FA Network Compatible Products can Handle a Wide Variety of Equipment Design Requirements.

There are two main types of Oriental Motor FA Network-compatible products. “FA Network direct connection type” and “Gateway connection type”. Highly versatile Modbus (RTU) communication is also supported.

➜ P.6  Usage Examples for FA Network-Compatible Products

Product Line for FA Network-Compatible Products

Host Master Equipment
Various FA Network Communication Units

EtherCAT
SSCNETIII/H
MECHATROLINK

Multi-axis Driver (Maximum 4)

Actuator

AZ Series

Actuators Equipped with AZ Series

Single-axis Driver

EtherCAT

AZ Series

Actuators Equipped with AZ Series

EtherNet/IP

AZ Series

CC-Link
Brushless Motors

● BLE Series

Control from a variety of host devices is possible using Modbus (RTU)
Modbus (RTU) Communication Type

Gateway Connection Type

**Vertex Motors**

- Stepper Motors
  - AZ Series
  - AR Series
- Electric Linear Slides
  - EAS Series
  - EZS Series
- Electric Grippers
  - EH Series
- Compact Electric Cylinders
  - DR52 Series
  - DR Series
- Rack-and-Pinion System
  - L Series
- Hollow Rotary Actuators
  - DGII Series
- Brushless Motors
  - BLE Series
  - BLV Series
  (Maximum 12 axes)

**EtherCAT**

**CC-Link**

**FLEX**

Built-in Controller Driver (RS-485 Communication Compatible)
Pulse Input Driver with RS-485 Communication
Maximum Connection 16 Axes

**Network Converters (Gateway)**

- Built-in Controller Driver (RS-485 Communication Compatible)
- Pulse Input Driver with RS-485 Communication
- Maximum Connection 31 Axes
- Gateway Connection Type

**Modbus (RTU) Communication Type**

**Vertex Motors**

- Stepper Motors
  - AR Series
- Electric Linear Slides
- Electric Cylinders
- Compact Electric Cylinders
- Rack-and-Pinion System
- Hollow Rotary Actuators
- Brushless Motors
  - BLE Series
  - BLV Series
  (Maximum 12 axes)
Increased productivity is sought in manufacturing plants. At the same time, it is imperative to continue utilizing the knowledge of human experience through the use of Artificial Intelligence (AI). In order to use AI, it is important to collect, digitize and analyze the day to day “changes in conditions”. Oriental Motor has created a wide lineup of products capable of outputting the various changes in conditions of motors.

### System Overview

**Data Utilization**

- Data Accumulation
- Decision Based on Data (Predictive Maintenance, Preventative Maintenance)
- AI (Artificial Intelligence)

**Flowchart**

- **Improved Productivity**
- **Data Utilization**
  - Data Accumulation
  - Data Analysis (Visualization)
  - Decision Based on Data (Predictive Maintenance, Preventative Maintenance)
- **AI (Artificial Intelligence)**

**On-site Data Utilization**
- Collection of Real Data
- Feedback

**Control**
- PLC
- Motor
- Room Temperature Sensors
- Fan
- Indicator
- LED

**Production**
- Touch Screen
- Serial Communication

**Edge Computing**
- Cloud
- Office

**Factory**
- Supplier Chain
- Engineering Chain

**Demonstrations of Predictive Maintenance and IoT can be Viewed on Our Website.**

www.orientalmotor.com/videos/index.html
### List of Alarms, Warnings/General Information and Monitors for Each Series

The monitoring functions, which contribute to analysis, are introduced below. For details, check the operating manual for each product.

#### Stepper Motors

<table>
<thead>
<tr>
<th>Series Name</th>
<th>CVD Series</th>
<th>RKII Series</th>
<th>A*Step AR Series</th>
<th>A*Step AZ Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>RS-485 Communication</td>
<td>Built-in Positioning Function</td>
<td>Built-in Controller</td>
<td>Pulse Input with RS-485 Communication</td>
</tr>
<tr>
<td>Monitoring</td>
<td>Positioning</td>
<td>○ RS1</td>
<td>○ RS1</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>Speed</td>
<td>○ RS1</td>
<td>○ RS1</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td>Torque/Load</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Integrating Load</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Motor Temperature</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Driver Temperature</td>
<td>○</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Distance Traveled</td>
<td>Integrating Distance Traveled</td>
<td>○</td>
<td>-</td>
</tr>
</tbody>
</table>

