The αSTEP AZ Series now includes a mini driver option. Compatible with battery power operations for use in a wider range of applications.

- AZD-KR2D: RS-485 Communication Type
- AZD-KREP: EtherNet/IP™-Compatible
- AZD-KRPN: PROFINET-Compatible
- AZD-KRED: EtherCAT Drive Profile-Compatible
- AZD-KRX: Pulse Input Type with RS-485 Communication

Modular Automation Products
The mini Driver Allows for Smaller and More Compact Design to Fit in Small Spaces

Light Weight Design Reduces Load on Equipment

Installation Space is Minimized
No DIN rail required. Can be installed directly to equipment with 2 screws.

Compatibility with Battery Power
Accepts a wide power supply voltage range for battery power operation. Supports 24 VDC and 48 VDC.

Energy Savings through Optimized Current Control
The servo emulation mode optimizes the current provided to the motor to match the load conditions.

Compact Design to Fit in Small Spaces

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Example: When mounted inside AMR/AGV.

Reduce overall equipment mass
Reduce Power Consumption for Drive Wheels

→ See use examples (Page 4)

AZD-KR2D
AZD-KREP
AZD-KRPN
AZD-KRX
AZD-KRED
AZD-KR2D

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→ See use examples (Page 4)

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Example: When mounted inside AMR/AGV.

→ See use examples (Page 4)
Examples of mini drivers in use are shown on the next page.

**What Are Modular Automation Products?**
Modular Automation Products are a group of products that share the common features of being battery-powered, compact and lightweight. Optimized for use with self-propelled devices and mobile equipment, they contribute to the flexibility of automation lines and mobile automation.

---

**Visualization of Power Supply Voltage**
It is possible to monitor the driver power supply voltage from the host controller.

- **Power Supply Voltage:** 24.5 VDC
- **Power Supply Voltage Monitor**

If the driver power supply voltage drops below a pre-set threshold a signal is output.

- **Insufficient Voltage Information**

Avoid Stoppages due to Insufficient Battery

→ See use examples (Page 4)

---

**No External Sensors Required**
With the **AZ** Series, no external sensors and its related wiring are required.

**Example of Wiring when Using External Sensors.**
The **AZ** Series eliminates the need for these external sensors and wires shown in green and red.

Avoid Stoppages due to Insufficient Battery

---

**Compatible with Various Interfaces**
These are compatible with the major industrial networks used around the globe. Pulse control is also possible.

<table>
<thead>
<tr>
<th>Interface</th>
<th>Driver Type (Driver type name)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EtherCAT</td>
<td>EtherCAT Drive Profile-Compatible</td>
</tr>
<tr>
<td>EtherNet/IP</td>
<td>EtherNet/IP-Compatible</td>
</tr>
<tr>
<td>PROFINET</td>
<td>PROFINET-Compatible</td>
</tr>
<tr>
<td>Modbus (RTU)</td>
<td>RS-485 Communication Type</td>
</tr>
<tr>
<td>Pulse</td>
<td>Pulse Input Type with RS-485 Communication</td>
</tr>
</tbody>
</table>

*The **AZD-KRED** passes the official EtherCAT conformance test.
*The **AZD-KRED** is also compatible with CC-Link and MECHATROLINK control when used with a network converter (gateway).

---

**Up to 10 m (32.8 ft) Connection Cable Extension**
Connection cables can be selected to suit the installation environment, with lengths of 0.5 m (1.6 ft), 1 m (3.3 ft), 3 m (9.8 ft), 5 m (16.4 ft), 10 m (32.8 ft) available.

- **When the motor and driver are far apart,** 3 m (9.8 ft), 5 m (16.4 ft) and 10 m (32.8 ft) cables are recommended.
- **When the motor and driver are close,** 0.5 m (1.6 ft) and 1 m (3.3 ft) cables are recommended.

*Flexible connection cables in the same lengths are also available.
Example A: Incorporation into Self-propelled Devices

Equipment Problem | Battery operation time must be maximized.
--- | ---
The equipment’s overall power consumption can be reduced by lowering the equipment’s overall mass, and by reducing the motor’s running current when large amounts of torque aren’t required.

With the **αSTEP-AZ** Series mini Driver...

Light Design Reduces Load on Equipment
By reducing the overall equipment mass, the power consumption for the drive wheels can be reduced.

- **AZD-KR2D**
- The mass of all models except the **AZD-KR2D** [84–110 g (2.82–3.88 oz)]
- Approx. 60 g (2.11 oz)
- 56 g (1.98 oz)

Energy Savings through Optimized Current Control
The current supplied to the motor is optimized to suit the load (also called servo emulation mode), thus reducing power consumption. This allows for a reduction in the number of times the battery must be charged.

Visualization of Power Supply Voltage
The power supply voltage can be monitored using the monitoring function, and the battery is recharged at the appropriate time.

When the load is light, the current supplied to the motor is automatically reduced.
Example B: Incorporation into Stationary Equipment

Equipment Problem
Install the diver and control systems in separate locations to reduce overall equipment size.

