.49 N·m

Safety Precautions

Precautions for Correct Use

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

Connector Connection and Disconnection

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

• Wiring

Lay the cables so that external force is not applied to the Connectors. Otherwise, the degree of protection (IP67) may not be achieved.

• Degree of Protection for M12/Smartclick Connectors

- The degree of protection of Connectors (IP67) is not for a fully watertight structure. Do not use the Connectors underwater.
- Do not step on or place any objects on the Connectors. Doing so may damage the Connectors.

Handling Precautions

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

Terms and Conditions of Sale

- 1. Offer; Acceptance. These terms and conditions (these "Terms") are deemed part of all quotes, agreements, purchase orders, acknowledgments, price lists, catalogs, manuals, brochures and other documents, whether electronic or in catalogs, manuals, brochures and other documents, whether electronic or in writing, relating to the sale of products or services (collectively, the "Products") by Omron Electronics LLC and its subsidiary companies ("Omron"). Omron objects to any terms or conditions proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms. Prices: Payment Terms, All prices stated are current, subject to change without notice by Omron. Omron reserves the right to increase or decrease prices on any unshipped portions of outstanding orders. Payments for Products are due net 30 days unless otherwise stated in the 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 (i) the invoice is paid according to Omron's payment terms and (ii) Buyer has no past due amounts.
- 2
- 3.
- and (ii) Buyer has no past due amounts. Interest. Omron, at its option, may charge Buyer 1-1/2% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms.
- Orders. Omron will accept no order less than \$200 net billing. Governmental Approvals. Buyer shall be responsible for, and shall bear all 6 costs involved in, obtaining any government approvals required for the impor-tation 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 Omron or required to be collected directly or 7. indirectly by Omron for the manufacture, production, sale, delivery, importa-tion, 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 Omron. <u>Financial.</u> If the financial position of Buyer at any time becomes unsatisfactory
- 8. <u>Einancial</u> If the financial position of Buyer at any time becomes unsatisfactory to Omron, Omron 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, Omron may (without liabil-ity and in addition to other remedies) cancel any unshipped portion of Prod-ucts 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 unpaid accounts.
- <u>Cancellation</u>, <u>Etc.</u> Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Omron against all related costs or expenses.
 <u>Force Majeure</u>. Omron shall not be liable for any delay or failure in delivery
- Force majeure. Other shall not be lable for any delay or lating 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.
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- except in "break down" situations. b. Such carrier shall act as the agent of Buyer and delivery to such carrier shall
 - constitute delivery to Buyer; c. All sales and shipments of Products shall be FOB shipping point (unless oth-
- c. All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Omron), at which point title and risk of loss shall pass from Omron to Buyer; provided that Omron shall retain a security interest in the Products until the full purchase price is paid;
 d. Delivery and shipping dates are estimates only; and
 e. Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
 12. <u>Claims</u>. Any claim by Buyer against Omron for shortage or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within 30 days of receipt of shipment and include the original transportation bill signed by the carrier received the Products
- portation bill signed by the carrier noting that the carrier received the Products from Omron in the condition claimed.
- <u>Warranties</u>. (a) <u>Exclusive Warranty</u>. Omron'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 Omron (or such other period expressed 13 (b) <u>Limitations</u>. OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABIL-

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- "forbidden" or other proscribed persons; and (ii) disclosure to non-citizens of regulated technology or information. <u>Miscellaneous</u>. (a) <u>Waiver</u>. No failure or delay by Omron in exercising any right and no course of dealing between Buyer and Omron shall operate as a waiver of rights by Omron. (b) <u>Assignment</u>. Buyer may not assign its rights hereunder without Omron's written consent. (c) <u>Law</u>. These Terms are governed by the law of the jurisdiction of the home office of the Omron company from which Buyer is purchasing the Products (without regard to conflict of law principles). (d) <u>Amendment</u>. These Terms constitute the entire agreement between Buyer and Omron relating to the Products, and no provision may be changed or waived unless in writing signed by the parties. (e) Severability. If any provi-18 or waived unless in writing signed by the parties. (e) <u>Severability</u>. If any provision hereof is rendered ineffective or invalid, such provision shall not invalidate any other provision. (f) Setoff, Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice. (g) <u>Definitions</u>. As used herein, "<u>including</u>" means "including without limitation"; and "<u>Omron Compa-</u> nies" (or similar words) mean Omron Corporation and any direct or indirect subsidiary or affiliate thereof.

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