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Allen-Bradley Kinetix 5700 Servo Drive

Allen-Bradley by ROCKWELL AUTOMATION

Helping to Deliver an Innovative Motion Control System

The Kinetix® 5700 servo drive helps expand the value of integrated motion on EtherNet/IP to large, custom machine builder applications.

With Logix as a single control engine, and one design environment – Studio 5000® – machine builders now have more flexibility to scale, design and control to help meet their needs. The Kinetix 5700 servo drive can help reduce commissioning time and improve machine performance. It offers the simplicity, power and space savings you need to help get your machine up and running faster.

The Kinetix 5700 servo drive is designed for machines with large axis counts and higher power requirements. It is available in single- and dual-axis servos with integrated and hardwired Safe Torque-Off and integrated advanced safety capability.



Allen-Bradley® Kinetix 5700 System

Features and Benefits

- Dual-axis modules
- 200V and 400V class motor support
- Virtual torque sensor functionality to detect anomalies and provide analytics
- Command notch filter reduces load oscillation in applications without a load sensor
- Large power range 1.6 to 112 kW
- Servo and induction motor control
- Wide range of feedback types supported
- Dual Ethernet ports support linear and device level ring topologies
- Reduced wiring with single cable technology
- Tuning-less commissioning for most axes
- Best-in-class power density reduces cabinet space requirements up to 67%
- Innovative snapfit bus system
- CIP energy support to monitor energy data
- Accessory modules provide installation flexibility
- CIP security capable offers defense in depth to address different types of physical and electronic threats

Rockwell Automation

Integrated Safety

The Kinetix 5700 servo drive with integrated safety on EtherNet/IP, mitigates the need to separately wire the drive for safety. It reduces overall system wiring, saves time and money in installation and helps remove potential points of failure, thus resulting in less down time and troubleshooting. Integrated safety provides the capability to change the safety zoning and configurations, without needing to physically rewire the devices. Other features:

- Reduces complexity with a single network, EtherNet/IP for motion and safety functions
- Use EtherNet/IP to provide rich diagnostic data
- Simplifies zoning and reduces changeover time
- Integrated or hardwired safety – Safe Torque-Off – SIL3 PLe
- Advanced safety with five safe stop functions and three safe monitoring functions

Save time and enhance machine performances with tuning-less operation features

Traditionally, tuning the axis on a machine was a special art. Whether it was commissioning a machine or providing maintenance due to changing mechanics over time – tuning has been a time consuming job. Kinetix 5700 tuning-less features include:

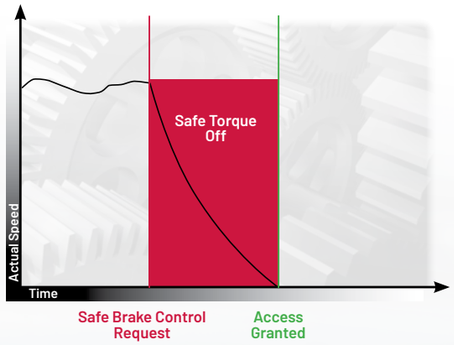
- **Load Observer** real-time tuning technology to automatically tune each axis, compensate for unknown mechanics and adjust for applications with varying inertia during operation
- **Virtual torque sensor** functionality to detect anomalies and provide analytics
- **Adaptive tuning** with multiple tracking notch filters to mitigate resonances





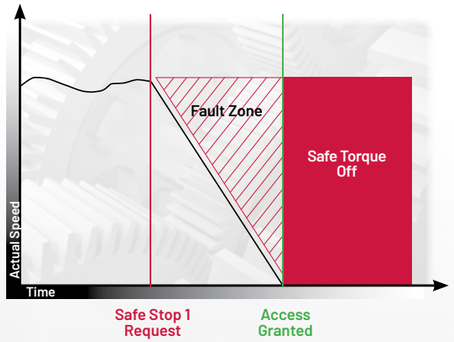
Stop Functions

Stop Functions – Safe Torque Off



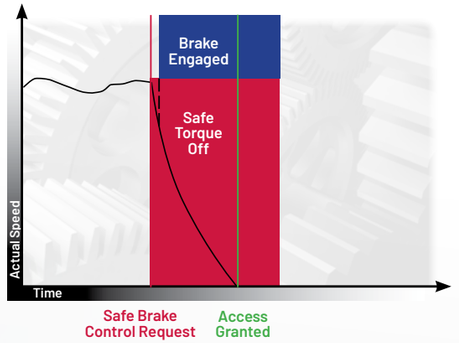
With the **Safe Torque Off** function, power that can cause rotation (or motion in the case of a linear motor), is removed from the motor. The drive will not provide energy to the motor that can generate torque (or force with a linear motor).

