LISTEN.
THINK.
SOLVE.®

Allen-Bradley® PowerFlex® 525 AC Drives

The Next Generation of Powerful Performance and Flexible Control

Allen-Bradley · Rockwell Software

Rockwell Automation

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
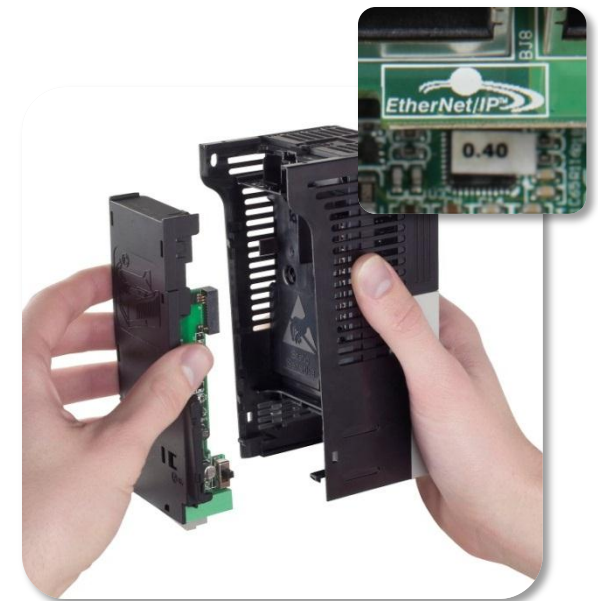
PowerFlex 525 AC Drive

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 foot print

- 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 it's 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
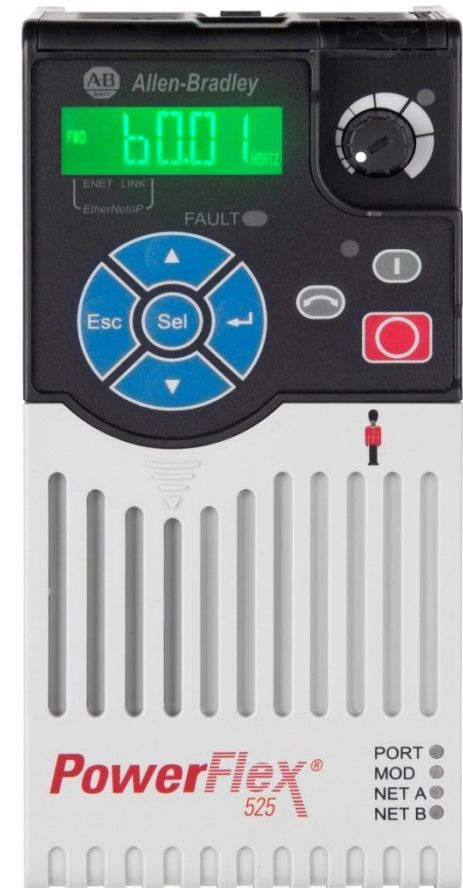
Flexibility in Motor Control

- ## 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
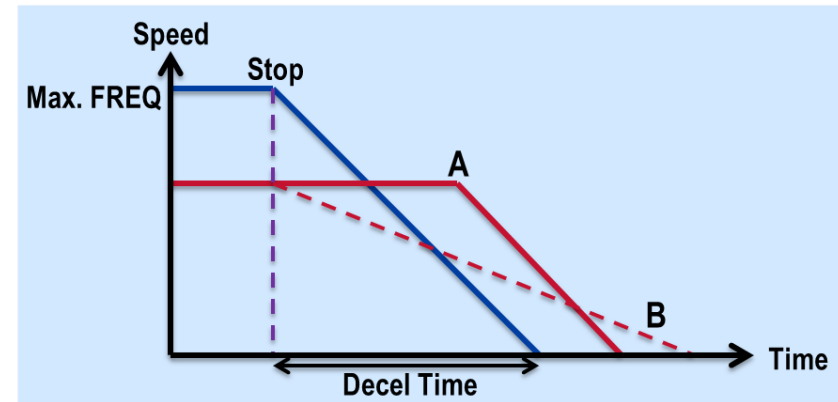
Simplified Programming

- **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)
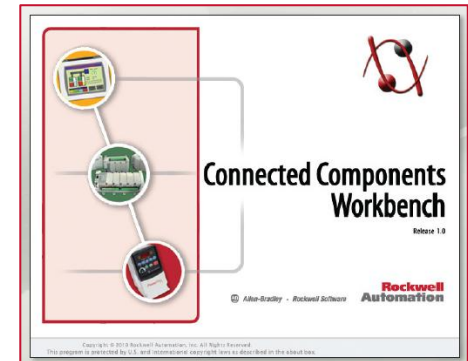
Speed Installation & Configuration

