Reliance Electric FlexPak 3000 Digital DC Variable Speed Drives Product Summary

RELIANCE ELECTRIC

A three-phase digital DC drive for regenerative
and non-regenerative applications 25…2000 ADC

PERFORMANCE PROVEN

Rockwell Automation

The Reliance® Family Of Variable Speed AC and DC Drives

Note: This material is not intended to provide operational instructions. Appropriate Rockwell International Corporation instruction manuals and precautions should be studied prior to installation, operation, or maintenance of equipment.

The Reliance® FlexPak 3000 is part of the Reliance Electric family of variable speed AC and DC drives. The FlexPak 3000 digital DC drive features a unique, ergonomic user interface for easy installation, start-up, application, and maintenance. Its unique design uses the latest digital, micro-semiconductor and circuit technology for an exceptional combination of simplicity, flexibility, and reliability in a compact package.

FlexPak 3000:
Simple. Compact. Flexible. Reliable.

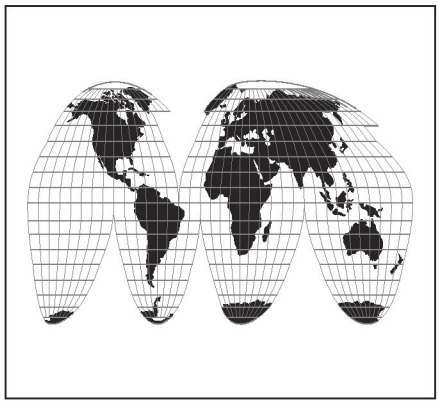
FlexPak 3000 DC drives provide high break-away torque, precise control, and the rugged reliability required by rubber and plastic extrusion equipment.

Simple.

- Readily accessible control, signal, and field wiring for streamlined installation
- User-friendly, graphical displays and a remote keypad using plain text instructions provide fast and easy set-up
- Five languages, accessible with a single keystroke, for displaying diagnostics, status information, and "help" text

Compact.

- Extensive use of molded parts enable feature-rich power density with a small footprint
- Space-saving package facilitates field wiring, mounting, modification, and maintenance



With a single keystroke, the display language of FlexPak 3000 DC drives can be changed to English, German, French, Spanish, or Italian.

Flexible.

- Standard drive software accommodates a wide range of application requirements
- Expanded capabilities available through drive modification kits and options
- Easily modified to a full range of international input-line voltages and frequencies

Reliable.

- Advanced high-density power semiconductor devices, surface mount, and sub-micron ASIC technology for exceptional dependability
- Sophisticated design uses fewer parts for extended performance and reduced maintenance requirements

ISO Certified.

Reliance FlexPak 3000 digital DC drives are manufactured in the U.S.A. and Switzerland in compliance with ISO 9001 certification procedures for consistent, predictable performance. Our program of continuous quality improvement ensures that every FlexPak 3000 drive meets world-class standards of excellence with the ultimate goal of customer satisfaction.

Standard Features and Benefits

Dependable AC Supply For Optimum Reliability

- 200…500 VAC (300…690 VAC)
- 50/60 Hz AC line frequency input
- Phase insensitive AC line input
- Sequencing supports AC-Switching

Versatile Power Capabilities For Diverse Application Requirements

- Full-wave, full control 6-Pulse power conversion for smooth efficient operation and high performance
- Burst firing of SCRs
- Non-regenerative or regenerative (required for reversing) controller
- Rated for continuous output current or 150% full load
- DC inverting fault protection on regenerative controllers

User-Friendly Quick Start Menu For Easy Set-Up and Application

Adjustable parameters include:

- Maximum speed
- Minimum speed
- Linear acceleration
- Linear deceleration
- Current limit (positive and negative on regenerative modules)
- I/R compensation (voltage regulated drives)
- Jog speed
- Jog acceleration/deceleration rate
- Reverse disable on regenerative drives