Install the mini drivers in the empty enclosure space or next to the work, allowing for a smaller control cabinet design.

The αSTEPAZ Series mini Driver Provides

- Compact Design to Fit in Small Spaces
  Volume is greatly reduced in comparison to a box-type DC driver.

- No External Sensors Required
  No external sensor or related wiring is necessary. Because there are no external sensors and wiring, the size and weight of the equipment can be reduced. In addition, the work time for wiring can be reduced.

- FA Network Compatible
  Common Network Protocols are available to support the upper controller, reduce the burden of programming and support quicker installation time.

- Up to 10 m (32.8 ft) Connection Cable Extension
  The length of the cable between the motor and driver can be selected to suit the installation environment. Extension of up to 10 m (32.8 ft) are available.
**Applicable Series**

The **AZ** Series mini Driver DC Power Input can be used in combination with the following motors and linear & rotary actuators.

- **Motors**
  - **AZ** Series DC Power Input

- **Electric Linear & Rotary Actuators**
  - Electric Linear Slides **EZS** Series DC Power Input **AZ** Series Equipped
  - Electric Cylinders **EAC** Series DC Power Input **AZ** Series Equipped
  - Compact Electric Cylinders **DR** Series / **DRS2** Series **AZ** Series Equipped
  - Electric Grippers **EH** Series **AZ** Series Equipped
  - Hollow Rotary Actuators **DG** Series DC Power Input **AZ** Series Equipped
  - Rack and Pinion System **L** Series DC Power Input **AZ** Series Equipped

For applicable motor and electric linear & rotary actuator combinations, please see the Oriental Motor website or refer to each brochure of product series.

**System Configuration**

- When the Standard Type Electromagnetic Brake Motor is Combined with an EtherCAT Drive Profile-Compatible mini Driver

  - Motors, drivers, and connection cables / flexible connection cables must be ordered separately.
  - **Motor**
  - **Driver**
    - The driver does not come with connectors for motors, power supplies, or for RS-485 communication.
    - Motor: Purchasing an optional cable is necessary.
    - Power supply: Please either request a separately sold cable or arrange a connector.
    - For the connector part number, refer to the dimensions of each cable or the operating manual.

- **DC Power Supply**
  - (For control)
  - (Main power supply)

- **Support Software** **MEXE02**
  - Must be supplied by customer.

- **USB Cable**

- **Host Controller**

- **EtherCAT Communication Cable**

- **Input Signals**

- **Connection Cable**
  - Page 15

- **Power Supply Cable**
  - Page 18

- **Must be purchased**
- **Purchase as necessary**

Support Software **MEXE02** can be downloaded from the Oriental Motor website.

The support software **MEXE02** can be downloaded from the Oriental Motor website.
Combination of AZ Series Standard Type Electromagnetic Brake Motor and mini Driver RS-485 Communication Type

- Motors, drivers, and connection cables / flexible connection cables must be ordered separately.

- Support Software MEXE02 can be downloaded from the Oriental Motor website.

- DC Power Supply (For control)

- DC Power Supply (Main power supply)

- Motor: Purchasing an optional cable is necessary.

- Power supply: Please either request a separately sold cable or arrange a connector.

- RS-485 Communication: Preparing a connector separately is necessary. When connecting to a network converter, we provide an optional cable. For the connector part number, refer to the dimensions of each cable or the operating manual.

- Motor

- Driver

- RS-485 Communication Cable

- Network Converter

- RS-485 Communication Cable

- USB Cable

- Support Software MEXE02

- Connection Cable
Standard Type Electromagnetic-Brake Motor Combined with Pulse Input Type with RS-485 Communication Type mini Driver
Motors, drivers, and connection cables / flexible connection cables must be ordered separately.

- **Required for operation**
- **Optional accessory**

**Driver**
- **Support Software MEXE02**
- Not supplied.
- USB Cable

**Motor**
- **DC Power Supply**
  - (Main power supply)
  - (For control)

**Connection Cables**
- **Page 15**

**Connection Cables**
- **Page 15**

**Cables for I/O Signals**
- **Page 17**

**Heat Control Device**
- **Page 18**

**Support Software MEXE02**
- MEXE02 can be downloaded from the website.
- Not supplied.

**RS-485 Communication Cable**
- Not supplied.
- Check either page 14 or the operating manual for connector part numbers.
### Product Number

**AZD - K R 2 D**

| 1 | Driver Type | AZD: AZ Series Driver |
| 2 | Power Supply Input | K: 24 VDC, 48 VDC |
| 3 | Driver Figure | R: Compact |
| 4 | Reference Number | Type |

**Type**
- **ED**: EtherCAT Drive Profile-Compatible
- **EP**: EtherNet/IP-Compatible
- **PN**: PROFINET-Compatible
- **D**: RS-485 Communication Type
- **X**: Pulse Input Type with RS-485 Communication

### Product Line

#### EtherCAT Drive Profile-Compatible

<table>
<thead>
<tr>
<th>Product Name</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AZD-KRED</td>
<td>$557.00</td>
</tr>
</tbody>
</table>

