Premier Integration with PowerFlex® Drives

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LV Drives / Product Manager - Software
Agenda

- Timeline Review - Integration
- Add-On Profiles (AOPs)
- IA Productivity Tools
- Automatic Device Configuration
- Integrated Motion
Timeline Review
Original Hardwired system

- Typically configured using **two** different software tools, **two** different cables or converters, and sometimes by **two** different people
**Timeline Review**

*Early Networks*

- Same as hardwired system …. Typically configured using two different software tools, two different cables or converters, and sometimes by two different people.

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Diagram:
- Controller
- I/O-only networks ('old' networks)
- Drive
- Network
- Serial
- Controller Software
- Drive Software
Timeline Review
Use of Dual Networks

- Typically configured by one person using two different software tools
Timeline Review

Typical Single Network Today

- Typically configured by one person using two different software tools
Timeline Review

Integrated Software Today

- **Single** software tool
  - Configure network I/O connection to the drive at **ONE** time, in **ONE** place, and by **ONE** person
    - Eliminates potential for user error when configuring network I/O

Controller

I/O & Programming network with fully integrated software

Drive
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Premier Integration
Logix / PowerFlex

- **Single** Integrated Development Environment
  - Single project file for controller / drive system (.ACD)
  - All configuration data resides in controller

Logix controller

I/O & Programming network with fully integrated software

PowerFlex drive

RSLogix 5000 with Add-On Profiles (AOPs)

EtherNet/IP
Premier Integration
Drive Add-On Profiles (AOPs)
Premier Integration
Drive Add-On Profiles (AOP’s)

- Extensive Drive Selection

Legacy connectivity extends back to 1994 with the 1305 drive (18 years!)

Support for all PowerFlex 4-Class, 7-Class and DC drives

From fractional Hp Component drives ...

... to high Hp Medium Voltage drives

Support for all PowerFlex 750-Series drives (and future PowerFlex drives)
Both sides of the network connection must be properly configured for communications to occur.
Premier Integration
Network I/O Configuration

- Configures up to 18 words of inputs and 18 words of outputs between drive and Logix controller
  - “Dynamic assembly”

- Configures BOTH sides of the network connection at the same time
  - No I/O mismatch!

- Logix tags automatically created from these selections
Premier Integration
Automatic Tag Generation

- Automatic generation of **descriptive** Logix tag names with **proper data types** respective of each parameter
  - Can have a mixture of data types

- Saves development time
  - Descriptive tag names eliminate need to manually add descriptions

- Tags are the actual network I/O as set up in the Module Definition window
Premier Integration
Programming

- Auto-generated tags are operational network I/O
  - Could go online and control drive directly from here with no Logix program present

- No additional programming required to move from a ‘blob’ of I/O to descriptive tag names from a User-Defined Data Type

- No additional programming required to convert data formats

Just add your application program here using the above tags
Premier Integration
Drive Configuration Options

- Drive Configuration
  - Utilizes the same tools found in Connected Components Workbench and DriveExecutive software

**SINGLE software tool for programming and configuring a Logix / PowerFlex system**
Premier Integration
Start-up & Application Wizards

• Simplified Configuration with Startup and Application Wizards
Premier Integration
Start-up Wizards Example

**Applied and Pending Changes**

Below is a list of changes that have already been made.

Wizard Step "Direction Test"...
Direction Test was not completed.
No changes were made by direction test.

Below is a list of changes that will be made if you click Finish.

Wizard Step "Motor Control"...
Change parameter "125 - [Torque Perf Mode]" value from "Sensits Vect" to "V/Hz".

Wizard Step "Stop / Brake Mode"...
Change parameter "82 - [DB Resistor Sel]" value from "Disabled" to "5% DutyCycle" %.
Change parameter "37 - [Stop Mode]" value from "Ramp CF" to "DC Brake".

Wizard Step "Ramp Rates / Speed Limits"...
Change parameter "83 - [S Curve %]" value from "0" to "5" %.
RSLogix / Studio 5000

Duplicating Drives

• Simple Cut & Paste Quickly Duplicates Drives

Duplicates configuration settings too!
RSLogix / Studio 5000

Add I/O Online

- RSLogix 5000 v17 & higher feature
  - Ideal for continuous operation applications that can not be easily shut down (Logix controller offline)
  - EtherNet/IP
  - ControlNet (unscheduled)
RSLogix / Studio 5000

Module Discovery

- Improve Speed of Application Development
  - Online browse of the backplanes and networks for devices
  - Supports virtually all devices supported by RSLogix 5000
    (exception - CompactLogix not supported in v20)

- Improve Accuracy of Building the I/O Tree
  - Easily add devices to the I/O tree
  - Without needing exact catalog number
  - Without needing Slot # or address
  - Without needing to know firmware revision
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IA Productivity Tools

Add-On Instructions (AOIs)

- Save time by creating sets of commonly used custom instructions
- Promote consistency between projects – no need to constantly re-invent commonly used control algorithms

Example AOI to scale drive engineering units to units operators can understand
IA Productivity Tools

FactoryTalk® View Faceplates

Available Faceplates from Rockwell Automation Sample Code Web Site:

- Preconfigured
- Go to Display
- Buttons

Device Configuration

Device Diagnostics

Operator Help

Status and Operator Control

Infeed Motor 1

Fault Description
DC bus voltage exceeded maximum value.