| Warning/General Information | Overflow | ○ RS3 | ○ | ○ | ○ |
|                            | Overspeed | - | - | ○ | ○ |
|                            | Overload | - | - | - | - |
|                            | Motor Overheat | - | - | - | - |
|                            | Driver Overheat | ○ | ○ | ○ | ○ |

| Alarm | Overflow | ○ RS3 | ○ | ○ | ○ |
|       | Overspeed | - | - | ○ | ○ |
|       | Overload | - | - | - | - |
|       | Motor Overheat | - | - | - | - |
|       | Driver Overheat | ○ | ○ | ○ | ○ |

1. Only the command values can be monitored.
2. For products with an encoder, the command value and the encoder counter value can be monitored.
3. Only for products with an encoder

#### Brushless Motors

<table>
<thead>
<tr>
<th>Series Name</th>
<th>BLE Series</th>
<th>BLV Series</th>
<th>BLH Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>RS-485 Communication</td>
<td>Type</td>
<td>Digital Setting</td>
</tr>
<tr>
<td>Monitoring</td>
<td>Torque/Load</td>
<td>○ RS1</td>
<td>○ RS1</td>
</tr>
<tr>
<td></td>
<td>Speed</td>
<td>○ RS2</td>
<td>○ RS2</td>
</tr>
<tr>
<td></td>
<td>Position Regulation</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Driver Temperature</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

| Warning/General Information | Motor Lock/Overload | ○ | ○ | ○ |
|                            | Overspeed | ○ | ○ | ○ |
|                            | Overload | - | - | - |
|                            | Motor Overheat | - | - | - |
|                            | Driver Overheat | ○ | ○ | ○ |

1. Can be monitored using Support Software MEXE02 or RS-485 communication.
2. Can be monitored using SPEED OUT output or Support Software MEXE02.
3. Requires Support Software MEXE02.
Usage Examples for FA Network-Compatible Products

Application cases for the FA Network Direct Connection Type and the Gateway Connection Type will be introduced below.

Capabilities of Network Products

- Setting of operating data from the network and overwriting of data at any time
- Implementation of the monitoring necessary for analysis

Motion System

FA Network Direct Connection Type

Motion System network communication can be used
- High-speed communication (Based on network being used)
- Applications that require simultaneous operation, straight line/circular interpolation, kinematics calculation, etc.

Field System

Gateway Connection Type

Operate FLEX-compatible products through a network converter (gateway)
- Positioned as an FA Network I/O slave, controls motor with I/O sense
- Applications that do not require simultaneous operation or high-speed communication
- Inexpensive multi-axis configurations without the addition of PLC units

Index Table

Maximum connection of 16 axes

One driver can operate a maximum of 4 motor axes.
● **What is a Motion System?** Applications that require linear/circular interpolation, kinematics calculations or complicated calculation processing. High-speed communication is necessary for simultaneous/synchronized operation of multiple motors.

● **What is a Field System?** Applications that do not require simultaneous/synchronized operation and can be positioned as an I/O slave within an FA Network. High-speed communication is not necessary.

**Field System**

**FA Network Direct Connection Type**
Can use Motion System network communication and it can be controlled from PC.
- Positioned as an FA Network I/O slave, controls motor with I/O sense
- Applications that do not require simultaneous operation and high-speed communication
- Inexpensive multi-axis configurations without the addition of PLC units

**Field System**

**Gateway Connection Type**
Operate FLEX-compatible products through a network converter (gateway).
- Positioned as an FA Network I/O slave, controls motor with I/O sense
- Applications that do not require simultaneous operation and high-speed communication
- Inexpensive multi-axis configurations without the addition of PLC units

**Factory Management**

- Ethernet
- EtherCAT
- CC-Link
- EtherNet/IP

- PLC/IPC
- X-Y Single-axis Driver
- Single-axis Driver
- Single-axis Driver
- Single-axis Driver
- Network Converter
  - Maximum connection of 16 axes
  - RS-485 Communication
  - Single-axis Driver
  - Single-axis Driver
What is FLEX?

