Logix5000™ & RSLogix™ 5000 Overview

This presentation provides an overview of the products & features that make up the Logix Architecture.

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An Integrated Architecture Based on Core Products and Communications

**Logix for Control**
Control execution engine deployed on multiple platforms. Sharing common programming RSLogix 5000 software. Preferred I/O connectivity

**NetLinx for Communications**
An information enabled architecture optimized for control, configuration, and collection of data deployable on multiple media

**ViewAnyWare for Visualization**
Information visualization from a standardized development environment across a broad range of electronic operator interface and industrial computers
NetLinx Control and Information Protocol (CIP) Becomes the Basis of a New Control System Philosophy

• NetLinx Control and Information Protocol (CIP)
  – Open standard application layer protocol designed specifically for industrial automation applications
  – Configure, Collect, and Control information and data efficiently
  – CIP is the core technology used by DeviceNet™, ControlNet™ and Ethernet/IP™

• Producer Consumer Model
  – Allows information to be passed between autonomous devices
  – Sharing of communicated messages to reduce latency and increase performance by reducing network traffic
  – I/O Modules will generate data directly to networks, eliminating the need to be polled

• Both I/O, Messaging, programming and configuration on the Same Wire
  – Reduced network cabling expense

• Seamless bridging between networks
Logix Addresses Contemporary Control Needs

• Increased distribution of control
  – Multiple controllers in a single chassis or distributed via networks
  – Distributed I/O over various networks (RIO, ControlNet, DeviceNet, Ethernet/IP)
  – DeviceNet places I/O devices directly on the network

• Scaleable control system options
  – Multiple Logix5000 processor form factors available
  – Complete modularity of communication, controllers, and memory
  – System monitors modules for health, correct placement, and configuration control

• Open communication for system-wide linking
  – Totally modular communication for flexibility
  – State of the Art producer-consumer model for networks and backplane

• Reduction of controllers and programming packages
  – Integration of multiple disciplines into a single platform
  – Multiple control data bases become a single data base
  – International IEC61131 program structure

• Higher functionality in a smaller, lower priced form factor
Logix5000 Goals

- Multiple control disciplines in a single controller
  - sequential
  - motion
  - drives
  - process
- Portable so it could be implemented in many form factors

Customers

Solutions

Applications

Control Disciplines

Products

Logix5000™
Control
Logix™
RSLogix 5000
View EOI/MMI

Packaging
SCADA
Tire Assembly
Power Monitoring
Extrusion
Palletizer
Packaging
Batch Process
Mixing

High Speed
Sequential

Motion Control

Process Control

Drive Control

Material Handling
Web Handling
A common approach to control, communications and visualization across multiple platforms.
ControlLogix™ System Model

- Modular, scaleable architecture
- Small SLC size
- High performance passive, multimaster bus
- Producer-Consumer on the backplane
- No slot dependencies
- Communications bridging independent of the controller
- Multiple processors in a chassis
- True pre-emptive, multi-tasking, symbol based controller
- Removal and insertion of any module under power without disruption to other modules in the system (RIUP)
- Software Configuration of modules to point level
- Electronic Keying
- Lower user cost than PLC-5/1771 and AutoMax
- High functionality diagnostic and isolated I/O
Backplane and Network Communications

- Modular rack based communication
  - Ethernet/IP, ControlNet™, DH+, RIO, DeviceNet™, Serial-DF1, Serial ASCII, others
  - Mix and match network interfaces
  - Add as many or as few networks as needed
- Flexible networking
  - Bridging and routing between messaging networks across backplane w/o processor intervention
  - Supports I/O, Peer to Peer data transfer, explicit messaging, programming and configuration support
- Supports I/O sharing
- Software configurable
## ControlLogix Network Products

<table>
<thead>
<tr>
<th>1756-ENBT</th>
<th>1756-CNB/R</th>
<th>1756-DNB</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 10/100MBit EtherNet/IP</td>
<td>• 5Mbit ControlNet bridge module</td>
<td>• DeviceNet Scanner / Bridge</td>
</tr>
<tr>
<td>• Full-Duplex Communication</td>
<td>• Available in single or redundant</td>
<td>• Supports up to 64 simultaneous</td>
</tr>
<tr>
<td>• 4 Character Diagnostic Display</td>
<td>median</td>
<td>devices</td>
</tr>
<tr>
<td>• Control, Configure and Collect Data</td>
<td>• Built-in Network Access Port (NAP) provides programming terminal access</td>
<td>• Supports up to 64 simultaneous</td>
</tr>
<tr>
<td>• Control of I/O over EtherNet/IP</td>
<td>• Supports up to 64 simultaneous</td>
<td>devices</td>
</tr>
<tr>
<td>• High speed Interlocking between ControlLogix controllers via EtherNet/IP</td>
<td>I/O or peer to peer connections</td>
<td>• All I/O owned by a single</td>
</tr>
<tr>
<td>• “Information-Enabled” Communications</td>
<td>• 4 Character diagnostic display</td>
<td>ControlLogix controller</td>
</tr>
<tr>
<td>• Web-Enabled for remote management activity</td>
<td>• Configured using RSNetWorx for ControlNet</td>
<td>• 4 Character diagnostic display</td>
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<tr>
<td></td>
<td></td>
<td>• Configured using RSNetWorx for DeviceNet</td>
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### ControlLogix Network Products (Cont.)

<table>
<thead>
<tr>
<th>1756-MVI</th>
<th>1756-DHRIO</th>
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<tbody>
<tr>
<td>• RJ45 Serial Ports, 1 Program / User COM (Non-isolated, and 2 User Comm Ports (isolated)</td>
<td>• 2 configurable ports configurable as DH+ or as a RIO Scanner</td>
</tr>
<tr>
<td>• Baud rates up to 115.2K</td>
<td>• Baud rates 56K/115K/230K for DH+ &amp; RIO</td>
</tr>
<tr>
<td>• RS232/422/485 Signals Supported (Jumper configured)</td>
<td>• DH+ routing table permits devices on DH+ to communicate to other networks</td>
</tr>
<tr>
<td>• Cables provided to convert RJ45 to D9 Connectors</td>
<td>• DH+ default CPU Slot routing forwards messages to a Logix5550 controller</td>
</tr>
<tr>
<td>• x86 PC Running DOS, Programmable with “C” or Basic</td>
<td>• RIO Scanner supports up 64 logical racks (32 per port)</td>
</tr>
<tr>
<td>• Built in FlashROM drive stores OS and user application</td>
<td>• Block Transfer to intelligent I/O</td>
</tr>
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</table>
Producer / Consumer Model

