



# Powerful Simplicity for a Competitive Edge

Kinetix 6000 Multi-Axis Servo Drive



**Allen-Bradley**



**Rockwell  
Automation**

Bringing Together Leading Brands in Industrial Automation

# Kinetix 6000: Your Competitive Edge



Kinetix™ 6000 effectively meets worldwide motion control needs.

- Handles all global voltage requirements
- Features an adaptable modular design with unique easy-to-use components
- Offers a convenient compact size

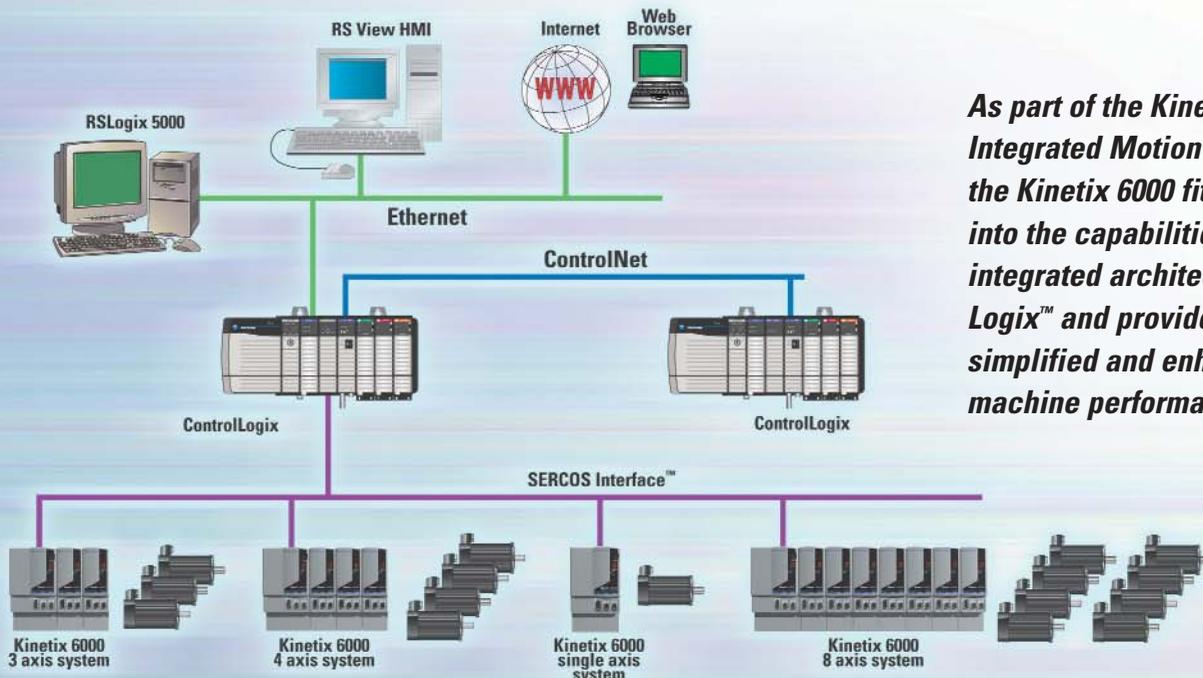
As part of the Allen-Bradley Kinetix™ Integrated Motion solution, Kinetix 6000 provides:

- Exceptional Performance
- Ease of Use
- Time Savings
- Flexibility
- Cost Savings

Today's competitive business environment constantly presents new challenges. The only thing that's certain is that time and money are always in short supply. That's why Allen-Bradley has designed the Kinetix 6000 with the features you need to use every minute and every dollar wisely.

The Kinetix 6000 multi-axis servo drive provides powerful simplicity to handle even the most demanding applications quickly, easily and cost-effectively. One of the keys to that power and simplicity is the use of Logix™ to provide true integration of motion and sequential control.

Other types of automation systems require multiple controllers and programming packages, but since Logix is fully integrated, these functions are performed by a single control and software package. Motion control functions are embedded in RSLogix 5000™ programming software and in the ControlLogix controller. As a result of using a single, integrated package for sequential, motion and drive control, you're reducing the time and money involved in machine building, implementation and maintenance. You're also improving performance – along with your bottom line. That valuable savings of time and money, coupled with exceptional performance, is the very essence of Kinetix – the new science of integrated motion.