12-Bit Resolution Analog Signals For Exceptional Accuracy

- 10 VDC manual speed reference
- User selectable +/- 10 Volt or 4-20 mA auto speed reference
- 0-10 VDC analog output proportional to speed
- 0-10 VDC analog output proportional to armature current
- Speed feedback from analog tachometer (250 VDC maximum input)

Expanded Offering of Digital Signals For Optimum Flexibility

- Coast to stop, auto/manual, forward/reverse, jog, run, and stop inputs
- Motor thermostat diagnostic input
- Brush wear diagnostic input
- Customer interlock diagnostic input
- Drive running contact output
- Drive alarm contact output
- Drive fault contact output

Feature-Rich "Standard" Package For Exceptional Functionality

- Self-tuning of speed and current loops without disconnecting the fields
- Field (current) loss protection
- User selectable stop modes
  - Coast
  - Current limit
  - Ramp (separate stop ramp selectable)
- Local controls with interactive keypad and display for:
  - Drive set-up
  - Drive operation
  - Metering and diagnostics (including fault and alarm logs)

Features and Benefits

Connection Terminals for AC input, DC output and field

Compact Chassis Design

Enhanced Field Supply or Field Regulator Kit mount inside

Compact Package with Surface-Mount Regulator Board

Operator Interface Module (OIM)

Terminal Strip for User Control

Digital Encoder or AC Tachometer; AutoMax® Network or DeviceNet™; and other Circuit Kits mount inside drive chassis

Operator Interface Module (OIM)

Unique Reliance OIM technology makes the FlexPak 3000 digital DC drive exceptionally easy to set-up, start-up, operate, and trouble-shoot. The OIM allows you to start-up, adjust, monitor, and operate the drive through one simple interface. An ergonomic keypad layout and extensive full-text information presented on a large liquid crystal display make the OIM easy to understand and use.

Similar functions are grouped together on the keypad:

- Control keys (start, stop, run, jog, and forward/reverse) on the lower right
- Set-up keys (help, enter, and cancel) grouped together on the left

To promote ready identification of specific functions, the OIM uses symbols as well as text descriptions and keys that vary in size and shape.

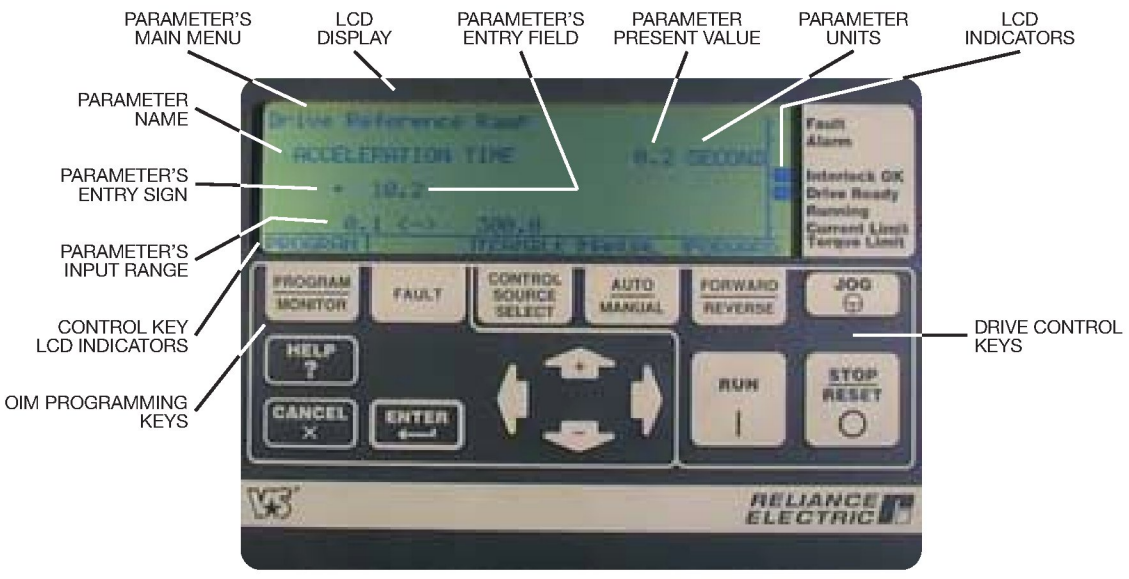
The Quick Start routine makes set-up fast and easy through self-prompting of the drive. The drive can be started in minutes, using the drive and motor nameplate information.