- ControlNet™ like interface for all modules:
  - Input modules produce data for the system
  - Controllers and Output modules are producers and consumers
    - outputs echo (produce) output status for system use
  - Multiple devices can simultaneously consume data
- I/O sharing provides more flexibility for system design
- I/O data can be shared between controllers and/or operator interface devices
- Applications become more responsive
  - Reduced processor overhead and handling time
  - Network and backplane traffic is reduced
  - Reduced I/O latency
  - Applications can be truly interrupt driven
ControlLogix I/O Overview

• Presently consists of over 50 I/O modules
  – 30 Digital
  – 10 Analog
  – 2 Motion Modules
  – High Speed Counter
  – Programmable Limit Switch
  – Configurable Flow Meter

• Options in termination
  – Screw-style
  – Spring-style
  – Bulletin 1492 pre-wired

• Includes a variety of chassis sizes
• AC / DC Power Supply choices, both Standard and Redundant
I/O Functional Overview

- Producer/Consumer model
- Module-Level fault reporting
- RIUP (Removal and Insertion Under Power)
  - for both field and backplane sides
- Fully software configurable
- Software retrievable module I.D. information
- Isolated versions of digital and analog modules
- Electronic backplane keying
- System clock access for various time-stamping functions
- Field FLASH firmware upgradeable
- Class 1 Division 2 certified
- Certifications approved or pending: UL, CE, CSA & FM
ControlLogix Controllers

- Three different processors for the ControlLogix platform
  - All fit within a single slot in the ControlLogix backplane
  - Different capacity, performance, and capabilities
  - Expandable network communications via separate modules
  - Built-In RS232 ASCII Serial, DF1, and DH485 protocol Support
  - Varying memory capacity and Non-Volatile memory backup

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<tr>
<th>Logix5555 1756-L55</th>
<th>Logix5563 1756-L63</th>
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<tbody>
<tr>
<td>• Released Nov 2000</td>
<td>• 250 I/O Connections</td>
</tr>
<tr>
<td>• 250 I/O Connections</td>
<td>• 8 MB Fixed RAM Memory</td>
</tr>
<tr>
<td>• OK Base Version</td>
<td>• Built in Flash NVS Storage</td>
</tr>
<tr>
<td>• 750K, 1.5M, 3.5M, and 7.5MByte RAM Memory cards</td>
<td>• Local / Remote Battery Backup (1756-BATM)</td>
</tr>
<tr>
<td>• 750K, 1.5M, 3.5M RAM / Flash NVS Storage Combo Memory Cards</td>
<td>• Socket for future Compact-flash memory card for NVS Storage</td>
</tr>
<tr>
<td>• Local / Remote Battery Backup (1756-BATM)</td>
<td>• Built in Floating Point Math Co-processor</td>
</tr>
<tr>
<td>• 30% Increase in motion and FBD performance over Logix5550</td>
<td>• 400 to 500% Increase in motion and FBD performance over Logix5550</td>
</tr>
<tr>
<td>• Forced LED</td>
<td>• Requires RSLogix 5000 V6 or above</td>
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<tr>
<td>• Requires RSLogix 5000 V6 or above</td>
<td>• Requires RSLogix 5000 V10 or above</td>
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20 May 2003
New ControlLogix5561 and 5562 Controllers

• New controllers in the ControlLogix family based on the 5563
• Targeted for high-speed applications
• Better performance than the ControlLogix5555
  – 2 times faster ladder execution
  – 3 to 5 times faster motion, FBD, and REAL math
• Fixed memory capacity
  – 1756-L61 ControlLogix5561 2MBytes
  – 1756-L62 ControlLogix5562 4MBytes
• Socket for nonvolatile memory
  – 1784-CF64 Industrial CompactFlash card
  – Access through bottom of processor
• Requires 1756-BATM battery module
• Requires RSLogix 5000 V12
ControlLogix Controllers

- Greater functionality / faster performance / smaller size / lower cost / scaleable in all dimensions
  - Outperforms other controllers in its class
  - Requires 20% to 50% less panel space than comparable controllers
  - Highest functionality controller at a system price between the PLC5 and SLC500

- Multiple controllers in one small package
  - The Logix5500’s Highly Integrated Motion capability saves you money by eliminating separate motion controllers and software
  - Ongoing enhancements for process and drive systems

- Fully scalable solution allows you to purchase exactly what you need
  - Expandable memory on the Logix5555 cover small to large applications
  - The Logix5563’s large memory capacity means one controller can cover all applications to minimize spare parts management
  - Modular networks provides the right communications mix for your application
  - I/O capacity sufficient to meet large applications

- Distributed control solution
  - Multiple controllers in a single chassis permits load sharing to increase application performance
  - CPUs distributed across ControlNet while sharing I/O
  - Processor to processor communications without writing application code
ControlLogix I/O Capacity

- I/O data areas are created as you assign modules to the controller saving memory for other uses
  - Capacity is no longer limited by a fixed memory area
- Analog and Discrete modules are addressed using the same mechanism
  - I/O tags are automatically created based on chassis location within the system and physical slot number
    - Eliminates confusion associated with various addressing modes (1/2slot, 1slot, 2slot…)
    - NO Block-Transfer needed for ControlLogix I/O!
- The Logix5550’s connection based I/O provides increased I/O capacity
  - 250 simultaneous connections to modules or chassis of discrete I/O
    - 250 x 17 slot chassis of 32 point discrete I/O yields 128,000 points maximum discrete I/O only*
    - 250 x 16 channel analog I/O modules yields 4000 channels maximum analog I/O only*
  *I/O Capacity will vary based on I/O module and network used
ControlLogix Communications

- The Logix5500 provides fully scaleable network communications that lets you purchase only what you need
  - ControlLogix chassis based network modules purchased separately to meet application needs
  - Any mix DH+/RIO/ControlNet /DeviceNet /Ethernet/Serial
  - Get the right combination of network modules for the job
  - De-couples network and controller development
  - Increased performance from distributed processors
- The Logix5500 includes an RS232 interface port that acts as your portal into the system
  - Provides full bridging through the controller onto the backplane so you can access other modules or processors, distributed in the system
    - Eliminate the need for computer cards
    - Provides remote diagnostic support
  - Supports DF1 protocol for programming terminals and other intelligent devices to access data and upload/download programs
    - DF1 Master/Slave and Point-to-Point modes for SCADA applications
  - DH485 Protocol for messaging with SLC based products
  - Serial RS232 ASCII messaging to 3rd party products
L55 Memory Options

- The Logix5555 processor provides scalable memory
  - Purchase the right amount of memory for the applications
  - A single memory expansion card may be installed
    • Base processor has no user RAM memory
  - Various RAM memory capacities
    • 4 options from 750Kbyte to 7.5Mbyte user memory
    • Battery Backed RAM memory
      • Program and working data values maintained through a power loss
      • Small battery delivered with processor or external battery pack supported for longer hold times
  - Flash based non-volatile combination cards also available
    • Combined RAM / non-volatile flash memory built in
    • Backup storage for program and data
    • Avoids battery dependence

