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Overview of Network-Compatible Products

Motor control via network communication can detect the status of the motor directly by data. This results in a shorter development period and increased reliability, maintainability of the equipment. By expanding the network supported product line, Oriental Motor meets diversifying network environments of factory automation (FA).

Features

Network-compatible products offer the following benefits:

- Simple wiring for smaller equipment size.
- Transmission distance can be extended up to several hundred meters. This makes wiring route design easier and enables products to be positioned in appropriate locations.
- Reduces the man-hours for the wiring process and the cost of wiring.
- Operating status is monitored by product I/O information, alarm, etc. This achieves improved maintainability of the system.
- Simple wiring makes wiring and checking process easier when replacing the product.

Network Configuration and Product Line

Oriental Motor offers "FA network direct connection" and "gateway connection" products compatible with FA networks.

Modbus (RTU) Can be Used to Provide Control from a Range of Host Devices
### Compatible Networks

**Modbus (RTU)**

Modbus is the open field network with Modbus Protocol installed. Modbus is used widely in the fields of factory and process automation because its protocol specification is open to the public and it is very simple.

*Modbus is a registered trademark of Schneider Automation Inc.*

**EtherCAT**

EtherCAT is an Ethernet (IEEE802.3)-compliant, open, high-speed, industrial network system.

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

**CC-Link**

CC-Link (Control & Communication Link) is the open field network promoted by CC-Link Partner Association.

*CC-Link is a registered trademark of CC-Link Partner Association.*

**MECHATROLINK**

MECHATROLINK-[] and MECHATROLINK-[] are motion networks promoted by MECHATROLINK Members Association.

*MECHATROLINK is a registered trademark of MECHATROLINK Members Association.*

**SSCNET III/H**

SSCNET III/H is an open field network promoted by Mitsubishi Electric Corporation.

*SSCNET III/H is a registered trademark of Mitsubishi Electric Corporation.*

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**Network Converters**

- Stepper Motors: RKII Series, AZ Series, AR Series
- Electric Linear Slides: EZ Series
- Electric Cylinders: EAC Series
- Compact Linear Actuators: DRS2 Series
- Hollow Rotary Actuators: DGI Series
- Brushless Motors: BLE Series

**Gateway Connection**

- Stepper Motors: RKII Series, AZ Series, AR Series
- Electric Linear Slides: EZ Series
- Electric Cylinders: EAC Series
- Compact Linear Actuators: DRS2 Series
- Hollow Rotary Actuators: DGI Series
- Brushless Motors: BLE Series

**Modbus (RTU) Connection**

- Stepper Motors: RKII Series, AZ Series, AR Series
- Electric Linear Slides: EZ Series
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Examples of Using FA Network-Compatible Products

This section introduces how to use products depending on whether a "FA network direct connection" or "gateway connection" is used.

<table>
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<th>Common Features</th>
<th>FA Network Direct Connection Features</th>
<th>Gateway Connection Features</th>
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| ● Set operating data from the network, and overwrite data when needed  
● Provides monitoring required for visualization  | Allows use of motion system network communication  
● High speed communication (conforms with network being used)  
● Synchronous operation  
● Linear and circular interpolation operation  | Drive FLEX-compatible products over a network converter  
● Operation is similar to I/O control as a slave of the FA network  
● Multiple axes at a reasonable cost without the need to add PLC units  |

[FA Network Direct Connection]  
Pick and Place X-Y-Z Axis

Choose a motion system network for applications requiring multi-axis synchronous operation, linear interpolation operation or high speed  
● System Configuration Example (X-Y-Z axis)  
  - AZ Series multi-axis driver EtherCAT drive profile-compatible × 1  
  - EZS Series electric linear slides (with AZ Series) × 2  
  - DRS2 Series compact linear actuator (with AZ Series) × 1

[Gateway Connection]  
Transportation Axis

Choose a field system network for FLEX-compatible product control (over a network converter) for synchronous operation applications or applications that do not require fast communication  
● System Configuration Example (Transportation axis)  
  - EtherCAT-compatible network converter × 1  
  - BLV Series brushless motors × 2  
  - RKII Series FLEX-compatible stepper motor × 1
What is FLEX?
FLEX is a collective name for control motor products that support I/O control, Modbus (RTU) control, and FA network control via network converters.

Advantages of FLEX-Compatible Products
1. These products enable simple connection and simple control, shortening the total lead time for system configuration.
2. Operating data is set and stored in the driver, so no PLC positioning module is required. This can reduce system configuration complexity for multi-axis control.

A Simple Tool for Setting and Changing All Data

- **MEXE02** Support Software (Distributed free of charge)
  Easily set data and confirm startup operation from a PC. You can even copy and backup sensor logic settings when copying the same settings to other equipment.

  ![MEXE02 Support Software](image)

  The Support Software can be downloaded from the Oriental Motor website.

- **OPX-2A** Control Module (Sold separately)
  Allows you to set data and confirm operation on startup, without using a PC. Perfect for checking I/O, monitoring operation or changing settings in the field.

  ![OPX-2A Control Module](image)

- **Touch Screen** (Commercially sold)
  This allows you to overwrite operating data straight from a touch screen normally used as a monitor. Convenient for situations where settings must be changed while monitoring the operation status or changing the setup.

  ![Touch Screen](image)
Network-Compatible Products Overview

I/O Control

Set operating data (traveling amount, speed, etc.) in the driver ahead of time. Operating data is run by connecting directly with the PLC and inputting signals. No positioning module or pulse generator is required, saving space and simplifying the system.

Another Possible Configuration

Use a switch instead of a PLC. Run operating data direct from I/O.

FA Network Control over Network Converter

This configuration uses a network converter to connect to an FA network. Operating data is set and operation commands are input from the network. A single converter can connect and control multiple motors, eliminating the need to add host masters and helping to reduce total costs.

Modbus (RTU) Control

RS-485 communication can be used to set operating data and parameters and input operation commands. This is compatible with the Modbus (RTU) protocol, allowing for easy control from PLCs and other devices.

Other Possible Configurations

Set and operate using an RS-485 communication board installed in a PC (instead of a PLC).

Connect directly with a touch screen (instead of a PLC). Set operating data and parameter settings, check alarm history, conduct test runs and more—no PLC required.