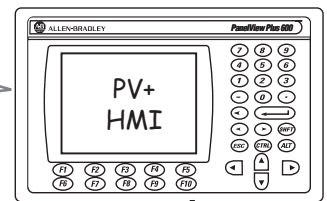


**HMI Capacity**  
200 screens  
250 tags per screen

**HMI Performance**  
With 50 tags/display and  
100 alarm tags the RS232  
typical update time is 2 sec

**HMI Configuration**  
As an option to using a PV+, you can  
use a VersaView industrial computer  
with Windows XP, RSLogix  
5000, Drive Executive Lite and  
RSView Studio for ME to have  
an HMI and programming  
terminal in one.



**CompactLogix Configuration**

- The L31 has two RS-232 ports that support ASCII, DH-485, DF-1, Modbus, and Modems.
- Program the Controller and the DeviceNet Devices from a PC connected to an RS-232 port
- 512K Memory
- Removable CompactFlash that helps reduce downtime by storing the program, tag values and firmware
- Support multiple DeviceNet Networks

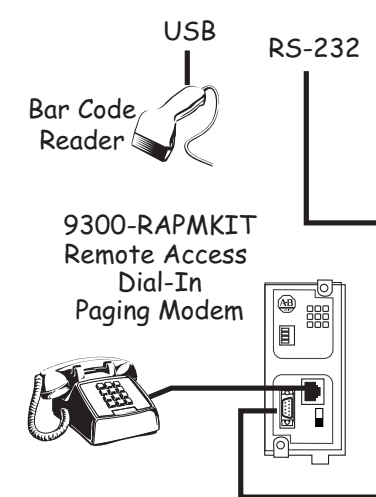
**CompactLogix Configuration**

- Up to 3 banks of modules
- Mix and match any combination of analog, digital and specialty modules
- Connect the banks with 1 m or 1 ft cable
- Requires one power supply for each bank
- Rackless...use only the space you need

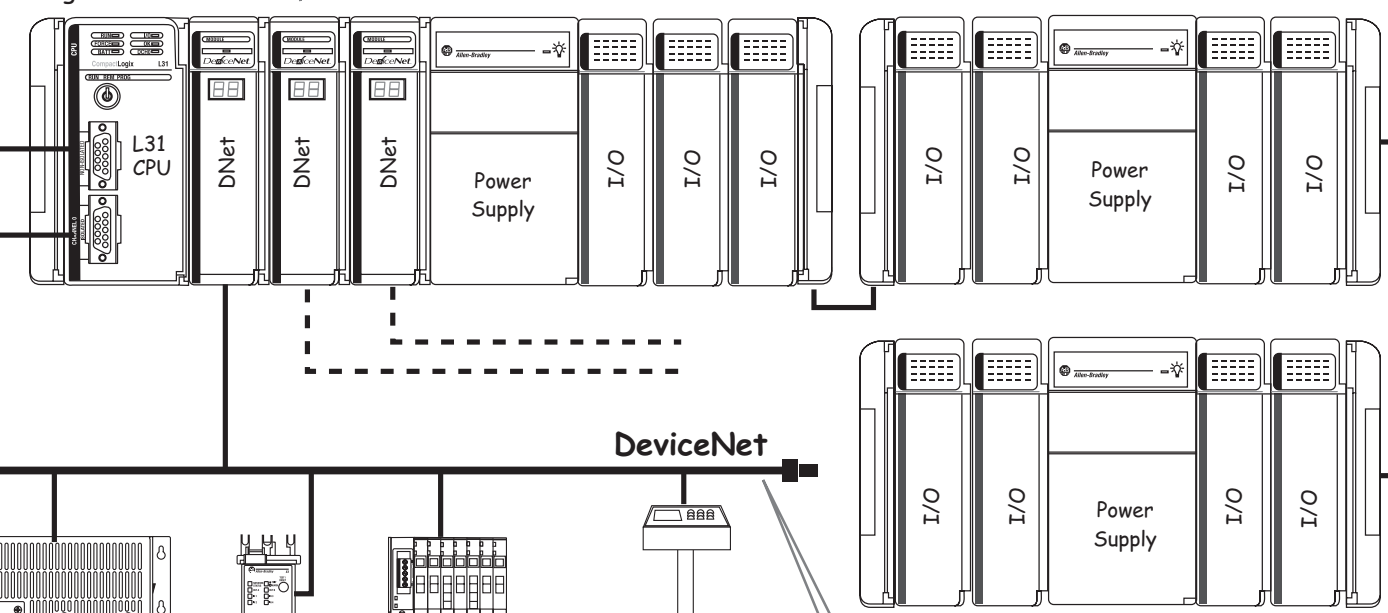
**CompactLogix Capacity**  
Up to 16 local I/O modules and  
up to 32 points per digital module  
and 8 points per analog module

**CompactLogix Performance within the local chassis**

- 1 ms is the minimum I/O update rate for all I/O in the local chassis
- Add 2 ms for each DeviceNet Scanner or High Speed Counter
- Most standard I/O Discrete Input modules have 8 ms filters. Some special I/O modules are faster
- For standard I/O, the screw to screw update for local input and output modules through a 1 K program is 10-12 ms.
- If you use the special faster I/O modules, you can get 3 ms screw to screw (throughput)



CompactLogix Processor



**PowerFlex 4-Class Performance**

- V/Hz or SVC
- Slip compensation
- 40:1 speed range
- DeviceNet allows complete access to all the data in the drive
- "Multi-Drive" feature allows up to 5 drives per node
- Serial peripheral interface (19.2K bps)

**PowerFlex 4-Class Configuration**

- Built-in operator display for configuration and monitoring
- Remote (Nema 1 & 4) HIM options
- DriveExplorer and DriveExecutive software tool options

**PowerFlex 4-Class Capacity**

- 0.5 - 15 HP
- 120V - 600V
- 24VDC digital I/O
- Analog I/O
- Internal DeviceNet adapter on PowerFlex 40

**PowerFlex 4-Component Class Drive**

**PowerFlex 7-Architecture Class Drive**

**PowerFlex 7-Class Capacity**

- 0.5 - 1250 HP
- 200V - 690V
- 24VDC & 120VAC digital I/O
- Analog I/O
- Internal DeviceNet adapter

**PowerFlex 7-Class Configuration**

- Requires a HIM or drive software tool to configure
- Local (on drive cover) and remote (Nema 1 & 4) HIM options
- DriveExplorer and DriveExecutive software tool options

**PowerFlex 7-Class Performance**

- V/Hz, SVC, Full vector with Force technology
- Slip compensation
- Torque control
- Adjustable voltage mode
- 40:1 to 1000:1 speed range
- DeviceNet allows complete access to all the data in the drive

**Point I/O Capacity**

- The maximum is 63 Point I/O modules per adapter
- The adapter supplies 1 amp of current to the Point I/O backplane, enough for 13 digital I/O modules.
- To connect additional I/O modules, add 1734-EP24VDC Expansion Power Units as needed. Each one passes 1.3 amps of current to the modules on its right -- enough for 17 digital modules.
- Other I/O modules draw more current so refer to the published specs

**DeviceNet Capacity**

- Up to 63 nodes
- Trunkline can be up to 500 m without repeaters
- Each device can be up to 6 m (20 ft) from the trunk

**DeviceNet Configuration**

- DeviceNet requires a power supply to provide power to devices on the network.
- Several media options are available
- Can extend distance with repeaters