#### PROFINET-Compatible

<table>
<thead>
<tr>
<th>Product Name</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AZD-KRPN</td>
<td>$557.00</td>
</tr>
</tbody>
</table>

#### Pulse Input Type with RS-485 Communication

<table>
<thead>
<tr>
<th>Product Name</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AZD-KRX</td>
<td>$493.00</td>
</tr>
</tbody>
</table>

### List of Combinations

<table>
<thead>
<tr>
<th>Product</th>
<th>Type</th>
<th>Product Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Type</td>
<td></td>
<td>AZM14AK, AZM15AK, AZM24AK, AZM26AK, AZM46K, AZM48AK, AZM66K, AZM69K</td>
</tr>
<tr>
<td>TS Geared Type</td>
<td></td>
<td>AZM46K-TS, AZM66K-TS</td>
</tr>
<tr>
<td>FC Geared Type</td>
<td></td>
<td>AZM46K-FC, AZM66K-FC</td>
</tr>
<tr>
<td>PS Geared Type</td>
<td></td>
<td>AZM24AK-PS, AZM46K-PS, AZM66K-PS</td>
</tr>
<tr>
<td>HPG Geared Type</td>
<td></td>
<td>AZM46K-HP, AZM66K-HP</td>
</tr>
<tr>
<td>Harmonic Geared Type</td>
<td></td>
<td>AZM24AK-HS, AZM46K-HS, AZM66K-HS</td>
</tr>
</tbody>
</table>

### Connection Cable / Flexible Connection Cable

- **For AZM14, AZM15, AZM24, AZM26**
  - **Connection Cable**
    - **CCM**: CCM-22AF
  - **Flexible Connection Cable**
    - **CCM**: CCM-22AR

- **For AZM46, AZM48, AZM66, AZM69**
  - **Connection Cable**
    - For Motor / Encoder: CCM-22BF
    - For Motor / Encoder / Electromagnetic Brake: CCM-22ACF
  - **Flexible Connection Cable**
    - For Motor / Encoder: CCM-22BR
    - For Motor / Encoder / Electromagnetic Brake: CCM-22ACR

* A code or a number indicating either one of the followings is entered where the box is located within the product name.
  - Output Shaft Shape
  - Additional Function
  - Motor Cable Type
  - Gear Ratio
  - Cable Outlet Direction
  - Output Shaft Type
  - Cable Length
## Driver Specifications

### Main Power Supply

<table>
<thead>
<tr>
<th>Driver Product Name</th>
<th>AZD-KRED</th>
<th>AZD-KREP</th>
<th>AZD-KRPN</th>
<th>AZD-KR2D</th>
<th>AZD-KRX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Voltage</td>
<td>24 VDC±5%</td>
<td>24 VDC±5%</td>
<td>24 VDC±5%</td>
<td>24 VDC±5%</td>
<td>24 VDC±5%</td>
</tr>
</tbody>
</table>

### Allowable Operating Voltage

- 24 VDC Input: 20 VDC to 32 VDC (22.8 VDC to 32 VDC)
- 48 VDC Input: 40 VDC to 55 VDC

### Control Power Supply

<table>
<thead>
<tr>
<th>Driver Product Name</th>
<th>AZD-KRED</th>
<th>AZD-KREP</th>
<th>AZD-KRPN</th>
<th>AZD-KR2D</th>
<th>AZD-KRX</th>
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</thead>
<tbody>
<tr>
<td>Rated Voltage</td>
<td>24 VDC±5%</td>
<td>24 VDC±5%</td>
<td>24 VDC±5%</td>
<td>24 VDC±5%</td>
<td>24 VDC±5%</td>
</tr>
<tr>
<td>Input Current</td>
<td>0.15 A (0.4 A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Allowable Operating Voltage

- 24 VDC Input: 20 VDC to 32 VDC (22.8 VDC to 32 VDC)
- 48 VDC Input: 40 VDC to 55 VDC

### Pulse Input

- 2 Points, Photocoupler
- Maximum Input Pulse Frequency
  - Line Driver: 1 MHz (50% duty)
  - Open Collector: 250 kHz (50% duty)

### Interface

<table>
<thead>
<tr>
<th>Field Network</th>
<th>EtherCAT</th>
<th>EtherNet/IP</th>
<th>PROFINET</th>
<th>RS-485 Communication</th>
<th>RS-485 Communication</th>
</tr>
</thead>
</table>

1. The value of the input current depends on the motor used in combination.
2. The values in parentheses () indicate the specifications when connected to the electromagnetic brake motor.
3. The value in parentheses () indicates the specification when connected to the electromagnetic brake motor. AZM46 is 0.23 A.

