Stepper Motors \(\alpha\)STEP

**AZ Series Multi-Axis Drivers**

**DC Input**

Compatible with EtherCAT Drive Profile

A multi-axis driver that supports EtherCAT communication. Compatible with the CiA402 drive profile. It can be connected to the AZ Series DC input motors and electric actuators. 2-axes, 3-axes and 4-axes driver connections are available.

**Space-Saving and Low-Cost Multi-Axis Driver (Max. 4 Axes)**

**Advantages of Consolidating 4 Drivers into 1 Unit**

- Space Saving and Reduced Wiring
- Reduced Cost

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**Product Line and List Price**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Number of Axis</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AZD2A-KED</td>
<td>Axis 2</td>
<td>$860.00</td>
</tr>
<tr>
<td>AZD3A-KED</td>
<td>Axis 3</td>
<td>$1,140.00</td>
</tr>
<tr>
<td>AZD4A-KED</td>
<td>Axis 4</td>
<td>$1,370.00</td>
</tr>
</tbody>
</table>

The following items are included with each product: Driver, Driver Connection Set, Operating Manual.

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**ESI File**

An ESI file is provided so that EtherCAT-compatible products can be used more easily. The ESI file can be downloaded from the Oriental Motor website. For questions about connections to Omron PLCs, please contact OMRON Corporation. An EtherCAT connection guide is available.

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**AZ Series Catalog**

- DC Input Motor Specifications
- DC Input Motor Characteristics
- DC Input Motor Dimensions
- Accessories
  - General-Purpose Cables
  - Couplings
  - Motor Mounting Brackets
**System Configuration**

Example Configuration of a System Using AZ Series DC Input Standard Type Motors with Electromagnetic Brakes.

- **Host System**: EtherCAT Master Device
- **Power Supply Cables (Sold Separately)** for AZ Series Multi-Axis Drivers
  - Main Power Cable: Product Name: LC03D06A, List Price: $29.00
  - Control Power Cable: Product Name: LC02D06A, List Price: $25.00
- **Connection Cables, Flexible Connection Cables (Sold Separately)**
  - Use a flexible connection cable in applications where the cable is bent and flexed repeatedly. The maximum extension length is 20 m (65.4 ft.).

**Connection Cables, Flexible Connection Cables (Sold Separately)**

Connection cables are required to connect the multi-axis diver and motors. These are not included with the multi-axis driver. Connection cables are sold separately. Use a flexible connection cable in applications where the cable is bent and flexed repeatedly. The maximum extension length is 20 m (65.4 ft.).

**Motor Cable for AZ Series Multi-Axis Driver**

The multi-axis driver connection cable combines both the motor cable and encoder cable into one cable.

**Connection Cable Set for Motor with Electromagnetic Brake for AZ Series Multi-Axis Driver**

This 2-cable set includes the motor cable for the AZ Series multi-axis driver and the motor cable for the AZ Series electromagnetic brake type motor.

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**Note**

The motor cable and electromagnetic brake cable from the motor cannot be connected directly to the driver. When connecting to a driver, use a connection cable.

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**Connection Cable Set for Motor with Electromagnetic Brake for AZ Series Multi-Axis Driver**

