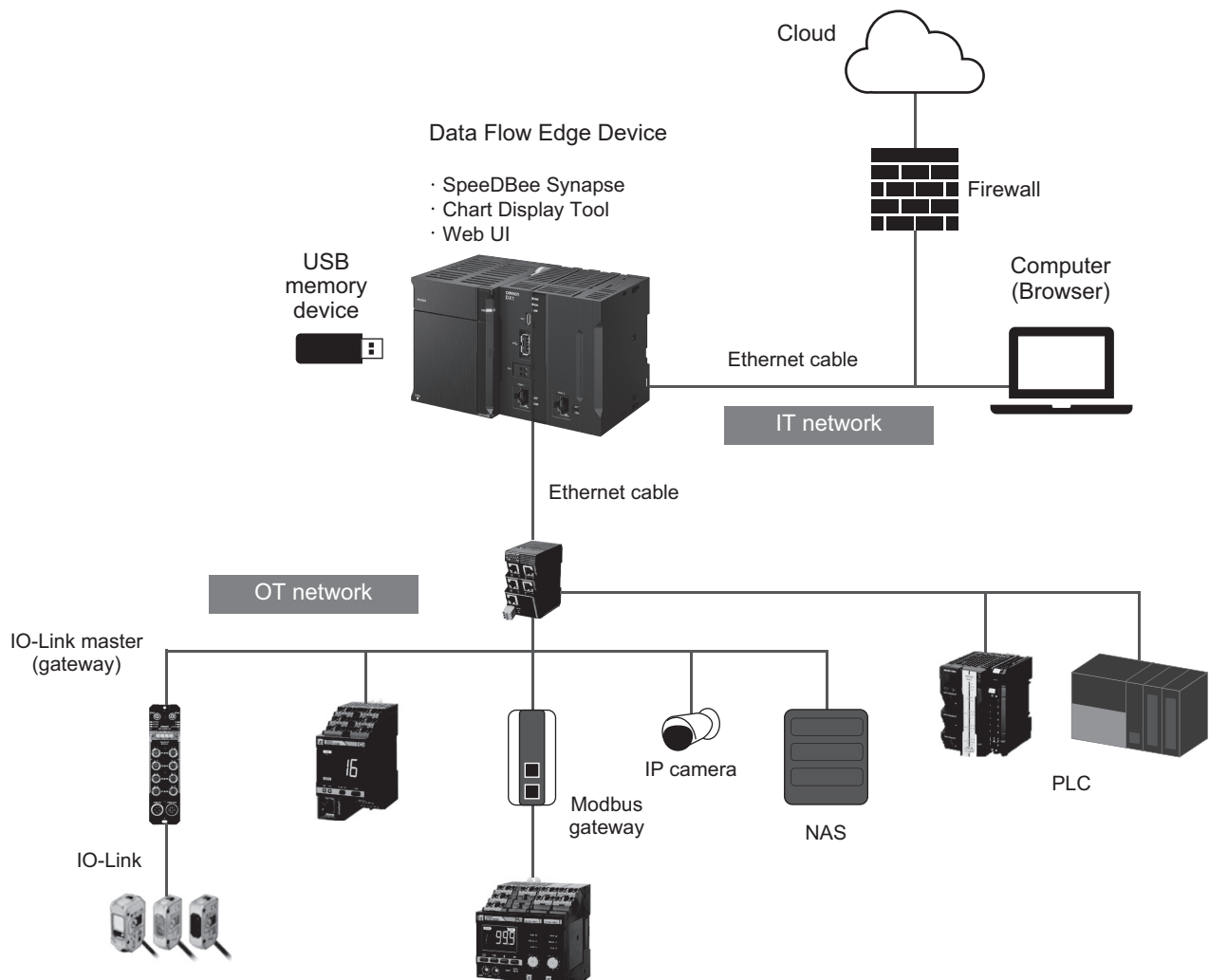# OMRON

Data Flow Edge Device
DX100

A versatile IIoT-ready data enabler designed for rapid development and confident-decision making

System Configuration

Cloud

Data Flow Edge Device

· SpeeDBee Synapse
· Chart Display Tool
· Web UI

Firewall

USB memory device

Computer (Browser)