Fault Action
Monitor the AC line for high line voltage or transient conditions. Bus overvoltage can also be caused by motor regeneration. Extend the decel time or install dynamic brake option.

Operator Help

Operator Program PB: Toggles the device control between the operator display or program controller.

Indicator Color Code:
- = In-Active/De-energized/Off
- = Active/Energized/On
- = Alarm/Fault
IA Productivity Tools

Accelerators

• Provides tools to assist with all facets of your design task
• Includes:
  • Quick Start manual
    • Step-by-step guidance on how to use the tools and modules
  • Configuration & Selection tools
    • Product Selection Toolbox, Motion Analyzer and Drive Engineering Assistant
  • Enclosure and wiring diagram CAD files
    • PDF, DWG and DXF versions
  • Bill of Material
    • Provides a starting list of the components and accessories for your particular application
  • Controller programming and HMI application files
    • Basic pre-configured logic and HMI screen templates for your application use
The DMAT includes automation engineering design tools for the entire machine control application development.

- Bill of Material
- CAD
- Logic
- HMI
- Quick Start

Bill of Material Files

Wiring Diagrams and Panel Layout Drawings

HMI Screens for status and diagnostics

Quick Start for Base System SetUp
IA Productivity Tools

IntelliCENTER Integration Assistant

- Integrates MCC devices into an RSLogix 5000 project
  - Automatically builds the I/O tree for all IMC devices in the MCC
  - Auto-generates device tags via Device AOPs

Available Fall 2012
IA Productivity Tools

IntelliCENTER Software

System Level Dashboard
- Virtual view of the MCC
- Simple dashboard presentation
- Customer configurable
- Exclusive functionality for MCCs

Component Configuration
- Parameter Editor
- Device monitoring and configuration
- Remote diagnostic support
- Support for all IMC devices in the MCC
- Trending and event logging

HMI support
ActiveX and IMC faceplates provided
Enables simple integration with On-Machine HMIs

Asset Management
Key customer documentation
- User manuals
- Customized wire diagrams
- Spare Parts lists
Agenda

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- **Automatic Device Configuration**
- Integrated Motion
Automatic Device Configuration (ADC)

Reducing System Down Time

- Animation

2:00 AM

EtherNet/IP

Configuration
Flash
IP Address

Stratix 6000 / 8000
Automatic Device Configuration (ADC)  
Reducing System Down Time

- ADC Setup (≥ v4.02 AOPs)
  - ADC icon on the Drive Tab that shows general ADC configuration status and launches an ADC Configuration window

- Indicates no ADC configured
- ADC configured for at least one Port
- ADC not supported

Enable / Disable ADC for all Ports in one location
Device Configuration
Common User Experience Across Devices & Platforms

Common User Experience Across Software Platforms & Devices for Identical Features
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Drives & Motion Integration

Integrated Motion on EtherNet/IP
Drives & Motion Integration

Integrated Motion on EtherNet/IP

- Device Integration with Integrated Motion

Logix Controller

Kinetix 6500 Servo Drives

EtherNet/IP

PowerFlex 755 Drives

RSLogix 5000 CIP Motion Profile

Soft Starters

Overloads

CIP Motion technology

RSLogix 5000 CIP Motion Profile

Standard I/O AOPs
Drives & Motion Integration
Common User Experience

- Provides customers using Kinetix 6500 & 350 servos and PowerFlex 755 drives (v2.xxx and higher) with a common user experience
  - Common configuration experience
  - Common programming experience

PowerFlex 755 requires RSLogix™ 5000 V19 (and higher)
Utilizes same motion profile
Drives & Motion Integration
Common Programming Experience

- Utilizes same motion instructions
Drives & Motion Integration
Considerations for Using Integrated Motion (vs. AOPs)

- **Typical Reasons:**
  - Applications that use *both* servos and AC drives
    - Use drives for some axes because they don’t need servo performance
    - Would be a convenience to be able to configure / program the drives the same way
  - Drives applications that could benefit from more powerful (i.e. motion) instructions
    - High-end users that write complex programs for their drives
    - Don’t need servo performance, but would like to take advantage of the motion instruction set to save time
Premier Integration
A Major Component of the Integrated Architecture

- Ethernet-based Power products
- Easy network I/O setup w/ AOPs
- Descriptive tag names & proper data types

Premier Integration Design Develop Maintain Operate

IntelliCENTER SW

ADC w/ Integrated Motion

General Faceplates

Product-specific Faceplates

ab.com/go/iatools

Accelerator Toolkits
Thank You!

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