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

Bill of Material

Qty	Catalog #	Description
System: Controller Hardware		
1	1769-L31	COMPACTLOGIX L31 PROCESSOR, 512K MEMORY
Note: CompactLogix L31 can connect to a PanelView Plus via the Serial port. For added flexibility add the 1761-NET-ENI to add the L31 to an Ethernet Network.		
1	1769-ECR	RIGHT END CAP/TERMINATOR
2	1769-IF4	4 CHANNEL ANALOG CUR RENT/VOLTAGE INPUT MODULE
4	1769-IQ16	16 POINT 24 VDC SINKING/SOURCING INPUT MODULE
3	1769-OB16	16 POINT 24 VDC SOURCING OUTPUT MODULE,
2	1769-OF2	2 CHANNEL ANALOG CUR RENT/VOLTAGE OUTPUT MODULE,
1	1769-SDN	DEVICENET SCANNER FOR 1769 BUS
3	1769-PA4	120/240 VAC INPT. PWR SUPPLY 4A @ 5VDC, 2A @ 24VDC
1	1769-CRL1	1 FT (305 MM) RIGHT-TO-LEFT BUS EXPANSION CABLE
HMI Hardware		
1	2711P-B6C5A	PanelView PLUS 600 COLOR KEY/TOUCH TERMINAL RS232
1	2711-NC13	5 METER RS232 OPERATING/ PROGRAMMING CABLE
DeviceNet Network Hardware		
1	1485A-T1E4	NEMA 6P, 13 TERMINATOR WITH IDC IDC BASE
2	1485P-P1E4-R5	NEMA 6P, 13 MICRO MODULE WITH IDC BASE
3	1485K-P1F5-C	RIGHT ANGLE MICRO 1M TO CONDUCTOR
3	1485T-P1E4-B1	NEMA 6P, 13 POWER TAP WITH IDC BASE, 1M LENGTH
1	1485C-P1E75	FLAT CABLE, CLASS 1, TPE JACKET, 75M
1	1787-DNPS	DEVICENET CLASS II 24VDC POWER SUPPLY
Note: Devicenet has several media options (Flat Cable, Thick/Thin Cable). These options provide the versatility to select the cable that best fits your application. Refer to the Devicenet Selection Guide for additional details.		
Distributed Devicenet Devices		
1	193-EC1AB	E3 ELECTRONIC OVERLOAD RELAY, 100-C09...C23, 1-5A
1	1734D-IA8XOA8S	120 VAC 8 IN 8 OUT, DNET COMMS, SPRING

Qty	Catalog #	Description
Drive Hardware		
1	20AA2P2A0AYYADNN	POWERFLEX 70 DRIVE - DEVICENET
Note: PowerFlex drives come in many variations - before ordering, you will need to identify voltage rating, horsepower, enclosure type. In addition, you may wish to add on optional equipment, such as HIM module or Brake Resister. Please refer to the PowerFlex Selection Guide for additional details on selecting the right drive for you application.		
1	22A-A1P5N114	POWERFLEX 4 DRIVE
1	22-COMM-D	POWERFLEX 4 DEVICENET INTERFACE
1	22-XCOMM-DC-BASE	EXTERNAL DSI COMM KIT
Other Hardware		
1	1756-CP3	RS-232 CONFIGURATION CABLE
Optional Hardware		
1	1761-NET-ENI	RS-232 TO ETHERNET CONVERTER
1	1761-CBL-AP00	CABLE: 9 PIN DIN TO 9 PIN DSHELL
1	1784-CF64	64MB COMPACTFLASH CARD
2	1769-SDN	DEVICENET SCANNER FOR 1769 BUS
Recommended Software		
1	RLD250xxE*	RSLOGIX 5000 LITE, CONTAINS ALL LANGUAGES / RSLINX LITE
Note: CompactLogix Controllers can be programmed using RSLogix 5000 Mini, Lite, Standard, or Pro. If you plan to only use Ladder Diagram, you may substitute the Lite version for Mini and save some upfront costs		
Note: If you plan on using the ControlLogix platform or plan to use motion instructions, you will need to up upgrade to RSLogix Standard		
1	9357-DNETL3.	RSNETWORKX FOR DEVICENET
1	9701-VWSTMENE	RSVIEW STUDIO FOR MACHINE EDITION
1	9306-4EXP02ENE	DRIVE EXPLORER
Optional Software		
1	9355-WABENE	RSLINX PROFESSIONAL- DATA MONIITOR AND DDE/OP SUPPORT

About this Configuration: L31 System

This CompactLogix based system provides economical, stand-alone control with expandable local I/O, expandable DeviceNet communications and two RS-232 ports that serve a variety of applications. It matches the basic layout of classic control systems but provides the functionality of the Integrated Architecture, including easy integration, a tag-based system and status and diagnostic information shared by all of the products.

About the Products

Logix Controllers

- A common set of controls, networks, and programming software available in multiple hardware platforms
- Multiple control disciplines in a single controller - sequential / motion / drives / process
- Multiple Program Languages available in all controllers - Ladder Diagram, Function Block, Structured Text, and Sequential Function Chart
- Embedded RS-232 port provides remote access as well as ASCII, DH-485, DF-1, Modbus Master/Slave and bridging to other networks enabling remote device configuration
- Tag-based architecture instead of addresses

PanelView Plus

- Reuse tags from Logix controllers by choosing them from a list
- 4" - 15" screen sizes available
- Touchscreen, keypad or combination
- Integrated EtherNet/IP and RS-232 communications (most models), add-on communications for many other networks
- Advanced Operator Interface features such as trending, expressions, data logging, animation.

PowerFlex Drives

- Serves applications ranging from 0.2 kW (0.25 hp) to 6,770 kW (9,000 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 Logix controllers directly