Ethernet cable

IT network

Ethernet cable

OT network

IO-Link master (gateway)

Modbus gateway

IP camera

NAS

PLC

IO-Link

DX100

Ordering Information

CPU Unit

Product name	Specifications		Model
	Communications	**Built-in software**	

DX-series Data Flow Edge Device	2 Ethernet ports, 1 USB port	• Data collection: SpeeDBee Synapse
		• Chart Display Tool
		• Package:
		  Equipment Monitoring Package
		  Factory Monitoring Package
		  Status Monitoring Package
		  Event-triggered Video Logging Package
			DX100-0010

Power Supply Units

The Data Flow Edge Device does not have a built-in power supply. You must install a Power Supply Unit on it.

Product name	Power supply voltage	Output current		Output capacity	Options			Model
		5-VDC output capacity	**24-VDC output capacity**	**Total power consumption**	**24-VDC service power supply**	**RUN output**	**Maintenance forecast monitor**	
AC Power Supply Unit	100 to 240 VAC	6.0 A	1.0 A	30 W	No	Yes	No	**NJ-PA3001**
DC Power Supply Unit	24 VDC							**NJ-PD3001**

Cable with Connectors

Item	Appearance	Recommended manufacturer	Cable length (m)	Model
Cable with Connectors on Both Ends (RJ45/RJ45) Standard RJ45 plugs *1 Wire gauge and number of pairs: AWG26, 4-pair cable Cable sheath material: PUR Cable color: Yellow *2 EtherCAT/ EtherNet/IP (10BASE/100BASE)		OMRON	0.3	**XS6W-6PUR8SS30CM-YF**
			0.5	**XS6W-6PUR8SS50CM-YF**
			1	**XS6W-6PUR8SS100CM-YF**
			2	**XS6W-6PUR8SS200CM-YF**
			3	**XS6W-6PUR8SS300CM-YF**
			5	**XS6W-6PUR8SS500CM-YF**
Cable with Connectors on Both Ends (RJ45/RJ45) Rugged RJ45 plugs *1 Wire gauge and number of pairs: AWG22, 2-pair cable Cable color: Light blue EtherCAT/ EtherNet/IP (10BASE/100BASE)		OMRON	0.3	**XS5W-T421-AMD-K**
			0.5	**XS5W-T421-BMD-K**
			1	**XS5W-T421-CMD-K**
			2	**XS5W-T421-DMD-K**
			5	**XS5W-T421-GMD-K**
			10	**XS5W-T421-JMD-K**
Cable with Connectors on Both Ends (M12 Straight/M12 Straight) Shield strengthening connector cable *3 M12/Smartclick connectors Wire gauge and number of pairs: AWG22, 2-pair cable Cable color: Black EtherCAT/ EtherNet/IP (10BASE/100BASE)		OMRON	0.5	**XS5W-T421-BM2-SS**
			1	**XS5W-T421-CM2-SS**
			2	**XS5W-T421-DM2-SS**
			3	**XS5W-T421-EM2-SS**
			5	**XS5W-T421-GM2-SS**
			10	**XS5W-T421-JM2-SS**
Cable with Connectors on Both Ends (M12 Straight/RJ45) Shield strengthening connector cable *3 M12/Smartclick connector and rugged RJ45 plug Wire gauge and number of pairs: AWG22, 2-pair cable Cable color: Black EtherCAT/ EtherNet/IP (10BASE/100BASE)		OMRON	0.5	**XS5W-T421-BMC-SS**
			1	**XS5W-T421-CMC-SS**
			2	**XS5W-T421-DMC-SS**
			3	**XS5W-T421-EMC-SS**
			5	**XS5W-T421-GMC-SS**
			10	**XS5W-T421-JMC-SS**

*1. Cables with standard RJ45 plugs are available in the following lengths: 0.2 m, 0.3 m, 0.5 m, 1 m, 1.5 m, 2 m, 3 m, 5 m, 7.5 m, 10 m, 15 m, 20 m. Cables with rugged RJ45 plugs are available in the following lengths: 0.3 m, 0.5 m, 1 m, 2 m, 3 m, 5 m, 10 m, 15 m. For details, refer to the *Industrial Ethernet Connectors Catalog* (Cat. No. G019).