To promote international use, all information is displayed in easy to understand units such as RPM, amps, volts, etc., and in your choice of five languages: English, French, German, Italian, or Spanish. "Help" in the language of your choice, is always only a keystroke away.

More complex set-up and adjustment information is also easily accessible through logically organized, full-text menus that significantly reduce operator training since there's no need to memorize cryptic names or parameter numbers.

If a fault should occur, the OIM allows quick access to the fault and alarm logs. In addition to logging the time and description of each fault, possible causes are identified. For example, a motor thermostat trip fault might suggest checking for an overloaded motor, incorrect blower rotation, clogged filters, etc. The end result of this sophisticated diagnostic process is reduced downtime.

OIM Integer Value Entry Screen



Operator Interface Module (OIM)

Extensive Operator Control For Quick and Easy Use

- Control keys include:
  - Run
  - Stop
  - Forward/Reverse
  - Auto/Manual
  - Control Source Select
- Quick Start sequence for fast and easy drive set-up
- Large, easy-to-read LCD provides:
  - Built-in digital metering, selectable in units proportional to speed or current such as feet/minute (FPM) or percent load
  - Single keystroke selects display text language:
    - English
    - Spanish
    - German
    - Italian
    - French
    - code
- Multiple parameter values, such as speed and load, can be monitored in a single display
- On-screen menus with non-abbreviated text for adjustments and monitoring
- Drive status display indicators include:
  - Drive fault
  - Drive running
  - Drive alarm
  - Current/torque limit
  - Interlocks (OK)
  - Drive ready

Helpful Diagnostics For Reduced Downtime

Diagnostic displays recommending corrective action include:

- AC line voltage high/low alarm
- Motor brush wear alarm
- Loss of AC line synchronization fault
- Failed SCR fault
- Motor thermostat fault
- Drive thermostat fault
- Drive (inverse time) overload fault
- Drive IET (instantaneous electronic trip) fault
- Tachometer loss fault
- Overspeed fault
- Field current loss fault
- Network communication fault

Drive Configuration Module (DCM)

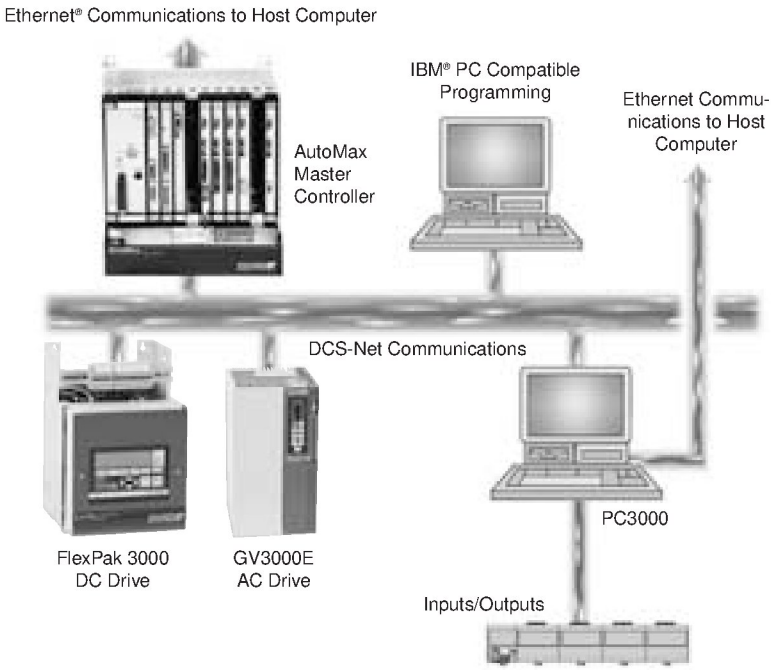
- Reduced OIM Functions
- Two-lines x 16 characters liquid crystal display for text readout.
- 4 LED's for drive status information: Fault, Alarm, Ready and Running
- Up-, Down-, Enter- and Cancel Key for scrolling and parameter entry.
- Parameters given by name in one of the 5 selectable languages: English, French, Italian, Spanish and German or by parameter number.
- Parameter and feedback values shown in engineering units as RPM, A, seconds etc.
- Alarm- and Fault Display