## EtherCAT Drive Profile-Compatible

### Driver Functions

<table>
<thead>
<tr>
<th>Driver Product Name</th>
<th>AZD-KRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote I/O</td>
<td>Input: 16 Points, Output: 16 Points</td>
</tr>
</tbody>
</table>

### Operation Mode

| Function               | Remote I/O Position Mode (PP) |
|                       | Remote I/O Velocity Mode (PV) |
|                       | Return-to-Home Mode (RM) |
|                       | Cyclic Synchronous Position Mode (CSP) |
|                       | Cyclic Synchronous Velocity Mode (CSV) |

### Settings Tool

Support Software: MEXE02

### Coordinates Management Method

Battery-free Absolute System

### Monitor/Information

As shown in the table below.
### EtherNet/IP-Compatible, PROFINET-Compatible, RS-485 Communication Type

<table>
<thead>
<tr>
<th>Driver Product Name</th>
<th>AZD-KREP</th>
<th>AZD-KRPDN</th>
<th>AZD-KRX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Positioning Data Sets</td>
<td>256 Points</td>
<td>256 Points</td>
<td>256 Points</td>
</tr>
<tr>
<td>Remote I/O</td>
<td>Input</td>
<td>16 Points</td>
<td>Output</td>
</tr>
<tr>
<td>Setting Tool</td>
<td>Support Software MEXE02</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Operation

<table>
<thead>
<tr>
<th>Operation</th>
<th>Positioning Operation</th>
<th>Linked Operation</th>
<th>Sequence Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation Method</td>
<td>Positioning Push-Motion Operation<strong>1</strong></td>
<td>Independent Operation</td>
<td>Loop Operation (Repeating)</td>
</tr>
<tr>
<td>Linked Operation</td>
<td>Multi-Speed Operation (Continuous Sequential Operation)</td>
<td>Event Jump Operation</td>
<td></td>
</tr>
</tbody>
</table>

#### Speed Control Operation (Continuous Operation)

<table>
<thead>
<tr>
<th>Return-To-Home Operation</th>
<th>Return-To-Home Operation<strong>3</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>JOG Operation</td>
<td>High-Speed Return-To-Home Operation</td>
</tr>
</tbody>
</table>

#### Monitor and Information

- Waveform Monitoring
- Overload Detection
- Overheat Detection (Motor and driver)
- Motor Load Factor
- Distance Traveled/Integrating Distance Traveled

#### Alarm

- This can be used via the support software MEXE02.

**1** The push-motion operation cannot be operated with the geared motors and the Rotary Actuators DG Series.

**2** The return-to-home operation using direct I/O is not available.

### Communication Specifications

#### EtherCAT

<table>
<thead>
<tr>
<th>Communication Protocol</th>
<th>IEC 61158-Type12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Layer/Protocol</td>
<td>100 BASE-TX (IEEE 802.3)</td>
</tr>
<tr>
<td>Baud Rate</td>
<td>100 Mbps</td>
</tr>
</tbody>
</table>

#### Communication Cycle

Free Run Mode: 1 ms min.
SM2 Event Synchronous Mode: 1 ms min.
DC Mode: 0.25 ms, 0.5 ms, 1 ms, 2 ms, 3 ms, 4 ms, 5 ms, 6 ms, 7 ms, 8 ms

#### Communication Port/Connector

<table>
<thead>
<tr>
<th>Connector</th>
<th>RJ45 × 2 (Shield-compatible) ECAT IN: EtherCAT Input ECAT OUT: EtherCAT Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topology</td>
<td>Daisy Chain (Max. 65,535 nodes)</td>
</tr>
</tbody>
</table>

#### Process Data

<table>
<thead>
<tr>
<th>Data</th>
<th>Variable PDO Mapping</th>
</tr>
</thead>
</table>

#### Sync Manager

<table>
<thead>
<tr>
<th>Manager</th>
<th>SM0: Mailbox Output SM1: Mailbox Input SM2: Process Data Output SM3: Process Data Input</th>
</tr>
</thead>
</table>

#### Mailbox (CoE)

<table>
<thead>
<tr>
<th>Message</th>
<th>Emergency Message SDO Request SDO Response SDO Information</th>
</tr>
</thead>
</table>

#### Synchronous Modes

<table>
<thead>
<tr>
<th>Mode</th>
<th>Free Run Mode (Asynchronous) SM2 Event Synchronous Mode DC Mode (SYNC0 Event Synchronous)</th>
</tr>
</thead>
</table>

#### Device Profile

<table>
<thead>
<tr>
<th>Profile</th>
<th>IEC 61800-7-4A02 Drive Profile</th>
</tr>
</thead>
</table>

---

---

---
EtherNet/IP

<table>
<thead>
<tr>
<th>Communication Protocol</th>
<th>EtherNet/IP (Complies with CT18)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vendor ID</td>
<td>187: Oriental Motor Company</td>
</tr>
<tr>
<td>Device Type</td>
<td>43: Generic Device</td>
</tr>
<tr>
<td>Baud Rate</td>
<td>10/100 Mbps (Autonegotiation)</td>
</tr>
<tr>
<td>Communication Mode</td>
<td>Full Duplex/Half Duplex (Autonegotiation)</td>
</tr>
<tr>
<td>Cable Specifications</td>
<td>Shielded Twisted-Pair (STP) Cable Stroke/Cross, Category 5e min. Recommended</td>
</tr>
</tbody>
</table>

