



WELCOME TO THE WORLD OF COMPLETE AUTOMATION

Digital Servo Drive Power and Flexibility



Allen-Bradley

Ultra Family Servo Drives

AB Drives



Rockwell Automation

Bringing Together Leading Brands in Industrial Automation

Ultra Family Drives – A Broad Range of Power and Flexibility

The new Ultra Family creates a comprehensive set of servo drive products that range from simple analog command control to state-of-the-art, single-axis intelligent position control. Three Ultra Family drives provide this range of features. The Ultra3000 is a high-performance, digital servo drive that provides analog command control, preset speed and torque control, as well as master/follower operation.

The Ultra3000i digital servo drive with indexing adds basic position control capability to the Ultra3000 feature set.

The Ultra5000 drive is a flexible, powerful, C-programmable intelligent positioning drive.



Ultra Family

The entire Ultra Family is configured and programmed using Ultraware software. Ultraware provides a rich, intuitive tool set that includes sophisticated digital storage scope capability, a comprehensive array of diagnostics, and a file management system that helps organize multiple configuration files and motion programs.

To complete your system, the entire Ultra Family will operate a wide variety of Allen-Bradley high-performance rotary servomotors.

The Ultra Family also offers seamless support of high-performance linear motors for your most demanding linear motion applications.

How Much Sophistication Does Your Application Require?

With the Ultra Family of drives, you can use the product that is the right fit for your application.

Ultra5000 Intelligent Positioning Drive

- When your application demands extremely high performance and flexibility, the Ultra5000 will provide you with an unprecedented level of performance at a reasonable price.
- High-speed digital signal processor technology, combined with C programmability, allows the Ultra5000 to accommodate the most demanding applications and execute motion programs extremely fast.
- High-speed applications such as labelers, smart belts, and flying cutoff systems will benefit from the Ultra5000's flexibility and performance.
- Because the Ultra5000 uses the standard ANSI C library of functions, it provides a rich set of math, string, and array commands that are not usually available on intelligent positioning drives.

Ultra3000 Digital Servo Drive

- Use the Ultra3000 with PLC, PC-based and stand-alone motion controllers that generate analog torque and velocity commands. Digital velocity and current loops in the Ultra3000 provide excellent, stable performance, and the Ultraware software makes them easy to set up.
- If your application requires accurate velocity control, the 8 preset velocities available on the Ultra3000 allow several speeds to be selected using the drive's digital inputs.
- The Ultra3000's flexible master/follower mode allows 8 different master/follower ratios to be selected using the drive's digital inputs.

Ultra3000i Digital Servo Drive with Indexing

- The Ultra3000i drive provides an economical solution to applications that require simple position control by eliminating an external motion controller or PLC card. Using the Ultra3000i's digital inputs or DeviceNet, 64 stored indexes can be selected. Indexes can be absolute positions, incremental distances, and even registration sensor-based moves. Also, multiple indexes can be linked together to form complex motion sequences, and blended indexes can be used to create complex profiles.

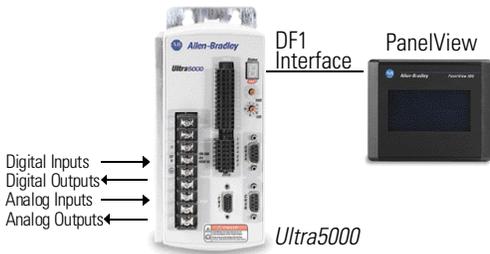
Platform Integration or Stand-Alone Flexibility

Motion control is the most important component to reducing cycle time in many applications. For higher performance and lower overall automation system costs, users now expect systems where multiple control functions, such as motion control and sequential control, integrate on single platforms for a single point of programming.

The Allen-Bradley Ultra Family is designed to provide OEM machine builders the flexibility of distributed, stand-alone component integration or broader integration into any machine architecture including Allen-Bradley's ControlLogix platform via analog command signals or direct SERCOS digital interfaces. ControlLogix technology integrates motion and sequential control functionality into a single multitasking controller platform that results in higher system performance, faster application development, easier maintenance, lower system costs, and simplified system installation.

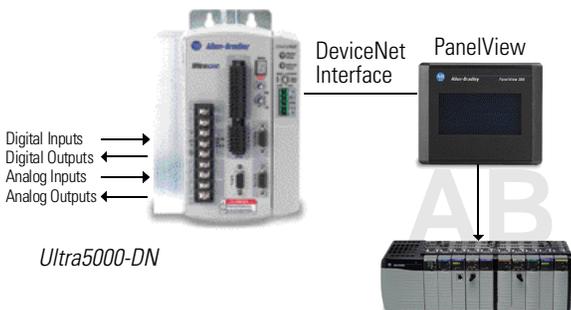
Ultra5000 Intelligent Positioning Drive

The Ultra5000 Intelligent Positioning Drive combines a high performance motion controller and a single axis servo drive into a single, cost-effective package.



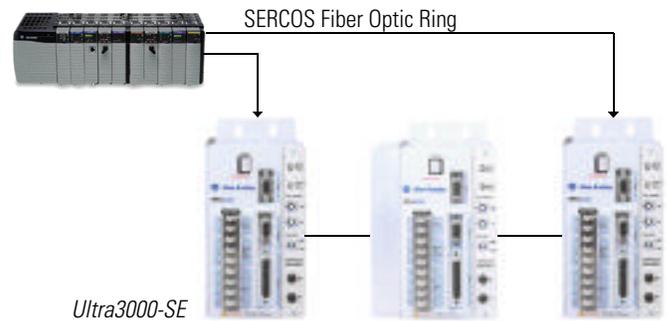
Ultra5000 with DeviceNet

The Ultra5000 and DeviceNet network combine to provide high-performance motion control capabilities with the versatility of network communications.

