Micro850® Overview	2080-LC50-48xxx
Embedded communication	USB, Serial, Ethernet
Basic I/O size	48 points
Max number of I/O	Up to 132
Max number of Expansion I/O	4
Motion axis (Only available in model with transistor output)	Up to 3 axes

Micro850® Capacity

- LC50-48xxx has 140KB of memory and supports 5 plug in I/O modules & 4 expansion modules.
- Supports Ladder Programming, Function Block Diagram, Structured Text

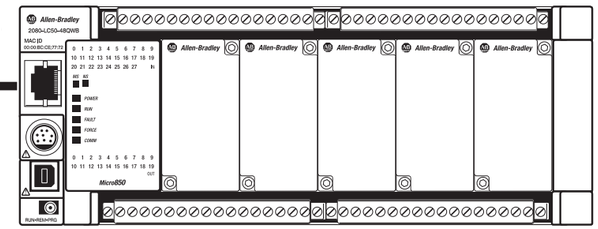
Micro850® Configuration

External Power Supply
- Embedded I/O 28 In, 20 Out, Base Analog I/O channels via plug in or expansion. Maximum Digital I/O :132, Max Expansion I/O Modules:4 6 High Speed Counters

Micro850® Performance

- Designed for larger standalone machine applications that require more I/O or higher performance analog I/O
- Number of I/O points embedded in the base 24,48 points

Micro850®



Panelview™ Component Performance

- 4.3, 5.7 ,10.7 inch Display Sizes
- Monochrome Transmissive FSTN Options/Color Transmissive TFT, Analog Touch

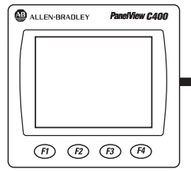
Panelview™ Component Configuration

- Optimized for compatibility with MicroLogix™ , SLC™, and Micro800 controllers.
- Features include unicode language switching, alarm messages and history, and basic recipe capability
- User Interface through Web browser

Panelview™ Component Capacity

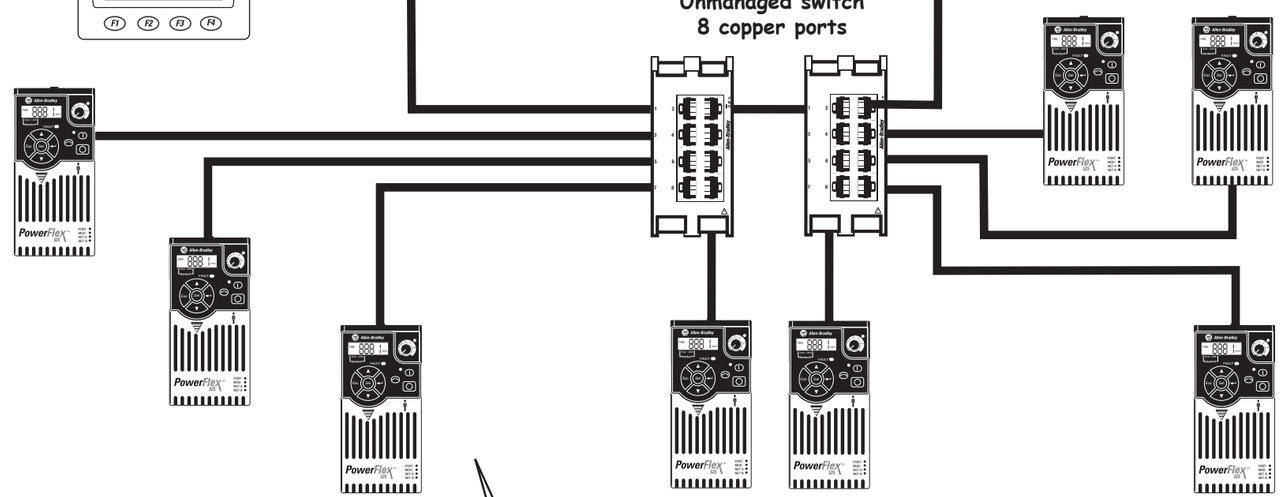
- Supports communication via RS-232 (DH-485), RS-232 (DF1), RS-485 and Ethernet
- Two USB ports for transferring files or updating firmware , Supports SD memory cards

PanelView™ Component



EtherNet/IP™

Stratix 2000™ Unmanaged switch 8 copper ports



About this Configuration

A Micro850 controller is connected to eight PowerFlex 525 drives as follows:
- Via EtherNet/IP from the embedded EtherNet/IP port on the controller
- Through an 8-port switch to the embedded EtherNet/IP ports on the drives.
- Reference to UDFB: http://www.rockwellautomation com/go/scmicro800

