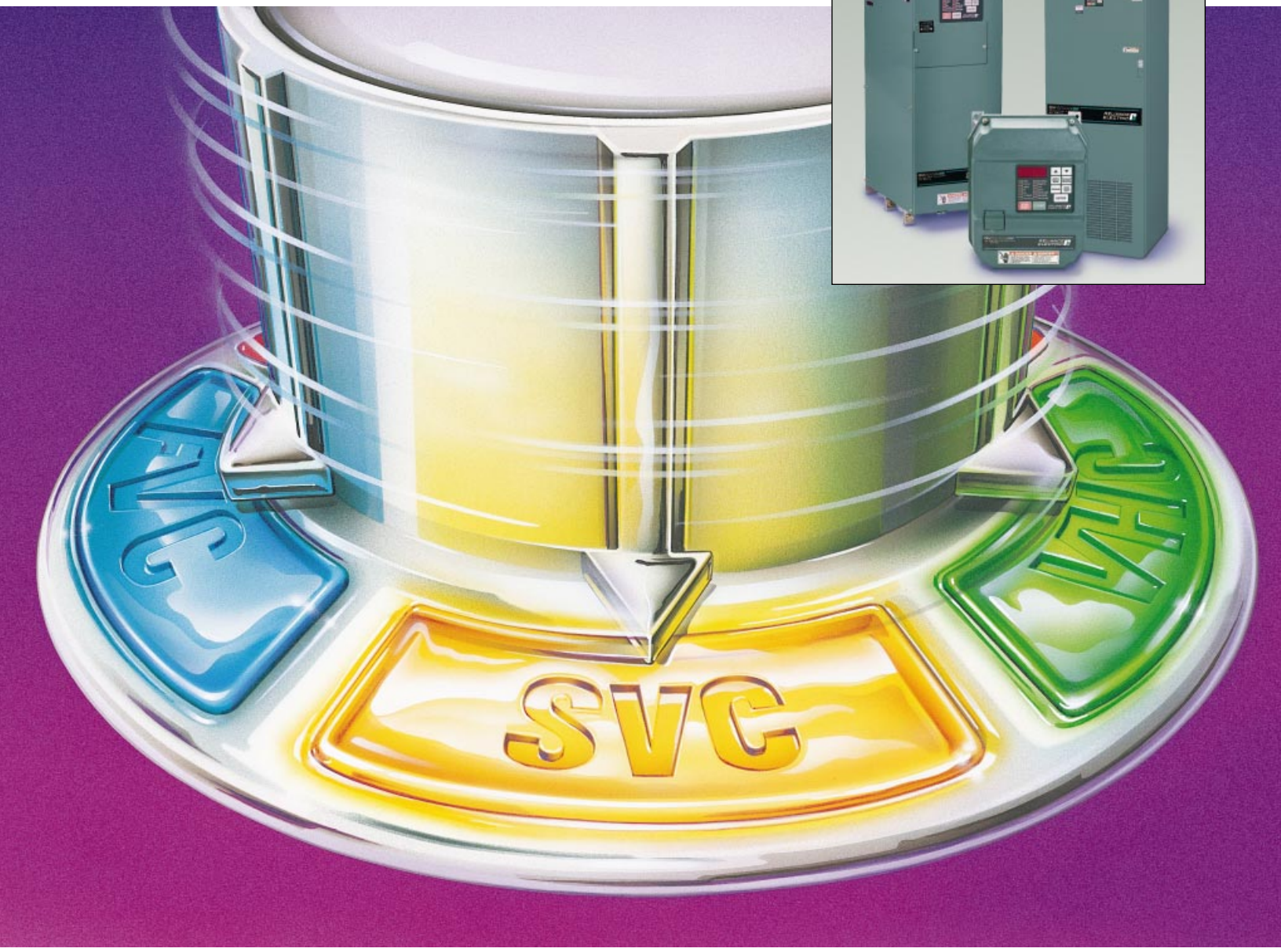
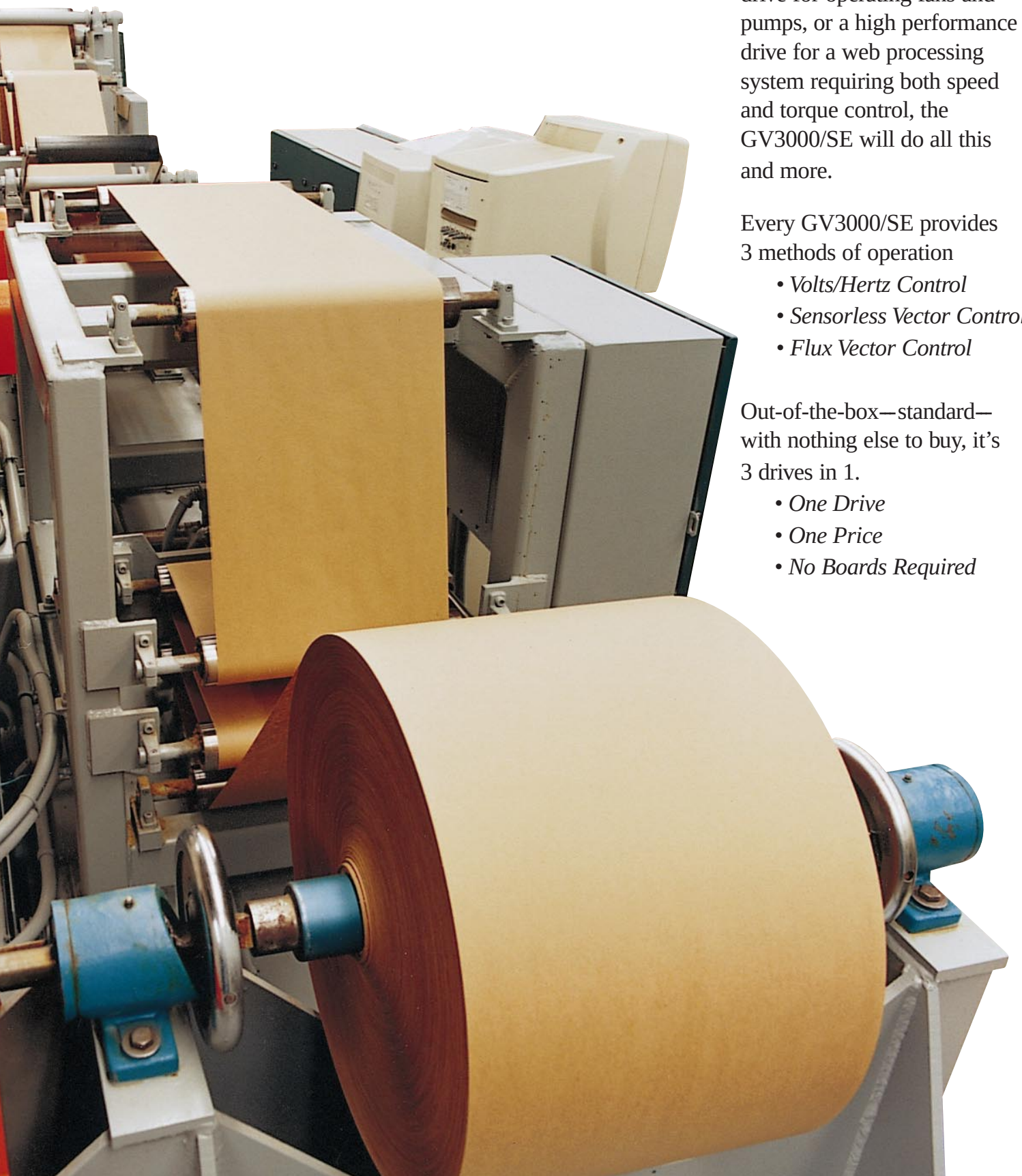
Reliance Electric GV3000/SE Industrial AC Drive

