Studio 5000
V21 Highlights
Introducing Studio 5000

Releasing in Version 21

**Logix Designer**
Programming and configuration for Logix controllers.

Existing RSLogix 5000 user interface retained with new shared components.

Releasing in Version 22

**View Designer**
Graphical design environment for View 5000 HMIs.

New User Interface leveraging shared components

One Tool

One Install

One Launch Point

One Activation
Studio 5000 – V21

- Studio 5000 will be the central location to design, program and configure all aspects of Rockwell Automation’s Integrated Architecture.
- Studio 5000 is a product that will include multiple capabilities under one environment sharing common functionalities.
  - Many of these functions will be product agnostic e.g. newly developed standalone foundational code from which each capability may access.
The first capability to be integrated into Studio 5000 V21 is Logix Designer. Starting with V21, Logix Designer is the new name of RSLogix 5000.

- Logix Designer will have the same functionality as RSLogix 5000, simply optimized to run in the Studio 5000 environment.

- Future releases of Studio 5000 will incorporate more design capabilities of Integrated Architecture such as visualization and system wide configuration.

- Studio 5000 is the product. Logix Designer is one capability of the product.
Studio 5000 – On the Horizon

- Studio 5000 will add View Designer
  - The new graphical design environment for View 5000 HMI’s – PanelView 5000.
  - It has a new user interface – it is completely new design software

- View Designer included at no additional cost.
  - Purchases of Studio 5000 will include both Logix Designer and View Designer for the same price, one activation, ordering one catalog number

- Future Management Capabilities
  - Examples include: Multiple Controller Systems, Network Architectures, Security, Code Libraries and Assets.
What’s new in Studio 5000
Logix Designer V21
Comments/Descriptions Stored on PC

- Ladder Logic
- Function Block Diagram
- Sequential Function Chart
- Structured Text

L6 Controller
- CPU
- User Memory (Volatile/RAM)

Engineering PC “.ACD”

- Comments/Descriptions
  - Rung
  - Tag
  - UDT
  - AOI
  - Task
  - Program
  - Routine

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New V21 Project Documentation Storage

Reduce File Management Efforts

L6 Controller

Engineering PC “.ACD”

Ladder Logic
Function Block Diagram
Sequential Function Chart
Structured Text

Comments Descriptions
Alarm Log 10K Alarms
Extended Tag Properties
New Additional Non-Volatile Extended Memory

Storage is Completely Independent of User Memory Space

New Memory (Non-Volatile)
V21 Project Documentation Storage
OEM & End User Value

- **Improved Maintenance Response Time (End User)**
  - Improved Revision Management
  - Easier project maintenance
  - Comments/Descriptions are Always Available

- **Faster Time to Market (OEM)**
  - Multi-user Development
  - No Risk to Losing Project Documentation

L7 Controller

CPU

Comments/Descriptions
Alarm Log
1#K Alarms
Extended Tag properties
Shelving Function for Alarms

Reduce Costly Mistakes by Assuring Alarms are Noticed

IN ALARM
Click to Shelve
Shelved
Selectively Apply Duration to ALMA

Increase Productivity by Eliminating Nuisance Alarms

High High Limit

High Limit

Temperature

Time

Min Duration To Trigger

Input Level

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<th>Apply Min Duration</th>
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<tr>
<td>Low Low: 0.0</td>
<td>500</td>
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Minimum Duration: 1000 ms

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New Controller Based Alarm Log

High Availability of Alarming Data Reduces Material Losses

Circular File Stores Alarm Transitions

Communications Loss

FT View 6.x and 7.x
New Logix Profiles

- Kinetics 5500 Servo Drive
- 842E EtherNet/IP Absolute Encoders
- Bulletin 294 ArmorStart Distributed Motor Controller
- 1756 Peer to Peer I/O + Scheduled Output
- 2100-ENET E3 Plus Ethernet/IP Adapter
- 56 RFID

- 1756-OB16I-EF Fast Output
- 1756-LSC8x16DI 8 Chnl Counter
- 1756-IB16I Fast Input
- 1756-OB16I-EFS Scheduled Output
ControlFLASH V12