File name: Micro800 UDFB: Ethernet communications with PowerFlex 520-Series and PowerFlex 4-Class Drives

PowerFlex® 525 Capacity

- 5 to 30 HP,.4 to 22KW
- 100 to 600V single or 3-phase
- 24vDC digital I/O
- Analog I/O
- Embedded EtherNet/IP (Linear/Ring with Dual Port Option)

PowerFlex® 525 Performance

- V/Hz, SVC, PM, Economizer
- Embedded EMC Filter for 1ph 240V & 3ph, 480V
- Embedded Safety-Torque Off (SIL2/PLd)
- Closed Loop Feedback allows Positioning Capability (Encoder Card Option)

PowerFlex® 525 Configuration

- Innovative LCD Display
- USB Powered Programming
- Connected Components Workbench™ (CCW) Programming

Note: Performance is what we tested, not the max capacity

Rockwell Automation

Micro800® Architecture for PowerFlex® Drives communication on EtherNet/IP™

Publication CCSIMP-QR003A-EN-P September 2014

Micro850® Overview	2080-LC50-48xxx
Embedded communication	USB, Serial, Ethernet
Basic I/O size	48 points
Max number of I/O	Up to 132
Max number of Expansion I/O	4
Motion axis (Only available in model with transistor output)	Up to 3 axes

Micro850® Capacity

- LC50-48xxx has 140KB of memory and supports 5 plug in I/O modules & 4 expansion modules.
- Supports Ladder Programming, Function Block Diagram, Structured Text

Micro850® Configuration

External Power Supply
- Embedded I/O 28 In, 20 Out, Base Analog I/O channels via plug in or expansion. Maximum Digital I/O :132, Max Expansion I/O Modules:4 6 High Speed Counters

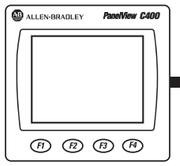
Micro850® Performance

- Designed for larger standalone machine applications that require more I/O or higher performance analog I/O
- Number of I/O points embedded in the base 24,48 points

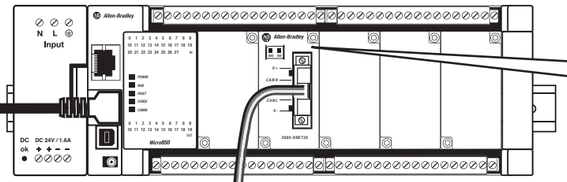
Panelview™ Component Performance

- 4.3, 5.7 ,10.7 inch Display Sizes
- Monochrome Transmissive FSTN Options/Color Transmissive TFT, Analog Touch

PanelView™ Component



Micro850®



2080-DNET20

- Up to 20 nodes of DeviceNet™ devices
- Reduces wiring and installation costs for larger standalone machines that have distributed drives and I/O

Panelview™ Component Configuration

- Optimized for compatibility with MicroLogix™ , SLC™, and Micro800 controllers.
- Features include unicode language switching, alarm messages and history, and basic recipe capability
- User Interface through Web browser

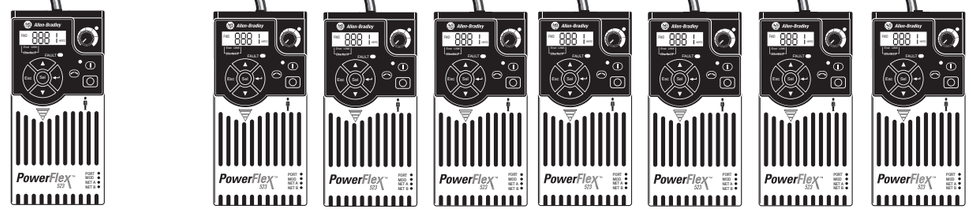
Panelview™ Component Capacity

- Supports communication via RS-232 (DH-485), RS-232 (DF1), RS-485 and Ethernet
- Two USB ports for transferring files or updating firmware , Supports SD memory cards

Power tap with built in resistor

DeviceNet™ Trunk Line

24Vdc Class 2 Power Supply



Compatible Drives - Powerflex® 525/523 series

About this Configuration

A Micro850 controller is connected to eight PowerFlex 525 drives as follows:
- DeviceNet trunk line daisy chained from a 2080-DNET20 plug-in module on the controller to 25-COMM-D DeviceNet adapters installed in the drives at 500 kbaud
- Reference to UDFB: http://www.rockwellautomation.com go/scmicro800

