Inverters

JX/MX2-V1/RX-V1 Series

Fast Response Inverter for Machine Control

» Wide lineup
» Harmonized motor and machine control
» Support for open network
Optimal performance for your application

Our Products come with new features and functionality to meet your application.

**JX Series**
*Easy-to-use*
JX provides a compact solution to a whole range of simple applications, such as conveyor control.

**MX2 Series V1 type**  
*NEW*  
*Born to drive machines*
The MX2 gives you better function "Simple Position Control" and "Speed Control". The combination of the NJ and MX2 give you more advantage.

**RX Series V1 type**  
*NEW*  
*Wide range of applications*
OMRON provides high level of quality and reliability, and quick customize your inverter to match your precise requirement.

OMRON keep advancing development of new products to meet your needs, in addition to quality and reliability that are commonly required.

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**Harmonized motor and machine control**
Thanks to its advanced design and algorithms, the Inverters provide smooth control down to zero speed, plus precise operation for cyclic operations and torque control capability in open loop.

**Open network**
Standard industrial networks, such as EtherCAT, and CompoNet or DeviceNet allow you to connect devices, such as Controller, Inverters, I/O Slaves to the same network, which enables faster startup time. Management of devices and networks with a Controller improves the debugging efficiency.

**Wide lineup**
Easy-to-use JX Series, born to drive machines MX2 Series V1 type, and RX series V1 type with wide lineup. They offer the best performance for various needs.
The smallest gets integrated...

**Easy network integration**

The RS-485 Modbus is built into the RS-485 port in the inverter front, making it very easy to add inverters into the network without any extra option boards. Therefore, saving money and space.

**Noise Measures for Peripheral Equipment**

As a noise measure, a built-in radio noise filter is a standard feature on every model* that saves on costs and space compared with the standard external filter solution.

*Excluding single-phase/three-phase 200-V models.

**Easy communications setting**

Modbus commands are implemented even in low-end CP1 PLC family by Modbus-RTU Easy Master functionality, making it easier than ever to integrate the inverters into the network.

**No additional devices required**

Even advanced functionality such as PID control is standard with the JX inverter making it a convenient solution for applications such as pumps & fans where pressure, flow and other processes need controlling.

**Automatic Energy-saving Function**

This function automatically minimizes the Inverter output power during constant speed operation. It has a large energy-saving effect when used with fans and pumps.

**Side-by-side Mounting Saves Space**

When several inverters are to be mounted in a control panel, side-by-side mounting makes it possible to mount them closely together, thus saving space.

Note: Some models have restrictions in the ambient temperature, carrier frequency, and output current.
Position can be controlled by receiving a feedback pulse from the encoder. Up to 8 positions can be set in the Inverter. Sensors for positioning and Limit Switches can be reduced.

Simple positioning control with feedback

Feedback reduces the loss of positioning accuracy, even with large load.

Position can be controlled by receiving a feedback pulse from the encoder. Up to 8 positions can be set in the Inverter. Sensors for positioning and Limit Switches can be reduced.

Network Integration

Standard industrial networks, such as EtherCAT, CompoNet or DeviceNet as options. High-speed EtherCAT provides solutions for the entire system from input to output with Sysmac Series. Built-in RS-485 Modbus communications.

Free to program

Drive Programming enables you to make your own programs to suit your machine, e.g., for an unwinding application. Up to 1000 lines of code and 5 tasks running in parallel in 2 programming modes. (CX-Drive version 2.80 or higher is required.)

Torque master

The PM motor conforming to high-efficiency regulations can be controlled. The PM motor promotes further energy saving and achieves earth-friendly machine control.

The MX2 delivers 200% starting torque near stand-still (0.5 Hz) and can operate in torque control in open loop mode. This allows the MX2 to be used in applications where closed loop AC vector drives were previously used.

Safety embedded

A contactor to stop the motor is not required, and it is possible to use our Safety Controller reliably together. EN ISO13849-1:2008 (Cat.3/PLd)* IEC60204-1 Stop Category 0* Approval pending

Harmonised motor and machine control
Drive Programming enables you to make your own programs to suit your machine, e.g. for an unwinding application. Up to 1000 lines of code and 5 tasks running in parallel in 2 programming modes. (CX-Drive version 2.72 or higher is required.)