FLEX is the collective name for products that support I/O control, Modbus (RTU) control, and FA network control via network converters. These products enable simple connection and simple control, and shorten the total lead time for system construction. The FLEX logo in the series name indicates the applicable products.

Advantages

Because operation data is set and stored in the driver (positioning function is built-in), a PLC positioning module is not required, and system configuration is simple for multi-axis control.

A Tool to Make All Data Setting Easy

- **Support Software MEXE02 (Free Download)**
  Fundamental settings, such as editing operation data and parameter settings, can be performed easily from a computer. Sequence control is possible, which allows for easy system configuration without a host sequence.

- **Control Module OPX-2A (Sold Separately)**
  Startup data setting and operation checks can be performed, even without a computer. Suitable for on-site I/O check operation monitoring and setting changes.

- **Touch Screen (Commercially Available)**
  Operating data can be directly overwritten from the touch screen normally used for monitoring. This is useful for monitoring operation status and when settings must be changed due to set-up changes.

FLEX-Compatible Products

A driver capable of setting the travel amount and speed (Same function as PLC positioning unit)

[Data Setting Method]
- Set from FA networks through a network converter
- Setting can be done by data setting software or RS-485 communication.
I/O Control

Operation data (travel amount, speed, etc.) is set in the driver in advance. When a signal is input from the directly connected PLC, operation is performed using the setting data. A positioning module and pulse generator are not necessary, thus saving space and simplifying the system.

This kind of configuration is possible. Use of switches instead of PLC. Execute operation data directly from I/O.

FA Network Control Via Network Converter

All FA network types are supported when a network converter is used. The setting of operating data and operation commands input is performed from the network. Multiple motors can be connected to and controlled by a single converter without the need to increase the number of host masters, contributing to a reduction in total costs.

Modbus (RTU) Control

RS-485 communication can be used to set operating data and parameters, as well as input operation commands. The protocol is Modbus (RTU) compatible, and can be easily controlled from a PLC or other device.

Connection guides have been prepared when communicating using the PLCs and FA network from the following manufacturers. (Download)

- OMRON Corporation
- Yaskawa Electric Corporation
- Mitsubishi Electric Corporation
- Keyence Corporation
- Hitachi Industrial Equipment Systems Co., Ltd.
- Fuji Electric Co., Ltd.

Usable screen samples and operating manuals have been prepared when the touch screens from the following manufacturers are connected. (Download)

- Schneider Electric Co., Ltd.
- Mitsubishi Electric Corporation
- Keyence Corporation
- Hakko Electronics Co., Ltd.
### FA Network Direct Connection-Compatible Products

#### Series Name

| AZ Series • Actuators Equipped with AZ Series
| EtherNet/IP-compatible EtherCAT drive profile-compatible

#### Features

- Automatic control that combines the tuning-free, high responsiveness of open loop control with the position correction and constant status monitoring function of closed loop control
- High performance
- Reduces return-to-home time and allows for motion control without the use of external sensors (Built-in battery-free absolute sensor)

#### Motor Types

- **Motor Size**
  - □20 (0.79)/□28 (1.10)/□30 (1.18)/□40 (1.57)/□42 (1.65)/□60 (2.36)/□85 (3.35)/□90 (3.54)

- **Geared Motor Types**
  - TS/PS/HPG/Harmonic Geared Right-Angle FC Geared

- **Actuator Types**
  - Electric Linear Slides EAS Series
  - Electric Linear Slides EZS Series
  - Electric Cylinders EAC Series
  - Compact Electric Cylinders DRS2 Series
  - Compact Electric Cylinders DR Series
  - Hollow Rotary Actuators DGS Series
  - Rack-and-Pinion System L Series
  - Electric Gripper EH Series

---

#### Brushless Motors

**BLE Series** CC-Link-Compatible

- AC Input

- **Motor Output Power**
  - 30 W (1/25 HP)/60 W (1/12 HP)/120 W (1/6 HP)

- **Combination Type**
  - Parallel Shaft Gearhead
  - Hollow Shaft Flat Gearhead

#### Stepper Motors

**PKP Series / CVD Series**

- Driver for stepper motors
- RS-485 Communication Type

- DC Input

- **Motor Size**
  - 2-Phase: □20 (0.79)/□28 (0.79)/□35 (0.97)/□42 (1.65)/□50 (1.97)/□51 (2.00)/□56.4 (2.22)/□60 (2.36)/□61 (2.40)