<table>
<thead>
<tr>
<th>Memory Capacity</th>
<th>RAM Cards</th>
<th>CPU / RAM</th>
<th>RAM/Flash Cards</th>
</tr>
</thead>
<tbody>
<tr>
<td>750KByte (Requires V10)</td>
<td>1756-M12</td>
<td>1756-L55M12</td>
<td>1756-M22</td>
</tr>
<tr>
<td>1.5Mbyte</td>
<td>1756-M13</td>
<td>1756-L55M13</td>
<td>1756-M23</td>
</tr>
<tr>
<td>2.5Mbyte</td>
<td>1756-M14</td>
<td>1756-L55M14</td>
<td>1756-M24</td>
</tr>
<tr>
<td>7.5Mbyte</td>
<td>1756-M15</td>
<td>1756-L55M15</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Logix5000 Benefits

• Preemptive multitasking operating system
  – 32 task provides flexibility to customize execution to application
  – Modularized programs reduce development time and improve maintainability

• IEC61131-3 compliant data model
  – Provides multiple data types to reduce development time
  – User defined structures allow for better data organization

• Symbolic addressing stored in controller
  – Provides more readable code that is easier to maintain
  – Eliminates need for cross referencing database to read data

• Powerful Instruction Set extensions over IEC61131-3
  – Familiar PLC/SLC instructions reduce training
  – Integrated Motion Instructions reduce effort to control servos
  – Comprehensive process and drives instructions
FlexLogix5400 Controllers

- A Distributed Logix5000 Controller Designed to operate in the existing Flex IO architecture
  - Two fixed memory version available (see below)
  - Program and data memory backup to built in non-volatile flash memory
  - Integral 24VDC power supply, powers to CPU and I/O rail
  - Built in RS232 port supports ASCII Serial, DF1, and DH485 Protocols
  - 2 Slots available to modular communications cards
    - 1788-CNC / CNCR – ControlNet
    - 1788-DNBO – DeviceNet
    - 1788-ENBT – Ethernet/IP (Future V11)

- Programmed with RSLogix 5000
  - Supports all languages LD, FBD (Future SFC, ST)
  - On-line programming supported

<table>
<thead>
<tr>
<th>FlexLogix5433 1794-L33</th>
<th>FlexLogix5434 1794-L34</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 64Kbyte user memory</td>
<td>• 512Kbyte user memory</td>
</tr>
<tr>
<td>• 1 Direct Connect Rail of Flex I/O (8 Modules)</td>
<td>• 1 Direct Connect Rail of Flex I/O (8 Modules)</td>
</tr>
<tr>
<td></td>
<td>• 1 optional Local Expansion Rail of Flexi I/O (8 Modules)</td>
</tr>
</tbody>
</table>
## FlexLogix Network Support

<table>
<thead>
<tr>
<th>1788-CNC/R ControlNet</th>
<th>1788-DNBO DeviceNet</th>
<th>1788-ENBT Ethernet/IP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Single slot card for FlexLogix network expansion</strong></td>
<td><strong>Single slot card for FlexLogix network expansion</strong></td>
<td><strong>Single slot card for FlexLogix network expansion</strong></td>
</tr>
<tr>
<td><strong>Provides FlexLogix the ability to message information and control some I/O via ControlNet</strong></td>
<td><strong>Provides FlexLogix the ability to scan and control I/O distributed on DeviceNet</strong></td>
<td><strong>Provides FlexLogix the ability to message information and control some I/O via Ethernet/IP</strong></td>
</tr>
<tr>
<td><strong>Programming access to CPU</strong></td>
<td><strong>Configure using RSNetWorx for DeviceNet software</strong></td>
<td><strong>Programming access to CPU</strong></td>
</tr>
<tr>
<td><strong>Configure using RSNetWorx for ControlNet</strong></td>
<td><strong>With 1788-CNC/R provides ControlNet to DeviceNet bridging</strong></td>
<td><strong>Configured via BootP server provided with RSLinx</strong></td>
</tr>
<tr>
<td><strong>Single or Redundant media communication cabling via BNC connectors</strong></td>
<td><strong>5 Pin DIN DeviceNet cable connector</strong></td>
<td><strong>RJ45 Ethernet Connection for Twisted-pair cabling</strong></td>
</tr>
<tr>
<td><strong>Built in node address switches</strong></td>
<td><strong>Built in node address switches</strong></td>
<td><strong>Network Diagnostic indicators</strong></td>
</tr>
<tr>
<td><strong>Network Status LED’s</strong></td>
<td><strong>Network Diagnostic indicators</strong></td>
<td><strong>Network Diagnostic indicators</strong></td>
</tr>
<tr>
<td><strong>Network Access Port (NAP) for an RJ45 laptop computer</strong></td>
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</tbody>
</table>
Distributed Control Architecture

- FlexLogix is designed for applications that have segmented
  - machines or processes.
  - Eg. Assembly line, Oven-Control Line, Filling Station
- Separating Control with the local machinery allows you to:
  - Modularize your process to simplify troubleshooting
  - Mount Control Equipment local to the process it controls
  - Interlock and Message Data between FlexLogix Controllers on ControlNet
- EXAMPLE: Oven Control Line

ControlNet

- Oven 1 Control
- Oven 2 Control
- Conveyor Control
Flex I/O Supported

At this point all Flex I/O modules are supported either directly or via the Generic Profile.