**As part of the Kinetix Integrated Motion solution, the Kinetix 6000 fits neatly into the capabilities of the integrated architecture of Logix™ and provides simplified and enhanced machine performance.**

# Features that Put You Ahead of the Competition

## Put these Kinetix 6000 advantages to work for you:

**Simplicity at its best.** Everything from initial wiring and programming to operation and diagnostics is faster and easier, saving you time and money each step of the way. In fact, innovative installation features allow you to mount an axis in less than a minute. Could it be any easier?

In addition, there's simplified wiring. Fewer connections take less time to wire and make it easier to wire correctly the first time. Kinetix 6000 simplifies wiring with:

- SERCOS interface™. A single, digital fiber optic link eliminates up to 18 discrete wires per axis.
- One simple Power Rail. Replaces power wiring, logic control wiring and other complex cables. Makes layout and installation fast and easy and provides a reliable system for grounding and bonding.
- Optional Line Interface Module. Install this one compact module instead of nine complicated components, eliminating up to 72 wire terminations.

**Compact system design.** Traditional control cabinets are usually big and bulky, taking up valuable floor space and often needing to be mounted across an aisle or on a catwalk. Kinetix 6000 drives are sized to allow smaller enclosures that fit under, or even inside, the machine. The smaller size of the Kinetix 6000 modules, along with many space-saving design features, result in enclosures that are up to 50% smaller than those required for competitors' units.

### Shallow Module Depth

- 230V unit is just 195mm (7.7") deep
  - 460V unit is just 260mm (10.2") deep
- The shallow depth allows the Kinetix 6000 modules to fit into standard 200mm (8") or 300mm (12") deep enclosures.

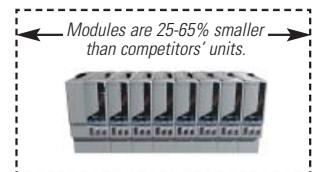


**Exceptional performance.** Advanced control capabilities provide greater precision and throughput, allowing you to meet demands for increased productivity. To help gain that added productivity, Kinetix 6000 offers an impressive velocity bandwidth greater than 400 Hz and a current loop bandwidth greater than 1300 Hz, double the performance of similar products.

**Significant cost savings.** Many products claim to save you money, but Kinetix 6000 comes through – and even extends the savings beyond the drive, eliminating many standard non-drive costs throughout your machine. For example, compact, easy-to-use accessory modules replace multiple components and complex wiring. This saves on installation time and maintenance as well as engineering documentation.

The savings continue with:

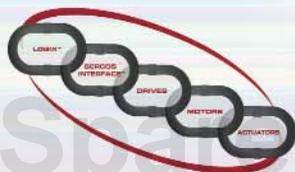
- A simple modular design lowers wiring costs by greatly reducing the total number of connections.
- The compact size saves you money with significant space savings that translate into greater flexibility for machine design and more production in the same amount of floor space.
- Smart motor technology provides automatic identification of a specific motor connected to the drive, eliminating errors, reducing commissioning time and safeguarding against incorrect motor replacement.



With Kinetix 6000, you continue to enjoy cost reductions, all the way through to fast, easy diagnostics and maintenance. The result is lower overall machine costs – and higher overall profits for you.

**Kinetix 6000.** It's far more than a drive; it's your competitive edge.

**Kinetix**  
the new science of integrated motion



Kinetix 6000 is part of the drives link of the Kinetix Integrated Motion solution. Kinetix is the Allen-Bradley integrated motion solution that helps you achieve improved performance and effortless precision. Kinetix is a combination of architecture, world-class motion products, and motion application expertise. This integrated architecture uses commercial off-the-shelf controls and software. Only Allen-Bradley can offer you the benefits of Kinetix Integrated Motion.

# A Complete Automation Solution for a Competitive Edge

## ControlLogix

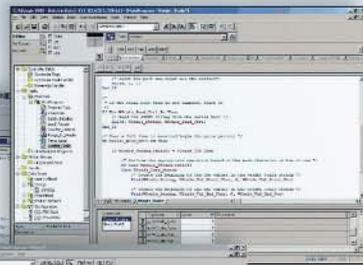
ControlLogix™ is a high performance, easy-to-use controller. This single platform can be used for sequential, drive and motion control, reducing system complexity. ControlLogix effectively uses RSLogix 5000 software to configure, program and monitor a system.