Communications and Control Capabilities

AutoMax DCS-Net

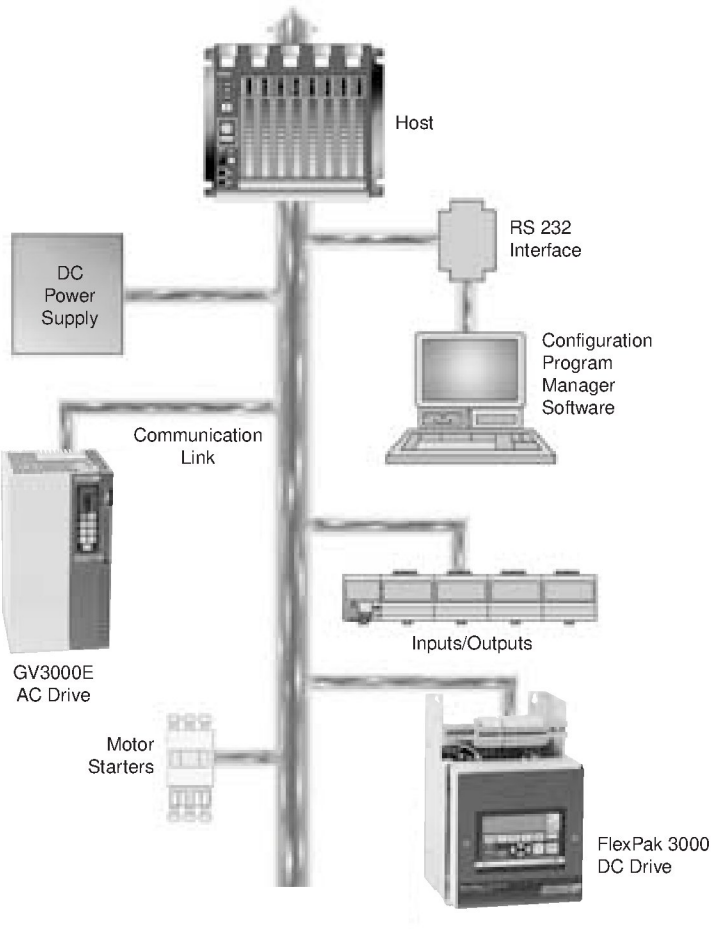
FlexPak 3000 drives are also available with an interface card that allows an AutoMax real-time distributed controller to control their operations. When connected to this network, the drive can receive reference, control, and tuning information and send monitoring and diagnostic information such as speed feedback and drive status through a high-speed network link. All data is pre-defined on the DCS-Net through fixed memory mapping to minimize programming.

FlexPak 3000 DC drives are ideal for use in connected production or processing applications where high-speed communications are required for exacting motor torque and/or speed control.



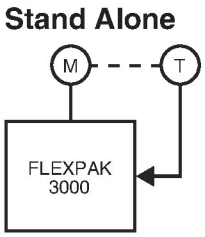
Industrial Network Capabilities

The FlexPak 3000 offers connectivity to the major industrial networks like **InterBus, PROFIBUS-DP, DeviceNet and ControlNet.** All these interfaces enable drive configuration, control, monitoring, and diagnostics to be accessed from a remote location for optimum versatility. Typically a host logic controller is used as the central manufacturing or process control centre, with nodes or drops used for all devices on the network. Each device is individually addressed by a single cable to reduce the amount of wiring required. Since all the devices communicate through this single network, complex operations such as interlocking and sequencing can easily be configured with software from a single location. At the same time important data from the drive or process can be monitored by the host to allow corrective action or record production, both to improve overall quality.