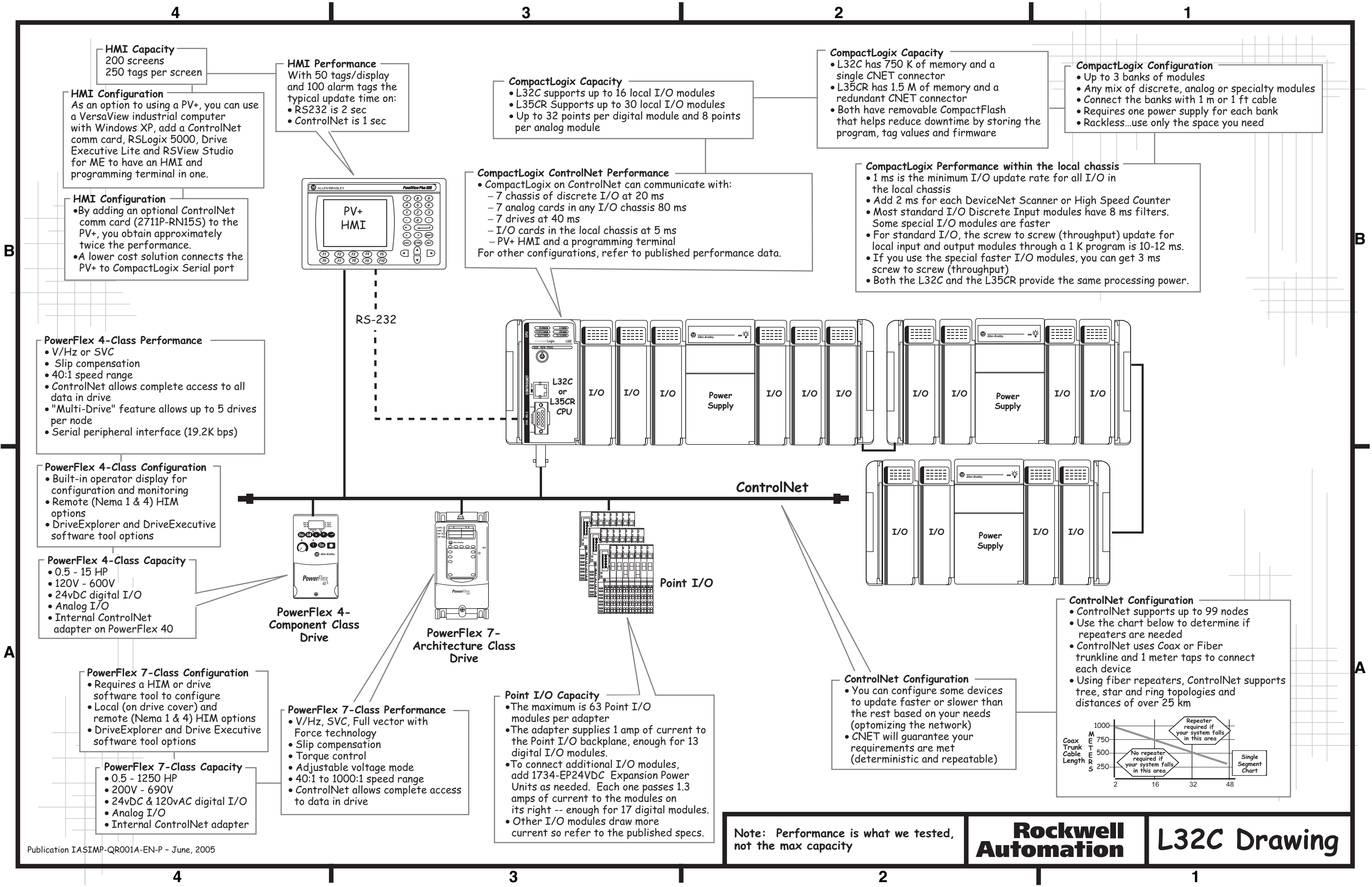
Point I/O

- Available in IP-20 or IP-67 styles
- Densities from 2-8 points per module
- Removable screw or spring terminals without rewiring
- Mounts horizontally or vertically with no derating required
- Supports EtherNet/IP, ControlNet, DeviceNet and 3rd party networks

For More Information and Help

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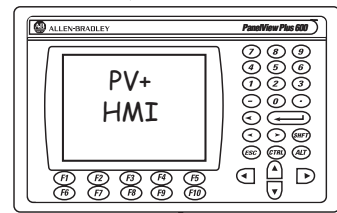


**HMI Capacity**  
200 screens  
250 tags per screen

**HMI Configuration**  
As an option to using a PV+, you can use a VersaView industrial computer with Windows XP, add a ControlNet comm card, RSLogix 5000, Drive Executive Lite and RSView Studio for ME to have an HMI and programming terminal in one.

**HMI Configuration**  
• By adding an optional ControlNet comm card (2711P-RN15S) to the PV+, you obtain approximately twice the performance.  
• A lower cost solution connects the PV+ to CompactLogix Serial port

**HMI Performance**  
With 50 tags/display and 100 alarm tags the typical update time on:  
• RS232 is 2 sec  
• ControlNet is 1 sec



**CompactLogix Capacity**  
• L32C supports up to 16 local I/O modules  
• L35CR Supports up to 30 local I/O modules  
• Up to 32 points per digital module and 8 points per analog module

**CompactLogix ControlNet Performance**  
• CompactLogix on ControlNet can communicate with:  
– 7 chassis of discrete I/O at 20 ms  
– 7 analog cards in any I/O chassis 80 ms  
– 7 drives at 40 ms  
– I/O cards in the local chassis at 5 ms  
– PV+ HMI and a programming terminal  
For other configurations, refer to published performance data.

**CompactLogix Capacity**  
• L32C has 750 K of memory and a single CNET connector  
• L35CR has 1.5 M of memory and a redundant CNET connector  
• Both have removable CompactFlash that helps reduce downtime by storing the program, tag values and firmware

**CompactLogix Configuration**  
• Up to 3 banks of modules  
• Any mix of discrete, analog or specialty modules  
• Connect the banks with 1 m or 1 ft cable  
• Requires one power supply for each bank  
• Rackless...use only the space you need

**CompactLogix Performance within the local chassis**  
• 1 ms is the minimum I/O update rate for all I/O in the local chassis  
• Add 2 ms for each DeviceNet Scanner or High Speed Counter  
• Most standard I/O Discrete Input modules have 8 ms filters. Some special I/O modules are faster  
• For standard I/O, the screw to screw (throughput) update for local input and output modules through a 1 K program is 10-12 ms.  
• If you use the special faster I/O modules, you can get 3 ms screw to screw (throughput)  
• Both the L32C and the L35CR provide the same processing power.

**PowerFlex 4-Class Performance**  
• V/Hz or SVC  
• Slip compensation  
• 40:1 speed range  
• ControlNet allows complete access to all data in drive  
• "Multi-Drive" feature allows up to 5 drives per node  
• Serial peripheral interface (19.2K bps)

**PowerFlex 4-Class Configuration**  
• Built-in operator display for configuration and monitoring  
• Remote (Nema 1 & 4) HIM options  
• DriveExplorer and DriveExecutive software tool options

**PowerFlex 4-Class Capacity**  
• 0.5 - 15 HP  
• 120V - 600V  
• 24vDC digital I/O  
• Analog I/O  
• Internal ControlNet adapter on PowerFlex 40

**PowerFlex 4-Component Class Drive**

**PowerFlex 7-Architecture Class Drive**

**Point I/O**

**PowerFlex 7-Class Configuration**  
• Requires a HIM or drive software tool to configure  
• Local (on drive cover) and remote (Nema 1 & 4) HIM options  
• DriveExplorer and Drive Executive software tool options

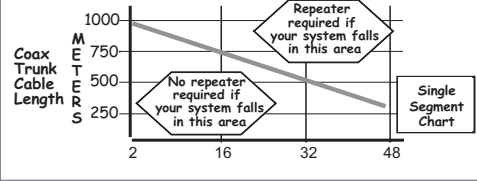
**PowerFlex 7-Class Capacity**  
• 0.5 - 1250 HP  
• 200V - 690V  
• 24vDC & 120vAC digital I/O  
• Analog I/O  
• Internal ControlNet adapter

**PowerFlex 7-Class Performance**  
• V/Hz, SVC, Full vector with Force technology  
• Slip compensation  
• Torque control  
• Adjustable voltage mode  
• 40:1 to 1000:1 speed range  
• ControlNet allows complete access to data in drive

**Point I/O Capacity**  
• The maximum is 63 Point I/O modules per adapter  
• The adapter supplies 1 amp of current to the Point I/O backplane, enough for 13 digital I/O modules.  
• To connect additional I/O modules, add 1734-EP24VDC Expansion Power Units as needed. Each one passes 1.3 amps of current to the modules on its right -- enough for 17 digital modules.  
• Other I/O modules draw more current so refer to the published specs.