*2. Cables colors are available in yellow, green, and blue.

*3. For details, contact your OMRON representative.

Cables/Connectors

Product name			Recommended manufacturer	Model
Products for EtherCAT or Ethernet (1000BASE-T/100BASE-TX)	Wire gauge and number of pairs: AWG24, 4-pair cable	Cable	Kuramo Electric Co.	**KETH-SB ✱1**
			JMACS Japan Co., Ltd.	**IETP-SB ✱1**
		RJ45 Connector	Panduit Corporation	**MPS588-C ✱1**
Products for EtherCAT or Ethernet (100BASE-TX)	Wire gauge and number of pairs: AWG22, 2-pair cable	Cable	Kuramo Electric Co.	**KETH-PSB-OMR ✱2**
			JMACS Japan Co., Ltd.	**PNET/B ✱2**
		RJ45 Assembly Connector	OMRON Corporation	**XS6G-T421-1 ✱2**

✱1. We recommend you to use the Cable for EtherCAT or Ethernet marked with ✱1 and the RJ45 Connector marked with ✱1 together.
✱2. We recommend you to use the Cable for EtherCAT or Ethernet marked with ✱2 and the RJ45 Assembly Connector marked with ✱2 together.

Options

Product name	Specifications	Model
USB Memory	2 GB	**FZ-MEM2G ✱1**
DIN Track	Length: 0.5 m. Height: 7.3 mm	**PFP-50N**
	Length: 1 m. Height: 7.3 mm	**PFP-100N**
	Length: 1 m. Height: 16 mm	**PFP-100N2**
End Plate	Stopper to prevent units from moving on the DIN track. The minimum order quantity is 10 units.	**PFP-M**

✱1. OMRON is not responsible for the operation of any other USB memory devices.

General Specifications

The general specifications of the CPU unit are shown below.
There are items for which restrictions on the operating environment of the Power Supply Unit are greater than those listed here. Also check the specifications in the NJ-PA/PD Datasheet.

Item		Specification
Structure		Mounted in a panel
Installation method		Ground to less than 100 Ω.
Operating Environment	Ambient operating temperature	0 to 55°C
	Ambient operating humidity	10% to 90% (with no condensation or icing)
	Atmosphere	Must be free of corrosive gases.
	Ambient storage temperature	-25 to 70°C (with no condensation or icing)
	Altitude	2,000 m max.
	Pollution degree	2 or less: Meets IEC 61010-2-201.
	Noise immunity	Conforms to IEC 61000-4-4. 2 kV on power supply line
	Overvoltage category	Category II: Meets IEC 61010-2-201.
	EMC immunity level	Zone B
	Vibration resistance	Conforms to IEC 60068-2-6. 5 to 8.4 Hz with 3.5-mm amplitude, 8.4 to 150 Hz, acceleration of 9.8 m/s^2 100 min each in X, Y, and Z directions (10 sweeps of 10 min each =100 min total)
	Shock resistance	Conforms to IEC 60068-2-27. 147 m/s^2, 3 times each in X, Y, and Z directions
Insulation Resistance		20 MΩ min. between isolated circuits (at 100 VDC)
Dielectric strength		510 VAC between isolated circuits for 1 minute with a leakage current of 5 mA max.
Applicable standards *1		cULus, EU: EN61131, RCM, KC

∗1. Refer to the OMRON website (http://www.ia.omron.com/) or consult your OMRON representative for the most recent applicable standards.