Kit Manager Builds Custom Firmware Kits

View Inventory Option

Enhanced Install Wizard Dialog
### Operating System and Controller Support

<table>
<thead>
<tr>
<th>Operating System Support</th>
<th>V21</th>
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<tbody>
<tr>
<td>Windows 7 Professional (64 and 32 bit)</td>
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<tr>
<td>Windows 7 Home Premium (64 and 32 bit).</td>
<td>Yes</td>
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<tr>
<td>Server 2008 R2 Standard Edition SP1</td>
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<table>
<thead>
<tr>
<th>Logix Controllers</th>
<th>V21</th>
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<tr>
<td>ControlLogix L7 Family</td>
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<tr>
<td>CompactLogix L1ER, L2ER, L3ER</td>
<td>Yes</td>
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V21 MOTION FEATURES
Integrated Motion Encoder on Ethernet/IP (CIP Motion)

Eliminate Extra Wiring and Complexity

- EtherNet/IP DLR support
- 18 bit resolution
- Single-turn and multi-turn absolute
  - 842E-CM-S
  - 842E-CM-M
- IP67 Packaging, M12 connectors
- Solid and Hollow shaft options
- CIP Motion Feedback Only axis support
  - Use as master axis for gear, PCAM, MDSC
  - Provides a master axis solution when using the Kinetix 350 drive or Kinetix 5500 drive

March/April 2013
High Performance Position Driven Outputs (PLS)

More points per Output Cam from 8 to 16

- Position based output control
  - MAOC motion instruction with RSLogix 5000 graphical profile editor
  - Map to any output - boolean or physical
  - Advanced PLS features

Output Cam Function

- Benefits
  - Any axis can control outputs using position & velocity
    - Physical or virtual axes
  - Scheduled Output modules in both ControlLogix & CompactLogix
    - Standard or Scheduled Outputs
    - Outputs with CIP Sync for high performance
      - 1756-OB16IS
        - 8 Scheduled Outputs/module
      - 1756-OB16IEFS
        - 16 Scheduled, E-fused Outputs/module
      - 1732E-OB8M8SR
        - EtherNet/IP DLR
        - Use with ControlLogix or CompactLogix
        - 8 outputs/module
Kinetix 5500 CIP Motion Servo Drive

- **Lower Installation Costs**
  - 50% less cabinet space
  - 70% fewer wiring terminations
  - 60% less cable runs required
  - VPL Servo motor single cable connection

- **Flexible Machine Architecture**
  - Single or Multiple Axis configurations
  - Shared AC/DC Bus configurations
  - Servo or V/Hz – Induction and PM motors
  - Embedded switch DLR support

- **Meets Global Machine Standards**
  - 195-528 VAC Input Voltage
  - Hardwired Safe Torque Off
  - 1A to 23A continuous
Kinetix VPL Servo Motor

- .4-31.5 NM Continuous Torque Range
- Single cable: 27% lower cable cost, 60% less wiring
- Windings options matched to drive ratings allow for optimized system sizing and costs
- Integrated Mechatronic functions simplify commissioning and reduce operational costs
- Based on proven magnetic core MP technology for market-leading reliability and performance
- Flat speed/torque curves deliver twice as much power at high speeds, delivering 20% savings
- Energy efficient drive/motor match and green shunt: 50% less energy, 15% lower costs

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Automatic Device Configuration of PowerFlex 755
Automatic Device Configuration (ADC)

- A v20 Logix-based feature that allows a user to configure their Logix system to automatically download a “large” device’s configuration.
- Configuration data for the device resides in the Logix controller (and ACD).
- Drive configuration was once a manual process in v16-v19.
Automatic Device Configuration (ADC)

- Supports v4.001 (and later) PowerFlex 755 drives
  - PowerFlex 753 drives will be supported with the future release of the 20-750-ENETR EtherNet/IP module
  - Our goal is to put ADC capability in all new drives (including PowerFlex 525)
  - No plans to provide support for other existing PF 4-Class and 7-Class drives

PowerFlex 753
PowerFlex 755
PowerFlex 525
and other new drives
*(planned)*
Automatic Device Configuration (ADC)
Compliments Stratix 6000/8000 & Firmware Supervisor

- Stratix switches can automatically assign the drive’s IP Address
  - 6000: “Dynamic IP Address Assignment by Port”
  - 8000: “DHCP persistence”

