Allen-Bradley® PowerFlex® 525 AC Drives
The Next Generation of Powerful Performance and Flexible Control
PowerFlex 525 AC Drive

- 1st drive of the next generation of Allen-Bradley PowerFlex compact drives
- Provides ultimate flexibility to your applications
- Features are unmatched in the market place today
- The PowerFlex 525 can help you save money, maximize your system performance and reduce the time to design and deliver your machines
PowerFlex 525 AC Drive Family

- Power, control, flexibility and features for a wide range of applications
- Ideal for standalone machines and simple system integration
  - Unique modular design
  - Seamless integration into Logix control architectures
  - Embedded port for EtherNet/IP and Safe Torque-Off standard
  - Easy to use configuration tools
  - Flexible motor control and installation options

- Power range:
  - 100-120V: 0.4 to 1.1 kW / 0.5 to 1.5 Hp
  - 200-240V: 0.4 to 15 kW / 0.5 to 20 Hp
  - 380-480V: 0.4 to 22 kW / 0.5 to 30 Hp
  - 525-600V: 0.4 to 22 kW / 0.5 to 30 Hp
PowerFlex 525 AC Drive

Innovative Design
- Removable control module speeds installation
- One control module supports entire power range
- No additional size penalty when adding option cards

Ease of Programming
- Studio 5000: AOPs & ADC
- Connected Component Workbench (CCW)
- Dedicated application parameter groups
- MainsFree™ programming

Communications
- Embedded EtherNet/IP
- Optional Dual Port EtherNet/IP
- Option Cards for DeviceNet, Profibus DP
PowerFlex 525 AC Drive

Safe-Torque Off
- Embedded Safe-Torque Off SIL2/PLd standard

Operation at High Ambient Temperature
- Up to 50°C
- 60°C with current derating
- Optional fan kit allows 70°C operation with current derating

Best-in-Class Power Rating & Global Voltage Classes
- 0.2 to 22kW (30HP) at 400V
- 110V, 200V, 400V, 600V
Innovative Design

- Unique modular design reduces installation and configuration time
- Standard offering includes embedded port for EtherNet/IP and Safe-Torque Off
- Industry leading compact footprint
  - No penalty for adding option cards
  - Smallest mounting clearances available for top and bottom of drive
- High ambient operation to 70°C
- Flexible installation with both vertical and horizontal and side-by-side installation
Speed Installation & Configuration

- Install power module while you configure your drive in parallel
- Same control module supports entire power range reducing customer spare part inventory
- Uses standard USB connection for upload, download & flash
- MainsFree™ configuration allows the control module to be powered from the USB connection
Flexible Installation

- Best in class power ratings with compact footprint
- Optimize panel space with 50mm clearance for top and bottom of drives
- Flexible installation with both vertical and horizontal and side-by-side installation
- Addition of option cards does not affect footprint
High Ambient Temperature

- Operates in ambient temperatures up to 70°C (158°F) with control module fan kit
- Reliable and robust components help contribute to withstanding extreme temperatures
Flexibility in Motor Control

- Ideal for any application—more motor control options than any other drive in its class
  - V/Hz
  - Sensorless vector control
    - Economizer mode
  - Closed Loop Velocity Vector Control
  - Permanent magnet motor control (future firmware release Dec 2013)
  - Positioning with closed loop feedback allows simple positioning
Flexibility in Motor Control

- **Point to Point position control**
  - Cost effective and flexible
  - For applications such as diverters, smart conveyors and packaging machines

- **PointStop™**
  - For applications requiring stops at designated positions regardless of the speed or load, and without the help of an encoder
  - This set of parameters directs the drive to adjust its deceleration rate based on its speed when a command is initiated, allowing a motor to stop in the same position
Simplified Programming

- Configure your drives faster with intuitive tools
- Dynamic HIM
  - LCD
  - QuickView™ Scrolling Text
  - Multiple Languages
- Connected Components Workbench™
  - Free software
  - Application Programming Groups: AppView™ & CustomView™
- Studio 5000 Logix Designer™
  - Premier Integration
  - Automatic Device Configuration (ADC)
Speed Installation & Configuration