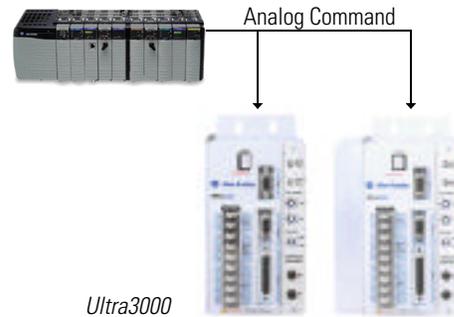


Ultra3000 with ControlLogix

The Ultra3000 can be used with Allen Bradley's ControlLogix PLC platform in a variety of ways. For the most complete integration, the 1756-M08SE and Ultra3000 with SERCOS interface provide OEM's with a high performance, single point commissioning system.

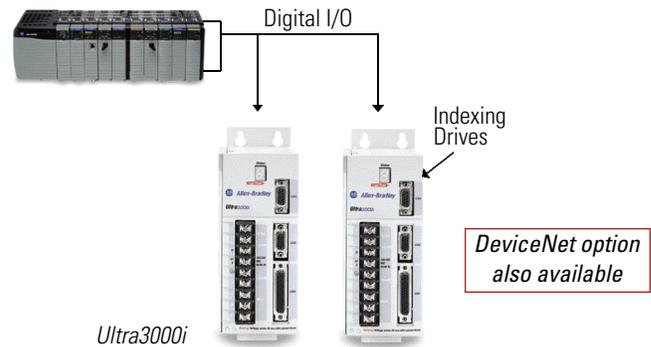


Using the ControlLogix 1756-M02AE analog card with the Ultra3000 provides a traditional motion solution for multi-axis applications.



Ultra3000i Indexing Servo Drive and ControlLogix

The Ultra3000i's indexing capability can often eliminate the need for a PLC motion card in applications where point-to-point positioning is required in a cost effective package.



AB Drives

Key Benefits of the Ultra5000 Intelligent Servo Drive

- ❖ Fully programmable integrated motion controller and drive to provide advanced motion control functions to any single axis application
- ❖ High-speed processing for increased axis performance and control capabilities
- ❖ Integrated drive, controller and I/O packaging eliminates system components, connections and cost
- ❖ Motion programs are created in ANSI C for fast code execution, compact code and standard development environment.
- ❖ Increased machine reliability by incorporating a proven power architecture
- ❖ Cost effective and seamless integration into stand-alone or control system topologies
- ❖ Standard DF-1 Interface for stand-alone applications, optional DeviceNet communication interface for supervisory control communications.

Ultra5000 Features

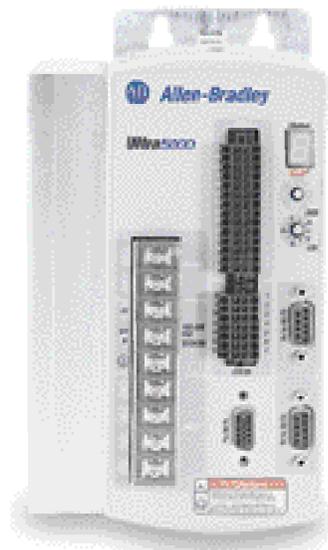
Each intelligent positioning drive features:

- ❖ 100-240V AC, single phase input
- ❖ Standard high-density D-Shell connectors for encoder feedback connections
- ❖ Pluggable spring clamp terminals for ease of wiring I/O and auxiliary feedback
- ❖ Sixteen general purpose digital inputs and eight general purpose digital output
- ❖ Two general purpose analog inputs and outputs
- ❖ Support for incremental, high resolution and multi-turn absolute feedback, including Stegmann Hiperface and sine/cosine encoders
- ❖ Automatic motor recognition capability with intelligent feedback devices, eliminating the need to configure motor parameters.
- ❖ CE compliance and UL listing

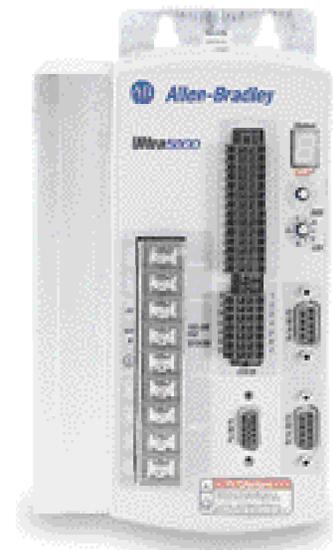
Ultra5000 Family



0.5 kWDrive



1.0 kWDrive



2.0 kWDrive

Key Benefits of the Ultra3000 Digital Servo Drive

- ❖ The Ultra3000 provides simple integration into Allen-Bradley machine control architectures. It accepts analog 0-10V, step/direction and master following command sources along with SERCOS and DeviceNet connectivity across the entire Ultra3000 family.
- ❖ Optimized motor/drive combinations are available for each application. The Ultra3000 can operate a wide variety of brushless servo motors, including the Allen-Bradley Y-, LD-, N-, H-, F-, W- and MP-Series motors along with linear and third-party motors.
- ❖ To eliminate costly and time consuming machine homing cycles, the Ultra3000 has built-in support for multi-turn absolute encoders or an option to supply external logic power to maintain position during power loss.
- ❖ Ultraware software is a powerful commissioning and diagnostic tool designed to increase your productivity and allows you to optimize your system's performance quickly and easily.