## RSLogix 5000

- RSLogix 5000 is the only software package necessary for both sequential, motion and drive control, eliminating the need for multiple programming tools

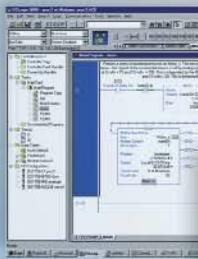
- “Plug and play” drive connectivity simplifies programming and commissioning
- Easily add and configure motion axes and drives using the wizard-based configuration tools
- Offers drive hookup diagnostics and auto-tuning
- Provides online editing and monitoring
- Choice of multiple programming languages
- Graphical editor simplifies creation of complex motion profiles

## Structured Text

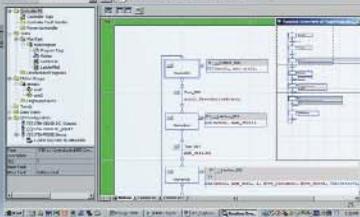


## Languages

Extensive set of motion commands is available in three IEC-61131-3 languages: Ladder, Structured Text and Sequential Function Chart. Multiple languages can be used for the same project. Choose the language that is best for the function being performed.



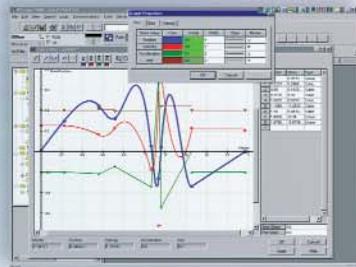
## Ladder



## Sequential Function Chart

## Graphical Motion Profile Editor

- Easily create complex motion profiles with the graphical motion profile editor built into RSLogix 5000
- Monitor profiles created dynamically during runtime



## Diagnostics

Diagnostic information is conveniently available both locally at the drive and from a central location via the ControlLogix controller for viewing with RSLogix 5000

- At the drive, three LEDs and a 7-segment display provide axis and fault status information
- Detailed drive status information can also be viewed with RSLogix 5000 or accessed via network connection for display on HMI device



## Kinetix 6000

- Compact
- Fast, simple wiring
- Global voltages
- Easy-to-use Power Rail
- Velocity bandwidth greater than 400 Hz and a current loop bandwidth greater than 1300 Hz



**SERCOS interface**

**SERCOS interface Motion Module**

- A single fiber optic ring serves as the sole interface between control and drive. It replaces costly command and feedback wiring, reducing both installation time and wiring costs
- Cables can be up to 32 meters in length using economical plastic fiber or up to 200 meters using glass fiber, so you can mount the controller in a central location, then distribute the drives conveniently on the application
- System is fully expandable, with up to 32 axes supported per controller. Multiple controllers can be used if additional axes are needed
- A single ControlLogix motion module can control up to 16 axes



**Smart Motor Interface**



**High Resolution Absolute Feedback**

- Up to two million counts per revolution for improved stability and smooth operation
- Absolute feedback eliminates the need for a homing sequence upon startup
- Configuration data is automatically transferred to the controller, eliminating commissioning errors and reducing start-up time



**Line Interface Module (Optional)**

Compact, cost-effective way to deal with the additional components required for a motion control system. Provides:

- Circuit breakers
- Safety contactor
- CE filters
- 24V motor brake power
- 24V DC for input/output power
- 220V AC logic control power production
- All the connection wiring needed

Spare Allen-Bradley Parts

# Flexible Design Provides Architecture on Your Terms

## Three simple steps to creating the ideal servo drive for your application

The Kinetix 6000 multi-axis servo drive is unlike any other. Simplicity and flexibility have been built into every component, making this the most practical, easy-to-use system you've ever seen. Available in both 200/230V AC and 380/480V AC models, Kinetix 6000 is comprised of three basic components: the Power Rail, Integrated Axis Module and Axis Modules. The modular design and compact size of these components allow you to assemble the system you need, as you need it, on your terms.

**Start with a Power Rail.** This unique mounting and connecting system attaches to a panel. The Integrated Axis Module and Axis Modules are then easily mounted to the Power Rail, making design and installation fast and uncomplicated. The Power Rail replaces:

- A DIN mounting rail or individual mounting bolts
- DC panel distribution or individual power connections
- Logic power control wiring
- Module-to-module communication cables.