Bytes

| Output (Scanner → driver) | 40 bytes |
| Input (Driver → scanner)  | 56 bytes |

Implicit Communication

| Connection Type           | Exclusive Owner, Input Only |
| Communication Cycle (RPI) | 1 – 3200 ms                |
| Connection Type (Scanner → driver) | Point-to-Point |
| Connection Type (Driver → scanner) | Point-to-Point, Multicast |

Data Reflection Trigger Cyclic

IP Address Setting Method

| IP Address Setting Switch, Parameter, DHCP |

Compatible Topologies

| Star, Linear, Ring (Device Level Ring) |

PROFINET

<table>
<thead>
<tr>
<th>Communication Protocol</th>
<th>PROFINET IO Ver. 2.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vendor ID</td>
<td>0x33E: ORIENTAL MOTOR</td>
</tr>
<tr>
<td>Baud Rate</td>
<td>100 Mbps (Autonegotiation)</td>
</tr>
<tr>
<td>Communication Mode</td>
<td>Full Duplex (Autonegotiation)</td>
</tr>
<tr>
<td>Cable Specifications</td>
<td>Shielded Twisted-Pair (STP) Cable Stroke/Cross, Category 5e min. Recommended</td>
</tr>
</tbody>
</table>

Communication Connector

| RJ45 × 2 (Shield-compatible) |

Conformance Class

| B |

RT/IRT

| RT |

NetLoad Class

| I |

Supported Protocols

| DCP, LLDP, SNMP, MRP |

Bytes

| Output (Host system → driver) | 40 byte |
| Input (Driver → host system)  | 56 byte |

Compatible Topologies

| Star, Tree, Line, Ring |

RS-485 Communication

Protocol

| Modbus RTU Mode |

Electrical Characteristics

| EIA-485 Based, Straight Cable |

Use a shielded twisted pair cable (TIA/EIA-568B CAT5e or higher is recommended) and keep the total wiring distance including extension to 50 m (164 ft.) or less.**

Communication Mode

| Half duplex, asynchronous communication (data: 8 bits, stop bit: 1 bit or 2 bits, parity: none, even, or odd) |

Transmission Rate

Select either from 9600 bps, 19200 bps, 38400 bps, 57600 bps, 115200 bps, or 230400 bps.

Connection Units

Up to 31 drivers can be connected to a single programmable controller (master device).

**If the motor cable or power supply cable generates an undesirable amount of noise depending on the wiring or configuration, shield the cable or install a ferrite core.

General Specifications

<table>
<thead>
<tr>
<th>AZD-KRED</th>
<th>AZD-KREP</th>
<th>AZD-KRPN</th>
<th>AZD-KRX</th>
<th>AZD-KR2D</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Degree of Protection</th>
<th>IP20</th>
<th>IP10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>0 to +50°C (+32 to +122°F) (Non-freezing)</td>
<td></td>
</tr>
<tr>
<td>Ambient Humidity</td>
<td>85% or less (Non-condensing)</td>
<td></td>
</tr>
<tr>
<td>Altitude</td>
<td>Up to 1000 m (3300 ft.) above sea level</td>
<td></td>
</tr>
<tr>
<td>Atmosphere</td>
<td>No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.</td>
<td></td>
</tr>
</tbody>
</table>

| Storage Conditions |     |      |
| Transportations     |     |      |
| Ambient Temperature | −25 to +70°C (−13 to +158°F) (Non-freezing) |
| Ambient Humidity    | 85% or less (Non-condensing) |
| Altitude            | Up to 3000 m (10000 ft.) above sea level |
| Atmosphere          | No corrosive gases or dust. The product should not be exposed to water, oil or other liquids. |

Note

* When measuring insulation resistance or performing dielectric strength test, disconnect the motor and driver.
Also, do not perform these tests on the ABZO Sensor (Absolute Sensor) part of the motor.
### Dimensions

Unit: mm (in.)

<table>
<thead>
<tr>
<th>Type</th>
<th>Product Name</th>
<th>Mass</th>
<th>2D CAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>EtherCAT Drive Profile-Compatible</td>
<td>AZD-KRED</td>
<td>0.11</td>
<td>B1541</td>
</tr>
<tr>
<td>EtherNet/IP-Compatible</td>
<td>AZD-KREP</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td>PROFINET-Compatible</td>
<td>AZD-KRPN</td>
<td>0.11</td>
<td></td>
</tr>
</tbody>
</table>

[Diagram of product dimensions]

<table>
<thead>
<tr>
<th>Type</th>
<th>Product Name</th>
<th>Mass</th>
<th>2D CAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-485 Communication Type</td>
<td>AZD-KR2D</td>
<td>0.11</td>
<td>B1538</td>
</tr>
</tbody>
</table>

[Diagram of product dimensions]

**Applicable Connectors**

- **Power Connector (CN1)**
  - Connector Housing: 1-1827864-2 (TE Connectivity)
  - Contact: 1827589-2 (TE Connectivity)