Multi-Purpose variable speed control of 1-400 HP three-phase motors, with Volts/Hertz or Vector mode operation as standard



Rockwell Automation
Reliance Electric

FLEXIBLE Control



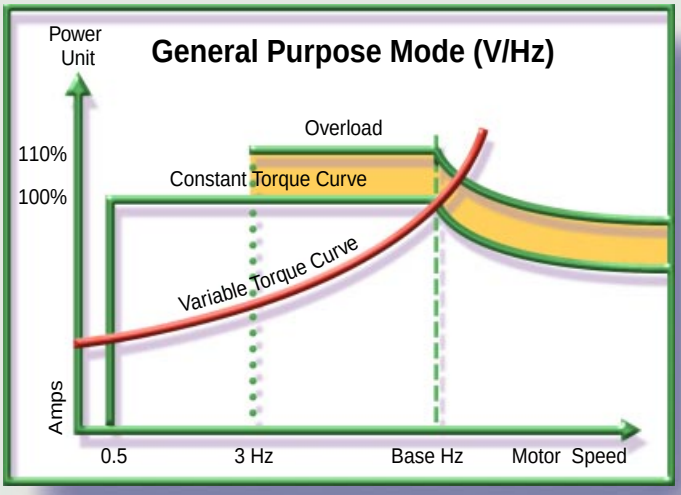
Whether you need a simple drive for operating fans and pumps, or a high performance drive for a web processing system requiring both speed and torque control, the GV3000/SE will do all this and more.

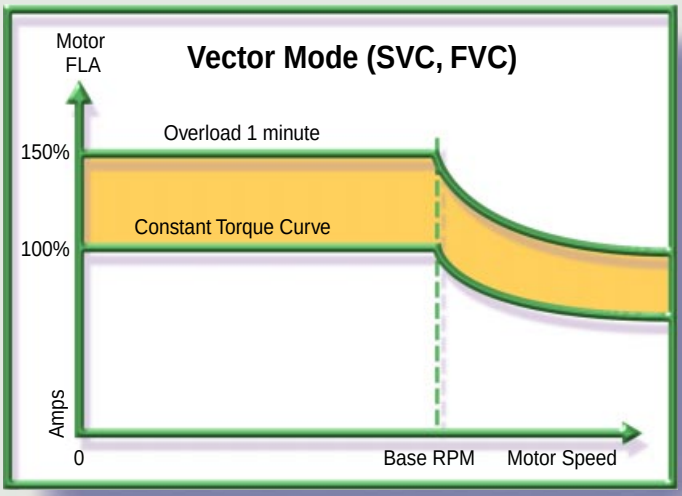
Every GV3000/SE provides 3 methods of operation

- *Volts/Hertz Control*
- *Sensorless Vector Control*
- *Flux Vector Control*

Out-of-the-box—standard—with nothing else to buy, it's 3 drives in 1.

- *One Drive*
- *One Price*
- *No Boards Required*





General Purpose Mode **Volts/Hertz** allows classical variable speed control of single or multiple motors from one drive. Operate either squirrel-cage induction or permanent magnet synchronous AC motors in this control mode. It's ideal for applications such as centrifugal fans and pumps, or conveyor applications.

Vector Mode allows operation in either open loop **Sensorless Vector** control or closed loop **Flux Vector** control. Selection between the two is done simply by selecting the Encoder PPR value. Choose a numerical PPR for closed loop operation, or choose "SE" for Sensorless Enhanced open loop operation. In most cases, tuning the drive isn't even necessary when switching between Sensorless and Flux Vector control due to the shared parameter set used for both methods of control.

VERSATILE Packaging

Whether it's a stand-alone design to be mounted in a harsh environment, or a panel-mounted drive designed specifically to save you valuable space and installation time, the GV3000/SE allows you to choose from multiple enclosures in order to select the packaging design that's "just right" for your application needs.

Washdown duty– ideal for food processing environments.

Keep dust and dirt from contaminating the drive without the cost of a separate enclosure.