- ❖ The Ultra3000 incorporates application proven designs, tested individually and within overall architectures, to provide world class reliability and increase your machine productivity.
- ❖ The Ultra3000 can reduce cost and components. Using the Ultra3000i's built-in indexing capability can eliminate the need for a motion controller or PLC card for point to point positioning moves.

Ultra3000 Drive Features

Each standard Ultra3000 digital servo drive features:

- ❖ 100-240V AC, single and three phase input
- ❖ Standard high-density D-Shell connectors
- ❖ Field programmable flash memory firmware storage
- ❖ Seven segment LED for status and error codes
- ❖ Eight selectable general purpose inputs
- ❖ Four selectable general purpose outputs and one relay output
- ❖ Serial port for RS-232/RS-485 communications
- ❖ CE compliance and UL listed to U.S. and Canadian safety standards

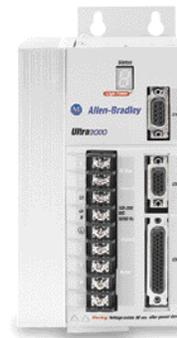
Ultra3000 Family



0.5 kW Drive



1.0 kW Drive



2.0 kW Drive



3 kW Drive
with DeviceNet



7.5 kW Drive
with DeviceNet



15 kW Drive
with SERCOS

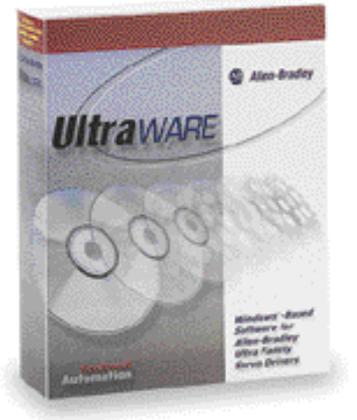
AB Drives

Ultraware Software – Pure Productivity

When you use the Ultra Family servo drives, you find just how easy they are to operate. Ultraware is a Windows-based interface with an intuitive object-oriented tree structure. With online help and quick startup windows, setup is simple.

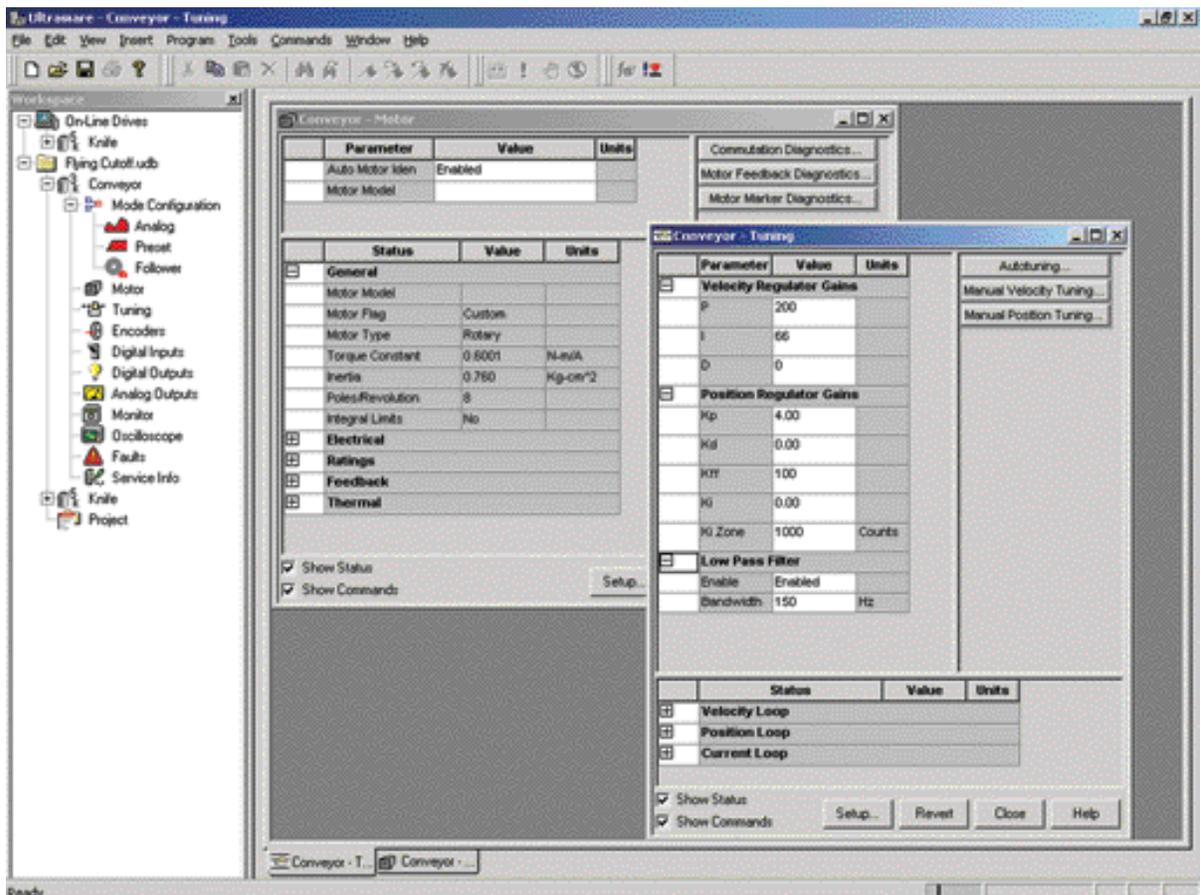
But Ultraware is more than just a configuration tool. It also comes with powerful, field-tested productivity tools such as:

- On-screen digital oscilloscope for fast tuning and diagnosis
- A full array of on-screen meters and other software tools for rapid debugging and measurement
- Instant access to critical information with complete online help
- Diagnostic and setup tools to make system integration a snap



Ultra Family drives keep error messages in nonvolatile message buffers, so tracking down problems is easier.