*The innovative Power Rail is just one of the many time-saving features of Kinetix 6000. The Power Rail's simple design allows you to mount an axis in less than a minute. It requires just five bolts to mount up to 8 axes, replacing as many as 32 bolts used by other systems. Modules easily attach by hooking to the top, rotating down onto the connector and securing one screw. With the Power Rail, installation time and related costs are significantly reduced.*

The Power Rail is available in various sizes to accommodate 1, 2, 4, 6 or 8 axes. And, future expansion is easy. Just replace the slot filler with an Axis Module and you're ready to control an additional axis. The same Power Rails are used for both the 200/230V AC and 380/480V AC systems, and each Power Rail shares integral shunting between Axis Modules. If needed, additional shunt capacity is available through optional shunt modules and external resistors.

**Add the Integrated Axis Module.** It contains both a converter and an inverter controlled by its own advanced digital signal processor. This standalone module controls one motor and efficiently provides extra power for additional drives on the Power Rail. Single axis applications are handled with an Integrated Axis Module.



*230V Integrated Axis Module on a four axis Power Rail*

**Add Axis Modules as needed.** Axis modules are used for applications requiring more than one axis of control. These modules lower costs by sharing the converter in the Integrated Axis Module, connecting via a Power Rail. Connect up to seven Axis Modules to a single Integrated Axis Module to control a total of eight axes. The Axis Modules are easily added to a system as you need them.



*230V Integrated Axis Module and Axis Module on a four axis Power Rail. Kinetix 6000 features modules with shared communications and power, saving additional time and money.*

*Separation of high power and low power wiring prevents problems related to electrical noise and simplifies wiring.*



*460V Axis Module*

*All connectors are removable and conveniently top- or front-mounted. The low voltage connections use standard D-sub miniature connectors and are compatible with:*

- Premolded cables
- Low profile connector kits
- Customer-built cables
- Cable connection to DIN-mounted terminal strips

# A Competitive Advantage for Your Application

Kinetix 6000 improves machine performance on a wide variety of applications.

## Packaging

applications move along quickly and smoothly with Kinetix 6000.



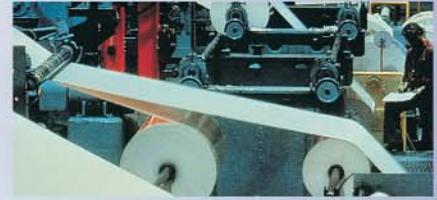
- The compact size of Kinetix 6000 provides significant savings on panel and enclosure space.
- Absolute feedback simplifies machine power-up, so it takes less time to get started.
- The innovative Power Rail reduces electrical hardware in the panel, reducing panel costs as well as overall machine costs.
- SERCOS interface provides high speed communications using noise-immune fiber optic cables.
- Automatic reconfiguration for changeout means there's no additional programming or commissioning when changing drives or motors.

**Material Handling** can be done more efficiently with Kinetix 6000.



- Engineering time is minimized through the reuse of programming from one machine to another.
- SERCOS interface provides high speed communications using noise-immune fiber optic cables. This also enables diagnostics to put an end to mystery faults that cause problems and delays.
- The modular design of Kinetix 6000 makes expansion easy.

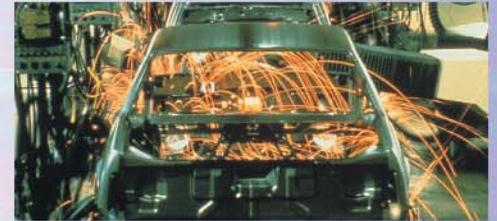
**Converting** applications roll quickly through product changeover thanks to the flexibility of Kinetix 6000 modularity.



- System-wide control provides real time information for the entire process.
- Modular architecture ensures that even large scale projects can be tackled with relative ease.
- High axis count and feature-specific configurations reduce hardware installation costs.
- Dedicated processing power at every axis ensures maximum computing power is available where you need it.

## Assembly

various types of products can be handled very effectively with Kinetix 6000.



- Kinetix 6000 offers extremely accurate product positioning.
- Absolute feedback simplifies machine power-up, so you'll save valuable time getting started.
- Kinetix 6000 is 25 to 65% smaller than competitors' units, allowing it to fit in or under the machine rather than across the aisle.
- SERCOS interface replaces costly command and feedback wiring, reducing both installation time and wiring costs.

**With Kinetix 6000, your application will benefit from improved performance and effortless precision, too.**



## World-Class Motion Control with Worldwide Support

Our Motion Solution Managers are specialists in motion control and servo drive technology. They have the expertise to evaluate your application requirements and help you achieve the optimum solution. In addition, our commercial engineering team provides design assistance and proof-of-concept evaluations to be sure you're on the right track before you start up your application. Should technical assistance ever be required once the system is in place, Rockwell Automation Global Manufacturing Solutions can help to solve almost any problem.