- USB connection is for upload/download of configuration file
  - Functions as a data transfer port only:
    - Upload
    - Download
    - Flash
  - No online programming via USB

- Configuration file created in Connected Components Workbench Software
  - Software does not need to reside on PC to download a file

- The USB configuration is similar to synchronizing a smart device with a computer
Connected Components Workbench

- Easy to use software
- Start up wizards further ease configuration
- Create your files on or offline
- Faster configuration with application specific sets
- Download to drive via standard USB connection
- Configure and control via standard EtherNet/IP communications
Application Specific Parameter Groups

- Speed configuration of common applications with the AppView™ tool
- Application parameters grouped together provide faster visibility to drive settings
  - AppView has a total of 8 groups including: conveyors, fans, mixers and pumps
- AppView programming is available using Connected Components Workbench or the human interface module (HIM)
Custom Configuration

- CustomView™ configuration tool allows you to create and save custom parameter groups

- Add or remove parameters from an AppView group or create your own
  - Up to 100 parameters

- CustomView programming is available using Connected Components Workbench or HIM
CustomView Configuration

1. Select parameters from parameter list
2. Move parameters by clicking the “add” or “remove” buttons
3. Parameters appear in the CustomView window
StepLogic Function

- Logic controlled steps using preset speed settings

- Each step can be programmed to:
  - Step, based on digital input(s) command (drive can perform basic AND, OR and NOT logic)
  - Step, based on a specified time
  - Control speed, direction and accel/decel rate
  - Control the status of an output
  - Make deterministic jumps
Communications

- Configure, control and monitor your devices with onboard communications

- Seamless integration into Logix architecture with a standard embedded port for EtherNet/IP

- Optional dual port EtherNet/IP card provides more connectivity options and device level ring (DLR) functionality

- Supports additional industrial networks
  - DeviceNet
  - Profibus DP (single port)
EtherNet/IP™ Topologies

Linear

Star

Ring

Only Rockwell Automation supports rings at the device level (DLR)
Automatic Device Configuration (ADC)

- ADC allows a user to configure their Logix system to automatically download a drive’s configuration
- Ideal for drive replacement
- ADC is a version 20 and above feature
- Also compliments:
  - Stratix 6000 & 8000 and 5700 switches
    - Automatically assigns IP Address
  - Firmware Supervisor
    - Flashes the drive and peripherals
Automatic Device Configuration (ADC)

Example

2:00 AM

EtherNet/IP

Configuration

Flash

Stratix 6000 / 8000 / 5700

IP Address

Helps save the user time and money by reducing downtime
## Reduce Downtime with Automatic Device Configuration

<table>
<thead>
<tr>
<th>Topologies</th>
<th>ADC</th>
<th>Automatic assignment of EtherNet/IP address</th>
<th>Manually load EtherNet/IP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitive controller</td>
<td>No</td>
<td>No</td>
<td>Required</td>
</tr>
<tr>
<td>Stratix 2000</td>
<td>Yes</td>
<td>No</td>
<td>Required</td>
</tr>
<tr>
<td>Stratix 5700, 6000, 8000</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>DLR</td>
<td>Yes</td>
<td>No</td>
<td>Required</td>
</tr>
</tbody>
</table>

Only drives from Rockwell Automation have this capability.
Embedded EtherNet/IP & Dual Port Card

- Dual port EtherNet/IP provides an additional networking solution that can simplify installation and lower costs associated with switches.
- Dual port card provides DLR (device level ring) functionality.
- Maximum recommended number of nodes in a DLR network is 50.
- When dual port card is installed, embedded single port still available for drive programming.
  - Drive does not act as e-tap.
Datalinks

- PowerFlex 525 drives provide 8 datalinks:
  - 4 in and 4 out
- Ease of programming by allowing drives to transfer any parameter values to controllers
- Reduces programming time by eliminating the need to write a message
Safety

- Help protect your personnel and assets with standard embedded Safe Torque-Off
- Reduce wiring and installation space with embedded safety
- Helps with faster start ups and reduces wear on motor assets
- Provides safety rating up to and including SIL2/PLd Cat 3
Energy Savings