Stop Functions – Safe Stop 1



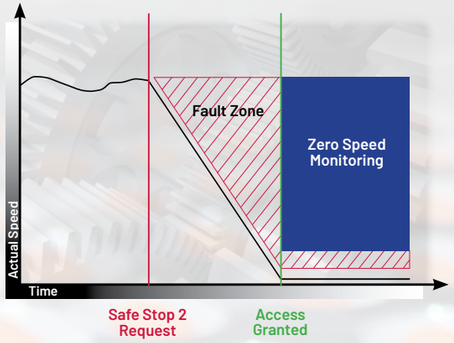
Safe Stop 1 initiates and monitors the motor deceleration rate within set limits. This function stops the motor and initiates the Safe Torque Off function when the motor speed is below a specified limit.

Stop Functions – Safe Brake Control



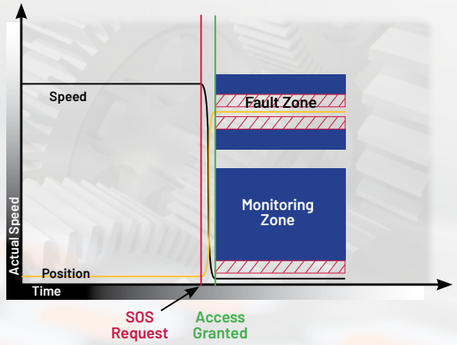
Safe Brake Control provides a safe output signals to control an external brake. This function is coordinated with the Safe Torque Off function.

Stop Functions – Safe Stop 2



Safe Stop 2 initiates and monitors the motor deceleration rate within set limits. This function stops the motor and initiates the safe operating stop function when the motor speed is below a specified limit.

Stop Functions – Safe Operating Stop

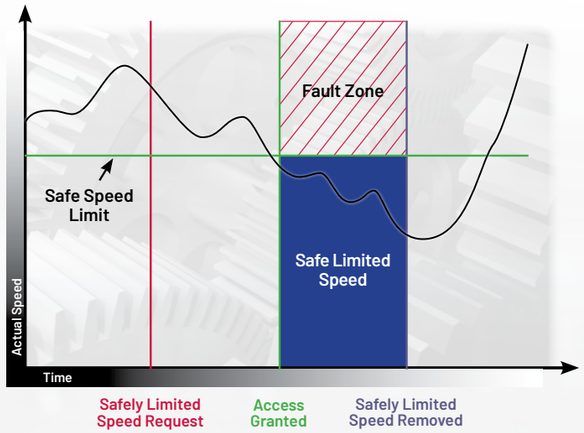


Can monitor either position or speed of motor while stopped.

The **Safe Operation Stop** function prevents the motor from deviating more than a defined amount from the stopped position. The drive provides energy to the motor to enable it to resist external forces.