- **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
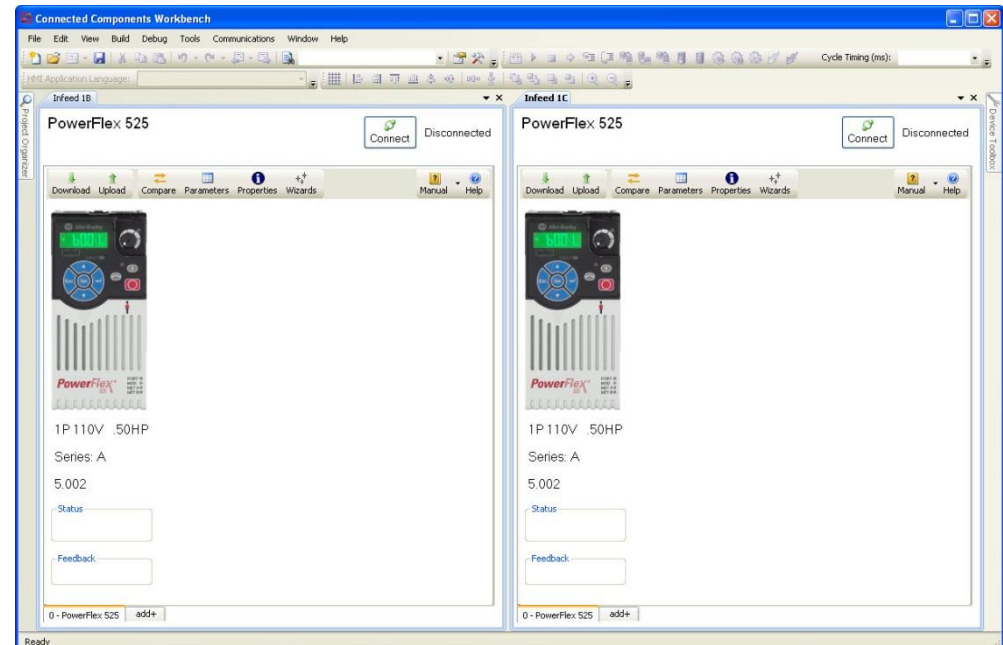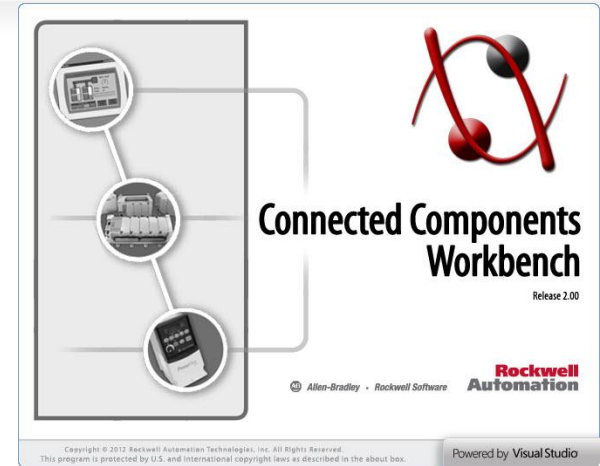
Application Specific Parameter Groups

- ## 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)
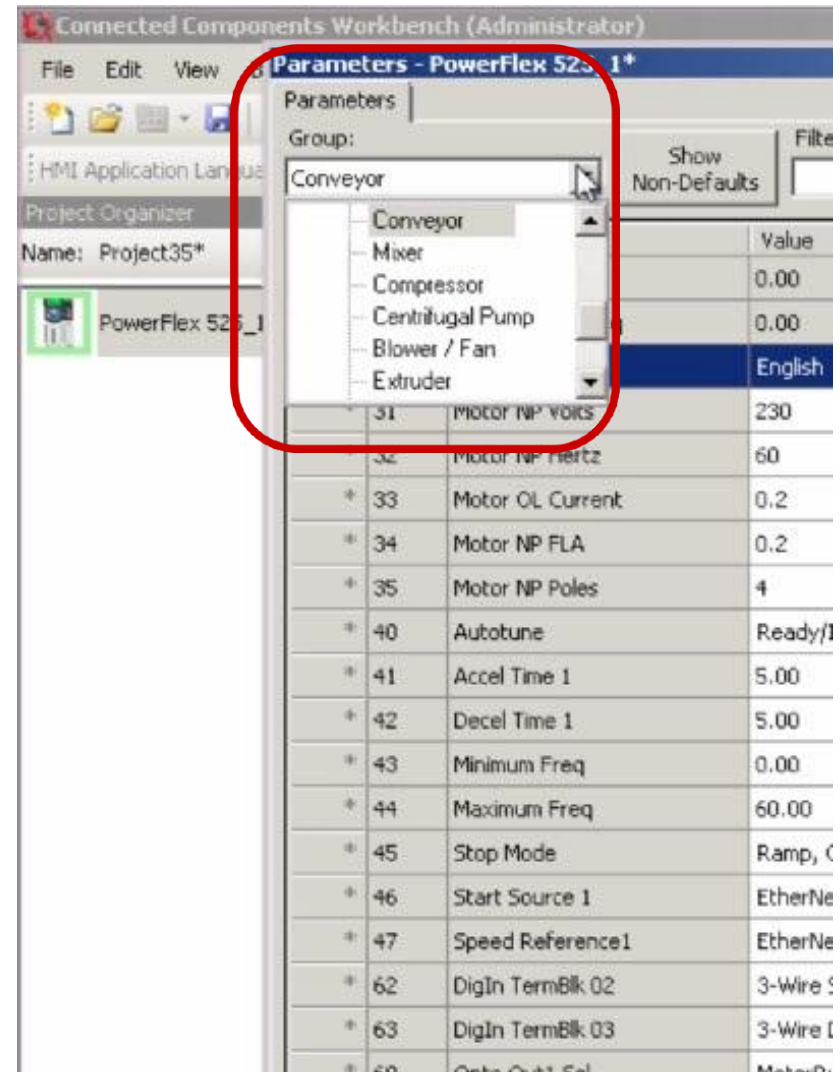
Custom Configuration