File name: Micro800 UDFB: DeviceNet communications with PowerFlex 520-Series Drives

PowerFlex® 525 Capacity

- 5 to 30 HP,.4 to 22KW
- 100 to 600V single or 3-phase
- 24vDC digital I/O
- Analog I/O
- 25-COMM-D DeviceNet adapters installed in the drives

PowerFlex® 525 Performance

- V/Hz, SVC, PM, Economizer
- Embedded EMC Filter for 1ph 240V & 3ph, 480V
- Embedded Safety-Torque Off (SIL2/PLd)
- Closed Loop Feedback allows Positioning Capability (Encoder Card Option)

PowerFlex® 525 Configuration

- Innovative LCD Display
- USB Powered Programming
- Connected Components Workbench™ (CCW) Programming

Publication CCSIMP-QR003A-EN-P September 2014

Note: Performance is what we tested, not the max capacity

Rockwell Automation

Micro800® Architecture for PowerFlex® Drives communication on DeviceNet®

Micro850® Overview	2080-LC50-48xxx
Embedded communication	USB, Serial, Ethernet
Basic I/O size	48 points
Max number of I/O	Up to 132
Max number of Expansion I/O	4
Motion axis (Only available in model with transistor output)	Up to 3 axes

Micro850® Capacity

- LC50-48xxx has 140KB of memory and supports 5 plug in I/O modules & 4 expansion modules.
- Supports Ladder Programming, Function Block Diagram, Structured Text

Micro850® Configuration

External Power Supply
- Embedded I/O 28 In, 20 Out, Base Analog I/O channels via plug in or expansion. Maximum Digital I/O :132, Max Expansion I/O Modules:4 6 High Speed Counters

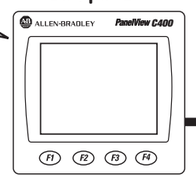
Micro850® Performance

- Designed for larger standalone machine applications that require more I/O or higher performance analog I/O
- Number of I/O points embedded in the base 24,48 points

Panelview™ Component Performance

- 4.3, 5.7 ,10.7 inch Display Sizes
- Monochrome Transmissive FSTN Options/Color Transmissive TFT, Analog Touch

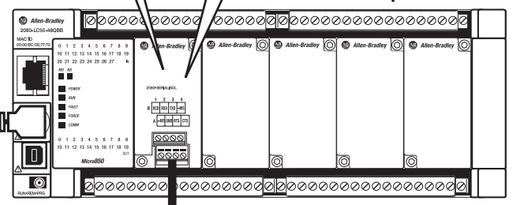
PanelView™ Component



2080-SERIALISOL

Master

Micro850®



Panelview™ Component Configuration

- Optimized for compatibility with MicroLogix™ , SLC™, and Micro800 controllers.
- Features include unicode language switching, alarm messages and history, and basic recipe capability
- User Interface through Web browser

Panelview™ Component Capacity

- Supports communication via RS-232 (DH-485), RS-232 (DF1), RS-485 and Ethernet
- Two USB ports for transferring files or updating firmware , Supports SD memory cards

PowerFlex® drives connected as slaves

Modbus® RTU (RS-485)

Compatible Drives - Powerflex® 525/523 series

About this Configuration

A Micro850 controller is connected to eight PowerFlex 525 drives as follows:
- Modbus RS-485 daisy chained from a 2080-SERIALISOL plug-in module on the controller to the embedded DSI ports on the drives at 19.2 kbaud
- Terminating Resistor should be used at the end of the node
- Reference to UDFB: http://www.rockwellautomation com/go/scmicro800

File name: Micro800 UDFB: Modbus communications with PowerFlex 520-Series and PowerFlex 4-Class Drives

PowerFlex® 525 Capacity

- 5 to 30 HP,.4 to 22KW
- 100 to 600V single or 3-phase
- 24vDC digital I/O
- Analog I/O
- Embedded DSI ports

PowerFlex® 525 Performance

- V/Hz, SVC, PM, Economizer
- Embedded EMC Filter for 1ph 240V & 3ph, 480V
- Embedded Safety-Torque Off (SIL2/PLd)
- Closed Loop Feedback allows Positioning Capability (Encoder Card Option)

PowerFlex® 525 Configuration

- Innovative LCD Display
- USB Powered Programming
- Connected Components Workbench™ (CCW) Programming

Note: Performance is what we tested, not the max capacity

Rockwell Automation

Micro800® Architecture for PowerFlex® Drives communication on Modbus®

Publication CCSIMP-QR003A-EN-P September 2014

About this Configuration

This report documents the measured start/stop communications performance of a Micro850® controller communicating with up to eight PowerFlex™ 525 drives over EtherNet/IP™, DeviceNet™ & Modbus®, while monitoring 14 status items from each drive.