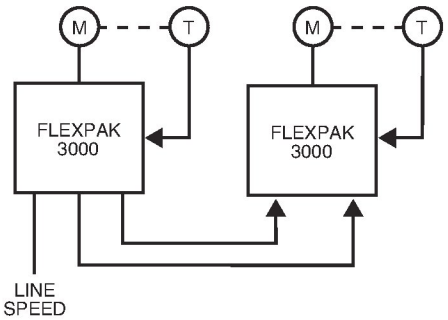
Application Solutions

Stand-Alone FlexPak 3000 Configuration



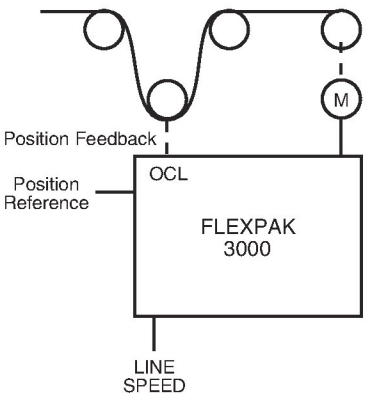
Recommended Applications	Benefits
• Plastic or food extruders • Mixers or agitators • Line shafts • Lead section for multiple drive MG set replacement	• High break-away torque • Wide speed range • Excellent speed regulation when used with digital tachometer

Master/Follower FlexPak 3000 Configuration



Recommended Applications	Benefits
• Web handling • Conveyors • Wire drawing • Multi-section process • Fiber Drawing	• Exceptional resolution accuracy with I/O frequency • Reduced hardware • Wide speed range • High starting torque

Dancer Position Regulator FlexPak 3000 Configuration



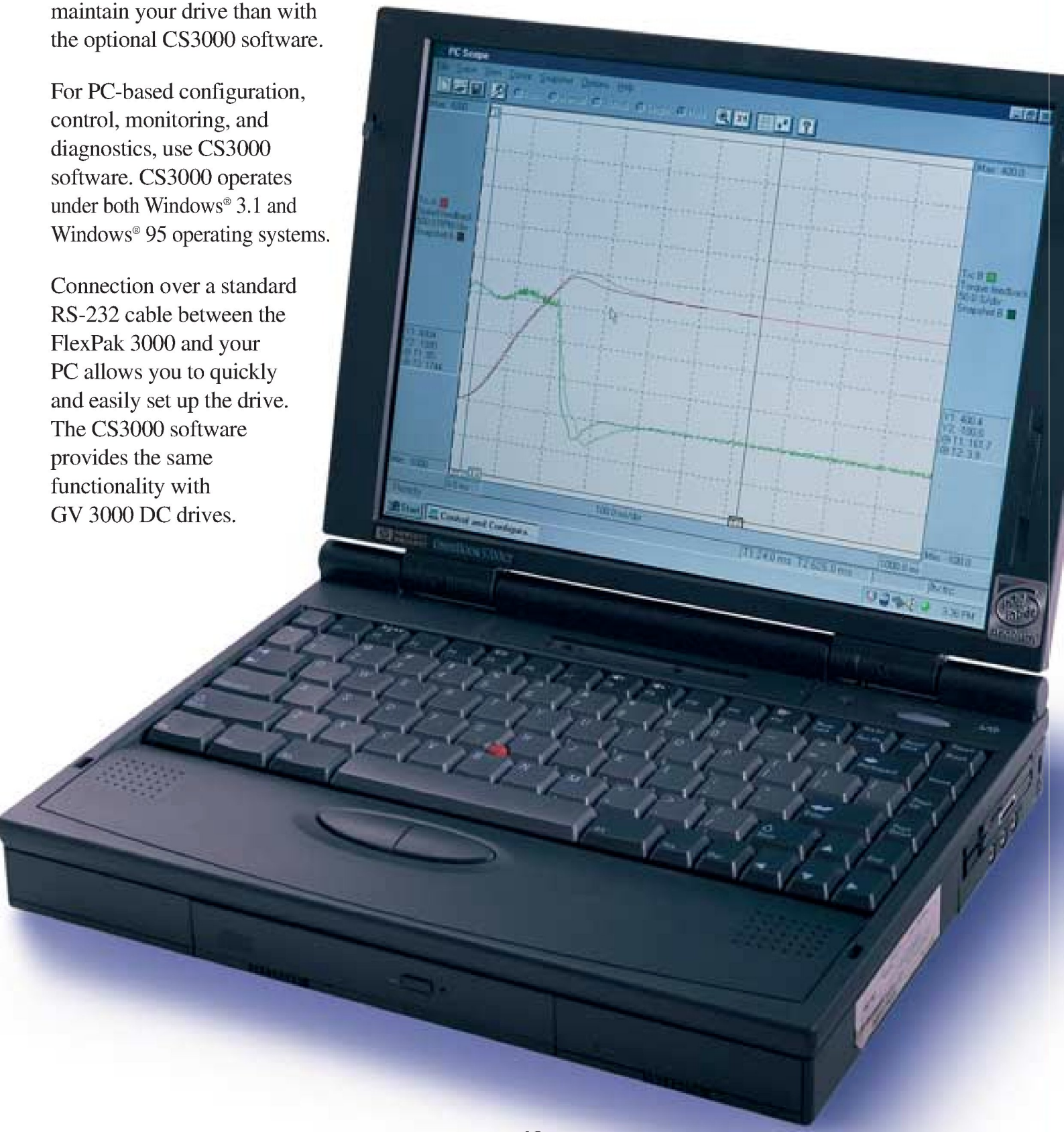
Recommended Applications	Benefits
• Textile • Web processing/handling	• Less external hardware • Simple set-up • Precise control • Full PI regulation