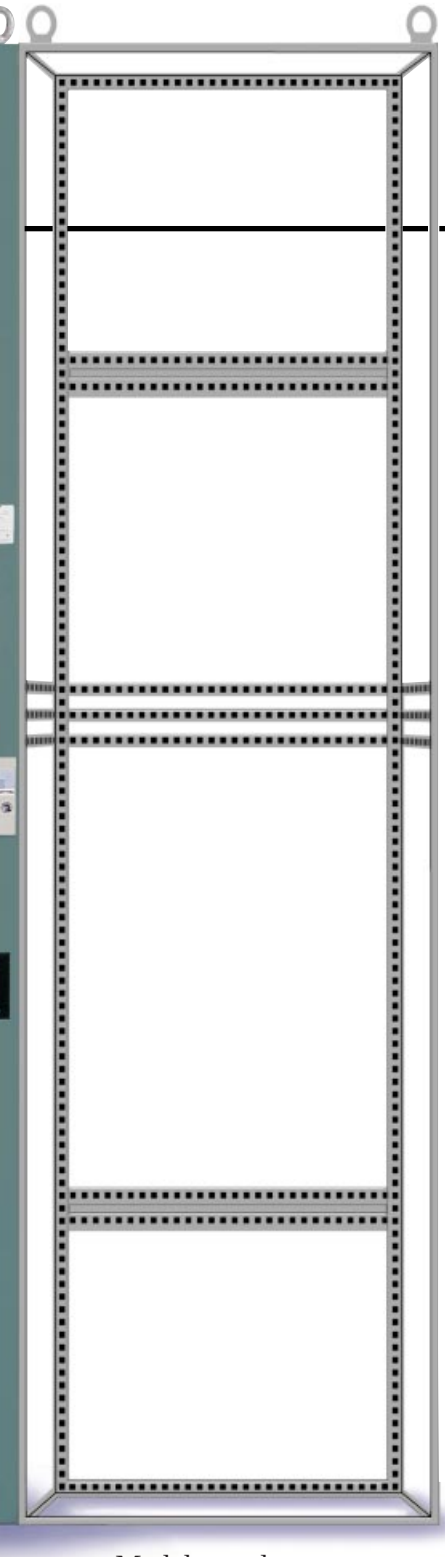
Designed for direct connection to conduit in stand-alone areas.

❑ *Stand-alone Packaging for Wall, Machine & Floor Mounting*

NEMA 4X / IP54 Drives (Washdown)	
• 200 to 230 VAC	1 to 5 HP
• 380 to 460 VAC	1 to 5 HP

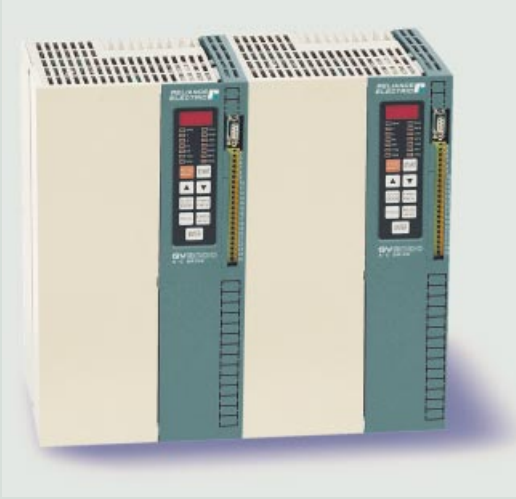
NEMA 12 / IP52 Drives (Dust Tight)	
• 200 to 230 VAC	1 to 20 HP
• 380 to 460 VAC	1 to 60 HP

NEMA 1 (*1A) / IP20 Drives (Ventilated)	
• 200 to 230 VAC	1 to 20 HP
• 380 to 460 VAC	1 to 150 HP
• 380 to 460 VAC	*200 to 400 HP



Modular enclosure simplifies matching into line-ups.

IEC-rated design for space optimization. Includes 7th IGBT for braking.



❑ *Bookshelf Packaging for Panel Mounting*

IP20 Bookshelf Drives (Finger-Safe)	
• 380 to 460 VAC	2.1 to 30 Amps

High power density allows retrofit of old DC applications.

❑ *Power Module Packaging for Panel Mounting*

IP0 Power Modules (Exposed Power Terminals)	
• 200 to 230 VAC	30 to 100 HP
• 380 to 460 VAC	75 to 200 HP