- **RS-485 Communication Connector (CN3)**
  - Connector Housing: 1-1827579-1 (TE Connectivity)
  - Contact: 1827588-2 (TE Connectivity)
<table>
<thead>
<tr>
<th>Type</th>
<th>Product Name</th>
<th>Mass g (oz.)</th>
<th>2D CAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse Input Type with RS-485 Communication</td>
<td>AZD-KRX</td>
<td>84 (2.96)</td>
<td>B1549</td>
</tr>
</tbody>
</table>

**Applicable Connectors**

- **Power Connector (CN1)**
  - Connector Housing: 1-1827864-2 (TE Connectivity)
  - Contact: 1827589-2 (TE Connectivity)
- **I/O signal connector (CN3)**
  - Connector Housing: 501646-1600 (molex)
  - Contact: 501647-1100 (molex)
- **RS-485 Communication Connector (CN4)**
  - Connector Housing: 1-1827579-1 (TE Connectivity)
  - Contact: 1827588-2 (TE Connectivity)
## Connection Cables

The connection cable can be selected from either one of the followings:

1. Connection Cable
2. Extension Cable

### Connection Cables / Flexible Connection Cables

These cables are used to connect the motor and the driver. Use the flexible connection cable in applications where the cable is bent and flexed repeatedly.

#### Product Line

**For AZM14, AZM15, AZM24, AZM26**

<table>
<thead>
<tr>
<th>Length L (m ft.)</th>
<th>Product Name</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 (1.6)</td>
<td>CCM005Z2AAF</td>
<td>$38.00</td>
</tr>
<tr>
<td>1 (3.3)</td>
<td>CCM010Z2AAF</td>
<td>$38.00</td>
</tr>
<tr>
<td>3 (9.8)</td>
<td>CCM030Z2AAF</td>
<td>$63.00</td>
</tr>
<tr>
<td>5 (16.4)</td>
<td>CCM050Z2AAF</td>
<td>$110.00</td>
</tr>
<tr>
<td>10 (32.8)</td>
<td>CCM100Z2AAF</td>
<td>$178.00</td>
</tr>
</tbody>
</table>

**For Motor / Encoder**

<table>
<thead>
<tr>
<th>Length L (m ft.)</th>
<th>Product Name</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 (1.6)</td>
<td>CCM005Z2AAR</td>
<td>$65.00</td>
</tr>
<tr>
<td>1 (3.3)</td>
<td>CCM010Z2AAR</td>
<td>$65.00</td>
</tr>
<tr>
<td>3 (9.8)</td>
<td>CCM030Z2AAR</td>
<td>$112.00</td>
</tr>
<tr>
<td>5 (16.4)</td>
<td>CCM050Z2AAR</td>
<td>$143.00</td>
</tr>
<tr>
<td>10 (32.8)</td>
<td>CCM100Z2AAR</td>
<td>$238.00</td>
</tr>
</tbody>
</table>

**Flexible Connection Cables**

- **For Motor / Encoder**

<table>
<thead>
<tr>
<th>Length L (m ft.)</th>
<th>Product Name</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 (1.6)</td>
<td>CCM005Z2ABF</td>
<td>$38.00</td>
</tr>
<tr>
<td>1 (3.3)</td>
<td>CCM010Z2ABF</td>
<td>$38.00</td>
</tr>
<tr>
<td>3 (9.8)</td>
<td>CCM030Z2ABF</td>
<td>$63.00</td>
</tr>
<tr>
<td>5 (16.4)</td>
<td>CCM050Z2ABF</td>
<td>$110.00</td>
</tr>
<tr>
<td>10 (32.8)</td>
<td>CCM100Z2ABF</td>
<td>$178.00</td>
</tr>
</tbody>
</table>

**For Motor / Encoder / Electromagnetic Brake**

<table>
<thead>
<tr>
<th>Length L (m ft.)</th>
<th>Product Name</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 (1.6)</td>
<td>CCM005Z2ACF</td>
<td>$53.00</td>
</tr>
<tr>
<td>1 (3.3)</td>
<td>CCM010Z2ACF</td>
<td>$53.00</td>
</tr>
<tr>
<td>3 (9.8)</td>
<td>CCM030Z2ACF</td>
<td>$83.00</td>
</tr>
<tr>
<td>5 (16.4)</td>
<td>CCM050Z2ACF</td>
<td>$136.00</td>
</tr>
<tr>
<td>10 (32.8)</td>
<td>CCM100Z2ACF</td>
<td>$216.00</td>
</tr>
</tbody>
</table>

**For Motor / Encoder**

- **For Motor / Encoder**

<table>
<thead>
<tr>
<th>Length L (m ft.)</th>
<th>Product Name</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 (1.6)</td>
<td>CCM005Z2ABF</td>
<td>$85.00</td>
</tr>
<tr>
<td>1 (3.3)</td>
<td>CCM010Z2ABF</td>
<td>$85.00</td>
</tr>
<tr>
<td>3 (9.8)</td>
<td>CCM030Z2ABF</td>
<td>$112.00</td>
</tr>
<tr>
<td>5 (16.4)</td>
<td>CCM050Z2ABF</td>
<td>$143.00</td>
</tr>
<tr>
<td>10 (32.8)</td>
<td>CCM100Z2ABF</td>
<td>$238.00</td>
</tr>
</tbody>
</table>