- **Geared Motor Types**
  - 2-Phase: SH/CS Geared, With Harmonic Gear
  - 5-Phase: TS Geared Type

---

#### Brushless Motors

**BLH Series** RS-485 Communication Type

- DC Input

- **Motor Output Power**
  - 15 W (1/50 HP)/30 W (1/25 HP)/50 W (1/15 HP)

- **Combination Type**
  - Parallel Shaft Gearhead
  - Hollow Shaft Flat Gearhead

---

### Notes

- **Products that can be connected directly to an FA Network master device**

- **EtherCAT**
  - EtherCAT-powered products

- **MECHATROLINK-II**
  - MECHATROLINK-II compatible

- **CC-Link**
  - CC-Link-equipped products

- **Modbus (RTU)**
  - Modbus RTU compatible
Network Converter

Connects FLEX-Compatible Products to FA Networks

Network converters convert the various FA Network communication protocols to Oriental Motor's original RS-485 communication protocol. Using a network converter makes it possible to control Oriental Motor FLEX-compatible products (RS-485 communication-compatible) using all types of FA Network communication.

- Multi-Axis Connection is Possible

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Communication Protocol</th>
<th>Maximum Number of Connectable Units</th>
<th>Setting Method for Converter</th>
</tr>
</thead>
<tbody>
<tr>
<td>NETC02-CC</td>
<td>CC-Link Ver. 2 Compatible</td>
<td>16</td>
<td>Body Control Panel</td>
</tr>
<tr>
<td>NETC01-CC</td>
<td>CC-Link Ver. 1.1 Compatible</td>
<td>12</td>
<td>CC-Link Communication</td>
</tr>
<tr>
<td>NETC01-M2</td>
<td>MECHATROLINK (MECHATROLINK-Ⅱ)</td>
<td>16</td>
<td>Support Software MEXE02 (Free download)</td>
</tr>
<tr>
<td>NETC01-M3</td>
<td>MECHATROLINK (MECHATROLINK-Ⅲ)</td>
<td>16</td>
<td>Control Module® OPX-2A (Sold separately)</td>
</tr>
<tr>
<td>NETC01-ECT</td>
<td>EtherCAT</td>
<td>16</td>
<td>EtherCAT Communication</td>
</tr>
</tbody>
</table>

USB Cable
- Standard: USB2.0 (Full Speed)
- Type: A to mini B

Support Software Communication Cable CC05IF-USB (Sold separately)

*The control module can also be used as a scan-time monitor during communication.
### Gateway Connection Type FLEX-Compatible Products

#### AZ Series with Built-In Battery-Free Absolute-Sensor

<table>
<thead>
<tr>
<th><strong>Series Name</strong></th>
<th><strong>Features</strong></th>
<th><strong>Motor Types</strong></th>
<th><strong>FA Network</strong></th>
</tr>
</thead>
</table>
| **AZ Series**   | - Automatic control that combines the tuning-free, high responsiveness of open loop control with the position correction and constant status monitoring function of closed loop control  
- Reduces return-to-home time and allows for motion control without the use of external sensors  
- Number of positioning points: 256 points  | - AC Input  
| **Motor Types** | [Motor Size]  
| | □30 (1.57)/□42 (1.65)/□60 (2.36)/□85 (3.35)/□90 (3.54)  
| | [Geared Motor Type]  
| | TS/P5/HPG/Harmonic Geared Type  
| | Right-Angled FC Geared  | - Straight Type  
| | □20 (0.79)/□28 (1.10)/□30 (1.18)/ □40 (1.57)/□42 (1.65)/□60 (2.36)  
| | [Geared Motor Type]  
| | TS/P5/HPG/Harmonic Geared Type  
| | Right-Angle FC Geared  | - Straight Type  
| | □EAC2, EAC4, EAC6  
| | EAC2 is DC input only  | - Reversed Type  
| | □EAC4, EAC6  | - Reversed Type  
| | □EAC4, EAC6  | - Connection to FA Network via Network Converter  
| | or  | - Modbus (RTU)  |