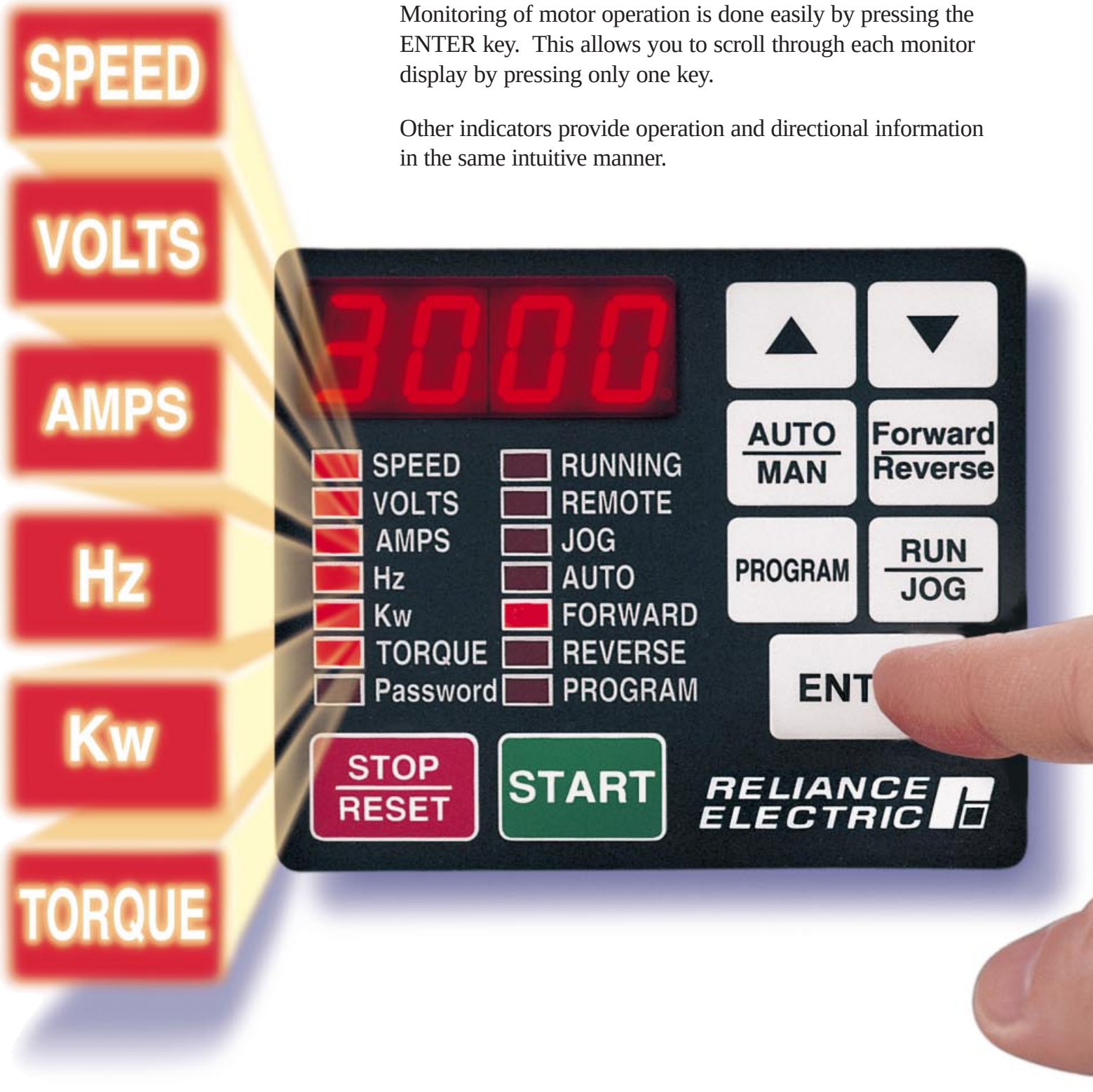
SIMPLE
Operation and Setup

Built into every GV3000/SE is this simple to use display and keypad. Bright LEDs provide clear indication of programming, operating, and monitoring values.

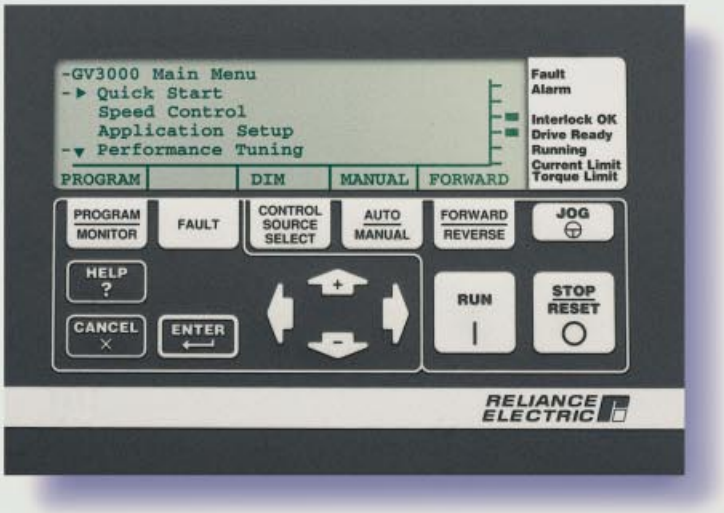
Arrow keys are used to change speed as well as to change data.

Monitoring of motor operation is done easily by pressing the ENTER key. This allows you to scroll through each monitor display by pressing only one key.

Other indicators provide operation and directional information in the same intuitive manner.



Optional Operator Interface Module



The Operator Interface Module (OIM) provides a remote-mounted drive interface.

The large, easy-to-read graphical display and function keys allow simple operator control, monitoring, and diagnostics.

A built-in help menu provides clear descriptions of drive setup and operation.

HELP — *Help Menu*

- Provides text description of parameter operation and use
- Eliminates the need to refer to instruction manuals
- Provides description of OIM operation

PROGRAM MONITOR — *Monitor Operation*

- Select 2, 4, or 6 lines of motor information
- Adjust text contrast for readability
- View intuitive status messages without selecting menus

Setup is made easy with self-prompting menus and parameter groupings.

Main Menu display allows selection

- Quick Start
- Speed Control
- Application Setup
- Performance Tuning
- Motor Data
- Drive Status
- Regulator Terminal Strip
- Option Port Configuration
- Memory Functions
- Additional Parameters

Displays can be shown in 5 languages.

Language Menu

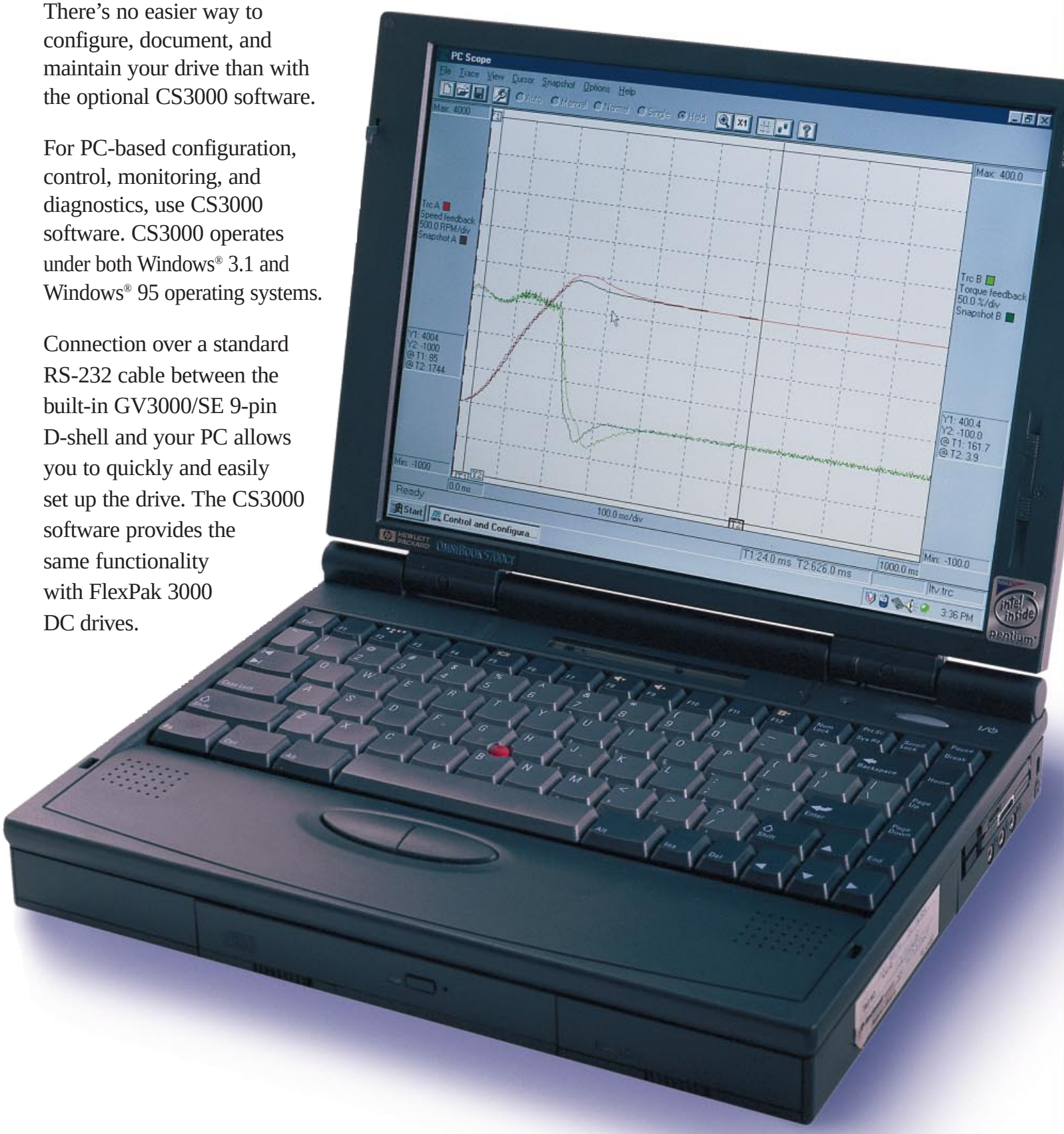
- English
- Deutsch
- Français
- Español
- Italiano