**Flexiable Connection Cables**

- **For Motor / Encoder**

<table>
<thead>
<tr>
<th>Length L (m ft.)</th>
<th>Product Name</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 (1.6)</td>
<td>CCM005Z2ACR</td>
<td>$115.00</td>
</tr>
<tr>
<td>1 (3.3)</td>
<td>CCM010Z2ACR</td>
<td>$115.00</td>
</tr>
<tr>
<td>3 (9.8)</td>
<td>CCM030Z2ACR</td>
<td>$153.00</td>
</tr>
<tr>
<td>5 (16.4)</td>
<td>CCM050Z2ACR</td>
<td>$193.00</td>
</tr>
<tr>
<td>10 (32.8)</td>
<td>CCM100Z2ACR</td>
<td>$314.00</td>
</tr>
</tbody>
</table>

Note:
- Up to 3 cables can be used to connect the motor and driver.
- The maximum distance between the motor and driver is 10 m (32.8 ft.).
For AZM14, AZM15, AZM24, AZM26

For Motor / Encoder

<table>
<thead>
<tr>
<th>Dimensions Unit: mm (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3 (0.0)</td>
</tr>
<tr>
<td>1.0 (0.39)</td>
</tr>
<tr>
<td>1.85 (0.73)</td>
</tr>
<tr>
<td>50</td>
</tr>
<tr>
<td>L</td>
</tr>
<tr>
<td>1.97 (0.78)</td>
</tr>
<tr>
<td>0.34 (0.0)</td>
</tr>
</tbody>
</table>

Motor Side  Driver Side

For AZM46, AZM48, AZM66, AZM69

For Motor / Encoder

For Motor / Encoder / Electromagnetic Brake

Extension Cables / Flexible Extension Cables  Driver Side

These are cables to provide an extension between the connection cable and the driver. When extending the connection, keep the overall cable length at 10 m (32.8 ft.) or less.

Use the flexible extension cable in applications where the cable is bent and flexed repeatedly.

Product Line

<table>
<thead>
<tr>
<th>Product Line</th>
<th>Extension Cables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [m (ft.)]</td>
<td>Product Name</td>
</tr>
<tr>
<td>1 (3.3)</td>
<td>CCM010Z2ADFT</td>
</tr>
<tr>
<td>3 (9.8)</td>
<td>CCM030Z2ADFT</td>
</tr>
<tr>
<td>5 (16.4)</td>
<td>CCM050Z2ADFT</td>
</tr>
</tbody>
</table>

Flexible Extension Cables

<table>
<thead>
<tr>
<th>Flexible Extension Cables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [m (ft.)]</td>
</tr>
<tr>
<td>1 (3.3)</td>
</tr>
<tr>
<td>3 (9.8)</td>
</tr>
<tr>
<td>5 (16.4)</td>
</tr>
</tbody>
</table>
### Cable for I/O Signals

#### Connector Type
- Unbundled wires on one end

<table>
<thead>
<tr>
<th>Product Line</th>
<th>Applicable Drivers</th>
<th>Number of Lead Wire Cores</th>
<th>AWG</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCD06Z2BY</td>
<td>Pulse Input Type with RS-485 Communication</td>
<td>16</td>
<td>26</td>
<td>$23.00</td>
</tr>
</tbody>
</table>

#### General-Purpose Type
- Shielded cable
- Unbundled wires on both ends
- Easy shield grounding using ground wire with a round terminal
- The number of lead wire cores can be selected to suit the functions that will be used