INTUITIVE Software

There's no easier way to configure, document, and maintain your drive than with the optional CS3000 software.

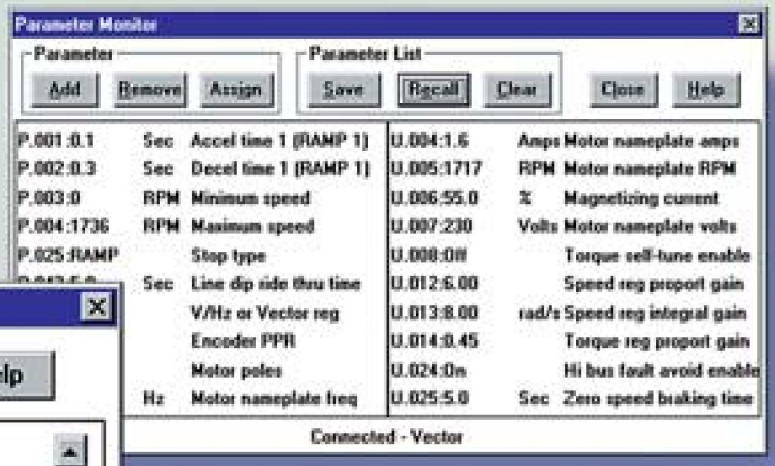
For PC-based configuration, control, monitoring, and diagnostics, use CS3000 software. CS3000 operates under both Windows® 3.1 and Windows® 95 operating systems.

Connection over a standard RS-232 cable between the FlexPak 3000 and your PC allows you to quickly and easily set up the drive. The CS3000 software provides the same functionality with GV 3000 DC drives.