INTUITIVE Software

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

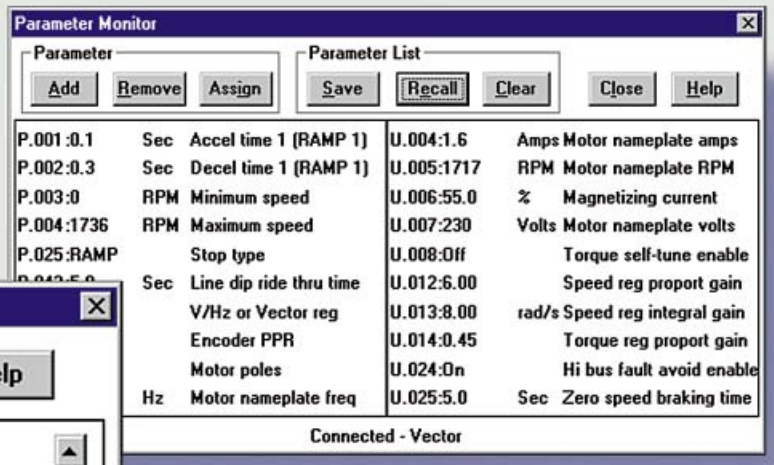
For PC-based configuration, control, monitoring, and diagnostics, use CS3000 software. CS3000 operates under both Windows® 3.1 and Windows® 95 operating systems.

Connection over a standard RS-232 cable between the built-in GV3000/SE 9-pin D-shell and your PC allows you to quickly and easily set up the drive. The CS3000 software provides the same functionality with FlexPak 3000 DC drives.

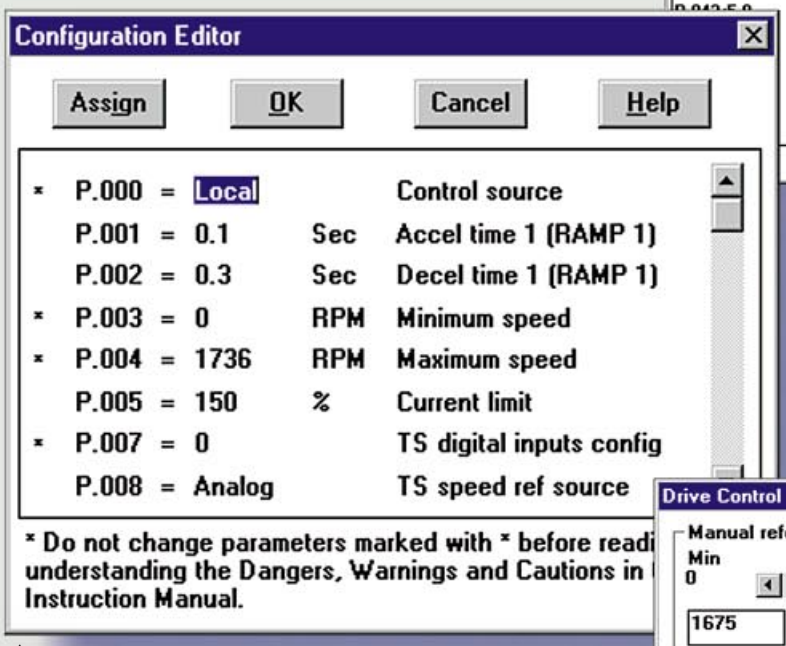


CS3000 Version 6.0 with PC Scope

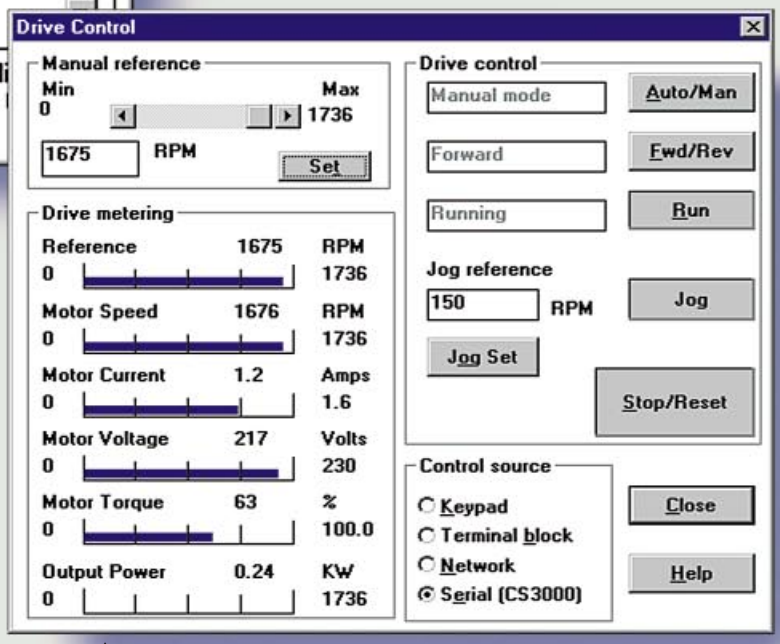
Now, with the power of an oscilloscope on your PC, use the PC Scope™ feature to tune, diagnose, and analyze the performance of your application. Data can be saved as scope trace files or converted to ASCII for use in a spreadsheet. Overlay new scope traces over old with the Snapshot function to tune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

EMBEDDED Solutions

Option boards for various needs mount cleanly inside every GV3000/SE design. Network communications and I/O expansion cards connect directly to the GV3000/SE Regulator through a high-speed dual-port connection. With either of these options installed, you can take advantage of GV3000/SE's inner and outer control loops to adapt to any application.