<table>
<thead>
<tr>
<th>Standard Flex Modules</th>
<th>FlexEX Modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>1794-ACN15/C</td>
<td>1797ACN15(R)</td>
</tr>
<tr>
<td>1794-ACNR15/C</td>
<td>1797-IBN16</td>
</tr>
<tr>
<td>1794-OA8/A</td>
<td>1797-IE8</td>
</tr>
<tr>
<td>1794-OA8I/A</td>
<td>1797-JJ2</td>
</tr>
<tr>
<td>1794-OA16/A</td>
<td>1797-IRT8</td>
</tr>
<tr>
<td>1794-OB8/A</td>
<td>1797-OB4D</td>
</tr>
<tr>
<td>1794-OB8EP/A</td>
<td>1797-OE8</td>
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<tr>
<td>1794-OB16/A</td>
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<tr>
<td>1794-OB32</td>
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<tr>
<td>1794-OC16/A</td>
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<tr>
<td>1794-OM8/A</td>
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<td>1794-OV16/A</td>
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<td>1794-OW8/A</td>
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<td>1794-OB16P/A</td>
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<td>1794-OV16P/A</td>
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<td>1794-IA8/A</td>
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<td>1794-IA8I/A</td>
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<td>1794-IA16/A</td>
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<td>1794-IB8S/A</td>
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<td>1794-IB16/A</td>
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<td>1794-IB32</td>
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<td>1794-IM8/A</td>
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<td>1794-IC16/A</td>
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<td>1794-IV16/A</td>
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<td>1794-IB10XOB6/A</td>
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<td>1794-IB16xOB16P</td>
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<td>1794-IRT8/A</td>
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<td>1794-IR8/A</td>
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<td>1794-IT8</td>
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<td>1794-IF2XOF2I/A</td>
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<td>1794-IJ2/A</td>
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<td>1794-OF4I/A</td>
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<td>1794-IF4I/A</td>
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<td>1794-IE8/B</td>
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<td>1794-IE4XOE2/B</td>
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<td>1794-VHSC (Via ACN)</td>
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<td>1794-ID2</td>
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<td>1794-IP4</td>
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<td>Flex Integra (Generic)</td>
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<td>3rd Party (Generic)</td>
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<td>1794-OC16</td>
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<td>1794-VHSC (Via ACN)</td>
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</table>
# CompactLogix5300 Controllers

- **Logix5000 Controller that connects directly to Compact I/O**
  - Target stand-alone OEM and distributed applications
  - Built in RS232 ASCII, DF1 and DH485 protocol support
  - Built in Ethernet supporting Messaging and I/O
  - Program / data memory backup to built in non-volatile flash memory

- **Programmed with RSLogix 5000**
  - Supports all languages LD, FBD, SFC, ST
  - on-line programming

<table>
<thead>
<tr>
<th>CompactLogix 1769-L20</th>
<th>CompactLogix 1769-L30</th>
<th>CompactLogix 1769-L35E</th>
</tr>
</thead>
<tbody>
<tr>
<td>64 Kbyte user RAM memory</td>
<td>256 Kbyte user RAM memory</td>
<td>1.5 Mbyte user RAM memory</td>
</tr>
<tr>
<td>1 RS-232 port</td>
<td>2 RS-232 ports</td>
<td>1 RS232 Port</td>
</tr>
<tr>
<td>Supports up to 2 banks of I/O for 8 modules maximum</td>
<td>Supports up to 3 banks of I/O for 16 modules maximum</td>
<td>Supports up to 30 Modules</td>
</tr>
<tr>
<td>Built in program / data backup into Non-Volatile Flash Memory</td>
<td>Built in program / data backup into Non-Volatile Flash Memory</td>
<td>1 10/100MB Ethernet/IP Port</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Program / data / firmware backup into removable Compact-flash card</td>
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<tr>
<td></td>
<td></td>
<td>Increased I/O memory capacity and program scan performance</td>
</tr>
</tbody>
</table>
## Networking Options for CompactLogix

<table>
<thead>
<tr>
<th>DH485 1761-NET-AIC+</th>
<th>1769 Devicenet Scanner</th>
<th>Ethernet 1761-NET-ENI</th>
<th>DeviceNet 1761-NET-DNI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connects CompactLogix RS232 to DH485 Network</td>
<td>Read/Write to up to 63 Devicenet slave devices</td>
<td>Connects CompactLogix RS232 to Ethernet Network</td>
<td>Connects CompactLogix RS232 to DeviceNet Network</td>
</tr>
<tr>
<td>Configure CompactLogix serial port for DH485 protocol</td>
<td>Same scanner works with CompactLogix and MicroLogix 1500 controllers</td>
<td>Configure CompactLogix serial port for DF1 protocol</td>
<td>Configure CompactLogix serial port for DF1 protocol</td>
</tr>
<tr>
<td>Utilizes 1756-CP3 RS232 cable to connect to controller</td>
<td>Can simultaneously operate as a master and a slave device on Devicenet</td>
<td>Supports messaging (no I/O)</td>
<td>Supports messaging (no I/O)</td>
</tr>
<tr>
<td>Rotary baud rate switch configuration</td>
<td>Supports up to 64 words per slave device (Series B)</td>
<td>Future support for program access</td>
<td>Requires 24VDC power</td>
</tr>
<tr>
<td>Provides 5pin DIN connector for DH485</td>
<td>Supports Automatic Device Replacement (Series B)</td>
<td>Requires 24VDC power</td>
<td>Requires 24VDC power</td>
</tr>
</tbody>
</table>
Hardware Features/Benefits

Modular – Allows module mix and match
Rackless – Lower cost, lower inventory, plus true scalability
Reduced Size – Smaller panel space (approx. 60% SLC volume)
Integrated Bus – Lower cost, smaller package
High Performance – 16Mbps I/O and data bus speed
Flexible Mounting – DIN or panel mount
Front Access Removal – Reduced assembly and repair time
Removable Terminal Block – Reduced down time
Terminal Door Write-On Labels – Custom point identification
Designed for world-wide market – UL/CUL and CE certified
SoftLogix5800 Controllers

- Windows NT / 2000 Based Logix5000 engine
  - RSLogix 5000 programming support LD, FBD, SFC, ST
  - Operates on a PC using networks to attach to I/O
- Communications to existing I/O Architectures
  - Leverage 1784-I/O Linx (w/ bridge enhancement) for Core networks
  - 3rd party drivers for non-Core networks
- Integrated Control & Motion Solution using PCI Dual Axis Servo Card
  - Utilizes RSLogix 5000s built in motion programming capability
- Virtual Chassis Configuration tool
  - Supports Logix, ControlNet, DeviceNet, Motion and Linx drivers
  - Integrated configuration and monitoring
  - Virtual I/O module simulator to test application
- Extendable Control
  - JXR to User written “C” code containing complex or proprietary algorithms in addition to control logic
  - Interface to “Industry Standard” networks
  - Integration with other software applications
- All-in one box solution; Control & HMI
  - Cost and panel space reduction, plus extensibility
  - Edit configure and run on the same box
# SoftLogix5800 Communications

<table>
<thead>
<tr>
<th>1784-PCIDS</th>
<th>1784-PCICS</th>
<th>3rd Party Ethernet</th>
</tr>
</thead>
</table>
| • PCI Based DeviceNet Scanner  
  • Provides connectivity to DeviceNet I/O products  
  • Scans I/O and permits device configuration from the same PC  
  • Requires RSNetWorx for DeviceNet | • PCI Based ControlNet Scanner / Bridge  
  • Provides connectivity to ControlNet I/O products  
  • SoftLogix supports same modules as Logix5500  
  • ControlLogix I/O, Flex I/O, 1771 Digital, 3rd Party…  
  • Bridging supported between networks and the devices in the SoftLogix virtual backplane  
  • Requires RSNetWorx for ControlNet | • PCI Ethernet Support  
  • Specific vendors will be listed / approved for use with SoftLogix5800  
  • Ethernet/IP messaging and program upload / download support (V11)  
  • Ethernet/IP control of I/O (V12) supports ControlLogix and Flex I/O product lines  
  • Configure Ethernet/IP I/O with RSLogix 5000 |