- 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
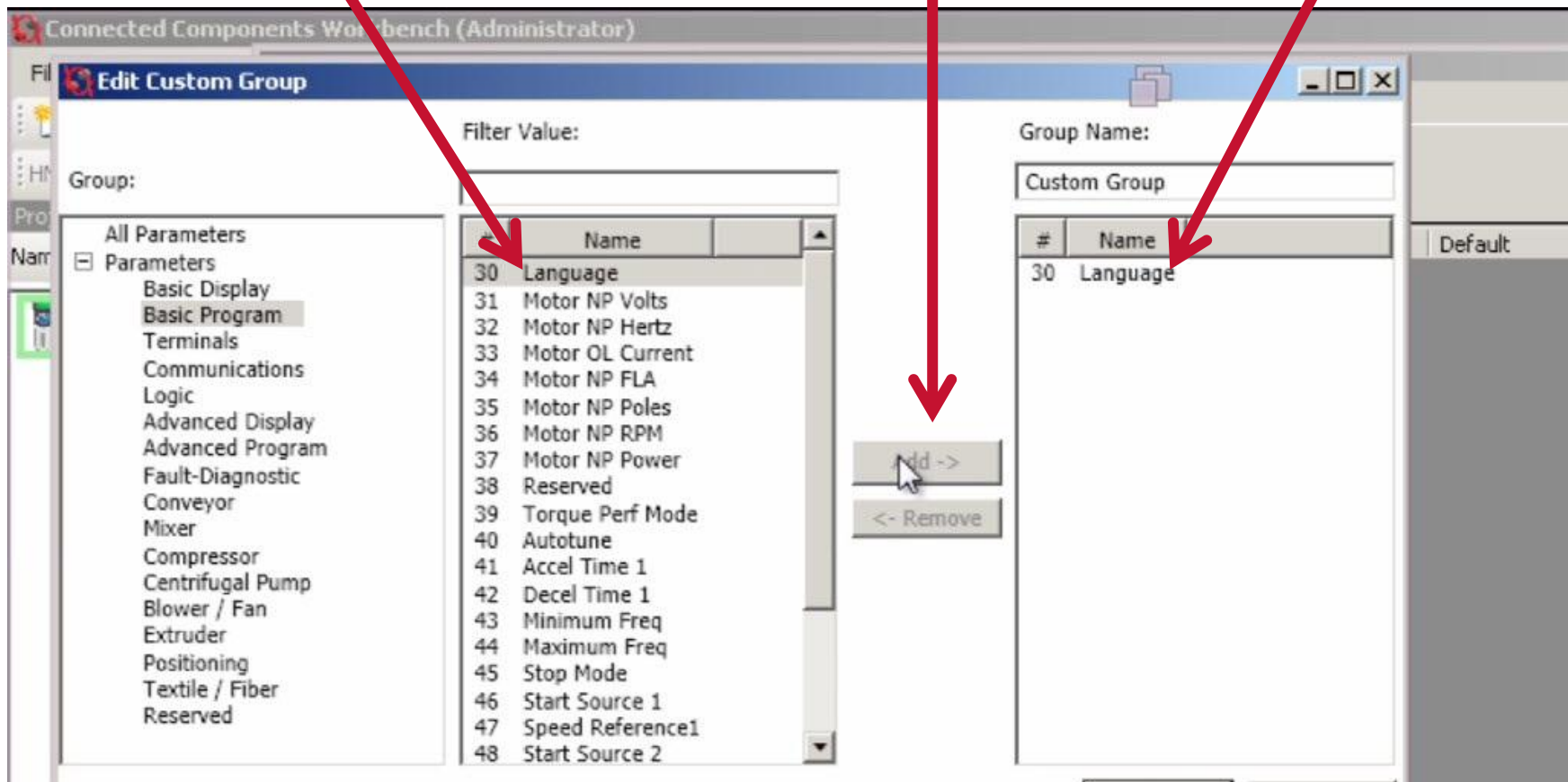
StepLogic Function