Ultraware software helps you save time, reduce your learning curve, and simplify the integration and debugging of your system because the same software is used for the entire Ultra Family. That means fewer maintenance headaches, less downtime, and a lower life cycle cost for all your drives.



Ultraware Software

Ultraware C Programming Environment for the Ultra5000

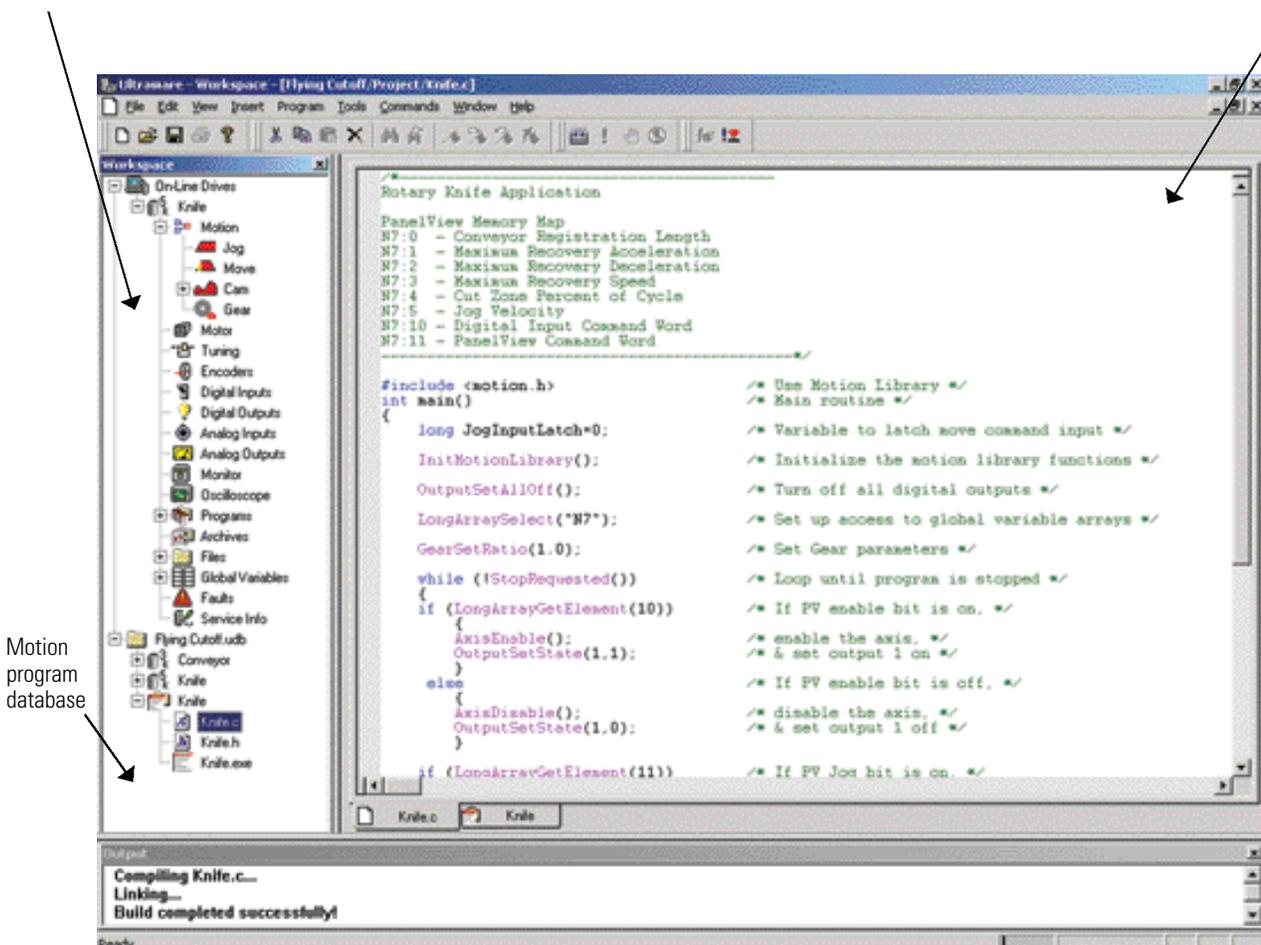
Ultra5000 Intelligent Positioning Drive programs are created using motion commands within an ANSI C format. The Ultra5000 is the first intelligent positioning drive to leverage the power and flexibility of the standard ANSI C language. Furthermore, adopting ANSI C as the programming language for the Ultra5000 provides the following benefits:

- Excellent capability to handle arrays, strings, numeric conversions, and math operations
- A rich set of iteration and selection structures such as If-Then, While, Do-While, For, and Switch operations
- Well-known syntax
- Greater speed and code compactness
- Convenient methods to add custom functions like rotary-knife, smart-belt, etc.

The Ultraware software used to configure the Ultra5000 includes a full-featured, color-syntax editor that provides access to the C programming environment.

Drive configuration and diagnostics controls

C Motion Program and Editor



AB Drives
Ultraware Software with C Editor

Ultra3000 Indexing – Cost-Reduce and Simplify Your Solution

Indexing functionality allows the drive to execute up to 64 different trapezoidal position moves initiated by the use of the digital I/O, MMI, or an unlimited number of indexes through the use of the host command language.