[Future V11 and V12]
PowerFlex 700S DriveLogix AC Drive

- Shares all common Logix family features
  - Logix5000 execution engine
  - RSLogix 5000 programming support
  - NetLinx open networks
  - Flash upgrades
- Reuse Logix training
- Architectures: Centralized or Distributed
- Advanced Motor Control Technology
- The High Performance member of the New PowerFlex Family of Drives
- Fiber-optic SynchLink will permit multi-axes synchronization for the most demanding applications
- On-Board I/O and Extended I/O (FLEX I/O)
Logix Family Positioning

Intelligent Control Devices
- DriveLogix
  - Logix5000 Built into PowerFlex Drive
  - Machine and Drive control
  - Direct Flex I/O Connection
  - ControlNet Communications
  - Future Motion Commands

Cost-Effective Station/Machine Control
- CompactLogix
  - Machine Control
  - Targeted at <100 prnts.
  - Cputer, RTD, T/C, combo and Analog and Sercos cards
  - Onboard 232/485 with future plans of Cnet, Dnet, and Enet
  - Future Sercos connectivity planned

Distributed
- FlexLogix
  - Designed for Distributed Control
  - 1-2 Communication links for Control & Information
  - 64K and 512Kbyte Mem
  - Targeted for <256 prnts.
  - Up to 16 local I/O mod's
  - Approx. 70% speed of ControlLogix
  - I/O Module RIUP
  - Benefits of Flex I/O

Performance Full-Featured
- ControlLogix
  - Hi-Speed Discrete
  - Advanced, integrated Motion Control
  - Multi-Processor & Co-Processing
  - Redundancy
  - Advanced Process Control
  - 1M, 2M, 3.5Mbyte Memory
  - Large, Centralized Control
  - Eg. Batch, Paint, Brewing
  - Network Bridging and Routing.
  - Ideal for Drive Systems
  - Expandable communications
  - Widest range of Encompass Offerings.
  - Highest level of I/O Diagnostics
  - RIUP

PC-Based SoftLogix
- Open Architecture
- 3rd Party Components
- Integrated MES
- Integrated HMI
- Alternate program via Microsoft Tools
- Integration with 3rd Party S/W via COM/DCOM

Control-Centric
Focused Comm's
De-centralized Architecture

Information-Centric
Demanding Comm's
Centralized Architecture

Size (memory & I/O)
Level of Integration
Performance (system)
Specialty Cards
3rd Party Integration

$
RSLogix™ 5000

• Programming and configuration for the Logix5000™ Family of Controllers
  – Common user interface with RSLogix 5 & 500
  – Single programming software package for the entire family of Logix5000 products
    • ControlLogix, FlexLogix, SoftLogix, CompactLogix, DriveLogix ...
    • Reduces learning curve between controllers
  – Multiple IEC61131-3 programming languages
  – Symbolic tag and structure data model
  – Relaxed, free-form editing reduces application development time
  – Power programming tools to increase productivity
RSLogix 5000 Feature Overview

- **Advanced I/O configuration tools**
  - Controller organizer I/O and network visualization improves navigation
  - Module specific configuration applets reduce module setup and debug

- **Modular multi-tasking / dual data scope application structure**

- **Multiple programming languages**
  - Ladder Diagram (LD) Language – Sequential state based applications
  - Optional Function Block Diagram (FBD) Language – Process and drive control systems
  - Future Sequential Function Chart (SFC) Language – Machine state and batch control applications
  - Future Structured Text (ST) Language – Specialized algorithms and protocol handlers

- **Comprehensive Instructions set reduces development time**
  - PLC-5 / SLC-500 / IEC1131-3 / Motion / Process / Drives Instruction set

- **Support for custom data structures and arrays tailored specific to the application**

- **Active / hot cross reference to quickly locate where data is used in the controller**

- **Intelligent search / replace simplifies program development and debug**

- **Report generation provides hard copy output**

- **Multiple text database import / export formats support 3rd party tools**

- **Graphical value trending (RSTrend) improves diagnostics**

- **Complete on-line help, PDF manuals and quick-start tutorial**
Exploring the Interface

- File operation toolbar
- Cut/Copy/Paste
- Undo / Redo
- Search Tools
- Application Verify buttons
- View / Zoom
- Scale Buttons
- On-Line Status bar and Tools
- Sequential Function Chart Editor
- Controller Organizer
- Configuration Information
- Ladder Diagram Editor
- Structured Text Editor
- Function Block Diagram Editor
- Language Specific Instruction Toolbar
Logix5000 Operating System

- Logix5000 utilizes a single-threaded multitasking operating system
  - Similar to PLC/SLC, but with more tasks
  - IEC61131-3 compliant tasking model
- Support for up to 32 separate tasks
  - 1 Continuous, 31 Periodic (STI), or future Event based Tasks (PII)
  - Segment your application based on operation
  - Execute each portion at an appropriate interval
- Periodic / event tasks support 15 Priority levels
  - Allows you to configure the controller to execute important task first
  - Tasks at the same priority are time sliced back and forth on a 1msec basis
  - Continuous task operates at lowest priority
- Each task can call 32 Programs
  - Permits further subdivision of the application
  - Provides an isolated data area and tag name space
Logix5000 Task Operation

- Executes each program top to bottom and then restarts
- Operates at the lowest priority on the controller
- Uses all CPU time left after other tasks execute
- Interrupted by operating system to perform processor and communications overhead
- Traditional PLC Scan

- Triggered automatically at a preset time interval
- Interrupts lower priority tasks and can be interrupted by higher priority tasks (15 Levels)
- Will time-slice on a 1ms basis with another task at the same priority level
- Captures fault for task overlap
- Similar to PLC/SLC Selectable Timed Interrupt (STI)

- Triggered based on arrival of input or consumed tag, motion operations, via another program, or a Windows Event for SofLogix5800
- Interrupts lower priority tasks and can be interrupted by higher priority tasks (15 Levels)
- Will time-slice on a 1ms basis with another task at the same priority level
- Captures fault for task overlap
- Similar to PLC Peripheral Input Interrupt (PII) or SLC Discrete Input Interrupt (DII)
RSLogix 5000 Multi Language Support

• Fully integrated with other languages within RSLogix 5000
  – Exists as part of RSLogix 5000, uses existing database, menu structure, controller organizer, I/O configuration, etc.
  – Available as an option to mini and standard versions and included with Professional