**ControlNet Configuration**  
• You can configure some devices to update faster or slower than the rest based on your needs (optimizing the network)  
• CNET will guarantee your requirements are met (deterministic and repeatable)

**ControlNet Configuration**  
• ControlNet supports up to 99 nodes  
• Use the chart below to determine if repeaters are needed  
• ControlNet uses Coax or Fiber trunkline and 1 meter taps to connect each device  
• Using fiber repeaters, ControlNet supports tree, star and ring topologies and distances of over 25 km



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

**Rockwell Automation**

**L32C Drawing**

Bill of Material

Qty	Catalog #	Description
System: Controller Hardware		
1	1769-L32C	COMPACTLOGIX L32C PROCESSOR, 750K MEMORY
Note: CompactLogix offers a 1769-L35CR for redundant ControlNet applications. ControlNet media redundancy improves system uptime and provides you with added reliability		
1	1769-ECR	RIGHT END CAP/TERMINATOR
2	1769-IF4	4 CHANNEL ANALOG CURRENT/VOLTAGE INPUT MODULE
6	1769-IQ16	16 POINT 24 VDC SINKING/SOURCING INPUT MODULE
4	1769-OB16	16 POINT 24 VDC SOURCING OUTPUT MODULE,
2	1769-OF2	2 CHANNEL ANALOG CURRENT/VOLTAGE OUTPUT MODULE,
3	1769-PA4	120/240 VAC INPT. PWR SUPPLY 4A @ 5VDC, 2A @ 24VDC
2	1769-CRL1	1 FT (305 MM) RIGHT-TO-LEFT BUS EXPANSION CABLE
HMI Hardware		
1	2711P-B6C5A	PANELVIEW PLUS 600 COLOR KEY/TOUCH TERMINAL RS232
ControlNet Network Hardware		
2	1786-XT	CONTROLNET 75 OHM TERMINATOR PLUG
4	1786-TPS	CONTROLNET T-TAP/STRAIGHT
1	1786-RG6	CONTROLNET RG6 SHIELD HIGH FLEX CABLE-1000FT ROLL
Note: A redundant network will require twice the number of taps, terminators, and wire. Some equipment (i.e. 1769-L32C) supports single media and some equipment (i.e. 1769-L35CR) supports redundant media. Make sure you have ordered the correct equipment to support a redundant network.		
Distributed ControlNet Devices		
2	1734-ACNR	1734 CONTROLNET ADAPTER /REDUNDANT MEDIA
2	1734-IA2	120 VAC 2 CHANNEL INPUT MODULE
2	1734-OA2	120/230 VAC 2 CHANNEL OUTPUT MODULE
2	1734-TB	MODULE BASE W/ REMOVABLE IEC SCREW TERMINALS
2	1794-PS13	85-264 VAC TO 24 VDC 1.3A POWER SUPPLY

Qty	Catalog #	Description
Drive Hardware		
1	20AB2P2A0AYYACNN	POWERFLEX 70 DRIVE - CONTROLNET INTERFACE
Note: PowerFlex drives come in many variations - before ordering, you will need to identify voltage rating, horsepower, enclosure type. In addition, you may wish to add on optional equipment, such as HIM module or Brake Resister. Please refer to the PowerFlex Selection Guide for additional details on selecting the right drive for you application.		
1	22A-A1P5N114	POWERFLEX 4 DRIVE
1	22-COMM-C	POWERFLEX 4 DEVICENET INTERFACE
1	22-XCOMM-DC-BASE	EXTERNAL DSI COMM KIT
Optional Hardware		
1	1784-PCC	CONTROLNET PC INTERFACE CARD
1	1784-CF64	64MB COMPACTFLASH CARD
Recommended Software		
1	RLD250xxE*	RSLOGIX 5000 LITE, CONTAINS ALL LANGUAGES / RSLINX LITE
Note: CompactLogix Controllers can be programmed using RSLogix 5000 Mini, Lite, Standard, or Pro. If you plan to only use Ladder Diagram, you may substitute the Lite version for Mini and save some upfront costs		
Note: If you plan on using the ControlLogix platform or plan to use motion instructions, you will need to up upgrade to RSLogix Standard		
1	9357-CNETL3.	RSNETWORKX FOR CONTROLNET
1	9701-VWSTMENE	RSVIEW STUDIO FOR MACHINE EDITION
1	9306-4EXP02ENE	DRIVE EXPLORER
Optional Software		
1	9355-WABENE	RSLINX PROFESSIONAL - DATA MONITOR AND DDE/OPC SUPPORT

About this Configuration: L32C System

This CompactLogix based system with integrated ControlNet offers a fast, economical yet small controller matched with a high-speed, deterministic network. ControlNet’s bus topology configuration is very popular for machine builders and end users while supporting I/O, drive control and HMI on a single network. Further, Logix automatically creates detailed tags for networked devices. It matches the basic layout of classic control systems, but provides a significant upgrade in performance and functionality in a small size.

About the Products

Logix Controllers

- A common set of controls, networks, and programming software available in multiple hardware platforms
- Multiple control disciplines in a single controller - sequential / motion / drives / process
- Multiple Program Languages available in all controllers - Ladder Diagram, Function Block, Structured Text, and Sequential Function Chart
- Embedded RS-232 port provides remote access as well as ASCII, DH-485, DF-1, Modbus Master/Slave and bridging to other networks enabling remote device configuration
- Tag-based architecture instead of addresses

PanelView Plus

- Reuse tags from Logix controllers by choosing them from a list
- 4" – 15" screen sizes available
- Touchscreen, keypad or combination
- Integrated EtherNet/IP and RS-232 communications (most models), add-on communications for many other networks
- Advanced Operator Interface features such as trending, expressions, data logging, animation.

PowerFlex Drives

- Serves applications ranging from 0.2 kW (0.25 hp) to 6,770 kW (9,000 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 Logix controllers directly