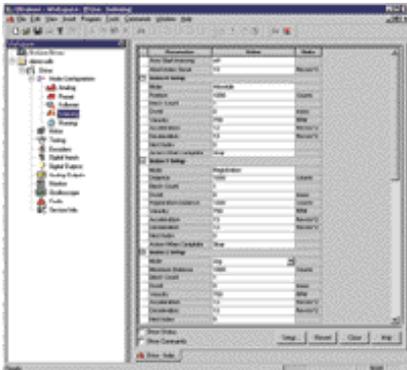
The benefit of indexing is the ability to obtain the position-control performance and flexibility in applications where electronic motion control systems were not cost-effective in the past. And the indexing drives simplify, as well as cost-reduce, many existing motion control systems by eliminating the need for the command source typically provided by motion controllers, stepper controllers, and PLC servo and stepper cards.

The indexing drives support four different types of index moves:

- Incremental – distance move that executes relative to current position
- Absolute – position move executed in reference to the home position
- Jog – input level sensitive move executed while input remains high
- Registration – distance move that executes relative to the registration sensor digital input

The Ultra 3000i indexing drive provides maximum flexibility by allowing you to define the following parameters for each individual index profile:

- Index Type
- Distance (Position)
- Batch Count
- Action when Complete
- Registration Distance
- Velocity
- Acceleration
- Deceleration
- Dwell Time
- Next Index

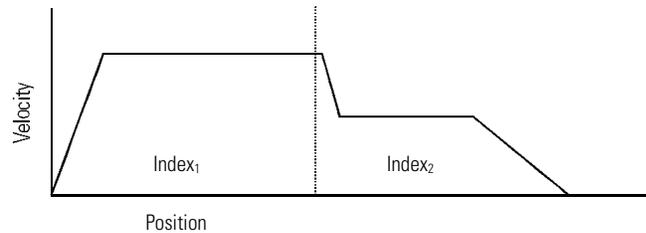


Ultra3000i Indexing with Ultraware

Blended Moves

Blended moves extend the positioning capability of the Ultra3000i by allowing it to finish an index move at a nonzero velocity and immediately begin the next specified move.

As the picture illustrates, one index can immediately lead to a second without stopping.



One of the many ways this feature can be useful includes making the high-velocity move of Index₁ to a defined point, then immediately blending it with Index₂ to the desired position, using a lower velocity. This allows product to be gently positioned without sacrificing cycle times.

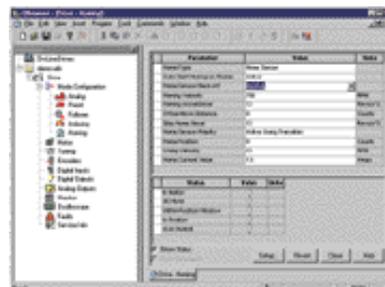
Alternatively, an application may require the use of a registration mark to define position. An index move to the zone where the registration mark is anticipated, immediately blended to a second index move that uses the mark for positioning, will result in accurate position registration.

Blended indexes are easily set up in Ultraware.

Home Routines

The Ultra 3000i offers a user-defined home routine, which allows you to home the axis without the aid of any other device. Using Ultraware, you can select one of the following different home routines to match your motion application:

- Home-to-sensor-to-marker
- Home-to-marker
- Home-to-sensor
- Home-to-current value
- Home-to-current value-to-marker



Ultra3000i Homing with Ultraware

MP-Series – New Low-Inertia Brushless Servomotors with Absolute Feedback

MP-Series features a newly engineered construction that reduces motor size while delivering significantly higher torque. A segmented core stator design, improved thermal management, along with multiple electronic configurations available create a motor with optimal performance characteristics. Easily reversible motor connectors and several feedback options including absolute and high resolution add to the versatility and capability of the MP-Series motor. Available in three frame sizes and growing, the MP-Series motors range in continuous torque capability from 0.79 to 10.20 Nm (7 to 90 lb-in) and speeds up to 5000 rpm. Feedback options for the MP-Series motor include a 2000-line, high-performance encoder that delivers 8,000 counts per revolution for precise position feedback.



H-Series – Low-Inertia Brushless Servomotors

H-Series motors provide low inertia and high acceleration. Available in five frame sizes, the H-Series motors range in continuous torque capability from 0.5 to 50 Nm (5 to 450 lb-in) and speeds to 6000 rpm. The H-Series motors use an optical 2000-line incremental encoder with the 5000-line option for superior low-speed performance with the Ultra Family.



F-Series – Medium-Inertia Brushless Servomotors

F-Series motors, mechanically interchangeable with the H-Series, use a ferrite magnet that provides nearly four times greater inertia than the H-Series family for matching larger-load inertias. Available in two frame sizes, the F-Series motors range in continuous torque capability from 3.5 to 28 Nm (31 to 245 lb-in) and speeds to 4000 rpm. The F-Series motors use an optical 2000-line incremental encoder with a 5000-line option for superior low-speed performance with the Ultra Family.



Y-Series – Small, Low-Inertia Brushless Servomotors

Y-Series motors, available in either 115V or 230V windings, use a high-energy neodymium magnet that provides low inertias for fast acceleration. Available in three popular metric frame sizes, the Y-Series motors range in continuous torque capability from .17 to 2.5 Nm (1.5 to 22 lb-in) and speeds up to 4500 rpm. Their outstanding torque-to-size ratios make the Y-Series a powerful combination with the Ultra Family drives.