• LD, FBD, SFC, ST routines can co-exist with other routine types in the same controller
  – A routine of any language can call other SFC, ST, LD or FBD routines

• Works with Logix5000 engine to support upload/download of routines from processor
  – All languages are native to Logix5000

• IEC1131-3 Compliant languages
Choosing the Appropriate Language

- There are many factors to consider when selecting a programming language
  - Examine all parts of the application and break it down into small sections
  - Select a language(s) appropriate to meet the diverse needs of each section
  - Forcing an application into the wrong language can result in complex code that is difficult to support
  - When developed appropriately, each language will enhance the development process and improve the maintainability of the resulting application
Ladder Diagram (LD) Language

- Relaxed / free-form editing environment permits multiple simultaneous edits
  - Modifications are checked and committed when user downloads the program or selects a verify operation
  - The user can select either auto or manually initiated verification
- Common user interface with RSLogix 5 / 500 reduces training
- Most comprehensive LD instruction set in the industry!
  - Avoids need for other languages
  - Based on PLC/SLC
  - Motion control blocks
  - Table / Array management
  - Diagnostic
  - Serial Port & Messaging
  - ASCII Manipulation
- Both off-line and on-line editing of individual rungs
  - Permits changes to running system
  - Minimal impact on controller
- IEC1131 compliance
Applications for Ladder Diagram

• Machine control applications requiring complex decisions and parallel processing, machine Interlocking, continuous operation
  – Material Handling - Conveyors, baggage handling, sortation, palletize /de-palletize…
  – Automotive – Press, body & assembly, paint…
  – Entertainment – Ski-lift, amusement park rides…
  – Messaging and serial communications
• General motion or robotic control application using analog or sercos based servos
  – Consumer products – Packaging, assembly …
  – Transfer lines – Engine, transmission, semiconductor…
  – Moving equipment – Bridge-cranes, ASRS, transfer-cars…
  – Entertainment – Theater, animatronics, simulators…
Function Block Diagram (FBD) Language

- Available as an add-on option for RSLogix 5000 Standard or mini, and included with RSLogix 5000 Professional
- Graphical Free-form drawing / programming environment
  - Place instructions blocks and draw connections to pass parameters
  - Position and Organize blocks based on application to improve readability
  - Floating text boxes provide application documentation (Planned for V12)
- Automatic sheet execution order determined by block interconnections
  - Eliminates program creation process
  - Simplifies program modification
- Off-line editing with on-line monitoring
  - Full upload / download
  - On-line edit of FBD routines (planned for V11)
- Comprehensive FBD functions are native Inside the Logix5000
  - Common LD blocks in FBD
  - 42 new process and drive control functions
- ActiveX faceplates for key FBD blocks streamline HMI development
- IEC1131-3 Compliant language
Applications for Function Block Diagram

• Ideal for analog loop control algorithms
  – Graphically represents control loops
  – Highly visual language is easy to understand
  – Resembles circuit diagrams
  – Commonly used in Distributed Process Systems (DCS)
• Continuous or Batch Process control loops
• Drive control loops
  – Speed, position, and tension regulation…
  – Rewind, winder, and dance control…
  – Provide a foundation for applications that previously used the Reliance Automax
Sequential Function Chart (SFC) Language

- Available as an add-on option for RSLogix 5000 Standard or mini, and included with RSLogix 5000 Professional
- Graphical Free-form drawing / programming environment
  - Place steps, transitional, simultaneous and select branches and draw connections to determine execution flow
  - Position and Organize blocks based on application to improve readability
  - Floating or linked text boxes provide application documentation (Stored off-line)
- Embed Structured Text in transitions and actions directly
  - Improves readability and maintenance
  - Eliminates extraneous routines
  - Use ST to call routines in FBD, LD, SFC or ST when needed
- Off-line editing with on-line monitoring
  - Display Auto-scroll keeps active step in the view to simplify maintenance
  - Works with Logix5000 engine to support upload/download of SFC routines from processor
  - On-Line editing planned (V13)
- IEC1131-3 Compliant language
Applications for Sequential Function Chart

• Sequencing of a machine’s states
  – High level program / routine execution management
  – More flexible approach to developing sequencers
  – Highly visual language is easy to understand
  – Ideal for machines with repetitive operations

• Execution of batch process applications

• Provide a foundation for motion or robotic applications using the Graphical Motion Language (GML)
  – Embedded Structured Text Motion commands provide streamlined development environment
RSLogix 5000 ST Language

• Available as an add-on option for RSLogix 5000 Standard or mini, and included with RSLogix 5000 Professional
• Fully functional editor
  – Red “Wavy Underlines” annotate undefined tags or programming errors
  – Syntactic coloring monitoring for commands, tags and comments to improves readability
  – Instruction format tool-tips simplify code development
  – Cut/Copy/Paste from other text editor tools
• High level programming language similar to Basic, Fortran, Pascal or “C”
  – If/Then, Case, Do/While, Do/Until, and For/Next constructs
  – Most LD and FBD Instructions supported, Including Motion and Process
  – Call routines in FBD, LD, SFC or ST when needed
• Off-Line development with on-line monitoring
  – Works with Logix5000 engine to support upload/download of ST routines from processor
  – Watch-Pane auto tag list, displays operating tag values
  – On-Line edit planned (V13)
• IEC1131-3 Compliant language
Applications for Structured Text

- Easily represent complex mathematical calculation
- Development of specialized array / table processing
- Creation of ASCII String protocol processing
- Imbedded motion control functions
- Inclusion of Process / Drive control functions permits specialized algorithms
- Provide a foundation for applications using the Reliance Automax basic language
- Easily convert text based Basic, “C”, Pascal and Fortran code to run on a Logix5000 controller
Logix5000 Instruction Set

- Highly functional ladder diagram instruction set based on PLC-5 / SLC-500
  - Same look, feel and execution as existing products
  - Reduced learning curve for new controller
  - Powerful file and diagnostic instructions
  - PID and other process instructions
  - Serial Port and Message Instructions
- Advanced Industry specific instructions reduce program development time
  - 105 built in Ladder Diagram Instructions
  - 30 Motion Instruction based on the Allen-Bradley Graphical Motion Language (GML) environment
  - 42 advanced FBD Process and Drive control blocks
  - One program environment for drives, motion, process and sequential control
- IEC1131-3 compliant instruction operation
- Symbolic addressing improves the overall readability of logic and code becomes self documenting
Controller Data Features

- **Support of IEC1131 defined base data types**
  - Boolean (1bit), Short Integer (8bit), Integer (16Bit), Double Integer (32 Bit), and Floating Point (32 Bit)