#### Electric Linear Slides

<table>
<thead>
<tr>
<th><strong>Series</strong></th>
<th><strong>Features</strong></th>
<th><strong>Motor Types</strong></th>
<th><strong>FA Network</strong></th>
</tr>
</thead>
</table>
| **EZS Series** | - Linear slide that combines the **AZ** Series with a ball screw and guide from THK.  
- Simple dust proofing function, clean room compatible  
- Slim dimensions  
- Stroke: 50 to 850 mm  
- Max. Speed: 800 mm/s  
- Maximum Transportable Mass - Horizontal: 60 kg (132.3 lb)  
- Maximum Transportable Mass - Vertical: 30 kg (66.1 lb)  
- Thrust: 400 N  | - □28 mm  
| | | □20/□28 mm  
| | | □Type with a Guide  
| | | □28 mm  
| | | □Rod Type  
| | | □20/□28 mm  |  |

#### Electric Cylinders

<table>
<thead>
<tr>
<th><strong>Series</strong></th>
<th><strong>Features</strong></th>
<th><strong>Motor Types</strong></th>
<th><strong>FA Network</strong></th>
</tr>
</thead>
</table>
| **EAC Series** | - Electric cylinder that combines the **AZ** Series with a ball screw and guide from THK.  
- Stroke: 50 to 300 mm  
- Max. speed: 600 mm/s  
- Maximum Transportable Mass - Horizontal: 60 kg (132.3 lb)  
- Maximum Transportable Mass - Vertical: 30 kg (66.1 lb)  
- Thrust: 400 N  | - □28 mm  
| | | □20/□28 mm  
| | | □Type with a Guide  
| | | □28 mm  
| | | □Type without a Guide  
| | | □42/□60 mm |  |

#### Compact Electric Cylinders

<table>
<thead>
<tr>
<th><strong>Series</strong></th>
<th><strong>Features</strong></th>
<th><strong>Motor Types</strong></th>
<th><strong>FA Network</strong></th>
</tr>
</thead>
</table>
| **DRS2 Series** | - Integration of an **AZ** Series motor with a ball screw saves space and reduces wiring. Optimized for providing linear motion micro-movements and high positioning accuracy applications. Push-motion operation is also possible.  
- Minimum Traveling Amount: 0.001 mm  
- Repetitive Positioning Accuracy: ±0.003 mm  
- Maximum Transportable Mass - Horizontal: 4 kg (8.8 lb)  
- Maximum Transportable Mass - Vertical: 4 kg (8.8 lb)  
- Max. Speed: 100 mm/s  
| | | □28 mm lead 2.5 mm only  |
| | | □Type with a Guide  
| | | □42 mm  
| | | □Type without a Guide  
<p>| | | □42/□60 mm  |  |</p>
<table>
<thead>
<tr>
<th>Series Name</th>
<th>Features</th>
<th>Motor Types</th>
<th>FA Network</th>
</tr>
</thead>
</table>
| Electric Gripper                | This is an electric gripper that combines the AZ Series with a rack-and-pinion mechanism. A delicate “grasp” is possible at low-speed operation by adjusting the running current.  
  ● Max. Holding Force: 25 N  
  ● Repetitive Positioning Accuracy (One side): ±0.02 mm  
  ● Backlash (one side): 0.1 mm  
  ● Stroke: 25 mm  
  ● Minimum Traveling Amount: 0.02 mm  
  ● Max. Speed: 156 mm/s                                                                 | EH4         | Connection to FA Network via Network Converter or Modbus (RTU) |
| Rack-and-Pinion System L Series | These are linear & rotary actuators that combine a rack-and-pinion mechanism with a linear motor.  
  ● High Transportable Mass/Long Stroke  
  ● Stroke: 100 to 1000 mm  
  ● Max. Speed: 500 mm/s  
  ● Maximum Transportable Mass: 100 kg (220.5 lb)                                                                                       | Horizontal (B Type)  
  Vertical (F Type)                                                               |             |                                |
| Hollow Rotary Actuators DGII Series | The AZ Series has been integrated with a large aperture hollow rotary table.  
  ● Useful for Index Operations  
  ● Attach Work Piece Directly to Table, Use Hollow Area for Piping  
  ● Reduced Return-to-Home Time                                                                                                             | Cross-Roller Bearing  
  □85/□130/□200 mm  
  □200 mm is AC input only  
  ● Deep-Groove Ball Bearing  
  □60 mm  
  □DC power supply input only                                                        |             |                                |
### Gateway Connection Type FLEX-Compatible Products