<table>
<thead>
<tr>
<th>Length (m)</th>
<th>Connection Cables List Price</th>
<th>Flexible Connection Cables List Price</th>
<th>For Frame Size 20 mm (0.79 in.), 28 mm (1.10 in.)</th>
<th>For Frame Size 42 mm (1.65 in.), 60 mm (2.36 in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 (1.64)</td>
<td>CC005VZ2FA $79.00</td>
<td>CC005VZ2RA $93.00</td>
<td>CC005VZ2FA $79.00</td>
<td>CC005VZ2RA $93.00</td>
</tr>
<tr>
<td>1 (3.3)</td>
<td>CC010VZ2FA $79.00</td>
<td>CC010VZ2RA $93.00</td>
<td>CC010VZ2FA $79.00</td>
<td>CC010VZ2RA $93.00</td>
</tr>
<tr>
<td>1.5 (4.9)</td>
<td>CC015VZ2FA $84.00</td>
<td>CC015VZ2RA $102.00</td>
<td>CC015VZ2FA $84.00</td>
<td>CC015VZ2RA $102.00</td>
</tr>
<tr>
<td>2 (6.6)</td>
<td>CC020VZ2FA $89.00</td>
<td>CC020VZ2RA $110.00</td>
<td>CC020VZ2FA $89.00</td>
<td>CC020VZ2RA $110.00</td>
</tr>
<tr>
<td>2.5 (8.2)</td>
<td>CC025VZ2FA $95.00</td>
<td>CC025VZ2RA $117.00</td>
<td>CC025VZ2FA $95.00</td>
<td>CC025VZ2RA $117.00</td>
</tr>
<tr>
<td>3 (8.8)</td>
<td>CC030VZ2FA $101.00</td>
<td>CC030VZ2RA $123.00</td>
<td>CC030VZ2FA $101.00</td>
<td>CC030VZ2RA $123.00</td>
</tr>
<tr>
<td>3.1 (13)</td>
<td>CC040VZ2FA $108.00</td>
<td>CC040VZ2RA $139.00</td>
<td>CC040VZ2FA $108.00</td>
<td>CC040VZ2RA $139.00</td>
</tr>
<tr>
<td>5 (16.4)</td>
<td>CC050VZ2FA $122.00</td>
<td>CC050VZ2RA $156.00</td>
<td>CC050VZ2FA $122.00</td>
<td>CC050VZ2RA $156.00</td>
</tr>
<tr>
<td>7 (23.0)</td>
<td>CC070VZ2FA $150.00</td>
<td>CC070VZ2RA $199.00</td>
<td>CC070VZ2FA $150.00</td>
<td>CC070VZ2RA $199.00</td>
</tr>
<tr>
<td>10 (32.8)</td>
<td>CC100VZ2FA $194.00</td>
<td>CC100VZ2RA $260.00</td>
<td>CC100VZ2FA $194.00</td>
<td>CC100VZ2RA $260.00</td>
</tr>
<tr>
<td>15 (49.2)</td>
<td>CC150VZ2FA $269.00</td>
<td>CC150VZ2RA $366.00</td>
<td>CC150VZ2FA $269.00</td>
<td>CC150VZ2RA $366.00</td>
</tr>
<tr>
<td>20 (65.6)</td>
<td>CC200VZ2FA $342.00</td>
<td>CC200VZ2RA $470.00</td>
<td>CC200VZ2FA $342.00</td>
<td>CC200VZ2RA $470.00</td>
</tr>
</tbody>
</table>

**Connection Cable Set for Motor with Electromagnetic Brake**

<table>
<thead>
<tr>
<th>Length (m)</th>
<th>Connection Cable Sets List Price</th>
<th>Flexible Connection Cable Sets List Price</th>
<th>For Frame Size 42 mm (1.65 in.), 60 mm (2.36 in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 (1.64)</td>
<td>CC005VZRFBA $95.00</td>
<td>CC005VZRBBA $126.00</td>
<td>CC005VZRFBA $95.00</td>
</tr>
<tr>
<td>1 (3.3)</td>
<td>CC010VZRFBA $95.00</td>
<td>CC010VZRBBA $126.00</td>
<td>CC010VZRFBA $95.00</td>
</tr>
<tr>
<td>1.5 (4.9)</td>
<td>CC015VZRFBA $102.00</td>
<td>CC015VZRBBA $137.00</td>
<td>CC015VZRFBA $102.00</td>
</tr>
<tr>
<td>2 (6.6)</td>
<td>CC020VZRFBA $106.00</td>
<td>CC020VZRBBA $148.00</td>
<td>CC020VZRFBA $106.00</td>
</tr>
<tr>
<td>2.5 (8.2)</td>
<td>CC025VZRFBA $116.00</td>
<td>CC025VZRBBA $158.00</td>
<td>CC025VZRFBA $116.00</td>
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<tr>
<td>3 (8.8)</td>
<td>CC030VZRFBA $123.00</td>
<td>CC030VZRBBA $167.00</td>
<td>CC030VZRFBA $123.00</td>
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<tr>
<td>3.1 (13)</td>
<td>CC040VZRFBA $134.00</td>
<td>CC040VZRBBA $189.00</td>
<td>CC040VZRFBA $134.00</td>
</tr>
<tr>
<td>5 (16.4)</td>
<td>CC050VZRFBA $149.00</td>
<td>CC050VZRBBA $211.00</td>
<td>CC050VZRFBA $149.00</td>
</tr>
<tr>
<td>7 (23.0)</td>
<td>CC070VZRFBA $183.00</td>
<td>CC070VZRBBA $265.00</td>
<td>CC070VZRFBA $183.00</td>
</tr>
<tr>
<td>10 (32.8)</td>
<td>CC100VZRFBA $236.00</td>
<td>CC100VZRBBA $343.00</td>
<td>CC100VZRFBA $236.00</td>
</tr>
<tr>
<td>15 (49.2)</td>
<td>CC150VZRFBA $324.00</td>
<td>CC150VZRBBA $476.00</td>
<td>CC150VZRFBA $324.00</td>
</tr>
<tr>
<td>20 (65.6)</td>
<td>CC200VZRFBA $410.00</td>
<td>CC200VZRBBA $607.00</td>
<td>CC200VZRFBA $410.00</td>
</tr>
</tbody>
</table>
**Specifications**

### Power Supply Input

- **Main Power Supply:** 24/48 VDC ±10% 7.0 A. When using a motor, make sure that the average is 4.0 A max.
- **Control Power Supply:** 24 VDC ±10% 1.5 A. When using an electromagnetic brake, use a 24 VDC ±5% power supply for the electromagnetic brake. When using an electromagnetic brake with a 20 m (65.6 ft.) connection cable, use a 24 VDC ±4% power supply.