- **Structures to provide data encapsulation**
  - SLC & PLC 5 structures (T, C, R, P, and M)
  - I/O Module Specific Structures
  - Advanced motion control structures
  - Function block instruction data structures
  - ASCII String Structures
  - Custom User Defined structures

- **Data table scoping provides isolation between programs**
  - Scoped local to a single program
  - Globally for all programs

- **Arrays of data (1,2,3 dimensional)**
  - Built from any data type including structures
  - A single dimension array may be included in a structure

- **Symbolic Addressing**
  - Eliminates tie to fixed memory locations
  - More flexible approach to program development
  - Provides self documented code

- **Advanced Tag features**
  - Alias Tags provide alternative name for data
  - Produced / Consumed Tags pass information between controllers without writing code
Controller Symbolic Addressing

- Data and I/O are addressed using IEC1131-3 Compliant Symbolic Address
- Stored on the controller to allow access to data over network via Tag Names
- Users will have the ability to reference data via multiple names using Aliases
  - Provides flexibility to name data differently depending on its use
  - Allows program to be developed without knowing I/O or memory layout
- Tag Name
  - 40 character Tag Names (Same as RSView)
    - 1st character begins with Alpha or “_”
    - Remaining 39 characters Alpha, Numeric or “_”
  - Non-case sensitive
- Tag Description/Comment
  - 120 Characters provides for a more meaningful description
  - Stored offline on disk
- Tag Type-Ahead / Auto-Fill streamlines development Process
**Concurrent Engineering with Data Tag Alias**

- The Logix5000’s tag alias capability can reduce your project development time and cost
  - Develop programs without a completed electrical design
  - Create a library of reusable programs that can be used across multiple projects
  - Multiple names for the same data value allows you to improve your documentation
Produced / Consumed Tags

• Multiple Logix5000 controllers in the same backplane or connected via Ethernet/IP or ControlNet may share tag data values
  – No code or message instructions required to pass values
  – In the future a produced tag can be used to trigger event tasks in each controller
• Simple configuration of tag settings
  – Mark a tag as a produced and point consumed tags in remote controllers at it
  – Select the requested packet interval or broadcast rate as fast as 1msec
• The user can selectively choose which published data to consume
  – Data may be scheduled between processors similar to I/O operation
User Defined Arrays

- User can create custom tables to store information
- Arrays are named symbolically to aid in determining its contents and use
- Arrays can be built using 1, 2 or 3 dimensions to represent the data it is intended to contain
- Can be built to contain a base data type (Bool, Integer, Float...) or a structure (Timer, Counter, User...)

![Image showing Single, Two, and Three Dimensional Arrays]
Structure Data Type Editor

- Create custom memory layouts that match your application’s need using IEC1131-3 compliant structures
- Structures allow you to name each field individually for its use, providing self documenting code
- Structures can be defined to contain
  - Base level data types (BOOL, SINT, INT, DINT, REAL)
  - Product defined structures (Timer, Counter, String...)
  - User defined structures
  - Single dimension array of any data type
- The integrated structure editor makes the creation of a structure as easy as working with a table
String Data Type

- New built in compound “STRING” structure
  - User specified length from 1 to 64KByte characters
  - Supports multiple strings with different lengths
  - User assigned names permit application specific strings
- String grouping in controller organizer simplifies string management
- 82 Character string created by default to ensure compatibility with PLC5/SLC500
Arrays of Structures

• Create user-defined data types that emulate your devices
• Create tag names for memory as needed without the burden of physical memory addressing
• Provides self-documented code that is easier to develop and maintain
• Use arrays to store tables of information in up to 3 dimensions (like the real world)
  – example: Tankroom with 4 rows of tanks, 3 deep, stacked 2 high
Communications Configuration

- RSLogix 5000 makes it easy to set up the Logix5550 to communicate with products using PLC/SLC message commands
- The data mapping tool permits you to configure your Logix5000 to look like a PLC or SLC to another product
  - Logical data table reads are redirected to the array that you specify
  - Select multiple data tables files to emulate
- Configuring the message instruction is also done with a easy to use windows interface
  - Supports PLC2, PLC3, PLC5, SLC500 and C&IP message commands
Module Configuration Wizards

- Highly intuitive I/O module configuration wizards walk the user through the configuration of a module
  - All information presented in easily understood forms to reduce learning curve
  - Eliminates the confusion of block transfers for intelligent modules
  - Automatically creates Tags that will be used by the application
I/O Forcing

- What you can force
  - I/O data tags and aliases into them
    - Discrete I/O
    - Analog I/O
    - DeviceNet module
    - CNet Drives
  - Data-types that can be forced
    - BOOL, SINT, INT, DINT, and REAL

<table>
<thead>
<tr>
<th>Tag Name</th>
<th>Value</th>
<th>Force Mask</th>
<th>Style</th>
<th>Type</th>
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<td>Local:81</td>
<td>{...}</td>
<td></td>
<td>Forced</td>
<td>AB:1756</td>
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<td></td>
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<tr>
<td>A10_dial</td>
<td>0.0</td>
<td></td>
<td></td>
<td>Float</td>
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</table>

**Bit Force Status**

- "." = No Force
- 0 = Force Bit Off
- 1 = Force Bit On

**Value Force Status**

- "." = No Force
- Otherwise value is forced into tag
Built in I/O Diagnostics

- I/O Module status animation in controller organizer
  - Leads user to potential issues

- Electronic I/O Module Keying
  - Validates the right module is installed and provides its built-in information

- Built in analog alarming
  - Multiple set-points available
  - Checks performed by module directly and status reported to controller
Graphical Trending / Histogram

- RSLogix 5000 utilizes the RSTrendX component found in other RSI software packages (RSView…)
- Provides graphical real-time data histogram for diagnostics and monitoring functions
- Multiple Trend groups may be saved in the RSLogix 5000 controller organizer
  - Supports trending of up to 8 separate values simultaneously
  - Saved into the off-line source database so that it can be recalled at will
Information Import / Export

• Two ASCII file exchange formats provide information portability and development flexibility
  – Full Project file (.L5K)
    • Configuration, code, data-types, tag definitions and data
    • Structured format Based on IEC61131 standard
    • Useful for automatic code generation techniques
  – Tag Data (CSV)
    • Edit tag information in a 3rd party tool such as Text editors, MSAccess, or MSExcel
    • Import merges ASCII file contents with application tag database
    • Overwrite or Discard import/database tag collisions
The Help you Need

• RSLogix 5000 contains a comprehensive help system that can help you solve most problems
  – Tip of the day helps you learn software features
  – On-line instructions set reference is an electronic version of the printed manual
  – Quick Start tutorial walks you through common features
  – On-Line module helps puts module information and wiring at your fingertips
  – Tool-tips give you immediate information just by pointing at an object
  – On-line access to PDF Manuals
  – Quick Tour - Tutorial
Reduce Your Program Development Time

