CUSTOMIZABLE SINGLE-AXIS SERVO DRIVE (FORMERLY DS2110) WITH INTEGRATED AXIS MOTION CONTROL FOR BRUSHLESS SERVO MOTORS AND ACTUATORS

WHAT MOVES YOUR WORLD
Whenever the highest levels of motion control performance and design flexibility are required, you’ll find Moog expertise at work. Through collaboration, creativity and world-class technological solutions, we help you overcome your toughest engineering obstacles. Enhance your products’ performance. And help take your thinking further than you ever thought possible.
INTRODUCTION

Moog Customizable Single-Axis Servo Drive

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Higher performing machinery equates to real advantages in productivity and profitability for any manufacturing line. Servo Drives are crucial to production capabilities in the plastics, metal forming, flight simulation and power generation industries to name a few. When choosing a Servo Drive, you want one known for dependability and accurate control in all applications. The CSA Servo Drive is a proven unit that delivers consistent high dynamic performance control accuracy and versatility. This Servo Drive is ideal for applications requiring integrated axis motion control. This is a new generation of the former DS2110 Servo Drive with many upgrades to this proven design.

PRODUCT OVERVIEW

Servo Drive Control Solution
Higher performing machinery equates to real advantages in productivity and profitability for any manufacturing line. Servo Drives are crucial to production capabilities in the plastics, metal forming, flight simulation and power generation industries to name a few. When choosing a Servo Drive, you want one known for dependability and accurate control in all applications. The CSA Servo Drive is a proven unit that delivers consistent high dynamic performance control accuracy and versatility. This Servo Drive is ideal for applications requiring integrated axis motion control. This is a new generation of the former DS2110 Servo Drive with many upgrades to this proven design.

Easy installation and maintenance
CSA’s user friendly installation allows you to get up to speed quickly while the maintenance program lets you stay at full production.

Control accuracy and dynamic performance
Complete customization gives you that edge in production so sought after in manufacturing today. Precise control is gained through state-of-the-art fieldBus interfaces, 16-bit analog to digital sampling and low drift current sensors.

Production reliability
Take advantage of increased capacity by eliminating downtime. The CSA keeps you productive with the ability to operate a broad range of brushless servo motors giving you the adaptability you need along with an easy to use motion template for electro-mechanical actuators.

Complete machine adaptability
Adaptability means you are prepared for future changes. The CSA Servo Drive gives you the ability to adapt with a high speed interface, universal fieldBus acceptance and motor feedback supported through resolver, high resolution, interpolated sin/cos encoder, or incremental and commutation track encoder feedback.

MEETING YOUR TOUGHEST MACHINE CHALLENGES

The CSA Servo Drive represents the highest level of control accuracy, dynamic performance and reliability in a user friendly configuration that can adapt to all your motion control and performance needs.
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COMPLETE FLEXIBILITY

The CSA Servo Drive gives you integrated axis motion control in a self-contained, customizable, and fully digitized stand-alone unit. Custom applications are achieved with model-based control templates that allow parameterization of motion limits, command profiles and closed-loop gains. Precision motion is implemented with closed-loop position and velocity control. Maximum motor efficiency is maintained by the field oriented DQ current control loops that produce optimum torque/amp output. All loops and trajectory generation are processed up to 8 kHz for true real-time control.

The CSA is your answer when the highest levels of motion control performance and design flexibility are required. Through collaboration, creativity and world-class technological solutions, Moog helps you overcome your toughest engineering obstacles.

DESIGNED FOR HIGH PERFORMANCE APPLICATIONS

Put the CSA on your motion control challenges and see how one Servo Drive with a comprehensive range of performance features can tackle your most demanding applications.

Ease of use through a comprehensive windows based Graphical User Interface (GUI). The GUI gives you control model downloading, configuration and application parameters plus system tuning/diagnostics.

Automatic phasing and error detecting features allow you to fine tune your operation even further.

Support for multiple communication protocols via the fieldBus gives you adaptability. Supported fieldBuses include DeviceNet, EtherCat, Ethernet IP and 16-bit Analog I/O.

Flexible performance supports several feedback devices including Stegmann Hiperface absolute encoders, Hedenhain Endat 2.1 and 2.2 absolute encoders, incremental encoders with commutation tracks and 2 to 24 pole resolvers.