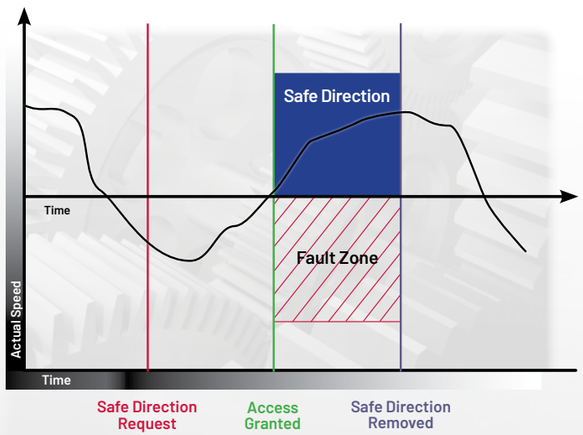
Monitoring Functions

Safely Limited Speed



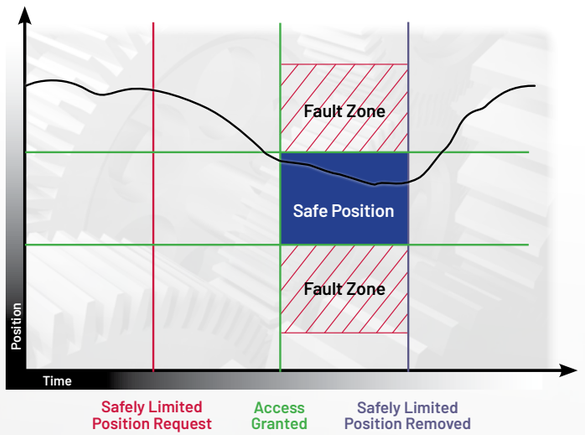
The **Safely Limited Speed** function prevents the motor from exceeding the specified speed limit.

Safe Direction



The **Safe Direction** function prevents the motor shaft from moving in the unintended direction.

Safely Limited Position



The **Safely Limited Position** function prevents the motor shaft from exceeding one or more specified position limits.

Kinetix 5700 Servo Drive Target Industries and Applications

The Kinetix 5700 servo drive is a solution for OEMs requiring large, high performance machines with ControlLogix® or CompactLogix™ controllers. It is the ideal choice for machine builders that have high axis count and higher power requirements. The Kinetix 5700 with integrated safety, provides added benefits to customers looking for an EtherNet/IP solution for safety. The Kinetix 5700 combines high performance servo and vector motor control, which helps reduce machine complexity and reduces time and labor costs for integration.

The Kinetix 5700 helps address complex application needs in a wide variety of industries.

Target Industries

- Beverage
- Consumer Products
- Food
- Automotive & Tire

Target Segment – Converting Print and Web Handling

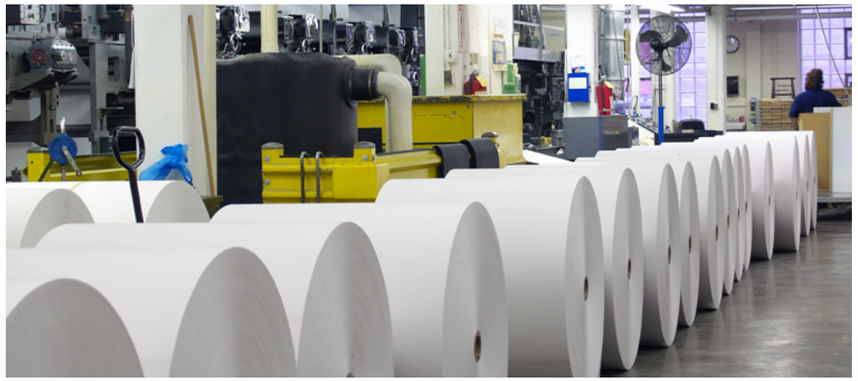
- Diaper Machines
- Corrugated Paper Machines
- Wipe and Napkin Machines
- Flexo-folder-gluers and Diecutters
- Narrow Web Press
- Tissue Converting
- Wire Rolling Machines
- Bag Machines
- Slitter Rewinders
- Coating and Laminating Machines

Target Segment – Manufacturing and Assembly

- Tire Building Machines
- Press Feeds
- Conveyors
- Material Handling
- Foundry Pouring Systems

Target Segment – Packaging

- Cartoning
- Pouching
- Tray Loaders
- Case Packing
- Product Distribution Systems
- Baking and Confectionery Lines and Systems







Allen-Bradley Kinetix 5700 Regenerative Bus Supply

Providing Consistent Machine Performance Globally

The Kinetix 5700 regenerative bus supply leverages EtherNet/IP to enable monitoring of energy usage, and provides direct energy cost savings by regenerating excess energy back to the AC power source or for plant-wide use. The bus supply offers an integrated LC filter to help reduce installation costs. With a smaller overall footprint, users can expect up to a 70% reduction in required cabinet space. This supply is CIP security capable and offers defense in depth to address different types of physical and electronic threats. The bus supply can assure peak machine production output capability by stabilizing the DC bus voltage by riding through AC input voltage dips. This allows global machine manufactures to ship anywhere in the world and still meet machine output specifications.