- Firmware Supervisor
  - Flash the drive and/or peripherals
  - Set Electronic Keying to “Exact Match” for the desired drive(s) / peripheral(s)
  - Use Controller Properties window to Load / Store the respective ControlFLASH files into controller memory
Automatic Device Configuration (ADC)

Example

Saves the End-User time / money by reducing down-time
Automatic Device Configuration (ADC)

Need to Know

- Logix “owns” the drive’s configuration
  - The use of other configuration tools, such as a HIM, DriveExplorer or DriveTools SP, must be restricted to monitor-only operation
  - Any changes to the drive’s configuration must be made in the RSLogix 5000 Add-On Profile (AOP)
“ADC” versus “ADR”

**ADR**
- **“Auto Device Replacement”**
- DeviceNet only
- Configuration resides in DeviceNet scanner

**ADC**
- **“Auto Device Configuration”**
- EtherNet/IP only
- Configuration resides in Logix controller

Although the configuration is stored in Logix, ADC is only supported over EtherNet/IP.
High Performance I/O in ControlLogix®
World Class DC I/O Solution

- Advanced Input / Output functionality built into the Digital modules:
  - **Inputs**: Event Task triggers with Input Pattern Matching / CIPSync Timestamps with 4μS accuracy
  - **Outputs**: Per-point Pulse Width Modulation / Per-point Scheduling within 10μS of desired time
  - Arguably the fastest field-side hardware with symmetrical On/Off performance in the industry
- More capable solution for multiple Counter applications
- Chassis Peer-Peer solution featuring screw to screw throughput of <100μS

1756-OB16IEF
Fast Peer Output

1756-LSC8xIB8I
8 Chnl Peer Counter

1756-IB16IF
Fast Peer Input

1756-OB16IEFS
Scheduled Output
What is Peer-to-Peer I/O Control?

Peer-to-Peer I/O Control is output actuation based on input data, independent of the programmable automation controller (PAC).

Throughput speeds are drastically reduced as outputs are turned on and off without intervention from the PAC.

Here’s how it works:

1. the input module is configured to “produce” data
2. the output module establishes a connection to the input module
3. the output module “listens” for the data the input module is producing
4. the output module energizes outputs when it “hears” the required parameters
Peer control allows outputs on the 1756-OB16IEF module to energize within 50 µS of input peer pre-conditions being met.

Example Use Cases

**Peer-to-Peer I/O Control**

*Simple Counter / Solenoid Valve Control*

Trigger an Event Based Task
Single Input OR a Combination of Inputs

*Time-Proportioned Control Applications*

Max # of Pulses Per Cycle Limit

**Glue Gun Control**

Variable Pulse train to Heating Element from PID Calculation

PID in PAC

Temp Feedback to Analog Input

Heated Vessel

Apply Glue Now Sensor

Glue
CompactLogix®
CompactLogix 5370 Programmable Automation Controllers

Expanding on the scalability of the Logix family of controllers

The CompactLogix 5370 PACs offer:

• A wider variety of options to provide best-fit alternatives for specific application requirements
• A strong motion solution when combined with Kinetix® 350 or Kinetix® 5500 for customers requiring high performance in a compact and affordable package
• Common and consistent features across all three platforms; scalability between the Logix families
CompactLogix 5370 PACs Hardware Overview

- Faster CPU to meet a wider variety of application requirements
  - ~2x Performance Improvement over CompactLogix L2x/L3X controller

- Integrated Motion support (ERM models) for up to 16 axis
  - Supports all motion instructions including Kinematics

- EtherNet/IP standard on all CompactLogix 5370 controllers
  - Dual Ethernet Port for topology flexibility (DLR)

- USB Type B port for improved connection speed from PC to controller

- Eliminate maintenance, transportation & environmental concerns with battery-less energy storage
CompactLogix 5370 PACs Hardware Overview

- **CompactLogix 5370 L1 Highlights:**
  - Utilizes 1734 Point Backplane and 1734 Point I/O for I/O expansion
  - 16 DI/16DO embedded on all L1ER controllers + embedded power supply

- **CompactLogix 5370 L2 Highlights:**
  - 40% smaller package size vs. L2x
  - 50% more I/O expansion capacity vs. L2x
  - 16DI/16DO or 16DI/16DI/4AI/2A/4HSC + embedded power supply
  - Enhanced Analog resolution + **NEW** universal analog capability