Free to program

Positioning functionality
Simple positioning is handled by the inverter itself without the need for an external motion controller. Functions include pulse trace position control mode, homing and position teaching.

Network Integration
Standard industrial networks, such as EtherCAT, CompoNet or DeviceNet as options. High-speed EtherCAT provides solutions for the entire system from input to output with Sysmac Series. Built-in RS-485 Modbus communications.

Vector Control
In addition to V/F control, the following control methods are included. This enables a 200% starting torque at 0.3 Hz.
- Sensorless vector control
- Sensorless vector control in 0-Hz domain
- Vector control with a PG

Space and cost saving
The RX-V1 has built-in radio noise filter/EMC filter* that saves on costs and space compared with the standard external filter solution.
* Selectable

LCD 5 line Digital Operator
Available soon
The LCD 5 line Digital Operator provides the copy function in addition to setting of various parameters of the Inverter and monitoring frequency and current*. Setup time and maintenance time are reduced. This allows you to operate the Inverter remotely via a special cable**.
*Optional
### Inverter Selection

#### Select the most suitable Inverter by choosing the functions you need for your application.

**Selection Based on Functions**

<table>
<thead>
<tr>
<th>Easy-to-use Inverters for simple applications</th>
<th>Environmental Consideration</th>
<th>Ease of Use</th>
<th>Versatile in Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>JX Series</td>
<td>RoHS compliant (standard feature)</td>
<td>Side-by-side mounting</td>
<td>V7 control</td>
</tr>
<tr>
<td>With Machine Automation Mentality</td>
<td>Built-in radio noise filter/EMC filter (selectable)</td>
<td>Standard-feature emergency shutoff function</td>
<td>PID function</td>
</tr>
<tr>
<td>MX2 Series V1 type</td>
<td>Built-in radio noise filter/EMC filter (selectable)</td>
<td>Standard-feature emergency shutoff function</td>
<td>Modbus-RTU</td>
</tr>
</tbody>
</table>

#### Versatile for a Wide Range of Applications

<table>
<thead>
<tr>
<th>RX Series V1 type</th>
<th>RoHS compliant (standard feature)</th>
<th>Side-by-side mounting</th>
<th>Vector control with a PG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Energy-saving</td>
<td>Automatic Energy-saving</td>
<td>PID function</td>
<td>Drive Programming*1</td>
</tr>
</tbody>
</table>

*1 CX-Drive version 2.80 or higher is required. *2 CX-Drive version 2.72 or higher is required.

#### Specifications

<table>
<thead>
<tr>
<th>Series</th>
<th>Power supply/and capacity</th>
<th>Control method</th>
<th>Input/output</th>
<th>Braking</th>
<th>Frequency</th>
<th>Installation and wiring</th>
<th>V/f control</th>
<th>Vector control</th>
<th>Frequency output method</th>
<th>Main functions</th>
<th>Communication</th>
<th>Safety standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>JX Series</td>
<td>Three-phase 200V</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>0.5 to 400 Hz</td>
<td>Line-to-line sine wave PWM</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>16 steps + jog</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>J Series</td>
<td>Three-phase 400V</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>0.5 to 400 Hz</td>
<td>Line-to-line sine wave PWM</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>16 steps + jog</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>MX2 Series V1 type</td>
<td>Three-phase 200V</td>
<td>Yes</td>
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</table>

*Three-phase 400V of MX2 Series V1 type: 4.0kW

*1 When specifications equivalent to CE mark is required, use an optional EMC filter. *2 Approval pending

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**Capacity**

<table>
<thead>
<tr>
<th>Series</th>
<th>Power supply</th>
<th>Capacity (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JX Series</td>
<td>Three-phase 200V</td>
<td>0.1, 0.2, 0.4, 0.75, 1.5, 2.2, 3.0, 3.7, 5.5, 7.5, 11, 15, 18.5, 22, 30, 37, 45, 55, 75, 90</td>
</tr>
<tr>
<td>J Series</td>
<td>Three-phase 400V</td>
<td>0.1, 0.2, 0.4, 0.75, 1.5, 2.2, 3.0, 3.7, 5.5, 7.5, 11, 15, 18.5, 22, 40</td>
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</tr>
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* Under Planning
The following optional items and peripheral devices can be used with the Inverter. Select them according to the application.