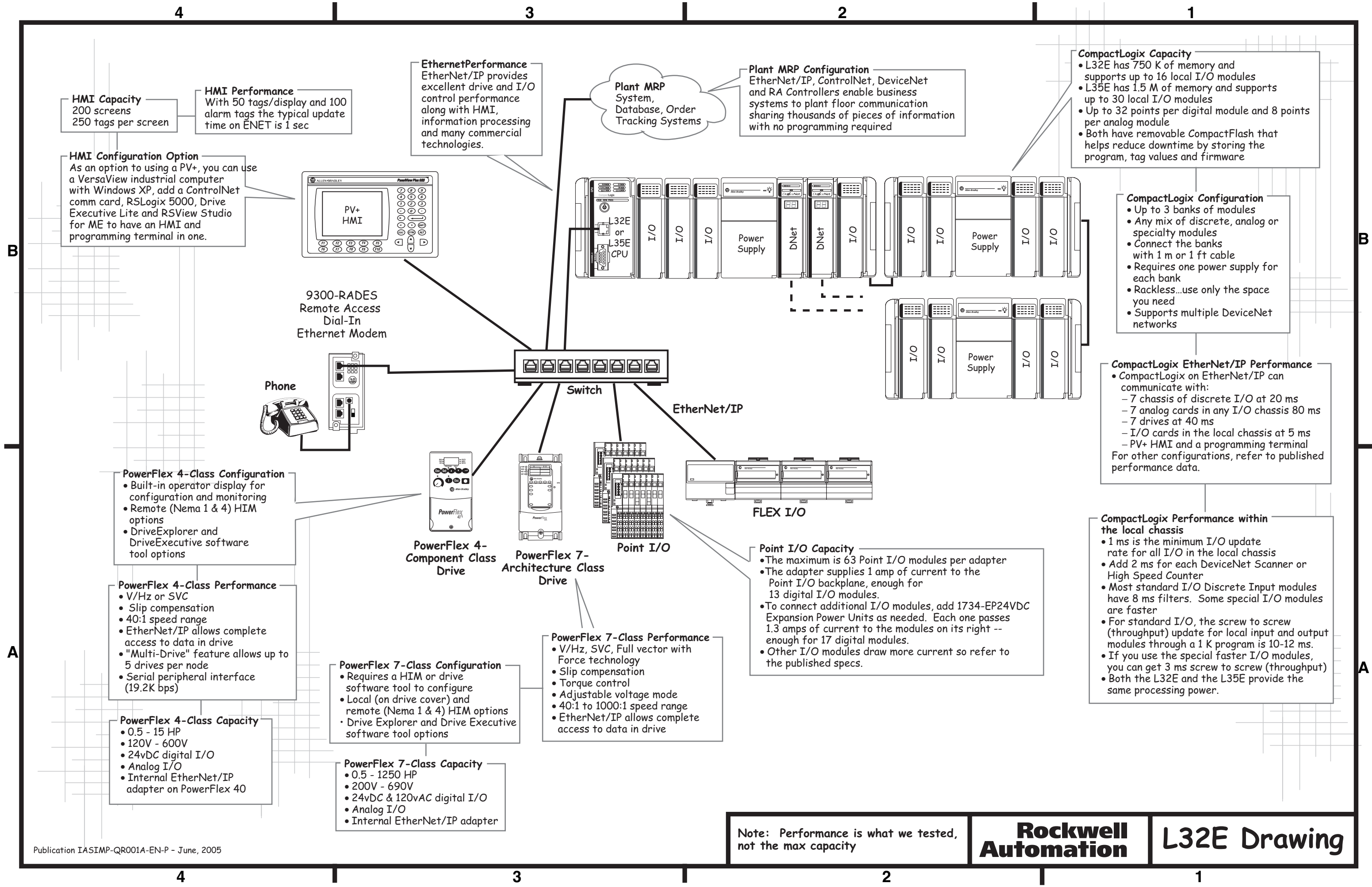
Point I/O

- Available in IP-20 or IP-67 styles
- Densities from 2-8 points per module
- Removable screw or spring terminals without rewiring
- Mounts horizontally or vertically with no derating required
- Supports EtherNet/IP, ControlNet, DeviceNet and 3rd party networks

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**HMI Capacity**  
200 screens  
250 tags per screen

**HMI Performance**  
With 50 tags/display and 100 alarm tags the typical update time on ENET is 1 sec

**HMI Configuration Option**  
As an option to using a PV+, you can use a VersaView industrial computer with Windows XP, add a ControlNet comm card, RSLogix 5000, Drive Executive Lite and RSView Studio for ME to have an HMI and programming terminal in one.

**EthernetPerformance**  
EtherNet/IP provides excellent drive and I/O control performance along with HMI, information processing and many commercial technologies.

**Plant MRP System**  
Database, Order Tracking Systems

**Plant MRP Configuration**  
EtherNet/IP, ControlNet, DeviceNet and RA Controllers enable business systems to plant floor communication sharing thousands of pieces of information with no programming required

**CompactLogix Capacity**

- L32E has 750 K of memory and supports up to 16 local I/O modules
- L35E has 1.5 M of memory and supports up to 30 local I/O modules
- Up to 32 points per digital module and 8 points per analog module
- Both have removable CompactFlash that helps reduce downtime by storing the program, tag values and firmware

**CompactLogix Configuration**

- Up to 3 banks of modules
- Any mix of discrete, analog or specialty modules
- Connect the banks with 1 m or 1 ft cable
- Requires one power supply for each bank
- Rackless...use only the space you need
- Supports multiple DeviceNet networks

**CompactLogix EtherNet/IP Performance**

- CompactLogix on EtherNet/IP can communicate with:
  - 7 chassis of discrete I/O at 20 ms
  - 7 analog cards in any I/O chassis 80 ms
  - 7 drives at 40 ms
  - I/O cards in the local chassis at 5 ms
  - PV+ HMI and a programming terminal

For other configurations, refer to published performance data.

**CompactLogix Performance within the local chassis**

- 1 ms is the minimum I/O update rate for all I/O in the local chassis
- Add 2 ms for each DeviceNet Scanner or High Speed Counter
- Most standard I/O Discrete Input modules have 8 ms filters. Some special I/O modules are faster
- For standard I/O, the screw to screw (throughput) update for local input and output modules through a 1 K program is 10-12 ms.
- If you use the special faster I/O modules, you can get 3 ms screw to screw (throughput)
- Both the L32E and the L35E provide the same processing power.

**Point I/O Capacity**

- The maximum is 63 Point I/O modules per adapter
- The adapter supplies 1 amp of current to the Point I/O backplane, enough for 13 digital I/O modules.
- To connect additional I/O modules, add 1734-EP24VDC Expansion Power Units as needed. Each one passes 1.3 amps of current to the modules on its right -- enough for 17 digital modules.
- Other I/O modules draw more current so refer to the published specs.

**PowerFlex 7-Class Performance**

- V/Hz, SVC, Full vector with Force technology
- Slip compensation
- Torque control
- Adjustable voltage mode
- 40:1 to 1000:1 speed range
- EtherNet/IP allows complete access to data in drive

**PowerFlex 7-Class Configuration**

- Requires a HIM or drive software tool to configure
- Local (on drive cover) and remote (Nema 1 & 4) HIM options
- Drive Explorer and Drive Executive software tool options

**PowerFlex 7-Class Capacity**

- 0.5 - 1250 HP
- 200V - 690V
- 24vDC & 120vAC digital I/O
- Analog I/O
- Internal EtherNet/IP adapter

**PowerFlex 4-Class Performance**

- V/Hz or SVC
- Slip compensation
- 40:1 speed range
- EtherNet/IP allows complete access to data in drive
- "Multi-Drive" feature allows up to 5 drives per node
- Serial peripheral interface (19.2K bps)

**PowerFlex 4-Class Capacity**

- 0.5 - 15 HP
- 120V - 600V
- 24vDC digital I/O
- Analog I/O
- Internal EtherNet/IP adapter on PowerFlex 40

**PowerFlex 4-Class Configuration**

- Built-in operator display for configuration and monitoring
- Remote (Nema 1 & 4) HIM options
- DriveExplorer and DriveExecutive software tool options

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

Bill of Material

Qty	Catalog #	Description
System: Controller Hardware		
1	1769-L35E	COMPACTLOGIX L35E PROCESSOR, 1.5meg MEMORY
1	1769-ECR	RIGHT END CAP/TERMINATOR
2	1769-IF4	4 CHANNEL ANALOG CURRENT/VOLTAGE INPUT MODULE
4	1769-IQ16	16 POINT 24 VD SINKING/ SOURCING INPUT MODULE
3	1769-OB16	16 POINT 24 VDC SOURCING OUTPUT MODULE,
2	1769-OF2	2 CHANNEL ANALOG CURRENT/ VOLTAGE OUTPUT MODULE,
3	1769-PA4	120/240 VAC INPT. PWR SUPPLY 4A @ 5VDC, 2A @ 24VDC
1	1769-CRL1	1 FT (305 MM) RIGHT-TO-LEFT BUS EXPANSION CABLE
HMI Hardware		
1	2711P-B10C15B1	PANELVIEW PLUS 1000 COLOR KEY/TOUCH TERMINAL
Distributed I/O Hardware - Point I/O		
1	1734-AENT	1734 ETHERNET/IP ADAPTER
1	1734-FPD	FIELD POTENTIAL DISTRIBUTOR
1	1734-IA2	120 VAC 2 CHANNEL INPUT MODULE
1	1734-OA2	120/230 VAC 2 CHANNEL OUTPUT MODULE
2	1734-TB	MODULE BASE W/ REMOVABLE IEC SCREW TERMINALS
1	1794-PS13	85-264 VAC TO 24 VDC 1.3A POWER SUPPLY
Distributed I/O Hardware - Flex I/O		
1	1794-AENT	ETHERNET ADAPTER W/24V DC POWEL SUPPLY, TWIST PR
2	1794-IA16	85-132V AC INPUT MODULE, 16 POINT
1	1794-OA16	85-132V AC OUTPUT MODULE, 16 POINT
1	1794-PS13	85-264 VAC TO 24 VDC 1.3A POWER SUPPLY
3	1794-TB3	TERMINAL BASE, 3-WIRE
Drive Hardware		
1	20AB6P8A0AYNAENN	POWERFLEX 70 DRIVE - ETHERNET

*Note: PowerFlex drives come in many variations - before ordering, you will need to identify voltage rating, horsepower, enclosure type. In addition, you may wish to add on optional equipment, such as HIM module or Brake Resister. Please refer to the PowerFlex Selection Guide for additional details on selecting the right drive for you application.*