<table>
<thead>
<tr>
<th>Product Line</th>
<th>Length L (m)</th>
<th>Number of Lead Wire Cores</th>
<th>Outer Diameter D (mm)</th>
<th>AWG</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC06D005B-1</td>
<td>0.5</td>
<td>6</td>
<td>0.54</td>
<td></td>
<td>$18.00</td>
</tr>
<tr>
<td>CC06D010B-1</td>
<td></td>
<td>10</td>
<td>0.67</td>
<td></td>
<td>$22.00</td>
</tr>
<tr>
<td>CC06D015B-1</td>
<td>1.5</td>
<td>12</td>
<td>0.75</td>
<td></td>
<td>$25.00</td>
</tr>
<tr>
<td>CC06D020B-1</td>
<td>2</td>
<td>16</td>
<td>0.75</td>
<td></td>
<td>$33.00</td>
</tr>
<tr>
<td>CC10D005B-1</td>
<td></td>
<td>10</td>
<td>0.67</td>
<td></td>
<td>$20.00</td>
</tr>
<tr>
<td>CC10D010B-1</td>
<td>1</td>
<td>12</td>
<td>0.75</td>
<td></td>
<td>$29.00</td>
</tr>
<tr>
<td>CC10D015B-1</td>
<td>1.5</td>
<td>16</td>
<td>0.75</td>
<td></td>
<td>$33.00</td>
</tr>
<tr>
<td>CC10D020B-1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC12D005B-1</td>
<td>0.5</td>
<td>6</td>
<td>0.54</td>
<td></td>
<td>$24.00</td>
</tr>
<tr>
<td>CC12D010B-1</td>
<td>1</td>
<td>12</td>
<td>0.75</td>
<td></td>
<td>$25.00</td>
</tr>
<tr>
<td>CC12D015B-1</td>
<td>1.5</td>
<td>16</td>
<td>0.75</td>
<td></td>
<td>$33.00</td>
</tr>
<tr>
<td>CC12D020B-1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC16D005B-1</td>
<td>0.5</td>
<td>12</td>
<td>0.75</td>
<td></td>
<td>$33.00</td>
</tr>
<tr>
<td>CC16D010B-1</td>
<td>1</td>
<td>16</td>
<td>0.75</td>
<td></td>
<td>$29.00</td>
</tr>
<tr>
<td>CC16D015B-1</td>
<td>1.5</td>
<td></td>
<td></td>
<td></td>
<td>$33.00</td>
</tr>
<tr>
<td>CC16D020B-1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Dimensions
- **Dimensions Unit: mm (in.)**
  - 16 Leads
  - AWG26, finished outer diameter Ø1.32
  - Dimensions Unit: mm (in.)
  - 501664-1600 (Molex)
  - 501664-1600 (Molex)

- **Dimensions Unit: **
  - Insulated Round Crimp Terminal (1.25-4)
  - AWG24, finished outer diameter Ø1.1

- **Dimensions Unit: mm (in.)**
  - 16 Leads
  - AWG26, finished outer diameter Ø1.1
  - Dimensions Unit: mm (in.)
  - 501664-1600 (Molex)
  - 501664-1600 (Molex)

- **Dimensions Unit: **
  - Insulated Round Crimp Terminal (1.25-4)
  - AWG24, finished outer diameter Ø1.1
  - Dimensions Unit: mm (in.)
  - 501664-1600 (Molex)
  - 501664-1600 (Molex)

- **Dimensions Unit: **
  - Insulated Round Crimp Terminal (1.25-4)
  - AWG24, finished outer diameter Ø1.1
  - Dimensions Unit: mm (in.)
  - 501664-1600 (Molex)
  - 501664-1600 (Molex)

- **Dimensions Unit: **
  - Insulated Round Crimp Terminal (1.25-4)
  - AWG24, finished outer diameter Ø1.1
  - Dimensions Unit: mm (in.)
  - 501664-1600 (Molex)
  - 501664-1600 (Molex)

- **Dimensions Unit: **
  - Insulated Round Crimp Terminal (1.25-4)
  - AWG24, finished outer diameter Ø1.1
  - Dimensions Unit: mm (in.)
  - 501664-1600 (Molex)
  - 501664-1600 (Molex)

- **Dimensions Unit: **
  - Insulated Round Crimp Terminal (1.25-4)
  - AWG24, finished outer diameter Ø1.1
  - Dimensions Unit: mm (in.)
  - 501664-1600 (Molex)
  - 501664-1600 (Molex)

- **Dimensions Unit: **
  - Insulated Round Crimp Terminal (1.25-4)
  - AWG24, finished outer diameter Ø1.1
  - Dimensions Unit: mm (in.)
  - 501664-1600 (Molex)
  - 501664-1600 (Molex)

- **Dimensions Unit: **
  - Insulated Round Crimp Terminal (1.25-4)
  - AWG24, finished outer diameter Ø1.1
  - Dimensions Unit: mm (in.)
  - 501664-1600 (Molex)
  - 501664-1600 (Molex)
RS-485 Communication Cables
These cables are used to connect the driver to a network converter or a robot controller **MRC01**.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Length L (m ft.)</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC02FLT6</td>
<td>2 (6.6)</td>
<td>$56.00</td>
</tr>
<tr>
<td>CC05FLT6</td>
<td>5 (16.4)</td>
<td>$82.00</td>
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</tbody>
</table>

This cable cannot be used to connect the drivers together.

Power Supply Cable
These cables are used to connect the driver and the power supply. Connecting with the main power supply and control power supply is easy.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCD06Z2AY</td>
<td>$18.00</td>
</tr>
</tbody>
</table>

This is a product line having a common concept of battery-drive, compact, and lightweight. Ideal for installing in transportation devices such as autonomous mobile robots and automated guided vehicles, these products contribute to creating an automation line possible to change as desired and achieving the mobile automation, which are further expected in the future.

Brushless Motors
**BLV Series R Type**
These are DC power input brushless motors that further downsizing and weight reduction are achieved. Low-speed operation from 1 r/min can be performed. Operation by battery-drive is also available.
- Output Power: 60 W (1/12 HP), 100 W (1/8 HP), 200 W (1/4 HP), 400 W (1/2 HP)
- Speed Control Range: 1 to 4000 r/min
- Modbus (RTU) and CANopen Communications Compatible