- **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
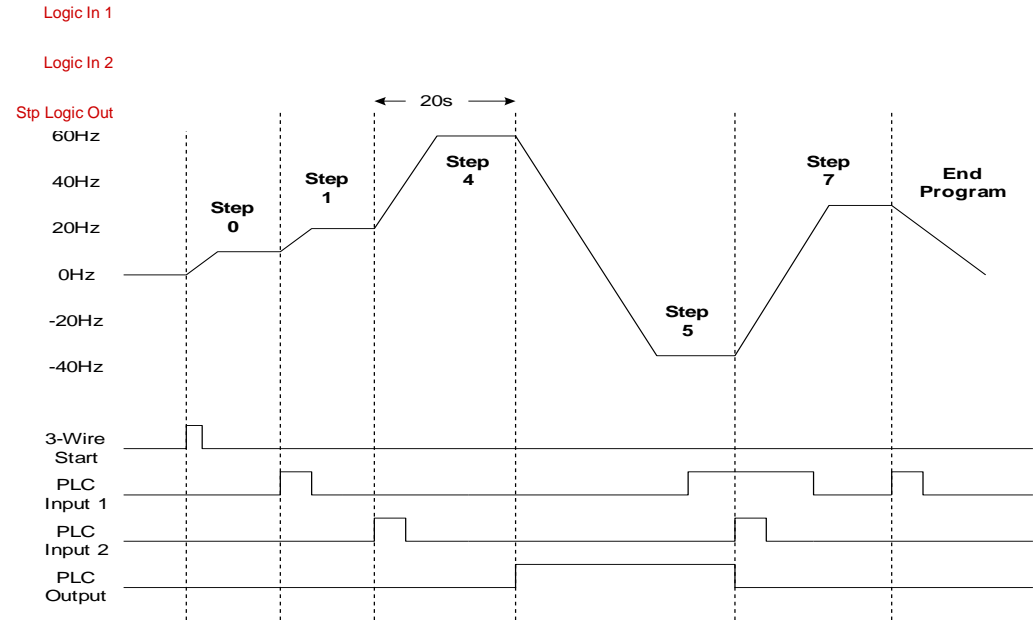
Communications

- 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
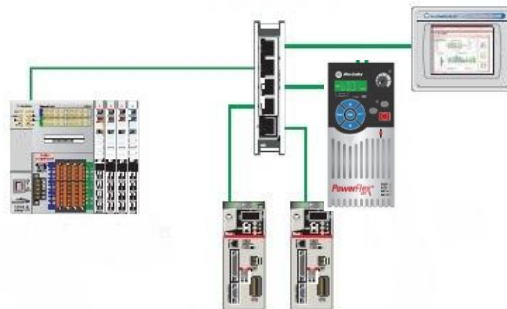   - DeviceNet
    - Profibus DP (single port)
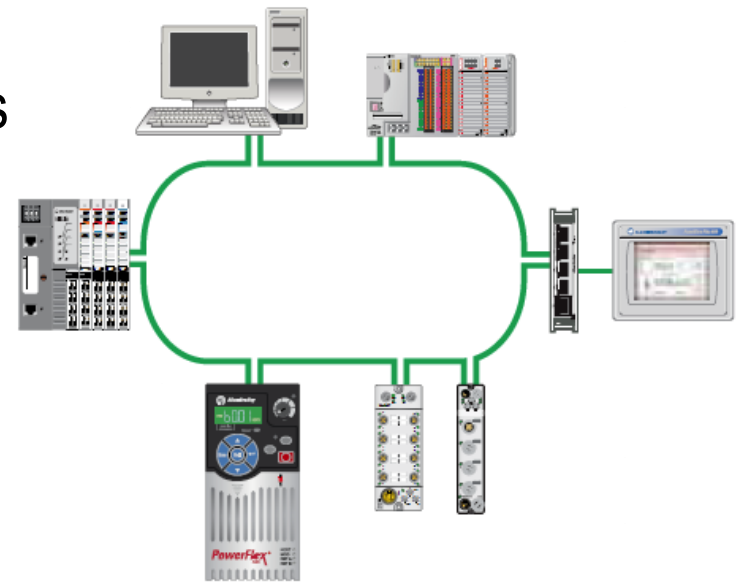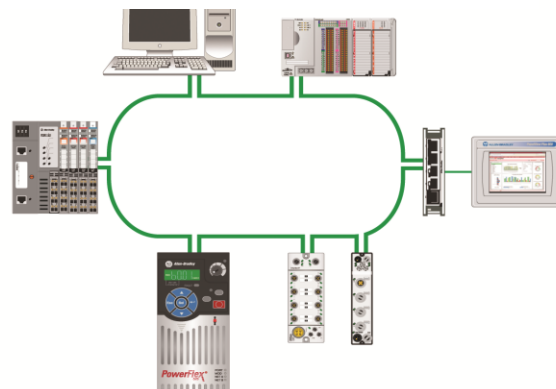
# EtherNet/IP™ Topologies