Qty	Catalog #	Description
1	22A-A1P5N114	POWERFLEX 4 DRIVE
1	22-COMM-E	POWERFLEX 4 ETHERNET INTERFACE
1	22-XCOMM-DC-	EXTERNAL DSI COMM KIT
Other Hardware		
1	ENET SWITCH	ETHERNET SWITHCH 4-PORT 8-PORT
<i>Note: For industrial applications, it is recommended to use industrial switches with network management capability. RA has teamed up with several reputable industrial switch manufacturers. Please check out our Encompass Partners on www.ab.com</i>		
Optional Hardware		
1	6180W-15BP2KH	VERSAVIEW 15-INCH WORKSTATION, KEYPAD & TOUCH PERFORMANCE FEATURES, WINDOWS 2000, HMI SOFTWARE
1	1784-CF64	64MB COMPACTFLASH CARD
1	1769-SDN	DEVICENET SCANNER FOR 1769 BUS
1	1769-HSC	2/4 CHANNEL HIGH SPEED COUNTER/ENCODER MODULE
Recommended Software		
1	RLD250xxE*	RSLOGIX 5000 LITE, CONTAINS ALL LANGUAGES / RSLINX LITE
<i>Note: CompactLogix Controllers can be programmed using RSLogix 5000 Mini, Lite, Standard, or Pro. If you plan to only use Ladder Diagram, you may substitute the Lite version for Mini and save some upfront costs</i>		
<i>Note: If you plan on using the ControlLogix platform or plan to use motion instructions, you will need to up upgrade to RSLogix Standard</i>		
1	9701-VWSTMENE	RSVIEW STUDIO FOR MACHINE EDITION
1	9306-4EXP02ENE	DRIVE EXPLORER
Recommended Software		
1	9355-WABENE	RSLINX PROFESSIONAL - DATA MONITOR AND DDE/OPC SUPPORT

About this Configuration: L32E System

This CompactLogix based system with integrated EtherNet/IP offers a single network solution for high-speed I/O control, drive control and controller-to-controller interlocking as well as easy integration with the business system, the Internet and commercial Ethernet technologies. Although drawn in an unusual configuration due to the star topology of Ethernet, this system can replace many classic control system configurations. Devices connected to Ethernet/IP feature embedded web pages that provide diagnostics information for troubleshooting from any standard web browser.

About the Products

Logix Controllers

- A common set of controls, networks, and programming software available in multiple hardware platforms
- Multiple control disciplines in a single controller - sequential / motion / drives / process
- Multiple Program Languages available in all controllers - Ladder Diagram, Function Block, Structured Text, and Sequential Function Chart
- Embedded RS-232 port provides remote access as well as ASCII, DH-485, DF-1, Modbus Master/Slave and bridging to other networks enabling remote device configuration
- Tag-based architecture instead of addresses

PanelView Plus

- Reuse tags from Logix controllers by choosing them from a list
- 4" - 15" screen sizes available
- Touchscreen, keypad or combination
- Integrated EtherNet/IP and RS-232 communications (most models), add-on communications for many other networks
- Advanced Operator Interface features such as trending, expressions, data logging, animation.

PowerFlex Drives

- Serves applications ranging from 0.2 kW (0.25 hp) to 6,770 kW (9,000 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 Logix controllers directly

Point I/O

- Available in IP-20 or IP-67 styles
- Densities from 2-8 points per module
- Removable screw or spring terminals without rewiring
- Mounts horizontally or vertically with no derating required
- Supports EtherNet/IP, ControlNet, DeviceNet and 3rd party networks

For More Information and Help

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4

3

2

1

**HMI Capacity**  
200 screens  
250 tags per screen

**HMI Performance**  
With 50 tags/display and 100 alarm tags the update time on:  
• RS232 is 2 sec  
• ControlNet is 1 sec

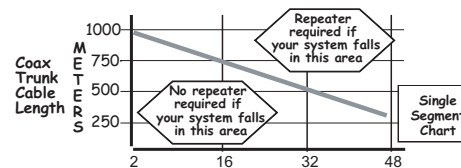
**HMI Configuration Option**  
As an option to using a PV+, you can use a VersaView industrial computer with Windows XP, add a ControlNet comm card, RSLogix 5000, Drive Executive Lite and RSVIEW Studio for ME to have an HMI and programming terminal in one.

**Plant MRP Configuration**  
EtherNet/IP, ControlNet, DeviceNet and RA Controllers enable business systems to plant floor communication sharing thousands of pieces of information with no programming required

**Plant MRP System,**  
Database, Order Tracking Systems

**HMI Configuration**  
• By adding an optional ControlNet comm card (2711P-RN15S) to the PV+, you obtain approximately twice the performance.  
• A lower cost solution connects the PV+ to CompactLogix Serial port

**ControlNet Configuration**  
• ControlNet supports up to 99 nodes  
• Use the chart below to determine if repeaters are needed  
• ControlNet uses Coax or Fiber trunkline and 1 meter taps to connect each device  
• Using fiber repeaters, ControlNet supports tree, star and ring topologies and distances of over 25 km



#### ControlNet Performance

- A ControlLogix processor can communicate with 250 devices max
  - A ControlLogix ControlNet Bridge (1756-CNB) can communicate with 64 max and a rule of thumb is to limit it to 40 devices.
  - If you need to communicate to more devices, add controllers and bridges as needed.
  - CompactLogix on ControlNet can communicate with:
    - 7 chassis of discrete I/O at 20 ms
    - 7 analog cards in any I/O chassis 80 ms
    - 7 drives at 40 ms
    - I/O cards in the local chassis at 5 ms
    - PV+ HMI and a programming terminal
- For other configurations, refer to published performance data.

#### ControlNet Configuration

- CNET supports single or redundant media options
  - CNET will guarantee your requirements are met (deterministic and repeatable)
  - You can configure some devices to update faster or slower than the rest based on your needs (optimizing the network)
- For simplicity, a device is:
- Discrete chassis of I/O
  - Analog or specialty modules
  - Tags sent between controllers

#### PowerFlex 4-Class Performance

- V/Hz or SVC
- Slip compensation
- 40:1 speed range
- ControlNet allows complete access to all data in drive
- "Multi-Drive" feature allows up to 5 drives per node
- Serial peripheral interface (19.2K bps)

#### PowerFlex 4-Class Configuration

- Built-in operator display for configuration and monitoring
- Remote (Nema 1 & 4) HIM options
- DriveExplorer and DriveExecutive software tool options

#### PowerFlex 4-Class Capacity

- 0.5 - 15 HP
- 120V - 600V
- 24vDC digital I/O
- Analog I/O
- Internal ControlNet adapter on PowerFlex 40

#### PowerFlex 7-Class Configuration

- Requires a HIM or drive software tool to configure
- Local (on drive cover) and remote (Nema 1 & 4) HIM options
- DriveExplorer and DriveExecutive software tool options

#### PowerFlex 7-Class Capacity

- 0.5 - 1250 HP
- 200V - 690V
- 24vDC & 120vAC digital I/O
- Analog I/O
- Internal ControlNet adapter

#### PowerFlex 4-Component Class Drive

#### PowerFlex 7-Architecture Class Drive

#### PowerFlex 7-Class Performance

- V/Hz, SVC, Full vector with Force technology
- Slip compensation
- Torque control
- Adjustable voltage mode
- 40:1 to 1000:1 speed range
- ControlNet allows complete access to data in drive

#### CompactLogix Performance within the local chassis

- 1 ms is the minimum I/O update rate for all I/O in the local chassis
- Add 2 ms for each DeviceNet Scanner or High Speed Counter
- Most standard I/O Discrete Input modules have 8 ms filters. Some special I/O modules are faster
- For standard I/O, the screw to screw (throughput) update for local input and output modules through a 1 K program is 10-12 ms.
- If you use the special faster I/O modules, you can get 3 ms screw to screw (throughput)