N-Series – NEMA-Style Brushless Servomotors

N-Series motors use a high-energy ring magnet rotor construction for outstanding torque-to-size ratio. Available in four common NEMA-style frame sizes, N-Series motors matched with an Ultra Family drive create a high-performance alternative to stepper systems. They range in continuous torque capability from .18 to 5.3 Nm (1.6 to 47 lb-in) and speeds up to 7000 rpm.



Cables and Accessories

When it comes to motion control systems, efficient commissioning and superior uptime are a direct result of simple, easy-to-understand interconnects and integrity in every component. You'll find that using the standardized cables and accessories designed specifically for the Ultra Family means fewer problems, more efficient operation, less downtime, and quicker troubleshooting. We've taken great care to ensure that Ultra Family accessories provide unquestionably sound connections, long life, and superior performance.



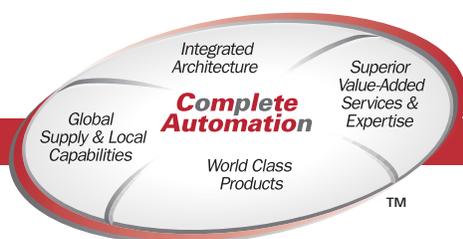
Ultra5000 Intelligent Positioning Drive Specifications

| GENERAL | 2098-IPD-005 2098-IPD-005-DN | 2098-IPD-010 2098-IPD-010-DN | 2098-IPD-020 2098-IPD-020-DN |
|--|---|--------------------------------------|--------------------------------------|
| Peak Output Current (Amps) | 7.5 | 15 | 30 |
| Continuous Output Current (Amps) | 2.5 | 5 | 10 |
| Continuous Output Power (kW) | 0.5 | 1 | 2 |
| Continuous Shunt Power Internal | N/A | N/A | N/A |
| Peak Shunt Power Internal | N/A | N/A | N/A |
| Continuous Shunt Power w/External Kit | 300 Watts | 300 Watts | 300 Watts |
| Peak Shunt Power External | 4 kW | 4 kW | 4 kW |
| INPUT | | | |
| Continuous Input Current | 5 | 9 | 18 |
| Input Voltage | 100-240 volts AC Single-Phase | | |
| Input Frequency | 47-63 Hz | | |
| USER PROGRAMMING | | | |
| Language | Compiled ANSI C with Library of Motion Commands | | |
| Programming Environment | Full-featured Color Syntax Editor and "C" Compiler Integrated with Ultraware Software | | |
| Operating System | Real-time multitasking, Flash-upgradeable | | |
| User Program Memory Capacity | 512 Kbytes | | |
| User Program Memory Storage Medium | Flash Memory, 100,000 Write Cycles | | |
| Nonvolatile Memory Capacity | 32 Kbytes (approximately 8000 nonvolatile user variables) | | |
| Nonvolatile Memory Storage Medium | nvSRAM (high-speed SRAM/EEPROM) | | |
| CONTROLLER | | | |
| Processor | Texas Instruments IMS320C32 32-Bit Floating Point Digital Signal Processor | | |
| Clock Speed | 60 MHz | | |
| Commutation | 3-Phase Sinusoidal Space Vector Modulated PWM | | |
| Current Loop | Digital PI - 125 µsec update rate | | |
| Velocity Loop | Digital PI - 250 µsec update rate | | |
| Position Loop | Digital PI - 500 µsec update rate | | |
| Position Range | 32-bit signed | | |
| Velocity Range | 32-bit floating point | | |
| Acceleration Range | 32-bit floating point | | |
| Electronic Gearing | 64-bit signed | | |
| INPUTS/OUTPUTS | | | |
| General-Purpose Digital Inputs | 16 Optically Isolated 12-24 volt inputs | | |
| Inputs/Outputs - Sinking/Sourcing Selection | Software Selectable as a Group to be Active High, Current Sinking or Active Low, Current Sourcing | | |
| General-Purpose Digital Outputs | 7 Optically Isolated 12-24 Volt Outputs – 50 Milliampers Maximum | | |
| General-Purpose Relay Output | 1 Normally Open Relay – 30 Volts DC Maximum Voltage, 1 Ampere Maximum Current | | |
| General-Purpose I/O Response | 100 µsec | | |
| High-Speed Input Response | <1 µsec (Inputs 1 and 2) | | |
| Position Capture Response | <1 µsec (Input 1, Input 2, Motor Encoder Index, and Auxiliary Encoder Index) | | |
| General-Purpose Analog Inputs | 2 12-bit Analog-to-Digital Converters (+/- 10v, single-ended) | | |
| General-Purpose Analog Outputs | 2 12-bit Digital-to-Analog Converters (+/- 10v, +/- 2ma, single-ended) | | |
| COMMUNICATIONS | | | |
| Serial | 2 Independent RS-232/RS-422/RS-485 Ports, 1200-38,400 Baud | | |
| Networking | DF-1 Point-to-Point standard, DeviceNet optional. | | |
| MOTOR FEEDBACK | | | |
| Input Modes | Incremental with Index, Sine/cosine High Resolution Absolute (Single and Multi-turn) | | |
| Maximum Input Frequency | 2.5 MHz (Encoder Lines), Over 1 million counts/rev (High Resolution) | | |
| Commutation Startup | Hall Sensor | | |
| AUXILIARY FEEDBACK | | | |
| Operation | Auxiliary Feedback Input | | |
| Input Modes | A quad B | | |
| Input Type | Line Receiver | | |
| Maximum Input Frequency | 2.5 MHz (Encoder Lines) | | |
| MOTION | | | |
| Acceleration Types | Linear, S-Curve | | |
| Auxiliary Encoder Follower Modes | Bidirection, Single-Direction, Buffered (Ratchet Mode) | | |
| Electronic Cam | User-Generated Point Pair Table, Polynomial Interpolated Point Pairs | | |
| CONNECTORS | | | |
| Digital I/O Connector CN1A | 28-Position Pluggable Spring-Clamp Terminal Block | | |
| Auxiliary Feedback/Analog I/O Connector CN1B | 14-Position Pluggable Spring-Clamp Terminal Block | | |
| Motor Feedback Connector CN2 | 15-Position High-Density Female D-Sub Connector | | |
| Serial Port Connectors CN3A and CN3B | 9-Position Female D-Sub Connector | | |
| Main AC, Motor Power, and DC Bus Connector | 9-Position Screw Terminal Block | | |
| ENVIRONMENTAL | | | |
| Storage Temperature | -40°C to 70°C (-40°F to 158°F) | | |
| Operating Temperature | 0°C to 55°C (32°F to 131°F) | | |
| Humidity | 5% to 90% noncondensing | | |
| Altitude | 1500m/5000ft (derate 3% per 300m above 1500m) | | |
| Vibration | 10 to 2000 Hz at 2g | | |
| Shock | 15 g 11 msec half sine | | |
| Weight | 2098-IPD-005 3.9 lbs (1.77 kg) | 2098-IPD-005-DN 4.7 lbs (2.11 kg) | 2098-IPD-010 4.55 lbs (2.07 kg) |
| | | 2098-IPD-010-DN 5.3 lbs (2.41 kg) | 2098-IPD-020 4.51 lbs (2.05 kg) |
| | | | 2098-IPD-020-DN 5.3 lbs (2.39 kg) |