Linear
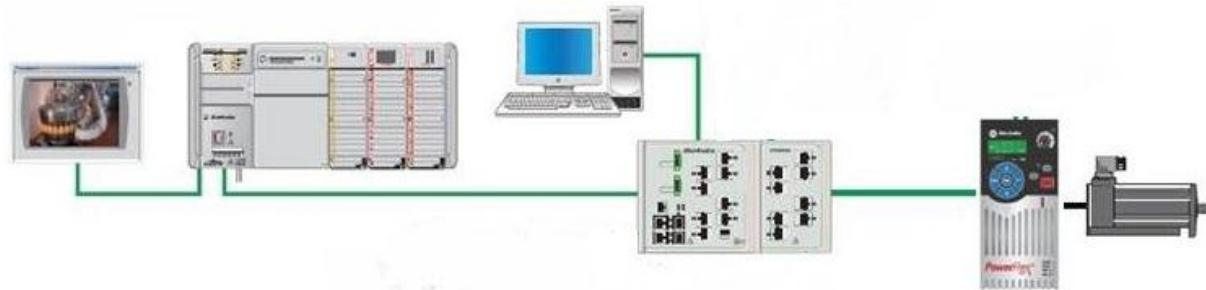
Star

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
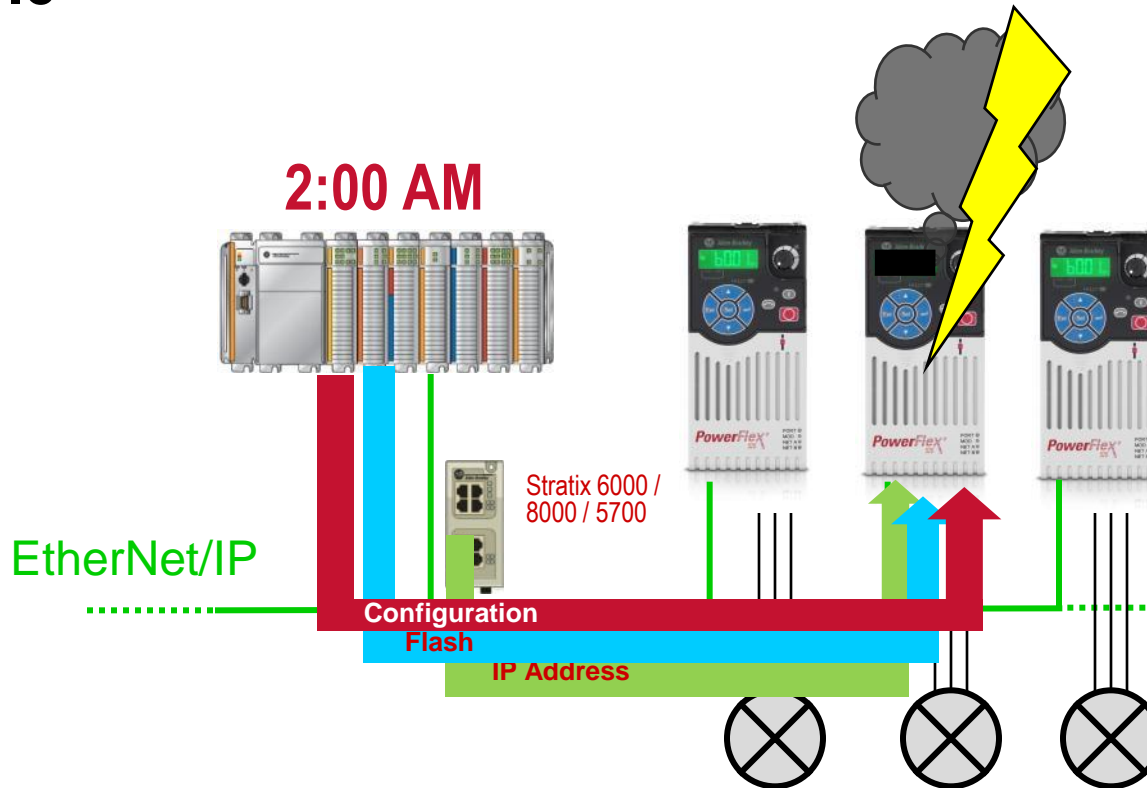
    - Flashes the drive and peripherals
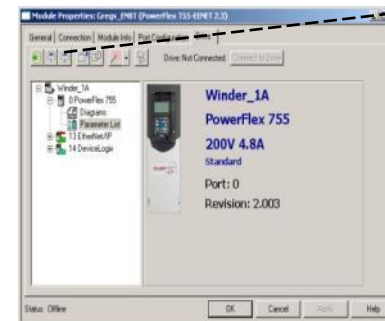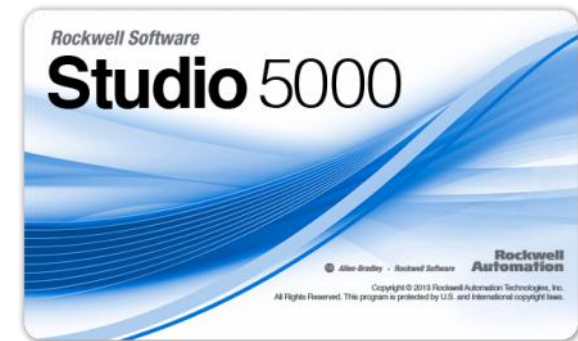
Download button