Features and Benefits

- Bus supply will perform common DC bus voltage regulation regardless of input AC voltage
- Excess energy regeneration back to the AC power source or for plant-wide use allows for energy cost savings
- Integrated LC Filter reduces installation costs and reduces cabinet space



Allen-Bradley® Kinetix 5700 Regenerative Bus Supply

The Kinetix 5700 regenerative bus supply also expands capabilities to address the needs of large applications. Extend the DC-bus up to 70 m away from the power supply cluster to extended drive clusters of Kinetix 5700 inverters without DC-bus fusing. Extend up to 1200 m total motor cable length per bus sharing group.

Bulletin 2198 EtherNet/IP Encoder Output Module

Future Proofing Your System and Enabling The Connected Enterprise

The Bulletin 2198 Encoder Output Module synchronizes devices to your integrated motion on EtherNet/IP system. Reduced wiring increases reliability by mitigating the need to split encoder signals between the motor and drive. The module also increases machine design flexibility. It can sync to any axis of motion (integrated motion over EtherNet/IP or virtual) Kinetix® and PowerFlex® drives.



Features and Benefits

Enhanced Performance and Troubleshooting

- Synchronizes third-party devices to our integrated motion system
- Configure and program with Studio 5000 Logix Designer® Software
- In-cabinet installation mitigates the need to mount encoders on the machine
- Reduces wiring

Increased Flexibility

- Syncs with any axis of motion. It is not limited to nearby axis.
- Configurable output: quadrature or pulse train
- Dual Ethernet ports support a variety of network topologies
- Provides role-based access control to routines and Add-On Instructions

The innovative snap fit bus system requires no tools and can help you to more easily assemble and install. The Kinetix 5700 also incorporates Load Observer real-time tuning technology, yielding high performance control while mitigating the need to tune most axes, thus reducing your commissioning time. DSL Feedback ports support single cable technology and helps simplify wiring with Allen-Bradley® Kinetix VP motors.



Kinetix 5700 Power Supply Specifications

Model	Input Voltage	Output Current	Peak Output Current	Module Width
2198-P031	195-528V AC	10 A	31 A	55 mm
2198-P070		25 A	70 A	55 mm
2198-P141		47 A	141 A	85 mm
2198-P208		69 A	207 A	85 mm
2198-RP088	324-506V AC	35 A	88 A	165 mm
2198-RP200		100 A	200 A	275 mm
2198-RP263		176 A	263 A	440 mm
2198-RP312		207 A	312 A	440 mm

Learn more on our website.

Kinetix 5700 Servo Drive Specifications

Model	Peak Output Current	Continuous Output Power		Module Width
		240V Input	480V Input	
2198-D006-ERSx	2 x 8.8 A	2x 0.9 kW	2 x 1.7 kW	55 mm
2198-D012-ERSx	2 x 17.6 A	2x 1.7 kW	2 x 3.4 kW	55 mm
2198-D020-ERSx	2 x 28.2 A	2x 2.8 kW	2 x 5.5 kW	55 mm
2198-D032-ERSx	2 x 45.9 A	2x 4.5 kW	2 x 8.9 kW	55 mm
2198-D057-ERSx	2 x 81.3 A	2x 8.0 kW	2 x 15.9 kW	85 mm
2198-S086-ERSx	121.6 A	14.9 kW	29.7 kW	85 mm
2198-S130-ERSx	183.8 A	22.5 kW	44.9 kW	85 mm
2198-S160-ERSx	226.2 A	30.1 kW	60.1 kW	100 mm

Options include 2198-xxxx-ERS3 drives that offer hardwired and integrated STO modes.
In addition, 2198-xxxx-ERS4 drives that offer the stopping functions and monitoring functions on pages 3 and 4.

Kinetix 5700 Accessory Module Specifications

Model	Module Width
2198-CAPMOD-2240	55 mm
2198-DCBUSCOND-RP312	55 mm
2198-CAPMOD-DCBUS-IO	55 mm

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