Integrated Intelligence within Low & Medium Voltage Motor Control Centers
Consider the Following Scenario

What tripped?

Why did it trip?

Was it preventable?

How do we fix it?

Is anything else going to trip...

...how soon?

You have the technology, but do you have the answers at your fingertips?
Low & Medium Voltage MCC Users Are Looking for More Than Intelligent Devices

• Users demanding useful information
  – Improved diagnostics and predictive failure information
    • intelligence in all end devices, not just critical areas
    • networked access to device information
    • real-time device monitoring and trending
    • process or component history

• Users demanding Plug & Play solutions
  – Pre-tested and pre-configured systems
    • reduced installation time and smooth start-up
  – User-friendly PC interface

Users focusing more on device intelligence and system integration than traditional MCC features
IntelliCENTER: A New Concept in MCC Technology

Built-in DeviceNet

New DeviceNet products

New real-time monitoring software

...And it's all pre-tested and pre-configured at the factory

Integrated Intelligence within a Motor Control Center
DeviceNet ports in each vertical wireway of LV MCC’s and in each horizontal low voltage wireway of MV MCC’s

- Pull-apart connectors
- Simplified installation, relocation, and adding of units
- Superior to traditional daisy-chaining, where downstream equipment may unintentionally be shut-down
• DeviceNet cabling is pre-installed at factory
  – Prevents damage which may occur during field installation

• New 8 ampere, Class 1 DeviceNet cabling
  – Eliminates the need for more than one power supply in most MCC line-ups
  – Class 1 provides noise immunity from motor leads without requiring cable spacing

• DeviceNet simplifies interwiring by replacing traditional hard-wiring
  – DeviceNet cable used for control and monitoring
  – Eliminates complex interwiring diagrams
IntelliCENTER
Built-in DeviceNet for LV & MV MCC’s

IntelliCENTER MCC Line-up

IntelliCENTER MV MCC Line-up

- Built-in DeviceNet
- Plug-in DeviceNet cable
- ControlNet or Ethernet

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DeviceNet MCC cost is nearly identical to the interwired I/O chassis solutions

**Study details available in white paper**
E3 Electronic Overload Relay

- DeviceNet on-board
- 2 input points (4 inputs in Plus version)
- Programmable protective functions (alarm level, trip level, time delay, and inhibit window)
  - Overload
  - Phase loss/imbalance
  - Stall/Jam
  - Ground Fault (Plus version)
  - PTC thermistor inputs (Plus version)
- Information:
  - Current
  - Time-to-trip
  - Time-to-reset
  - Percent thermal capacity
- Device Logix
E1 Plus Electronic Overload Relay

- Side module for DeviceNet communications
- Wide 5:1 current range
  - Fewer devices to cover a wider range of starters
- Responsive phase loss detection (three seconds)
- 2 input points 1 output point
- Information
  - Percent FLA current
  - Percent thermal capacity
  - Warning/Trip status
DeviceNet System Accessory (DSA)

- Interface module for non-intelligent devices
  - Motor starter with eutectic alloy
  - Load break switches (feeders and mains)
  - Redundant DeviceNet power supply status
- 4 input points
  - Ideal for monitoring contactor status, isolation switch, overload trip and Normal-Off-Test
- 2 output points
  - Direct control of contactor
- Device Logix
825-P Motor Protection Relay

- A-B motor protection relay with DeviceNet capability
- User programmable functions
  - Overload
  - Underload
  - Thermal utilization
  - Ground Fault
  - Phase unbalance
  - Motor and ambient temperature
  - Start time monitor
  - Starts per hour limitations
  - Metering (V, I, Power)
Entek XM-120 Vibration Module

- Two Channel Vibration
  - Standard
  - Low Frequency
  - gSE
- Tachometer input
- Outputs
  - Two 4 to 20 mA
  - Relay
- User programmable Alarms
  - 16 alarms, using any measured parameter
- IntelliCENTER ready
IntelliCENTER Software
The ultimate window into LV and MV MCC’s

• MCC monitoring in Windows environment
• Pre-configured screens display real-time information
• Complete system documentation
• Software optimized to ensure performance
  – Polling algorithm segregates monitoring and control, so monitoring scans do not affect control scans
• Complements operator interface and product specific software such as DriveTools and RSEnergy
• Elevation View
  - Shows MCC and status of each starter
  - Devices can be moved by simple drag and drop
  - Device descriptions and locations are fully customizable
• Monitor View
  – Detailed information
  – Three gauges
  – Two trends
  – I/O status and descriptions
  – Eight data/parameters
  – All parameters are fully configurable by the user
IntelliCENTER
Software Highlights - Documentation

- Electronic copies of electrical and mechanical drawings
- Easy to add custom drawings
- Electronic copies of key manuals
- Never search for missing manuals again
IntelliCENTER How it works...

- IntelliCENTER software has two components
  - IntelliCENTER CD
  - Data CD
IntelliCENTER
ActiveX Features

- IntelliCENTER screens can reside in RSView and other HMIIs
  • Made possible by ActiveX controls in IntelliCENTER software
  • Reduces HMI development time and gives the user better information

MCC Elevation View
Unit Monitor View
Electronic User Manuals
Electronic CAD Diagrams
Spreadsheet View of MCC
Integral Part of RA Integrated Architecture

- Software can reside anywhere in user’s facility
  - Control room
  - Engineer’s desk
  - Laptop used by maintenance personnel
- Hardware and software seamlessly integrated across control and information networks and into the enterprise

**Added value that no other Motor Control Center manufacturer can offer**
• System configuration and Testing done at the factory
  – Nodes addressed
  – DeviceNet powered up
  – Component communication and functionality verified

Helps assure smooth start-up
IntelliCENTER
What You Get

• Faster installation compared to hardwired I/O
• Faster integration
  – Network is preconfigured (node numbers, baud rates)
  – Use IntelliCENTER screens in HMI
• More precise control with intelligent motor control devices
• More information – where you need it when you need it
  – Enhances your plant asset management system
• More uptime
  – Warnings in advance of failure
  – Troubleshooting tools and information at your fingertips
• Adds up to lower total cost of ownership
IntelliCENTER
Integrated Intelligence within LV and MV MCC’s

• Software provides ultimate window into LV & MV MCC’s
  – Real-time monitoring
  – Access from anywhere in the facility
  – Complete documentation and MCC history

• New DeviceNet products capture new info
  – Allows predictive maintenance, process monitoring, and advanced diagnostics

• Built-in DeviceNet simplifies LV & MV MCC design and installation
  – Ease of moving and adding units
  – Prevents accidental damage to DeviceNet cables

• Plug & Play system
  – Pre-tested and pre-configured