#### CompactLogix Capacity

- L35CR has 1.5 M of memory and redundant CNET connector
- The L35CR has removable CompactFlash that helps reduce downtime by storing the program, tag values and firmware
- L35CR Supports up to 30 local I/O modules
- Up to 32 points per digital module and 8 points per analog module

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

**Rockwell Automation**

**L35CR Drawing**

Bill of Material

Qty	Catalog #	Description
System: ControlLogix Controller Hardware		
2	1756-L61	CONTROLLOGIX 5561, 2 MEG MEMORY
1	1756-PA72	10 AMP AC POWER SUPPLY
1	1756-A7	7 SLOT CHASSIS
1	1756-ENBT	CONTROLLOGIX ETHERNET/IP COMM CARD
1	1756-CNBR	CONTROLLOGIX CONTROLNET COMM CARD, REDUNDANT MEDIA
System: CompactLogix Controller Hardware		
3	1769-L35CR	COMPACTLOGIX L35CR PROCESSOR, REDUNDANT CONTROLNET
3	1769-ECR	RIGHT END CAP/TERMINATOR
6	1769-IF4	4 CHANNEL ANALOG CURRENT/VOLTAGE INPUT MODULE
18	1769-IQ16	16 POINT 24 VDC SINKING/SOURCING INPUT MODULE
12	1769-OB16	16 POINT 24 VDC SOURCING OUTPUT MODULE,
6	1769-OF2	2 CHANNEL ANALOG CURRENT/VOLTAGE OUTPUT MODULE,
9	1769-PA4	120/240 VAC INPT. PWR SUPPLY 4A @ 5VDC, 2A @ 24VDC
6	1769-CRL1	1 FT (305 MM) RIGHT-TO-LEFT BUS EXPANSION CABLE
HMI Hardware		
3	2711P-B10C4B1	PV PLUS 1000, KEY/TOUCH ETHERNET, AC PS
1	2711P-RN15S	CONTROLNET UNSCHEDULED COMM MODULE FOR PV PLUS 700-1500
ControlNet Network Hardware		
2	1786-XT	CONTROLNET 75 OHM TERMINATOR PLUG
9	1786-TPS	CONTROLNET T-TAP/STRAIGHT
1	1786-RG6	CONTROLNET RG6 SHIELD HIGH FLEX CABLE-1000FT ROLL
Note: A redundant network will require twice the number of taps, terminators, and wire. Some equipment (i.e. 1769-L32C) supports single media and some equipment (i.e. 1769-L35CR) supports redundant media. Make sure you have ordered the correct equipment to support a redundant network.		

Qty	Catalog #	Description
Drive Hardware		
1	20AB2P2A0AYYACNN	POWERFLEX 70 DRIVE - CONTROLNET INTERFACE
Note: PowerFlex drives come in many variations - before ordering, you will need to identify voltage rating, horsepower, enclosure type. In addition, you may wish to add on optional equipment, such as HIM module or Brake Resister. Please refer to the PowerFlex Selection Guide for additional details on selecting the right drive for you application.		
1	22A-A1P5N114	POWERFLEX 4 DRIVE
1	22-COMM-C	POWERFLEX 4 CONTROLNET INTERFACE
1	22-XCOMM-DC-BASE	EXTERNAL DSI COMM KIT
Optional Hardware		
1	1784-PCC	CONTROLNET PC INTERFACE CARD
1	1784-CF64	64MB COMPACTFLASH CARD
Recommended Software		
1	RLD250xxE*	RSLOGIX 5000 LITE, CONTAINS ALL LANGUAGES / RSLINX LITE
Note: CompactLogix Controllers can be programmed using RSLogix 5000 Mini, Lite, Standard, or Pro. If you plan to only use Ladder Diagram, you may substitute the Lite version for Mini and save some upfront costs		
Note: If you plan on using the ControlLogix platform or plan to use motion instructions, you will need to up upgrade to RSLogix Standard		
1	9357-CNETL3.	RSNETWORKX FOR CONTROLNET
1	9701-VWSTMENE	RSVIEW STUDIO FOR MACHINE EDITION
1	9306-4EXP02ENE	DRIVE EXPLORER
Optional Software		
1	9355-WABENE	RSLINX PROFESSIONAL - DATA MONITOR AND DDE/OPC SUPPORT

About this Configuration: L35CR System

This Integrated Architecture system provides distributed control communicating over a high-speed, redundant ControlNet to a supervisory controller. This bus topology ControlNet configuration matches the basic architectural layout found in many web-handling and steel applications as well as cell and station-based manufacturing environments. Information from every device is available to the business system without any additional code.

About the Products

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- Multiple Program Languages available in all controllers - Ladder Diagram, Function Block, Structured Text, and Sequential Function Chart
- Embedded RS-232 port provides remote access as well as ASCII, DH-485, DF-1, Modbus Master/Slave and bridging to other networks enabling remote device configuration
- Tag-based architecture instead of addresses

PanelView Plus

- Reuse tags from Logix controllers by choosing them from a list
- 4" - 15" screen sizes available
- Touchscreen, keypad or combination
- Integrated EtherNet/IP and RS-232 communications (most models), add-on communications for many other networks
- Advanced Operator Interface features such as trending, expressions, data logging, animation.

PowerFlex Drives

- Serves applications ranging from 0.2 kW (0.25 hp) to 6,770 kW (9,000 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 Logix controllers directly

Point I/O

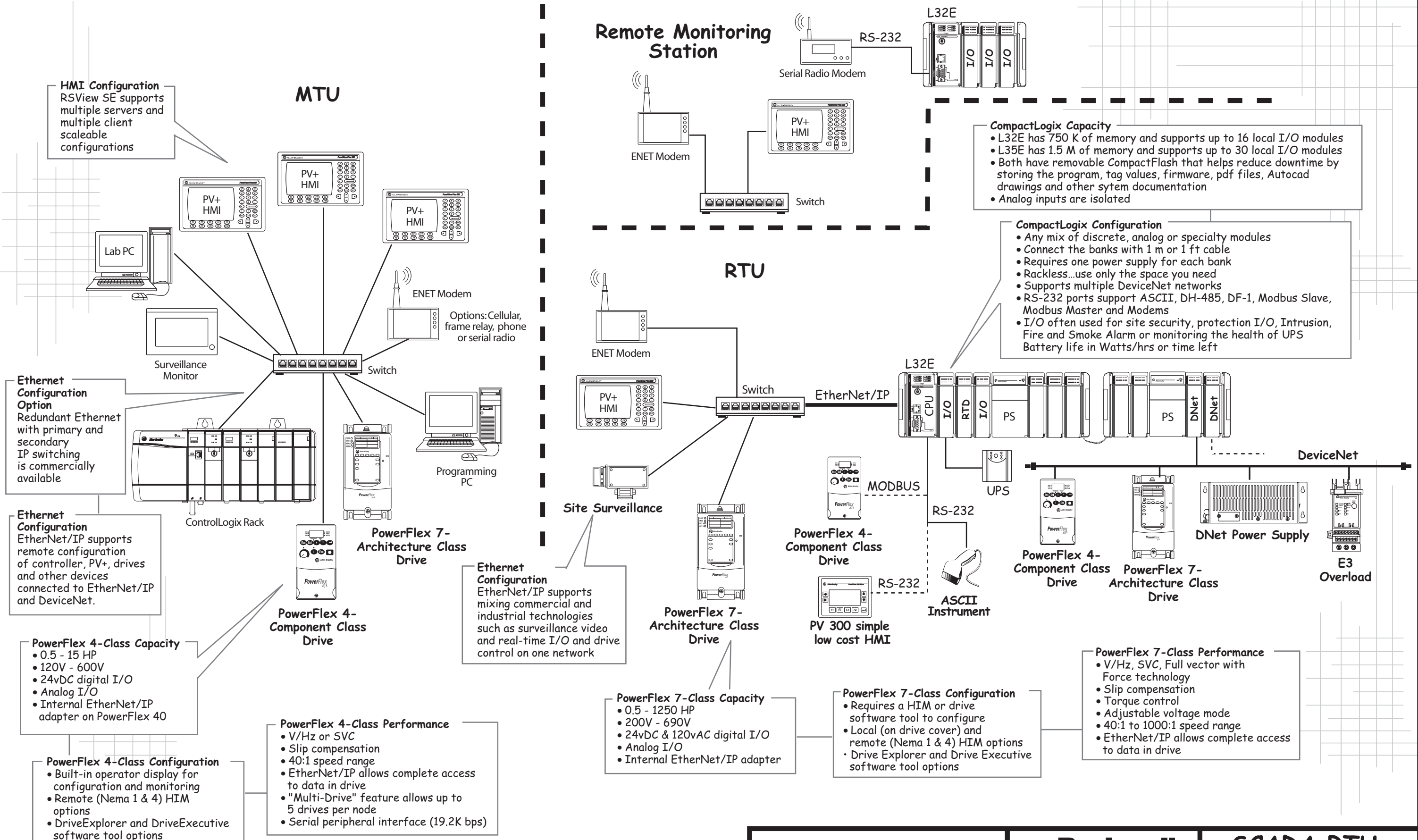
- Available in IP-20 or IP-67 styles
- Densities from 2-8 points per module
- Removable screw or spring terminals without rewiring
- Mounts horizontally or vertically with no derating required
- Supports EtherNet/IP, ControlNet, DeviceNet and 3rd party networks