# Kinetix 6000 Specifications

## Integrated Axis Module Converter

	2094-AC05-M01	2094-AC09-M02	2094-BC01-M01	2094-BC02-M02
AC Input Voltage	195-265V <sub>rms</sub> Three-Phase (200/230V nominal)		324-528V <sub>rms</sub> Three-Phase (380/480V nominal)	
AC Input Frequency	47 - 63 Hz 			
Main AC Input Current				
Nominal	7.5A	15A	10A	22.5A
Maximum inrush	40A	40A	40A	45A
Logic Power AC Input Voltage	95-264V <sub>rms</sub> Single-Phase (110/230V nominal) 			
Continuous Output Current to Bus (A <sub>dc</sub> )	9A	19A	10A	22.5A
Intermittent Output Current to Bus (A <sub>dc</sub> )	18A	38A	20A	45A
Continuous Power Output to Bus (nominal)	3 kW	6 kW	6 kW	15 kW

## Integrated Axis Module and Axis Module Inverter

	2094-AM01 (and 2094-AC05-M01)	2094-AM02 (and 2094-AC09-M02)	2094-BM01 (and 2094-BC01-M01)	2094-BM02 (and 2094-BC02-M02)
Continuous Output Current (0-peak)	9A	15A	9A	15A
Peak Output Current (0-peak) (up to 2.5 seconds)	17A	30A	13A	22A
Maximum seconds at peak	2.5	2.5	5	5
Continuous Power Out (nominal)	1.9 kW	3.4 kW	3.9 kW	6.6 kW

## Axis Module Size

	Height	Depth	Width AM/IAM
230V AC	200mm (7.9")	195mm (7.7")	70mm/125mm (2.8"/4.9")
460V AC	250mm (9.8")	260mm (10.2")	70mm/125mm (2.8"/4.9")

<b>Operating Temperature</b>	0°C to 50°C (32°F to 122°F)
<b>Storage Temperature</b>	-40°C to 70°C (-40°F to 158°F)
<b>Humidity</b>	5 to 95% non-condensing
<b>Vibration</b>	10-2000 Hz
<b>Operating/Non-operating</b>	1.0 g peak, 0.152 mm peak-peak 2.5 g peak, 0.381mm peak-peak
<b>Shock: Non-operating</b>	30g
<b>UL® listed to U.S and Canadian safety standards, CE compliant.</b>	

## Motors

Kinetix 6000 is designed to work with a wide range of motors with various feedback options to provide the ideal combination of performance and cost-effectiveness for your application.

**Feedback** types that work with Kinetix 6000 include Resolver, Incremental, High Resolution Single and Multi-turn Absolute Encoders, including Stegmann Hiperface and Sine/Cosine.

## On-Module I/O Specifications

- Inputs = 2 registration inputs, 1 home input, 2 over travel inputs, 1 axis enable input
- Each axis module provides terminals of 24V DC for use with up to six 3-wire sensors
- Outputs = Motor mechanical brake output (up to 1A), dynamic brake module control output (up to 1A), and drive okay input/output

**For complete specifications and additional product information, refer to the Motion Control Selection Guide: Publication # GMC-SG001x or visit our website: [www.ab.com/motion](http://www.ab.com/motion)**

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[www.rockwellautomation.com](http://www.rockwellautomation.com)

## Corporate Headquarters

Rockwell Automation, 777 East Wisconsin Avenue, Suite 1400, Milwaukee, WI, 53202-5302 USA, Tel: (1) 414.212.5200, Fax: (1) 414.212.5201

## Headquarters for Allen-Bradley Products, Rockwell Software Products and Global Manufacturing Solutions

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation SA/NV, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640

Asia Pacific: Rockwell Automation, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

## Headquarters for Dodge and Reliance Electric Products

Americas: Rockwell Automation, 6040 Ponders Court, Greenville, SC 29615-4617 USA, Tel: (1) 864.297.4800, Fax: (1) 864.281.2433

Europe/Middle East/Africa: Rockwell Automation, Brühlstraße 22, D-74834 Elztal-Dallau, Germany, Tel: (49) 6261 9410, Fax: (49) 6261 17741

Asia Pacific: Rockwell Automation, 55 Newton Road, #11-01/02 Revenue House, Singapore 307987, Tel: (65) 6356-9077, Fax: (65) 6356-9011