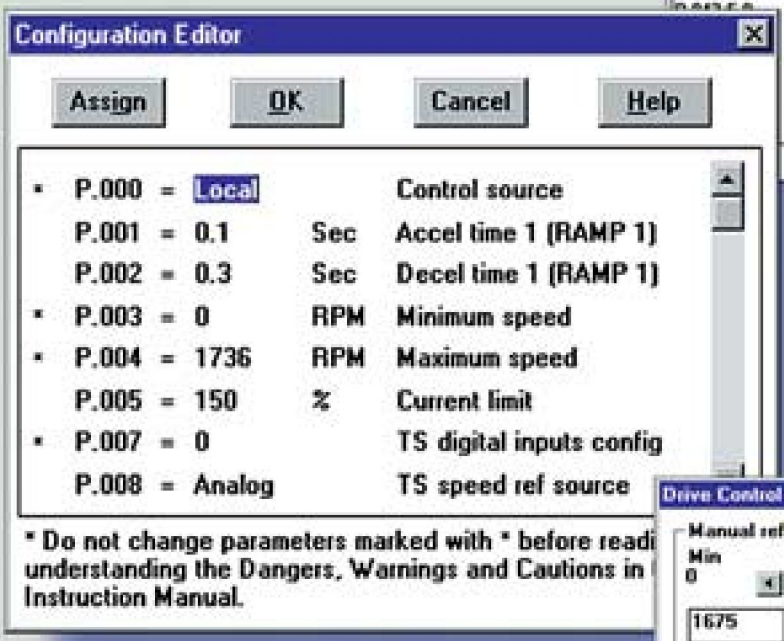


CS3000 Version 6.0 with PC Scope

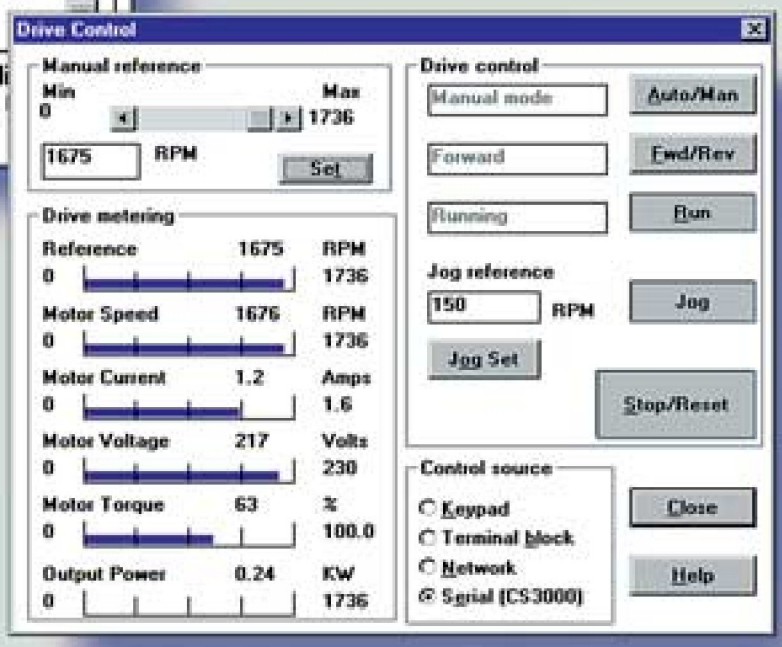
Now, with the power of an oscilloscope on your PC, use the PC Scope™ feature to tune, diagnose, and analyze the performance of your application. Data can be saved as scope trace files or converted to ASCII for use in a spreadsheet. Overlay new scope traces over old with the Snapshot function to tune machine performance.



Create a custom list of 20 tuning parameters to aid in application setup. Changes are downloaded immediately for you to observe in your application.



The Configuration Editor allows you to select and configure drive parameters at the drive or at your desk. Upload and download parameter settings from drive to drive. Save parameters as files for future reference and for ease of printing. Upload and compare parameter file settings to identify possible parameter changes.



From your PC you can operate the drive and monitor motor performance, including speed, current, voltage, torque, and kW.

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Wherever you need us, Rockwell Automation brings together leading brands in industrial automation including Allen-Bradley controls, Reliance Electric power transmission products, Dodge mechanical power transmission components, and Rockwell Software. Rockwell Automation's unique, flexible approach to helping customers achieve a competitive advantage is supported by thousands of authorized partners, distributors and system integrators around the world.

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