#### AR Series

**Series Name:** AR Series

**Features:**
- Automatic control that combines the tuning-free, high responsiveness of open loop control with the position correction and constant status monitoring function of closed loop control
- High Efficiency Motor
- IP65-rated Motor
- SEMI47-Compatible
- Number of Positioning points: 64 points

**Motor Types:**
- AC Input
  - (Motor Size)
  - □ 42 (1.65)/□ 60 (2.36)/□ 85 (3.35)/□ 90 (3.54)
- (Geared Motor Type)
  - TH/PS/PN/Harmonic Geared Type
  - Right-Angle Shaft FC Geared
- DC Input
  - (Motor Size)
  - □ 20 (0.79)/□ 28 (1.10)/□ 30 (1.18)/□ 42 (1.65)/□ 60 (2.36)/□ 85 (3.35)/□ 90 (3.54)
  - (Geared Motor Type)
  - TH/PS/PN/Harmonic Geared

**FA Network:完毕**

#### Electric Linear Slides

**EAS Series**

**Features:**
- This is a standard type linear slide that combines the AR Series with a ball-screw and guide from THK.
- Stroke: 50 to 850 mm
- Max. Speed: 800 mm/s
- Maximum Transportable Mass - Horizontal: 60 kg (132.3 lb)
- Maximum Transportable Mass - Vertical: 30 kg (66.1 lb)
- Thrust: 400 N

**Motor Types:**
- Straight Type
  - EAS2, EAS4, EAS6
- Reversed Type
  - EAS4, EAS6

**Connection to FA Network via Network Converter or Modbus (RTU)**

#### Electric Cylinders

**EAC Series**

**Features:**
- This is an electric cylinder that combines the AR Series with a ball-screw and guide from THK.
- Stroke: 50 to 300 mm
- Max. Speed: 600 mm/s
- Maximum Transportable Mass - Horizontal: 60 kg (132.3 lb)
- Maximum Transportable Mass - Vertical: 30 kg (66.1 lb)
- Thrust: 400 N

**Motor Types:**
- Straight Type
  - EAC2, EAC4, EAC6
- Reversed Type
  - EAC4, EAC6

#### Hollow Rotary Actuators

**DGII Series**

**Features:**
- The AR Series has been integrated with a large aperture hollow rotary table.
- Useful for Index Operations
- Attach Work Piece Directly to Table, Use Hollow Area for Piping

**Motor Types:**
- Cross-Roller Bearing
  - □ 85/□ 130/□ 200 mm
- AC Input only
- Deep-Groove Ball Bearing
  - □ 60 mm
- DC input only
### Stepper Motor Open Loop Control

<table>
<thead>
<tr>
<th>Series Name</th>
<th>Features</th>
<th>Motor Types</th>
<th>FA Network</th>
</tr>
</thead>
</table>
| **Stepper Motors**       | This is a newly-designed 5-phase motor that utilizes a full-time microstepping driver with full digital control.  
  **RK Series**            | High Efficiency Motor  
  Low Vibration and Reduced Noise  
  Compact AC Input Driver  
  Misstep Detection via Encoder  
  Number of Positioning Points: 64 points                                                                                                                                                                                                                                   | [Motor Size]  
  □ 42 (1.65)/□ 60 (2.36)/□ 85 (3.35)/□ 90 (3.54)  
  [Geared Motor Type]  
  TS/PS/Harmonic Geared  
  Right-Angle Shaft FC Geared | Connection to FA Network via Network Converter  
  _or_  
  Modbus (RTU) |
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.

EtherNet/IP is the open field network promoted by ODVA (Open DeviceNet Vendor Association, Inc.)
●EtherNet/IP is a trademark of ODVA.

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-II and MECHATROLINK-III are motion networks promoted by MECHATROLINK Members Association.
●MECHATROLINK is a registered trademark of MECHATROLINK Members Association.

SSCNET/H is the motion network promoted by Mitsubishi Electric Corporation.
●SSCNET/H is a registered trademark of Mitsubishi Electric Corporation.

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 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.

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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.
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