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Function Specifications

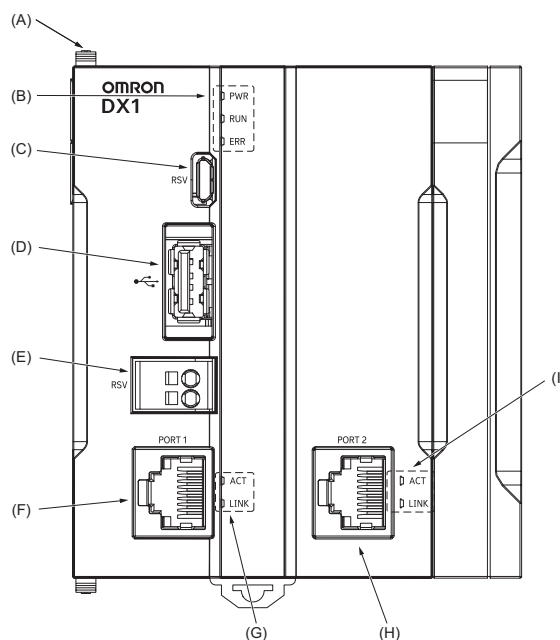The functional specifications of the Data Flow Edge Device are shown below.

Item			Specification
Hardware	Communications		2 Ethernet ports and 1 USB port
	User interface	Indicators	PWR, RUN, and ERR
	Supported power supply		NJ-PA3001 and NJ-PD3001

	Clock		Built-in RTC
			• Monthly fluctuation of power supply
			   At ambient temperature of 55°C: -4.5 to 4.5 min error per month
			   At ambient temperature of 25°C: -3.5 to 3.5 min error per month
			   At ambient temperature of 0°C: -4.5 to 4.5 min error per month

		Retention time of builtin capacitor	At ambient temperature of 40°C: 10 days
	Ethernet communications specifications	Baud rate	Port 1: 1 Gbps Port 2: 100 Mbps
		Physical layer	1000BASE-T·100BASE-TX (IEEE 802.3)
		Frame length	1,514 bytes max.
		Media access method	CSMA/CD
		Transmission distance	100 mm
		Transmission media	Twisted-pair cable of category 5, 5e, or higher (shielded cable)
		Communications protocol	TCP/IP, UDP/IP, HTTP(S), NTP, DHCP, and DNS/mDNS
	USB port	Physical layer	USB 2.0 compliant, type A connector. Output voltage: 5 V, 0.5 A max.
		Transmission distance	3 m
	Dimensions [mm]		78.8 × 90 × 80 mm (W × H × D)
	Weight		250 g max.

Built-in software			• Data collection: SpeeDBee Synapse
			• Chart Display Tool
			• Package: Equipment Monitoring Package
			         Factory Monitoring Package
			         Status Monitoring Package
			         Event-triggered Video Logging Package

OMRON

Part Names and Functions

CPU Unit

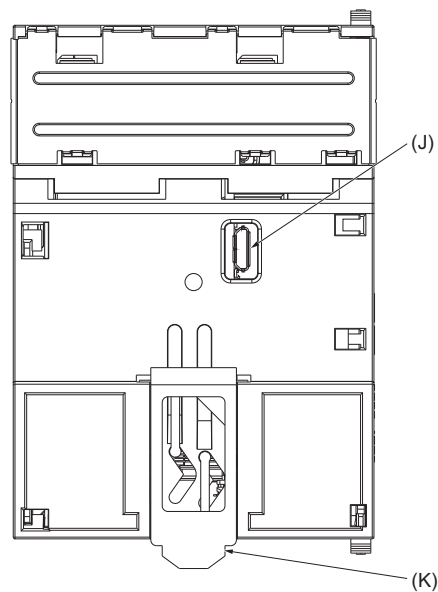The name and function of each part of the CPU unit are shown below.

Front view

Symbol	Name	Function
A	Slider	Locks the adjacent Unit in place. This part is used to mount the Power Supply Unit.
B	Operation Indicators	Show the operation status by the combination of multiple indicators.
C	RSV (Reserve)	Do not use this.
D	USB 2.0 connector	USB 2.0 interface connector. Connects a USB memory device.
E	RSV (Reserve)	Do not use this.
F	Ethernet communications connector (Port 1)	Connects an Ethernet communications cable. Port 1 supports a communications speed of 1 Gbps and is recommended for connecting the network for data collection.
G	Ethernet communications port (Port 1) operation indicator	Shows the operation status of Ethernet.
H	Ethernet communications connector (Port 2)	Connects an Ethernet communications cable. Port 2 supports a communications speed of 100 Mbps and is recommended for connecting a computer that use the Web UI.
I	Ethernet communications port (Port 2) operation indicator	Shows the operation status of Ethernet.