The ability to monitor drives and control them via a Digital I/O allows you the total customization you need. In addition to the Motor Brake control output and Drive Ready output there are seven programmable digital inputs and three programmable outputs.
# FEATURES

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**Electrical Characteristics**

- Power supply: 3-phase, 65 Vac to 510 Vac, 1 phase, 103 to 243 Vac
- Auxiliary power supply: 24 Vdc, 2 A
- PWM Frequency: 8 kHz
- Position control loop Frequency: 8 kHz
- Speed control loop frequency: 8 kHz
- Continuous / peak output current: 3 A/11 A to 140 A/300 A

**Certifications include**

- UL, CE, ODVA

**Environmental data**

- Operating ambient temperature: 0 to 40 °C
- Storage Temperature: -25 to +55 °C
- Thermal Protection: 70 °C with de-rating
- Ingress Protection: IP20

**Protection**

- Servo Motor and Servo Drive over temperature
- Out of tolerance power supply detection
- Encoder/Resolver missing signal detection
- Output Open/Short circuit detection
- I²T limiting
- Thermal foldback
SIZE MICRO A

CONNECTIONS

- J1: RS232 COMMUNICATIONS
- J2A: DIGITAL INPUTS
- J2B: DIGITAL OUTPUTS
- J2C: DRIVE READY
- J2D: MOTOR BRAKE
- J3: RESOLVER
- J4: ENCODER

DIMENSIONS

Dimensions in mm:
- Ø 5.6 TYP
- Ø 11.5 TYP
- 230.6 ±1
- 206.3
- 9.2
- 40
- 245.5 ±1
- 221.1 ±1
- 251.1 ±1
- 195.1 ±1
- 80 ±1
SIZE D

CONNECTIONS

J1 RS232 COMMUNICATIONS
J2A DIGITAL INPUTS
J2B DIGITAL OUTPUTS
J2C DRIVE READY
J2D MOTOR BRAKE
J3 RESOLVER
J4 ENCODER

DIGITAL I/O

DIMENSIONS

Dimensions in mm
GLOBAL SUPPORT

Moog Global Support is our promise to offer world-class Repair and Maintenance Services delivered expertly by our trained technicians. With the reliability only available from a leading manufacturer with facilities around the world, Moog offers you service and expertise you can count on to keep your equipment operating as it should.

This promise offers many benefits to our customers including:

• Reduce your downtime by keeping critical machines running in peak performance

• Protect your investment by ensuring reliability, versatility and long-life of products

• Better plan your maintenance activities and make systematic upgrades

• Leverage our flexible programs to meet unique service requirements of your facility

Look to Moog for global support including:

• Repair services using OEM parts are performed by trained technicians to the latest specifications

• Stock management of spare parts and products to prevent unplanned downtime

• Flexible programs, tailored to your needs such as upgrades, preventative maintenance and annual/multiyear contracts

• On-site services bring the expertise to you, providing quicker commissioning, set-up and diagnostics

• Access to reliable services that are guaranteed to offer consistent quality anywhere in the world

For more information on Moog Global Support, visit www.moog.com/industrial/service.
### ORDERING INFORMATION

**Moog Customizable Single-Axis Servo Drive**

* Discuss with Moog Engineering prior to order placement.

Turn to page 15 for related notes.
NOTES

1. Users must be experienced/qualified in the use of this product range before building products from this drawing.

2. The ‘x’ in the power stage/drive size option for the 03, 04, 06 and 08 drive sizes can mean:

<table>
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<tr>
<th>Value in x:</th>
<th>Description</th>
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<tbody>
<tr>
<td>A</td>
<td>Size A, no internal regen resistor</td>
</tr>
<tr>
<td>R</td>
<td>Size A, with internal regen resistor</td>
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</table>

3. External regen resistors for all drive sizes are to be ordered and supplied separately using:

<table>
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<tr>
<th>Drive Size (ACONT/APK)</th>
<th>Regen Description</th>
<th>Kit Order</th>
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<tr>
<td>3/11 and 6/22</td>
<td>120 OHM/100 Watt</td>
<td>CA6369-009</td>
</tr>
<tr>
<td>8/22</td>
<td>51 OHM/200 Watt</td>
<td>CA6369-002</td>
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<tr>
<td>14/42</td>
<td>33 OHM/250 Watt</td>
<td>CA6369-004</td>
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<tr>
<td>20/45, 25/70, and 30/90</td>
<td>12 OHM/370 Watt</td>
<td>CA6369-005</td>
</tr>
<tr>
<td>50/140 and 60/80</td>
<td>10 OHM/750 Watt</td>
<td>CA6369-006</td>
</tr>
<tr>
<td>100/300</td>
<td>3.9 OHM/1000 Watt</td>
<td>CA6369-007</td>
</tr>
<tr>
<td>140/300</td>
<td>3.0 OHM/1500 Watt</td>
<td>CA6369-008</td>
</tr>
</tbody>
</table>

4. Restart interlocks circuit ONLY available on -100 and -140 power stage options.

5. External 24V fan connector ONLY available on -100 power stage option.

6. Applies to µA size only. Form, fit and function different from µA options 0 - 3.

7. Reference bill of material for hardware revision detail.

8. Conformal coating shall be applied to all printed circuit board assemblies as defined in the bill of materials.

Refer to page 14 for ordering schematic.
TAKE A CLOSER LOOK.

Moog designs a range of products that complement the performance of those featured in this catalog. Visit our website for more information or contact the Moog facility nearest you.

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