A dual-port connection allows direct access to the 32-bit, Motorola 68332® processor for quick acknowledgement and response in networked applications.

I/O expansion allows terminal connections for more advanced drive control:

- PI setpoint control
- Outer loop trim of speed or torque for:
  - Inertia compensation
  - Current compounding
- Frequency input
- Additional preset speeds
- Assign relay outputs for:
  - Speed & torque setpoints
  - On-Delay logic

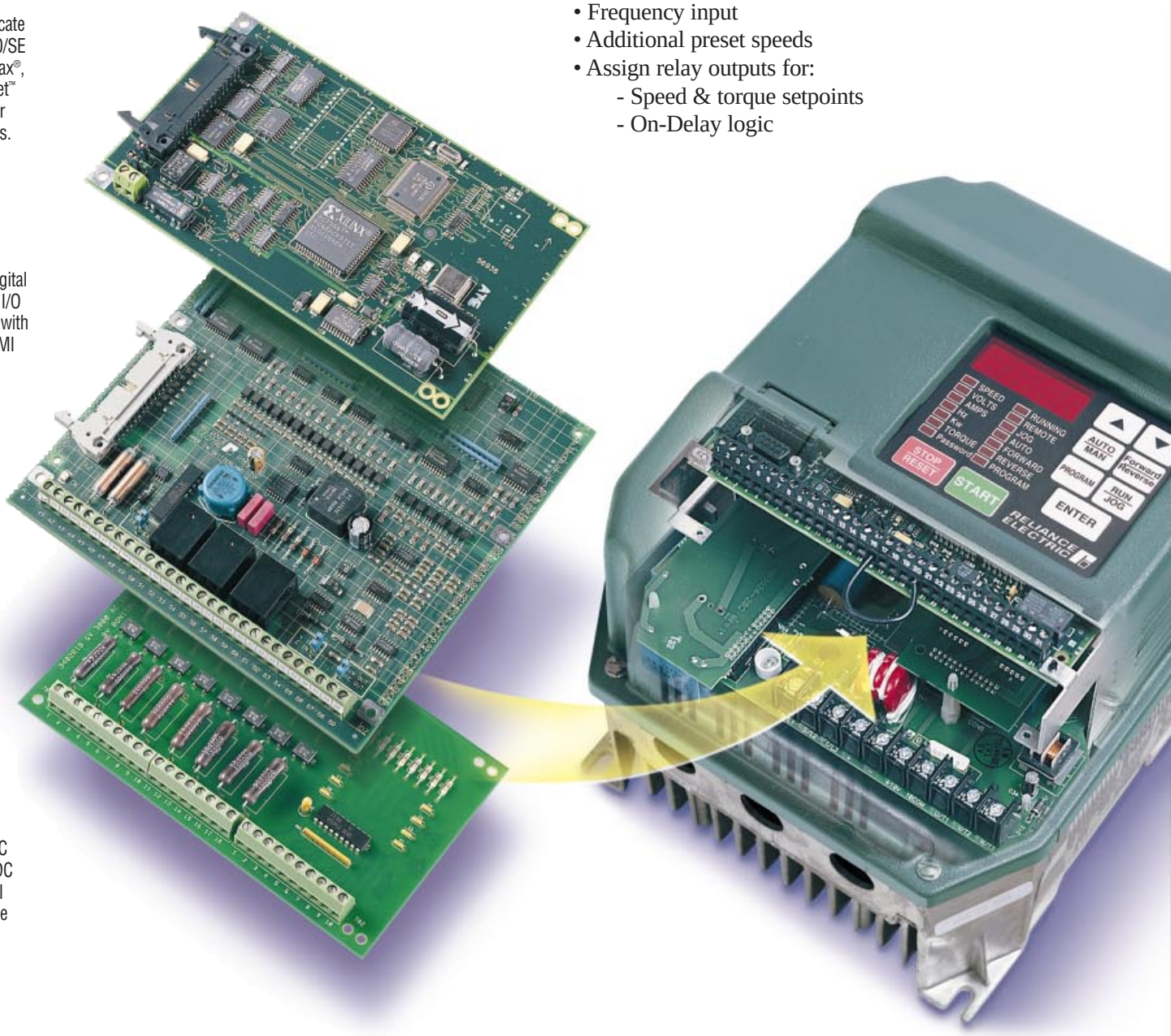
Communicate to GV3000/SE on AutoMax®, DeviceNet™ or other networks.