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Bill of Material

Qty	Catalog	Description
MTU Hardware		
System: ControlLogix Controller Hardware		
2	1756-L61	CONTROLLOGIX 5561, 2 MEG MEMORY
1	1756-PA72	10 AMP AC POWER SUPPLY
1	1756-A7	7 SLOT CHASSIS
1	1756-ENBT	CONTROLLOGIX ETHERNET/IP COMM CARD
1	1756-CNBR	CONTROLLOGIXM CARD, REDUNDANT MEDIA
HMI Hardware		
3	2711P-B10C4B1	PV PLUS 1000, KEY/TOUCH ETHERNET, AC PS
RTU Hardware		
System: CompactLogix Controller Hardware		
1	1769-L32E	COMPACTLOGIX L32E PROCESSOR, 750K MEMORY
1	1769-SDN	DEVICENET SCANNER FOR 1769 BUS
3	1769-ECR	RIGHT END CAP/TERMINATOR
3	1769-IF4	4 CHANNEL ANALOG CURRENT/VOLTAGE INPUT MODULE
1	1769-IR6	6 CHANNEL RTD/RESISTANCE INPUT MODULE
1	1769-IQ16	16 POINT 24 VDC SINKING/ SOURCING INPUT MODULE
1	1769-OB16	16 POINT 24 VDC SOURCING OUTPUT MODULE,
2	1769-OF2	2 CHANNEL ANALOG CURRENT/VOLTAGE OUTPUT MODULE,
2	1769-PA4	120/240 VAC INPT. PWR SUPPLY 4A @ 5VDC, 2A @ 24VDC
1	1769-CRL1	1 FT (305 MM) RIGHT-TO-LEFT BUS EXPANSION CABLE
HMI Hardware		
1	2711P-B6C1A	PANELVIEW PLUS 600 COLOR KEY/ TOUCH TERMINAL , ETHERNET

Note: Panelview 400 and 600 terminals provide an low cost integrated Ethernet solution to provide high performance capability at an affordable price.

DeviceNet Network Hardware		
1	1485A-T1E4	NEMA 6P, 13 TERMINATOR WITH IDC BASE
2	1485P-P1E4-R5	NEMA 6P, 13 MICRO MODULE WITH IDC BASE
3	1485K-P1F5-C	RIGHT ANGLE MICRO 1M TO CONDUCTOR
3	1485T-P1E4-B1	NEMA 6P, 13 POWER TAP WITH IDC BASE, 1M LENGTH
1	1485C-P1E75	FLAT CABLE, CLASS 1, TPE JACKET, 75M
1	1787-DNPS	DEVICENET CLASS II 24VDC POWER SUPPLY

Note: Devicenet has several media options (Flat Cable, Thick/Thin Cable). These options provide the versatility to select the cable that best fits your application. Refer to the Devicenet Selection Guide for additional details.

Qty	Catalog #	Description
Distributed Devicenet Devices		
1	193-EC1AB	E3 ELECTRONIC OVERLOAD RELAY, 100-C09...C23, 1-5A
1	1734D-IA8XOA8S	120 VAC 8 IN 8 OUT, DNET COMMS, SPRING
Drive Hardware		
1	20AB6P8C0AYNANNN	POWERFLEX 70 DRIVE - WALL MOUNT
	20-COMM-E	POWERFLEX70 ETHERNET INTERFACE
1	22A-A1P5N114	POWERFLEX 4 DRIVE
1	22-COMM-D	POWERFLEX 4 DEVICENET INTERFACE
1	22-XCOMM-DC-BASE	EXTERNAL DSI COMM KIT
Note: PowerFlex drives come in many variations - before ordering, you will need to identify voltage rating, horsepower, enclosure type. In addition, you may wish to add on optional equipment, such as HIM module or Brake Resister. Please refer to the PowerFlex Selection Guide for additional details on selecting the right drive for you application.		
Other Hardware		
2	ENET SWITCH 8-PORT	ETHERNET SWITCH 4-PORT+
Note: For industrial applications, it is recommended to use industrial switches with network management capability. RA has teamed up with several reputable industrial switch manufacturers. Please check out our Encompass Partners on www.ab.com		
1	1756-CP3	RS-232 CONFIGURATION CABLE
2	RF MODEM	ETHERNET RF MODEM
Note: RA has teamed up with several reputable RF Modem manuf acturers. Please check out our Encompass Partners on www.ab.com		
Optional Hardware		
1	1784-CF6464MB	COMPACTFLASH CARD
1	1769-SDN	DEVICENET SCANNER FOR 1769 BUS
Recommended Software		
1	RLD250xxE?	RSLOGIX 5000 LITE, CONTAINS ALL LANGUAGES / RSLINX LITE
Note: CompactLogix Controllers can be programmed using RSLogix 5000 Mini, Lite, Standard, or Pro. If you plan to only use Ladder Diagram, you may substitute the Lite version for Mini and save some upfront costs		
Note: If you plan on using the ControlLogix platform or plan to use motion instructions, you will need to up upgrade to RSLogix Standard		
1	9357-DNETL3.	RSNETWORKX FOR DEVICENET
1	9701-VWSTMENE	RSVIEW STUDIO FOR MACHINE EDITION
Note: You will need to purchase the RSView runtime in addition to the studio if you upgrade from the Panelview Plus to the VersaView PC		
1	9306-4EXP02ENE	DRIVE EXPLORER
Optional Software		
1	9355-WABENE	RSLINX PROFESSIONAL - DATA MONITOR AND DDE/OPC SUPPORT

About this Configuration: SCADA System

This Integrated Architecture system demonstrates the scalability of Logix controllers and RSView / PanelView Plus products in a SCADA application by using a variety of products to create large and small stations. Although equipment is distributed over long distances, all the data is easily accessible everywhere. In addition, because EtherNet/IP is standard Ethernet, a variety of modem technologies and instruments can be easily integrated to form a complete system.

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Point I/O

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