Software Setup

The Micro850 controller was programmed to issue a start command to up to eight drives and then log how long it took for each drive R1 Output to report that its motor was running, using the 10 microsecond clock as its timebase. Likewise, ten seconds later the Micro850 controller was programmed to issue a stop command to up to eight drives and then log how long it took for each drive R1 output to report that its motor was stopped, using the 10 microsecond clock as its timebase. Every 10 seconds the start and stop commands would alternate for 100 cycles. All data was logged to a microSD card and later transferred to Excel in order to calculate the minimum, maximum and average start and stop times over the 100 cycles.

Three new UDFBs were developed to handle communications with the drives over each of the three networks:

- RA_PFx_ENET_STS_CMD
- RA_PF52x_DNET_STS_CMD
- RA_PFx_MODBUS_STS_CMD

Each UDFB handles both writing commands (on an exception basis over EtherNet/IP and Modbus, and every scan over DeviceNet) and reading status on a regular basis. (The EtherNet/IP and Modbus UDFBs support all PF4-class and PF52xseries drives, whereas the DeviceNet UDFB only supports PF52x-series drives.)

The UDFBs share the following inputs and outputs:

Inputs/Commands

- Stop
- Start
- Jog
- ClrFault
- SetFwd
- SetRev
- SpeedRef
- AccelTime1
- DecelTime1

Outputs/Status

- CommLoss
- DriveType
- DriveFault
- FaultCode
- Ready
- Active
- CmdFwd
- CmdRev
- AtRef
- CmdSpeed
- SpeedFeedback
- OutputCurrent
- DCBusVoltage

Each UDFB also has configuration inputs that define the specific networking parameters required:

EtherNet/IP

- IPAddress
- UpdateRate_ms
- EnetCtrlTO_sec

DeviceNet

- SlotID
- NodeAddress

Modbus

- Channel
- NodeAddress
- UpdateRate_ms

Performance Table

Measured Performance (in milliseconds) for 100 Start/Stop Cycles

EtherNet/IP	Start Min	Start Max	Start Avg	Stop Min	Stop Max	Stop Avg
1-drive	22.03	48.96	27.12	22.86	44.13	29.83
2-drives	24.99	59.15	31.04	26.16	51.00	33.12
4-drives	26.95	63.46	38.33	27.74	81.77	40.41
8-drives	25.56	88.03	51.24	29.29	95.73	53.63

DeviceNet	Start Min	Start Max	Start Avg	Stop Min	Stop Max	Stop Avg
1-drive	22.96	39.81	32.41	30.09	47.34	37.91
2-drives	24.92	41.22	33.39	29.83	48.28	38.34
4-drives	24.00	46.96	34.83	30.01	55.03	39.54
8-drives	28.64	59.06	40.42	29.01	60.17	45.55

Modbus	Start Min	Start Max	Start Avg	Stop Min	Stop Max	Stop Avg
1-drive	38.76	71.84	46.42	41.98	83.92	51.60
2-drives	40.00	100.00	63.11	43.40	121.05	68.05
4-drives	41.40	274.37	98.72	46.31	263.89	104.23
8-drives	40.23	394.74	159.99	44.25	439.25	163.54

Note: In addition, inputs 4-11 on the Micro850 were wired to Relay Out1 on drives 1-8 and drive parameter #76 (Relay Out1 Sel) was configured in each drive for MotorRunning. This provided the feedback to the controller that the start and stop commands had been executed. (Note that all tests were run with the Speed Reference set to zero so that there would be no deceleration time delay when stopping.)