OR

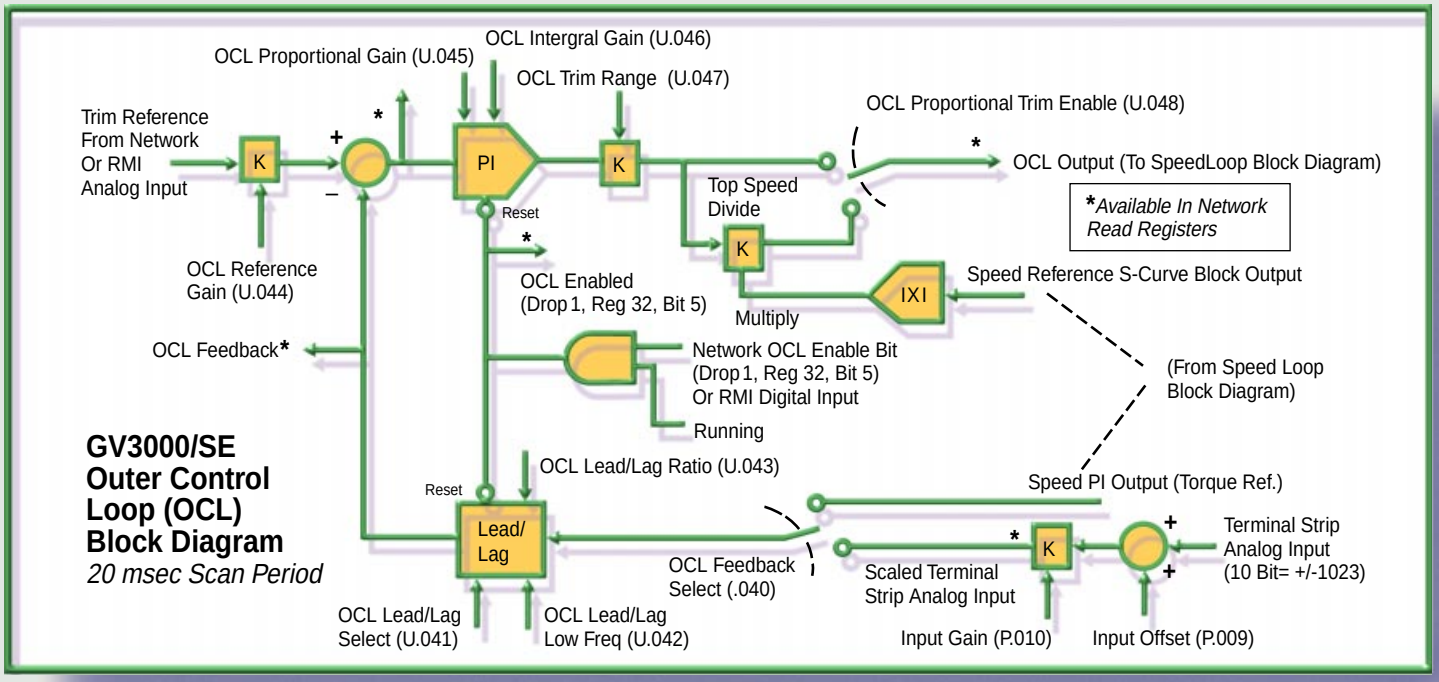
Isolated digital & analog I/O expansion with Super RMI card

OR

115 VAC to 24 VDC Control Interface card



Standard parameters for web processing applications.

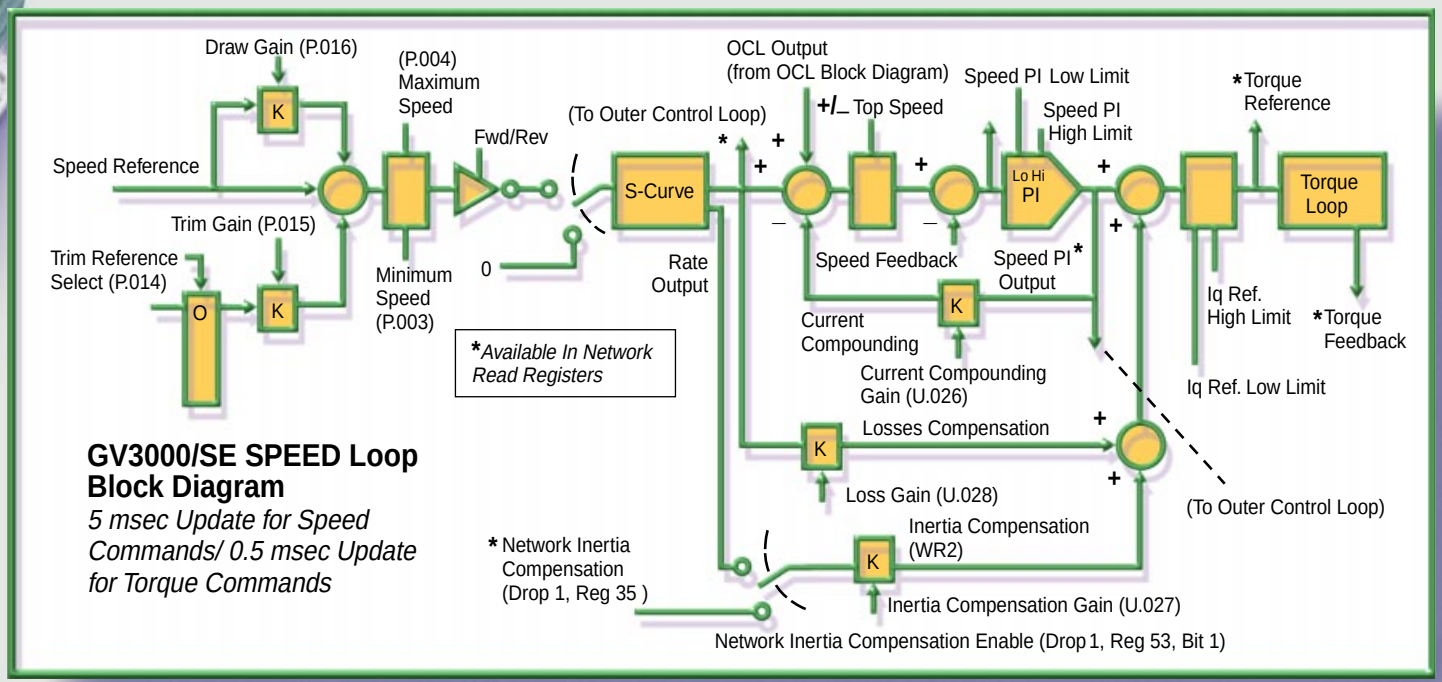


Compensate for inertia build-up in winders.

Load-share between motors in multi-drive roll sections such as calendars.

The outer control loop utilizes a 20-msec update, allowing use in both dancer-controlled and tension-controlled winder applications.

Trim a speed or torque main reference with an analog input from the Remote Meter Interface card or over one of several available network options.



ADAPTABLE in Application

For demanding applications that were once dominated by DC drives and other control technologies, look to the GV3000/SE in Vector Mode for high performance along with reduced operating and maintenance costs.