- Programs are more readable, self-documenting
  - Symbolic tag-based addressing
  - Memory “mirrors” the application through tag names, user-defined data structures, array, aliases
- I/O module diagnostics, scaling and alarming reduces programming and eases set-up
  - Intuitive I/O addresses - chassis.slot.data.bit
  - I/O module specific data layouts with floating point
- Build an object-oriented data table that looks like your process
  - User Defined Structures
  - Multiple data Scopes
- Multi-Tasking environment offers users a modularization / organizational tool
  - Hierarchical - Task, Program, Routine organization
- Power programming tools
  - Windows Cut/Copy/Paste and Drag/Drop assists code reuse
  - ASCII Import / Export supports code generation tools
- Reuse application code and training across multiple architectures
  - ControlLogix, FlexLogix, CompactLogix, SoftLogix, DriveLogix, MotionLogix...
# RSLogix 5000 Packages / Options

<table>
<thead>
<tr>
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1. Able to upload and download without option. Must purchase option to view, edit and print routines in this language.
ControlLogix Integrates High Speed Sequential and Motion Control

**Typical Motion and Logic Control**

- Interconnected Logic/Motion
- Dedicated controller for sequential logic
- Dedicated controller for motion
- Multiple programming packages
- Dedicated programming languages
- Multiple tag data bases
- Hardwired or network connection between logic and motion controller
- Performance & cost penalties

**ControlLogix**

- Integrated Logic/Motion
- Supports sequential logic and motion in the same controller
- One programming package
- Multiple programming languages with support for logic and motion
- One tag data base
- No connection required - control executes logic and motion
- Improves system performance and reduces system cost
Motion Architecture Overview

- **RSLogix 5000** reduces your expense by providing complete axis configuration and motion programming support
  - One software tool to purchase, learn and one program to maintain
- **Logix5500** firmware contains motion instructions and operating system
  - Motion executive (planner) runs as a dedicated task on the Logix5500
    - Provides motion command execution and path planning
    - Transparently communicates to servo modules over ControlLogix backplane
    - Powerful auto tuning sets all axis parameters and determines system dynamics
- **1756-M02AE / M08SE** servo modules provide drive connectivity
  - Interfaces to field sensors and drives
  - Fast 200us fine planner for position and velocity loop closure
  - Fully synchronized with Logix5500 controller(s)
Logix5550 Motion Support

- Embedded motion support
  - Move trajectory planner
  - 30 motion instructions
  - Analog and Sercos interface modules available
- In-line execution of motion instructions in the ladder application program
- Can define up to 32 axes per Logix5500 controller
  - Performance is roughly a linear function of the number of axis
- Remote Axis Support
  - Logix5500 acts as a axis to another CPU
  - Utilizes produced / consumed tag to pass data between controllers
- Virtual Axis Support
  - Simulated axis in Logix5500 memory
  - No Motion Module Required
- Multiple Logix5500 processors can be used, each with any mix of motion and sequential support
1756-M02AE Servo Module Features

- 2 Axis Analog/Quadrature Encoder Servo module
- Works with Logix5550™ to provide motion solution
  - Logix5550 Controller performs all motion/logic program execution and motion planner functions
  - must be in same chassis as controller
  - multiple modules can be fully synchronized for coordinated motion
- 1756-M02AE features
  - provides connectivity for 2 drives
    - 2-16 bit analog outputs
    - 2-4mhz quadrature encoder inputs
    - 2 high speed registration inputs - 5V or 24V
    - 2 home switch inputs
    - 2 drive status inputs and drive enable outputs
  - 200 μs position, velocity, and 2nd order fine planner loops
  - no programming or configuration required
  - Electronic Keying
  - Class 1 Div 2 Hazardous Classification
  - CE, UL, CSA, FM Approval
1756-M08SE Sercos Digital Drive Interface

- SERCOS digital drive interface
  - Fiber optic drive link supports 8 axes per slot
  - RSLinx5000 drive config and commissioning
    - Supports direct configuration of AB drives!
  - Conforms to IEC-61491 standard (SERCOS)
  - New loop support provides application program "links"....ladder and FBD
  - 1394 digital drive with MP servo motor and multi-turn absolute "smart" feedback support
    - future support for 1398, 8720, 3rd party
  - Simplified motion integration
    - "plug and play" drive connectivity
    - 2 fiber connections for 8 axes
    - fiber optics eliminate "noise" issues
  - Reduced system cost
    - 8 axes per 1756 slot
  - Open
    - support for 3rd party SERCOS drives (future)
    - "unique" AB drive features
Axis Management

- RSLogix 5000 simplifies axes management
  - create motion groups
  - create motion axes
  - monitor motion axis status
  - launch axis and motion group configuration
  - view element details
  - direct command support
    - reset faults
    - shutdown reset
    - turn servo on/off
Motion Axis Integration

- In the past, motion was handled with separate tools
- In RSLogix5000 the motion configuration is built into the editor
  - Eliminates the cost of purchasing and maintaining multiple tools
- The Axis wizard walks the user through the steps needed to incorporate a motion axis into the application
  - Streamlines the development
- With a basic understanding of the motion application, the user can point and click their way to a working motion system
- Uses the configuration tools from the S-Class GML editor
Integrated Motion Instructions

- 30 Instructions integrated into the Logix5550 controller
  - Support axis jog, move, direct drive, homing, registration, synchronized start, gearing, watch points, tuning, position/time based cam
- Motion instructions operate by transferring parameters to the motion planner which then uses the information to communicate directly to the axis interface module in the chassis
- Initially available via ladder diagram
- Graphical cam path configuration editor

  motion state
  motion move
  motion group control
  motion event
  motion configuration
  motion cam
ControlLogix Motion Benefits

• Single programming package for motion and logic
  – Reduces system cost and streamlines development process
  – Insert motion functions directly in the ladder application program

• High performance
  – Direct execution of motion commands on the Logix5500 processor
    eliminates need for synchronization logic and network connection
    between logic controller and motion controller
  – Fast 200μs position and velocity loop closure for all axes in a chassis -
    provides precise control of motor position
  – Support for multiple Logix5500 processors in a single chassis provides
    additional processing power for faster scan times or axis coarse planner
    rates
  – Multi-tasking operating system allows precise response to high speed
    events
  – Each Logix5500 processor can support up to 32 axes

• Extensive instruction set
  – Full sequential support plus 30 motion instructions provide support
    needed for complex applications
Superior Control That Fits

TAKE CONTROL

Logix
Este Ebook é distribuído pelo portal

www.apostilastecnicas.com