Ultra3000 and Ultra3000i Digital Servo Drive Specifications

| ELECTRICAL CHARACTERISTICS | 2098-DSD-005 | 2098-DSD-010 | 2098-DSD-020 | 2098-DSD-030 |
|---|---|-------------------------------|-------------------------------|--|
| | 2098-DSD-005X | 2098-DSD-010X | 2098-DSD-020X | 2098-DSD-075 2098-DSD-150 |
| Peak Output Current (Amps) | 7.5 | 15 | 30 | 30/75/150 |
| Continuous Output Current (Amps) | 2.5 | 5 | 10 | 15/35/65 |
| Continuous Output Power (kW) | 0.5 | 1 | 2 | 3/7.5/15 |
| Continuous Shunt Power Internal | N/A | N/A | N/A | 50/180 |
| Peak Shunt Power Internal | N/A | N/A | N/A | 4.5/10/18 |
| Continuous Shunt Power External (kW) | 300 Watts | 300 Watts | 300 Watts | 2.4/4/8 |
| Peak Shunt Power External | 4 kW | 4 kW | 4 kW | 6/10/19 |
| INPUT | | | | |
| Continuous Input Current (Amps RMS) | 5 | 9 | 18 | 28/30/46 |
| Input Voltage | 100-240 Volt AC Single-Phase (Three-Phase for -075 and -150) Optional 5 VDC external logic power | | | 12-24 VDC required for Digital I/O |
| Input Frequency | 47-63 Hz | | | |
| OPERATING MODES AND COMMAND SOURCES | | | | |
| Ultra3000 | | | | |
| Analog Velocity/Current Mode | +/- 10 Volt input | | | |
| Preset Velocity, Current, and Follower Ratios | 8 presets, binary selection by digital inputs or serial commands, electronic gearing | | | |
| Step and Direction, Step Up/Step Down | 2.5 MHz maximum frequency, Differential or single-ended input | | | |
| Master Encoder Following | 2.5 MHz maximum line frequency, Differential or single-ended input | | | |
| Digital Serial Commands | Via serial port and 7-bit ASCII protocol | | | |
| Ultra3000i | | | | |
| Indexing | 64 configurable indexes, selectable by digital inputs or serial commands | | | |
| Positioning Types | Blended moves at a nonzero velocity, Jogging, Stop Index via digital input or serial command | | | |
| Home Routines | Absolute, Incremental, Registration, Jog Home-to-sensor, home-to-marker, home-to-sensor/marker, or home-to-current-value | | | |
| INPUTS/OUTPUTS | | | | |
| General-Purpose Digital Inputs | 8 Optically Isolated 12-24 Volt, Active High Inputs - Assignable to one or more selections | | | |
| General-Purpose Input Selections | Drive Enable, Disable Serial Communications, Pause Index, Stop Index, Pause Homing, Stop Homing, Preset Select, Set Preset Position, Integrator Inhibit, Follower Enable, Forward Enable, Reverse Enable, Operation Mode Override, Position Strobe, Home Sensor, Start Index, Define Home, Registration Sensor, Remove Command Offsets, Start Homing, Fault Reset | | | |
| General-Purpose Digital Outputs | 4 Optically Isolated 12-24 volt Outputs, 50 Milliampere Maximum | | | |
| General-Purpose Output Selections | In-Position, Within Position Window, Zero Speed, Within Speed Window, Up to Speed Drive Enabled, DC Bus Charged, Ready, In Motion, In Dwell, Tracking, End of Sequence, Current Limiting, Registered, At Home, Axis Homed, Start Up Commutation Done, Brake Fault Disable, Fault Decel/Disable, Fault Ignore, Fault Indicate, Overtravel Exceeded | | | |
| General-Purpose Relay Output | 1 Normally Open Relay, 30 volts DC Maximum Voltage, 1 Ampere Maximum Current | | | |
| Registration Input Capture Response | <100 µseconds | | | |
| Analog Command Input | 1 14-Bit Analog-to-Digital Converter (+/- 10v, Differential) | | | |
| General-Purpose Analog Output | 1 8-Bit Digital-to-Analog Converter (+/- 10v, +/- 2ma, single-ended) | | | |
| COMMUNICATIONS | | | | |
| Serial | 1 port with RS-232/RS-422/RS-485 at 1200-57,600 baud | | | |
| Networking | DeviceNet, SERCOS | | | |
| CONTROL LOOPS | | | | |
| Modes | Current, Velocity, Position control | | | |
| Types | All loops digital | | | |
| PWM | 8 kHz, Space Vector Modulation | | | |
| Velocity Loop Bandwidth | 300 Hz | | | |
| MOTOR FEEDBACK | | | | |
| Input Modes | Incremental with Index, Sine/cosine High Resolution Absolute (Single and Multi-turn) | | | |
| Maximum Input Frequency | 2.5 MHz (Encoder Lines), Over 1 million counts/rev (High Resolution) | | | |
| Commutation Startup | Hall Sensor | | | |
| AUXILIARY FEEDBACK | | | | |
| Operation | Auxiliary Position Loop Feedback Input | | | |
| Input Modes | A quad B | | | |
| Input Type | Line Receiver | | | |
| Maximum Input Frequency | 2.5 MHz (Encoder Lines) | | | |
| CONNECTORS | | | | |
| Control Connector CN1 | 44-Position High-Density Female D-Shell Connector | | | |
| Motor Feedback Connector CN2 | 15-Position High-Density Female D-Shell Connector | | | |
| Serial Port Connector CN3 | 9-Position Female D-Shell Connector | | | |
| Main AC, Motor Power, and DC Bus Connector | 9-Position Screw Terminal Block | | | |
| ENVIRONMENTAL | | | | |
| Storage Temperature | -40°C to 70°C (-40°F to 158°F) | | | |
| Operating Temperature | 0°C to 55°C (32°F to 131°F) | | | |
| Humidity | 5% to 90% noncondensing | | | |
| Altitude | 1500m/5000ft (derate 3% per 300m above 1500m) | | | |
| Vibration | 10 to 2000 Hz at 2g | | | |
| Shock | 15g 11 msec half sine | | | |
| Weight | 2098-DSD-005 2098-DSD-005X | 2098-DSD-010 2098-DSD-010X | 2098-DSD-020 2098-DSD-020X | 2098-DSD-030 2098-DSD-075 2098-DSD-150 |
| | 3.7 lbs (1.68 kg) | 4.47 lbs (2.03 kg) | 4.41 lbs (2.0 kg) | (-030) 13.64 lbs (6.19 kg) (-075) 20.64 lbs (9.36 kg) (-150) 13.64 lbs (6.19 kg) |