APPLICATIONS	PERFORMANCE FEATURES
Extruders	Low speed operation w/100% torque & 0.01% speed regulation
Material Handling	Command 0 RPM w/ 100% torque continuous operation
Web Processing	Inertia compensation and load sharing capabilities
Punch Presses	Up to 200% starting torque plus high bus avoidance capability
Test Stands	Switch from speed to torque control on-the-fly
Metering Pumps	Use on motion controllers for positioning w/1000 rad/sec response

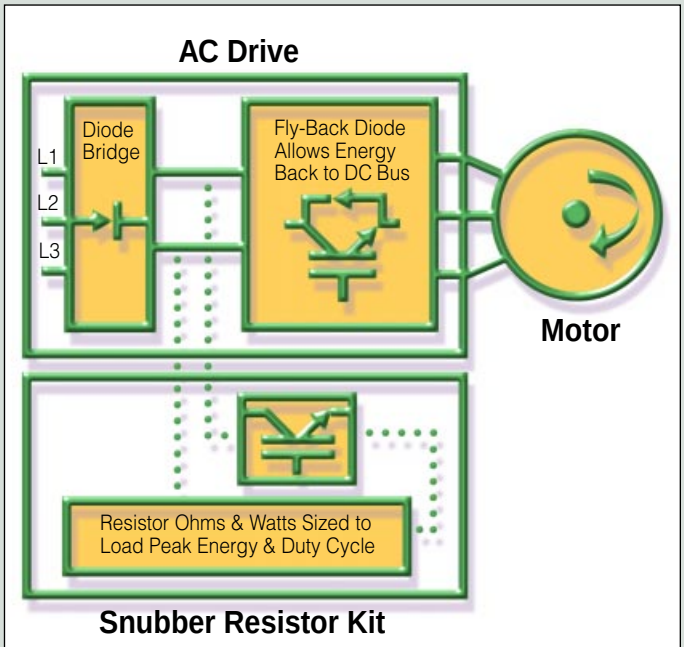
Braking and 4-quadrant operation:
• Snubber Braking kits

External Snubber kits are available in 2 styles, open frame and NEMA 1/IP2O.

With braking kits, you can:
- Match brakes to handle load peak energy demand
- Match brakes to handle duty cycle for energy dissipation

• NEMA 1 / IP20 enclosed, self-contained transistor circuit with resistors

• Open frame, transistor-only circuits for panel mounting



Overhauling loads occur when load torque exceeds motor torque. Energy is regenerated to the drive, raising the DC Bus voltage. The snubber brake dissipates the excess energy into heat for a regulated braking action.

• Line Regeneration

Power each GV3000/SE through the DC bus instead of the AC line inputs. The SS4000 Synchronous Rectifier acts as a line regeneration module to recover energy, as well as a DC bus supply for coordinated multi-drive applications. It can also be used strictly for line regeneration when desired.

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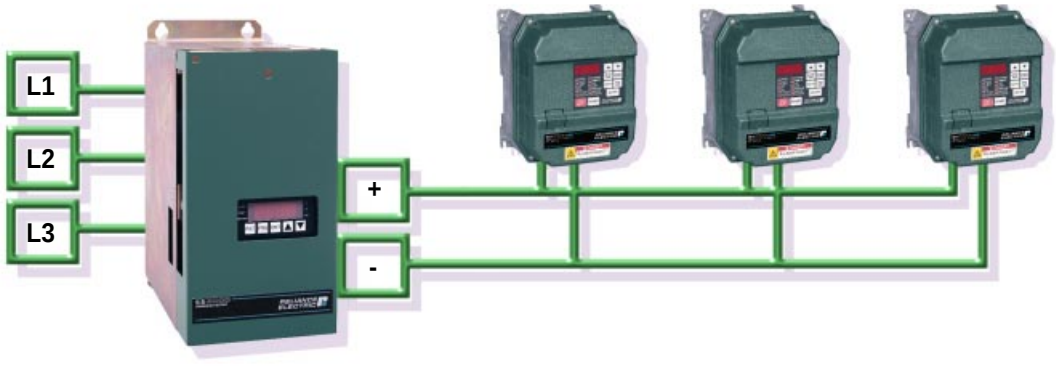


- Drives are powered directly through the DC bus instead of the AC line and diode bridge.
- Regenerative energy is shared between motoring and regenerating drives, saving power.
- Energy is recovered back to the 3-phase AC Line instead of being dissipated into heat.

PowerMatched Drives and Motors

Regardless of your application needs, Reliance Electric has a PowerMatched™ drive and motor solution for your needs. Nobody offers a larger variety of motors designed especially for use on IGBT-based PWM AC drives.

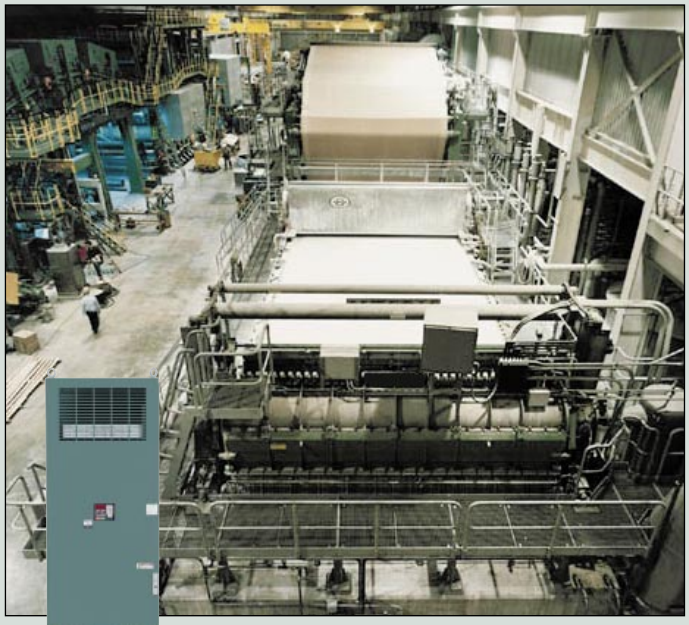
Consider these important advantages when you choose a motor for connection to your Reliance AC drive:

- 1,600 VAC insulation systems are standard on PowerMatched Reliance AC motors for maximum protection against reflected waves in 460VAC applications with long motor lead lengths.
- The broadest variety of mechanical motor options including NEMA and IEC frames, motor-mounted brakes, optical encoders, constant speed air-over blowers, and a multitude of enclosure designs.
- Environment-specific motor package including Washdown Duty and Hazardous Duty (Division I, Explosion Proof) packages with encoder feedback for Flux Vector operation.

GV3000/SE drives are tested with Reliance Electric AC motors to assure reliability from a single source.

Choose from E-Master, XE, and VXS motor families for all applications from 1 HP to 400 HP and a broad variety of motor enclosures and options.

NEMA 4X Washdown products easily meet food processing requirements with stock drives and motors for both open loop and closed loop applications.



Large horsepower drives with air-over blower-cooled VXS motors easily solve tough application needs with single source responsibility.

Power modules with RPM-AC motors provide high performance and compact size, making these packages an excellent choice when retrofitting older DC applications.