**Option**

- (1) AC Reactor
- (2) Radio Noise Filter
- (3) Input Noise Filter
- (4) Output Noise Filter
- (5) Braking Resistor
- (6) Digital Operator
- (7) Digital operator extension cable
- (8) EtherCAT Communication Unit
- (9) I/O Unit
- (10) PG Board

**Software**

**CX-One**

Application software to set and control data for Inverters and Servos.

**CX-Drive**

- Easy Setup and Adjustment
- Measurement, Analysis, and Monitoring
- Real Time Trace

**Parameters**

Servo Drive or Inverter parameters can be set as easily as with a digital operator. With an EtherCAT, CompoNet or DeviceNet system, Servo Drive parameters can be set and status can be monitored through the PLC.

**Automation Software**

Sysmac Studio

Created to give you complete control over your automation system, Sysmac Studio integrates configuration, programming and monitoring. Sysmac Studio can be used when using with NJ-series Controller.

**System Configuration**

- Configuration and monitoring for servo drive and Inverter.
- Motion control

**System Simulation**

- Data tracing

**System Programming**

- Motion control

**System Measurement**

- Real Time Trace

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1. Some models include this filter.
2. Integrated type and separate type are available.

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For CX-Drive: Use a Connecting Cable (3G3AX-PCACN2) to connect the Inverter with the computer when using the CX-Drive (for JX series/RX series V1 type). Use a standard USB cable for MX2 series V1 type.

Use a Connecting Cable (3G3AX-P001) to connect the Inverter with the computer when using the CX-Drive (for JX series/RX series V1 type). Use a standard USB cable for MX2 series V1 type.

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Used to improve the input power factor of the Inverter. Install DC and AC reactors for applications with a large power supply capacity (600 kVA or higher).

**Reduce the affects of radio and control device noise**

- Radio Noise Filter
- Input Noise Filter
- EMC-conforming Input Noise Filter
- Output Noise Filter

**Enable stopping the machine in a set time**

- Braking Resistor
- Regenerative Braking Units

**Operates the Inverter externally**

- Digital Operator
- Digital operator extension cable

**Control by the open network**

- EtherCAT Communication Unit
- CompoNet Communication Unit
- DeviceNet Communication Unit

**Expand the I/O**

- UD Unit

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**Parameters**

Servo Drive or Inverter parameters can be set as easily as with a digital operator. With an EtherCAT, CompoNet or DeviceNet system, Servo Drive parameters can be set and status can be monitored through the PLC.

**Real Time Trace**

Data traces can be used to monitor the output frequency and output current as easily as with an oscilloscope.

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**Notice**

RX series has this operator. It’s used separated the Inverter.

Extension cable to use a Digital Operator remotely.

Cable length: 1 m or 3 m

You can realize highly accurate system operation with minimum speed fluctuation and position control via pulse train position command input by detecting the rotation speed of the motor with an Encoder and using the data for feedback. (for RX series)
Machine Control Network

EtherCAT is the fastest emerging network for machine automation. It is Omron’s de-facto machine network for our wide range of field and motion devices.

Open Network

You can select the most suitable network for your application by choosing from various open networks. We offer the reliability of a proven track record with the CS/CJ-series PLCs.

Modbus-RTU

Built-in RS-485 (Modbus-RTU) communications is a standard feature. Modbus-RTU Easy Master functionality of the CP-series micro PLC makes connection easy and enables the Inverter to start and stop operation and the frequency to be changed. Direct frequency setting and read/write of various parameters are also possible.
Related Catalogs

For details of the JX/MX2-V1/RX-V1 series Inverters, data sheets/catalogs of each product are available.

JX Series
Datasheet
Cat No. : I918

MX2 Series V1 type
Datasheet
Cat No. : I920

RX Series V1 type
Datasheet
Cat No. : I919
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14. Limitations. Buyer shall indemnify and hold harmless Omron Companies and their 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 Omron is a party) which arises or is alleged to arise until such Products are transferred to Buyer. Buyer shall not be liable for any unpaid accounts.

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