- Energy saving features help reduce energy consumption and increase efficiency

- Economizer mode in sensorless vector control adjusts to reduce energy consumption while meeting the demands of the application
  - Measures power consumption
  - Optimizes current output
  - Delivers reduction in energy consumption

- Energy parameters deliver data on energy usage and can help monitor health of assets

- Replace traditional flow control with variable frequency drives
Energy Savings Calculators

- Calculate potential energy savings with fan and pump energy savings tools
  - Multiple languages
  - Multiple currencies
- Compare conventional flow control methods with PowerFlex drives
- iOS and Android apps
- On the web: www.rockwellenergycalc.com
## EMC Solutions

- **Standard offering for embedded EMC filtering**
  - Single phase 200-240V
  - Three phase 380-480V
- **Optional external filter for all voltages**
  - Foot print “piggy back” style for frame A, B and C drives

### Standards and Specifications

<table>
<thead>
<tr>
<th>EN 55011</th>
<th><strong>Class B</strong> Housing, trades and light Industries</th>
<th><strong>Class A Group 1</strong> Industrial environment</th>
<th><strong>Class A Group 2</strong> Industrial environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN/IEC 61800-3</td>
<td><strong>Category C1</strong> First environment Home and Office</td>
<td><strong>Category C2</strong> First environment Home and Office</td>
<td><strong>Category C3</strong> Second environment Industrial</td>
</tr>
<tr>
<td><strong>Integral</strong></td>
<td>-</td>
<td>10 meters</td>
<td>20 meters</td>
</tr>
<tr>
<td><strong>External</strong></td>
<td>30 meters</td>
<td>100 meters</td>
<td>100 meters</td>
</tr>
</tbody>
</table>
PowerFlex 525 Inputs & Outputs

- 7 Digital Input (6 Programmable)
- 2 Digital Output
- 2 Analog Input
- 1 Analog Output
- 2 Relay Output (1 Form A, 1 Form B)

Control I/O Terminal Block Wire Specifications

<table>
<thead>
<tr>
<th>Frame</th>
<th>Maximum Wire Size (T1)</th>
<th>Minimum Wire Size (T1)</th>
<th>Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>A...E</td>
<td>1.3 mm² (16 AWG)</td>
<td>0.13 mm² (26 AWG)</td>
<td>0.71...0.86 Nm (6.2...7.6 lb-in.)</td>
</tr>
</tbody>
</table>

(1) Maximum/minimum sizes that the terminal block will accept – these are not recommendations.
Multi-Drive Mode Configuration

- Connect up to five PowerFlex 525 AC drives using one node of EtherNet/IP or DeviceNet network.
- Requires one drive on either EtherNet/IP or DeviceNet as RS-485/DSI master.
- Up to four additional drives can be added on the RS-485/DSI network as slaves.
Worldwide Certifications

- **UL 508C**
- **cUL 508C**
- **REACH**
- **CE**
  - Low Voltage: EN61800-5-1
  - Machinery Safety: EN60204:2006
- **C-Tick**
  - EN61800-3 (1996 with A.11, 2000)
- **TUV**
- **ATEX**
  - EN 50495
- **SEMI-F47**
- **GOST-R**
- **Marine**: RINA Rules
- **ACS 156** (2003 build. code)
- **RoHS**
- **KCC**

*Meets Worldwide Standards*
PowerFlex 525 on the Web

Allen-Bradley® PowerFlex® 525 AC Drives
The Next Generation of Powerful Performance and Flexible Control

POWER AND FLEXIBILITY
- Power range of 0.4 to 22 kW/ 0.5 to 30 Hp at 380/480V, global voltage classes from 100-600V
- Motor control includes volts per hertz, sensorless vector control, closed loop velocity vector control and permanent magnet motor control.
- Closed loop feedback for positioning capability with an optional encoder card
- PointStop™ stops motor load in a consistent position without encoder feedback
- Point to point positioning mode for position control applications

Look inside the PowerFlex 525 Drive

View online at: www.ab.com/powerflex525
Thank you