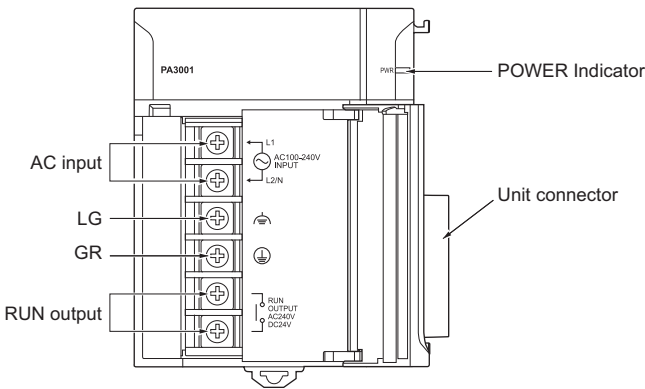Note: 1. The Data Flow Edge Device does not support wireless LAN.

DX100
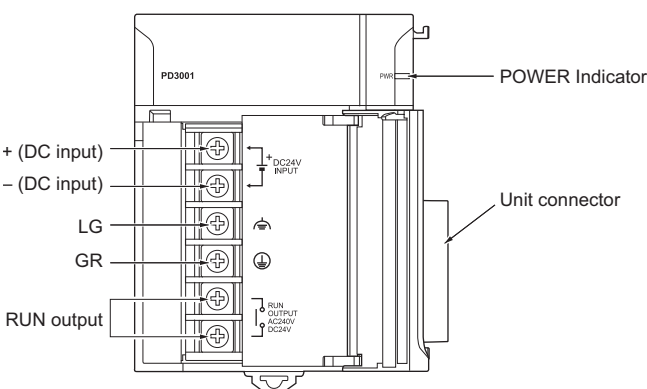
Rear view

Symbol	Name	Function
J	DIP switch	Use this in such a case where the computer cannot be connected.
K	DIN Track mounting hook	Use this to mount the Data Flow Device to a DIN Track.