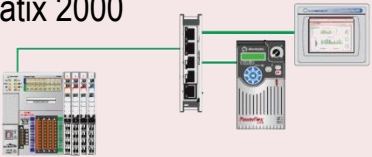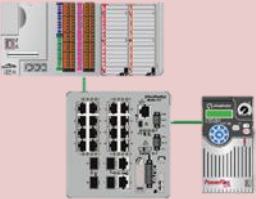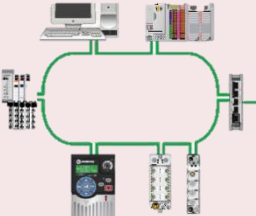Add-On Profile (AOP) of desired drive in RSLogix 5000

Automatic Device Configuration (ADC)

Example

2:00 AM

EtherNet/IP

Stratix 6000 / 8000 / 5700

Configuration

Flash

IP Address

Helps save the user time and money by reducing downtime

Reduce Downtime with Automatic Device Configuration

Topologies	ADC	Automatic assignment of EtherNet/IP address	Manually load EtherNet/IP
Competitive controller	No	No	Required
Stratix 2000	Yes	No	Required
Stratix 5700, 6000, 8000	**Yes**	**Yes**	**No**
	Only drives from Rockwell Automation have this capability		
DLR	Yes	No	Required

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
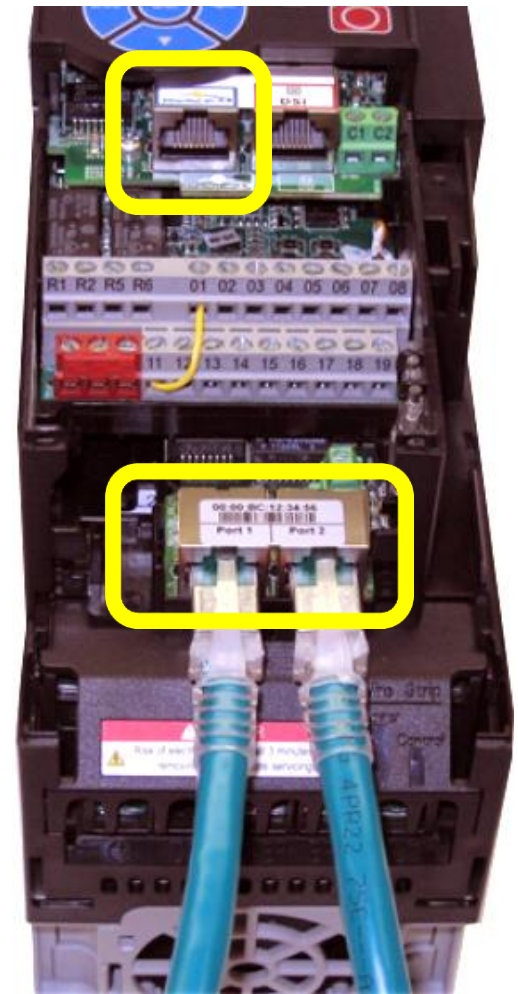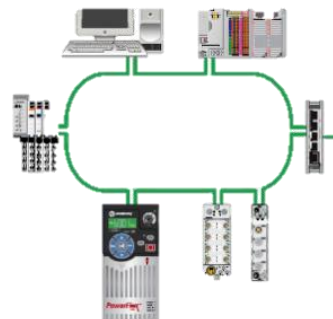
Datalinks