Rockwell Automation is an automation leader who not only develops innovative technology, but has the expertise and global supply network to be your complete automation solution provider. Rockwell Automation offers worldwide customer support capabilities. And, through a network of partnerships, Rockwell Automation brings together reliable, knowledgeable people from all corners of the automation world to meet your needs. As a part of Complete Automation™, the Ultra Family of world-class motion control products was designed with built-in reliability for long life and superior performance. In addition to stand-alone control, the Ultra Family offers the flexibility of platform integration with ControlLogix. This flexibility provides you with the most efficient flow of information to meet your needs from the simplest device to the highest-level information system. You can depend on Complete Automation to help you achieve increased productivity and lower total cost of ownership.



World-Class Motion Control with Worldwide Support

To put the Ultra Family – along with any other Allen-Bradley motion control equipment – to work for you, Rockwell Automation has a worldwide network of sales and service engineers and authorized system integrators. Together, they offer the industry's broadest range of support services to help you implement your motion control solution.

Our Motion Solution Managers are specialists in motion control, CNC, and servo drive

technology. They have the expertise to evaluate your application requirements and help you achieve the optimum solution.

Rockwell Automation Global Manufacturing Solutions offers application engineering services, system startup, training, field service, and ongoing product support.

They also offer an emergency HELP line – a 24-hour, toll-free evaluation and service connection.

Our network of authorized motion control system integrators can provide complete integration services for new, retrofit, or rebuild requirements worldwide.

For more information on the Ultra Family or any of our support services, contact your nearest Rockwell Automation sales office or motion control distributor, or refer to our Web site: www.ab.com/motion

Reach us now at www.rockwellautomation.com

Rockwell Automation, a business of Rockwell International Corporation (NYSE: ROK), helps industrial customers improve productivity and lower total costs through its combination of value-added services and product line competencies, which include: Allen-Bradley real-time control, Reliance Electric motors and drives, Dodge mechanical power transmission products, and information management through Rockwell Software. Rockwell Automation's Complete Automation™ approach is supported by thousands of authorized partners, distributors and solution providers around the world.



Headquarters for Allen-Bradley and Rockwell Software

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

Americas – Rockwell Automation, 6040 Ponders Court, Greenville, SC 29615-4617 USA, Tel: (1) 864.297.4800, Fax: (1) 864.281.2433
Europe – Rockwell Automation, Brühlstraße 22, D-74832 Elztal-Dallau, Germany, Tel: (49) 6261 941 110, Fax: (49) 6261 941 122
Asia Pacific – Rockwell Automation, 55 Newton Road, #11-01/02 Revenue House, Singapore 307987, Tel: (65) 351 6723, Fax: (65) 355 1733