Power Supply Unit

NJ-PA3001

NJ-PD3001

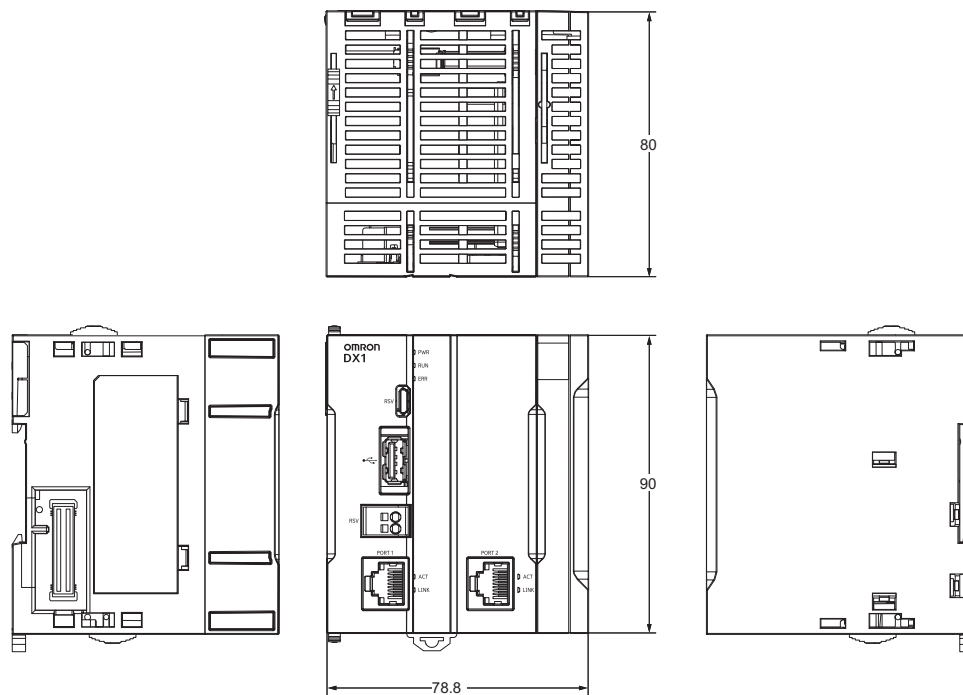# Version Information

Unit Version and Supportes Browser Versions

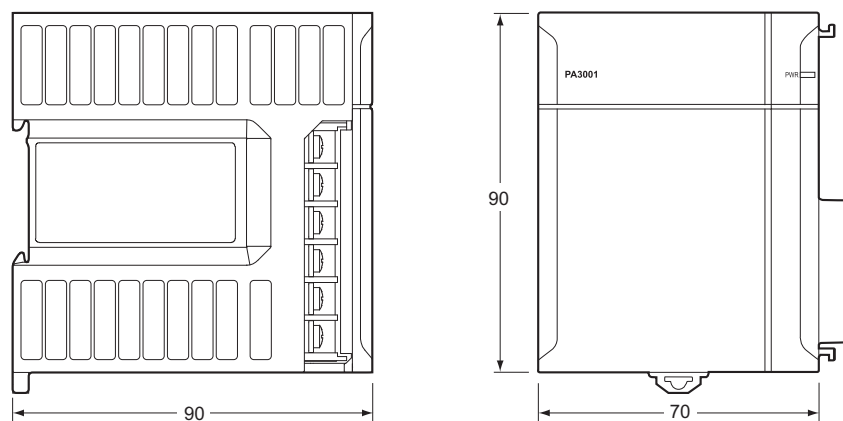Refer to *DX-series Data Flow Edge Device User's Manual* (Cat. No. V241).

Dimensions

CPU unit
DX100-0010

80

90

78.8

Power Supply Units
NJ-PA3001
NJ-PD3001

PA3001   PWR

90

90

70

System Configuration of the Packages

The following is an example of system configurations for using each package.

Equipment Monitoring Package

Product name	Manufacturer	Model	Quantity	Remarks
Data Flow Edge Device	OMRON Corporation	DX100-0010	1	
IO-Link Master Unit for EtherNet/IP	OMRON Corporation	NXR-ILM08C-EIT	1	
IO-Link Photoelectric Sensor M12 Pre-wired Smartclick Connector type	OMRON Corporation	E3AS-HL150LMT-M1TJ 0.3M E3AS-HL500LMT-M1TJ 0.3M E3AS-HL150MT-M1TJ 0.3M E3AS-HL500MT-M1TJ 0.3M	2	

Factory Monitoring Package

Product name	Manufacturer	Model	Quantity	Remarks
Data Flow Edge Device	OMRON Corporation	DX100-0010	2 or more	

Note: 1. For equipment used in the facility monitoring package managed by the factory monitoring package, refer to the *Equipment Monitoring Package*.

Event-triggered Video Logging Package

Product name	Manufacturer	Model	Quantity	Remarks
Data Flow Edge Device	OMRON Corporation	DX100-0010	1	
IO-Link Master Unit for EtherNet/IP	OMRON Corporation	NXR-ILM08C-EIT	1	
Camera	Axis Communications	M1055-L	1	Evaluated *1
Switching Hub PoE	TP-Link Systems Inc.	TL-SG105PE	1	Evaluated *1

∗1. This product has been confirmed to operate correctly in combination with our products.

Condition Monitoring Package (Variable Speed Motor)

Product name	Manufacturer	Model	Quantity	Remarks
Data Flow Edge Device	OMRON Corporation	DX100-0010	1	
Advanced Motor Condition Monitoring Device	OMRON Corporation	K7DD-PQMD/PQMA ∗1	1	
CT	OMRON Corporation	K6CM-CICB□□□ ∗2	1 or 3 ∗3	
Modbus Gateway	Moxa Inc.	MGateMB3170	1	Evaluated ∗4

∗1. PQMD: DC type, PQMA: AC type
∗2. Model name may vary depending on the CT sensor. Select a CT that can measure the motor current within the applicable range.
∗3. The number of CTs required depends on the number of phases of the motor current being measured.
∗4. This product has been confirmed to operate correctly in combination with our products.