- **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

Rockwell Automation

Calculator Home

ENERGY SAVINGS CALCULATORS

Achieving Operational and Energy Efficiency with PowerFlex® Drives

Did you know that reducing a fan or pump operating load by 20% can result in up to 50% energy savings?

With electric motors as the driving force behind most production output, improved motor control performance and motor efficiency means greater overall production efficiency. The technology behind Allen-Bradley PowerFlex variable frequency drives is capable of providing you with both an immediate and measurable impact on energy use and operational efficiency.

Calculate your potential energy savings with the fan and pump energy savings tools. These tools are designed to compare conventional flow control methods with PowerFlex drives and show the differential power consumption of each. Realize the energy saving benefits of applying PowerFlex drives to your variable torque loads.
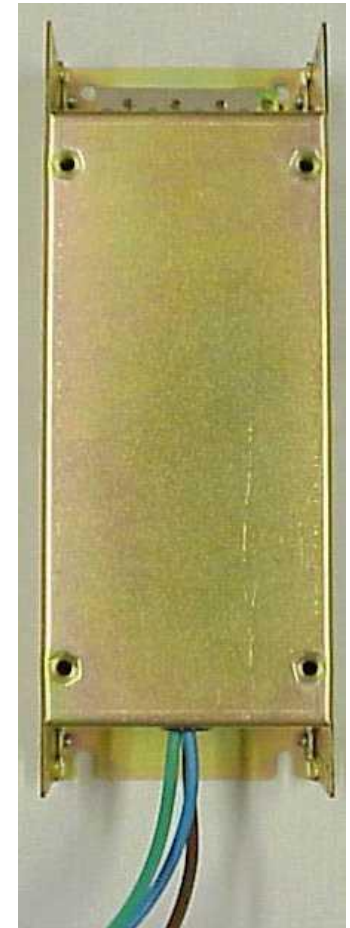
PowerFlex® Drives

Select your Calculator:

Pump Calculator   Fan Calculator

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

EN 55011	Class B Housing, trades and light Industries	Class A Group 1 Industrial environment	Class A Group 2 Industrial environment
EN/IEC 61800-3	Category C1 First environment Home and Office	Category C2 First environment Home and Office	Category C3 Second environment Industrial
Integral	-	10 meters	20 meters
External	30 meters	100 meters	100 meters

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 Wiring Block Diagram
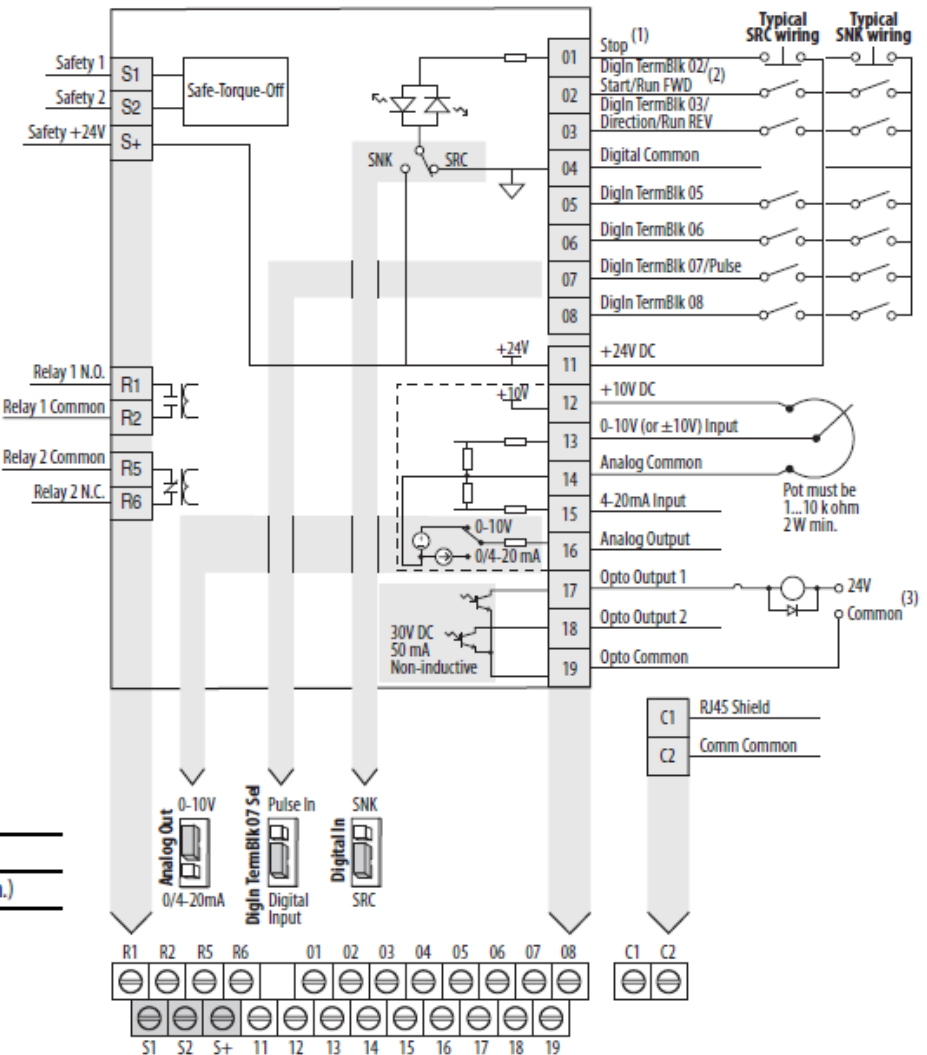
Control I/O Terminal Block Wire Specifications