Bill of Materials

Qty	Catalog #	Description
		System: Controller Hardware
1	2080-LC50-48QWB	Micro 850 Controller
1	2080-DNET20	DeviceNet Plug in Module (Refer to Page 2)
1	2080- SERIALISOL RS232/485	Isolated Serial Port Plug in Module (Refer to Page 3)
		HMI Hardware
1	2711C T4T	PanelView C400, touch terminal
1	2080-PS120-240VAC	Power Supply Module
		System: Communication Hardware
2	1783-US8T	Stratix 2000 Unmanaged Switch - 8 Copper Ports
11	1585J-M8TBJM-1M	Shielded Ethernet Cables
		Drive Hardware
8	25B-A4P8N114	PowerFlex 525 Drive,1HP,Single Phase 240V (Refer to Page 1)
8	25A-A4P8N104	PowerFlex 523 Drive, 1HP, Single Phase 240V
8	25-COMM-D	PowerFlex 520 Series DeviceNet Adapter (Refer to Page 2)
Note: PowerFlex drives come in many variations - before ordering, you will need to identify voltage rating, horsepower, and enclosure type. Please refer to the PowerFlex Selection Guide for additional details on selecting the right drive for you application.		
		Power Supply
1	1606-XLSDNET4	Class 2, DeviceNet Power Supply 24V, 4Amps
		KwikLink™ Media Configuration (Refer to Page 2)
1	1485P-K1TLR4	Power Tap
10	1485P-K1TG4	Trunk-line Connector IDC
9	1485P-K1DL4	Drop –line Connector IDC
1	1485P-K1TR4	Terminating Resistor IDC
1	1485P-KCrimp	Crimping Pliers
9	1485P-K1G4-Y5	5-pin Open Style Connector IDC
		Media
1	1485C-P1WX00	IP20 Flat Media Cable Spool,100 ,300,600meters
		Configuration Tool Required
1	9328-SO001-EN-C	Connected Components Workbench software

DeviceNet KwikLink Lite Media Guidelines

Data Rate	125k baud	250k baud	500k baud
Trunk Cable length (Max)	420m	200m	75m
DeviceNet Nodes (Max)	20		
Drop Cable length (Max)	6.1m		
Cumulative Drop	159m	78m	39m

KwikLink Lite Cable Color Code

Red	24 VDC
White	CAN_H
Blue	CAN_L
Black	0V DC

About this Configuration

This Micro850 Controller based low cost system demonstrates the power and scalability of the Component class on an DeviceNet based network. This system utilizes standard DeviceNet technology to allow you to easily mix and match, I/O control & drive control, on a single DeviceNet network.

A key advantage of this architecture is the ability to use Connected Components Workbench a common integrated environment for programming, configuration, commissioning, and motion tools for the PowerFlex Drives, Panelview Component, and Micro 800 Controller family of products.

About the Products

Micro850 Controllers

- The Micro850 controller is equipped with the same form factor, plug-in support, instruction/data size and motion capabilities as the 24-pt and 48-pt Micro830 controllers
- Support up to four Micro850 Expansion I/O modules, Up to a maximum of 132 I/O points (with 48-pt model)
- Designed for larger standalone machine applications that require more I/O or higher performance analog I/O than supported by Micro830.
- Structured Text, Ladder Diagram and Function Block editors that support
- Symbolic addressing
- Connected Components Workbench software is used for PLC programming, HMI and Drives configuration

PanelView Component

- A full line of displays ranging from 2" to 10",
- Communicate to MicroLogix, Micro800 and SLC controllers via serial (RS232 or RS422/RS485) networks on all terminals, and EtherNet/IP on the C400, C600 and C1000 displays.
- Features include unicode language switching, alarm messages and history, and basic recipe capability
- PanelView Component software (DesignStation) is an offline programming software offering better user experience with significant DesignTime performance improvement

PowerFlex Drives

- Serves applications ranging from 4 kW (.5 hp) to 22 kW (15 hp).
- Common set of networks, operator interface and programming for all PowerFlex drives
- Communication Options – EtherNet/IP, ControlNet, DeviceNet, DH Plus, RIO, 3rd party networks
- Hundreds of pieces of status and diagnostic information are shared with Micro 850 controllers directly.

KwikLink Lite Flat Media

- KwikLink Lite is the new, ODVA-approved solution for wiring DeviceNet networks. This new physical media makes DeviceNet wiring and cable installation both quick and easy, and extends the network into light-duty, IP20-rated applications.
- Drop-lines for connecting nodes can be easily added using the unique KwikLink Lite two-piece connectors.
- The cable system supports the intermixing of DeviceNet cable types (thin-round with flat).
- All of the KwikLink Lite Connectors provide Insulation Displacement Technology with reduced assembly time.

For More Information and Help

For more information contact your local distributor or Rockwell Automation sales representative.

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- My Support
- A – Z Product Directory

Rockwell Automation