Condition Monitoring Package (Induction Motor, Current type)

Product name	Manufacturer	Model	Quantity	Remarks
Data Flow Edge Device	OMRON Corporation	DX100-0010	1	
Motor Condition Monitoring Device Comprehensive current diagnosis type	OMRON Corporation	K6CM-CI2MD-EIP K6CM-CI2MA-EIP ∗1	1	
CT	OMRON Corporation	K6CM-CICB□□□ ∗2	1	

∗1. CI2MD: DC type, CI2MA: AC type
∗2. Model name may vary depending on the CT sensor. Select a CT that can measure the motor current within the applicable range.

Condition Monitoring Package (Induction Motor, Vibration type)

Product name	Manufacturer	Model	Quantity	Remarks
Data Flow Edge Device	OMRON Corporation	DX100-0010	1	
Motor Condition Monitoring Device Vibration & temperature type	OMRON Corporation	K6CM-VBMD-EIP K6CM-VBMA-EIP	1	
Vibration & Temperature Sensor	OMRON Corporation	K6CM-VBS1	1	

∗1. VBMD: DC type, VBMA: AC type

Condition Monitoring Package (Equipment Temperature)

Product name	Manufacturer	Model	Quantity	Remarks
Data Flow Edge Device	OMRON Corporation	DX100-0010	1	
Thermal Condition Monitoring Device	OMRON Corporation	K6PM-THMD-EIP	1	
Infrared thermal sensor	OMRON Corporation	K6PM-THS3232	1 to 31 *1	

*1. Select the number of temperature sensors according to the target and range you wish to monitor.

In Common

Product name	Manufacturer	Model	Quantity	Remarks
USB memory stick	OMRON Corporation	FZ-MEM2G	1	

DX100

Related Manuals

The following manuals are related. Use these manuals for reference.

Manual name	Cat. No.	Model	Application	Description
DX-series Data Flow Edge Device User's Manual	V241	DX100-0010	Learning the overview, installation, troubleshooting, and maintenance of the DX-series Data Flow Edge Device.	The following information is provided on the DX-series Data Flow Edge Device • Features and system configuration • Overview • Part names and functions • General specifications • Overview of functions • Initial setup • Installation and wiring • Maintenance and inspection
DX-series Web UI User's Manual	V242	DX100-0010	Learning the settings and operation details of the DX-series Data Flow Edge Device.	The following information is provided on the DX-series Data Flow Edge Device. • Settings • Operation method
DX-series SpeeDBee Synapse User's Manual	V243	DX100-0010	Learning how to collect and utilize data with the DX-series Data Flow Edge Device.	The following information is provided on the data collection and utilization functions of the DX-series Data Flow Edge Device. • Functions • Setting method
DX-series Dashboard Generator User's Manual	N700	DX100-0010	Learning the common usage of Packages with the DX-series Data Flow Edge Device	The following information is provided on the Packages for the DX-series Data Flow Edge Device • Common functions • Common usage
DX-series Equipment Monitoring Package User's Manual	N701	DX100-0010	Learning how to use the Equipment Monitoring Package with the DX-series Data Flow Edge Device	The following information is provided on the Equipment Monitoring Package for the DX-series Data Flow Edge Device • Functions • Usage
DX-series Factory Monitoring Package User's Manual	N702	DX100-0010	Learning how to use the Factory Monitoring Package with the DX-series Data Flow Edge Device	The following information is provided on the Factory Monitoring Package for the DX-series Data Flow Edge Device • Functions • Usage
DX-series Status Monitoring Package User's Manual	N703	DX100-0010	Learning how to use the Status Monitoring Package with the DX-series Data Flow Edge Device	The following information is provided on the Status Monitoring Package for the DX-series Data Flow Edge Device • Functions • Usage
DX-series Event-triggered Video Logging Package User's Manual	N704	DX100-0010	Learning how to use the Dashboard Event-triggered Video Logging Package with the DX-series Data Flow Edge Device	The following information is provided on the Dashboard Event-triggered Video Logging Package for the DX-series Data Flow Edge Device • Functions • Usage

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