Frame	Maximum Wire Size[1]	Minimum Wire Size[1]	Torque
A...E	1.3 mm² (16 AWG)	0.13 mm² (26 AWG)	0.71...0.86 Nm (6.2...7.6 lb-in.)

(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

EtherNet/IP or DeviceNet

Up to 5 drives on 1 mode

DSI
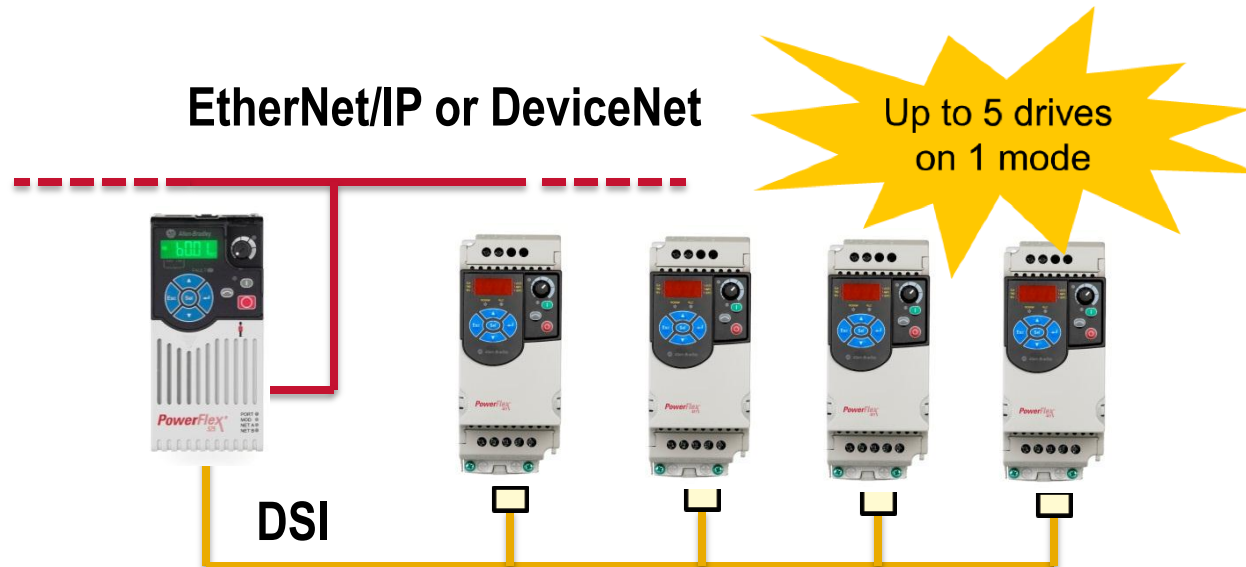
Worldwide Certifications

- **UL** 508C
- **cUL**508C
- **REACH**
- **CE**
  - Low Voltage: EN61800-5-1
  - Machinery Safety: EN60204:2006
  - EMC: IEC 61800-3:2004 + Am1:2011
- **C-Tick**
  - EN61800-3 (1996 with A.11, 2000)
- **TUV**
  - SIL3: EN 62061:2005 /IEC 61508 / EN 61800-5-2:2007
  - Cat 3 / PLd: EN ISO 13849-1:2008

- **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

- View online at: www.ab.com/powerflex525

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