### EtherCAT Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baud Rate</strong></td>
<td>100Mbps</td>
</tr>
<tr>
<td><strong>Communication Period</strong></td>
<td>0.5ms/1ms/2ms/3ms/4ms/5ms/6ms/7ms/8ms</td>
</tr>
<tr>
<td><strong>Node Address</strong></td>
<td>0<del>255 (00h</del>FFh, initial value: 00h)</td>
</tr>
<tr>
<td><strong>Communication Protocols</strong></td>
<td>EtherCAT-dedicated protocol (CoE)</td>
</tr>
<tr>
<td></td>
<td>CiA402 drive profile</td>
</tr>
</tbody>
</table>

### General Specifications

- **Degree of Protection:** IP10
- **Operating Environment**
  - Ambient Temperature: 0 to 50°C (32~+122°F) (non-freezing)
  - Humidity: 85% or less (Non-condensing)
  - Altitude: 1000 m (3280 ft.) max. above sea level
  - Atmosphere: Use in an area without corrosive gases and dust. The product should not be exposed to water or oil.
- **Storage Condition**
  - Ambient Temperature: −25 to 70°C (−13~+158°F) (non-freezing)
  - Humidity: 85% or less (Non-condensing)
  - Altitude: 3000 m (9842 ft.) max. above sea level
  - Atmosphere: Use in an area without corrosive gases and dust. The product should not be exposed to water or oil.
- **Insulation Resistance**
  - The measured value is 100 MΩ or more when a 500 VDC megger is applied between the following places: Between FG terminal and Power Supply Terminal
- **Dielectric Strength**
  - Sufficient to withstand the following for 1 minute: Between FG terminal and Power Supply Terminal 1k VAC 50/60 Hz Leakage current 10 mA max.

### Note

- Please disconnect the motor and driver when measuring insulation resistance or performing dielectric strength test.
- Also, do not perform these tests on the motor’s Mechanical Absolute Sensor components.

**Dimensions**

**Unit:** mm (in.)

### Multi-Axis Driver

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Mass kg (lb.)</th>
<th>2D &amp; 3D CAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>AZD2A-KED</td>
<td>0.39 (0.88)</td>
<td>B1206</td>
</tr>
<tr>
<td>AZD3A-KED</td>
<td>0.42 (0.93)</td>
<td>B1207</td>
</tr>
<tr>
<td>AZD4A-KED</td>
<td>0.45 (0.99)</td>
<td>B1208</td>
</tr>
</tbody>
</table>

- Frame size is identical for 2-axes, 3-axes and 4-axes units.
**Connection Cables, Flexible Connection Cables (Sold separately)**

- **Motor Cable for AZ Series Multi-Axis Driver**
  - For Frame Size 20 mm (0.79 in.), 28 mm (1.10 in.)
  - DF2C-13S-2.2C (Hiros Electric Co., LTD.)
  - J22DF-10V-KX (JST)
  - 9.5 (0.37) L (X 0.53)
  - 15.45 (0.61) L (X 0.53)
  - 9.75 (0.38) L (X 0.53)

- **Motor Cable for AZ Series Electromagnetic Brake Type**
  - For Frame Size 42 mm (1.65 in.), 60 mm (2.36 in.)
  - 23.9 (0.94) L (X 0.94)
  - 80 (3.15) L (X 0.94)

- **Power Cables (Sold Separately)**
  - **AZ Series Multi-Axis Driver**
    - Main Power Cable
      - LC03D06A
        - UL Style 1007, AWG16-32FSS-03V-KX (JST)
        - 600 (23.62)
        - F32FSS-03V-KX (JST)
        - UL Style 1007, AWG16
  - **AZ Series Multi-Axis Driver**
    - Control Power Cable
      - LC02D06A
        - UL Style 1007, AWG20-32FSS-02V-KX (JST)
        - 600 (23.62)
        - F32FSS-02V-KX (JST)
        - UL Style 1007, AWG20

- **Regeneration Unit RGC40 (Sold Separately)**
  - Mass: 0.03 kg (0.07 lb.)
  - 5559-02R-210 (Molex)
  - 51103-0200 (Molex)
  - 27 (1.06) ± 0.5 (1.06 ± 0.02)
  - 43.5 (1.71)
  - 50 ± 0.5 (1.97 ± 0.02)

The length L [m (ft.)] from "Connection Cables, Flexible Connection Cables (Sold separately)" on page 2 is used for the length L in the dimensions diagram.

Specifications are subject to change without notice. This catalog was published in September, 2017.