- **CompactLogix 5370 L3 Highlights:**
  - Support for up to 16 axis of Integrated Motion
  - Up to 3MB user available memory
  - Add up to 30 1769 I/O expansion modules
ControlLogix 5570 Family of controllers
ControlLogix & CompactLogix 55xx Hardware Overview

- New faster CPU
- Enhanced SDRAM
- USB 2.0 port
- Embedded SD Card
- 4-character display
- Energy Storage Module
  - No Battery

Higher Productivity
Less Downtime
Supports Green Initiatives
ControlLogix 557xS Integrated Safety

Safety Features

- Existing GuardLogix functionality
  - Safety Task 1756-L6xS functionality
  - All safety and safety application instructions
- All existing GuardLogix safety certifications
  - IEC 61508, IEC 62061, ISO 13849, etc.

Controller Options

- 1756-L71S = 2MB standard / 1M Safety
- 1756-L72S = 4MB standard / 2M Safety
- 1756-L73S = 8MB standard / 4M Safety
New Redundancy Module 1756-RM2

More Application Options & Faster Machine Throughput

Features and Benefits

- Higher Data Throughput Rates – Less Cross Loading time means less scan time impact
- 1 GB fiber speeds – **Faster Cross Load Speeds**
- Redundant Fiber Channels – No single point of Failure
- Enhanced Diagnostic Display (Used with RM Configuration tool) – Less time spent troubleshooting in the event of an issue

AFC 4CQ 2012
ControlLogix XT & ControlLogix SXT

1756-A7XT
- New higher density XT chassis (7-Slots)
- Same physical size as 1756-A10 and 1756-A5XT
- Use with existing Logix-XT
- No software update required

1756-L73XT / -L73SXT (8MB) Logix-XT controller
- Shares all characteristics of existing Logix-XT modules
- No software update required - Standard L7x firmware

Shipping Today!
The 1747-AENTR allows SLC IO racks to be controlled by Logix Controllers

- Must be located in the first slot of a SLC rack
  - Replaces the existing SLC processor
  - Replaces the existing RIO adaptor (1747-ASB) or CNET adaptor (1747-ACN15, -ACNR15) in remote racks
- Requires RSLogix 5000 v20 or greater
  - Utilizes the EDS AOP capability of v20
  - V20 supports up to 13 modules per rack
  - Recognizes all modules with an EDS
- Supports Ethernet DLR
  - Connects to new or existing Logix controller
  - Allows for ring, star and linear Ethernet topologies

V21 will now support up to 30 modules per AENTR

- Also requires AENTR FW Version 2.001
- AENTR’s are field flashable
RFID New Products Update

(Confidential – For Internal Use Only)
New RFID ...Easy Plug & Play Installation

- RFID Interface with dual port switch incl. DLR
- 1 or 2 RFID Channels
- 2 I/O’s for sensors

Tags
Data Carriers

Add-On-Profile for RSLogix5000 Software

CompactLogix
ControlLogix

EtherNet/IP

Read/Write Transceivers

VersaCube

Flat Pack

M18 / M30 Cylindrical

Switch

Visualization

Upload EDS files from the Armor Block
EtherNet/IP interface

- Embedded switch, w/ DLR
- 13.56 MHz
- ISO 15693 / ISO 18000-3 M1
- Read/write ICODE tags SL1, SL2
- 1 and 2 channel interface offered
- M12 connectors
- IP67
- Operating temperature: -25…+70°C
- Supply voltage: 24V DC
- Compatible with all transceivers

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<tr>
<td>56RF-IN-IPS12</td>
<td>1 RFID Channel E/IP Interface Block (1in/1out)</td>
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<td>56RF-IN-IPD22</td>
<td>2 RFID Channels E/IP Interface Block (1in/1out)</td>
</tr>
<tr>
<td>56RF-IN-IPD22A</td>
<td>2 RFID Channels E/IP Interface Block (2 in)</td>
</tr>
</tbody>
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RFID Transceivers

- 13.56 MHz
- ISO 15693 / ISO 18000-3 M1
- Read/write ICODE tags SL1, SL2
- M12 connector
- IP67
- Max. distance from E/IP interface is 300 ft
- Max sensing range (50mm Tag)
  - Rectangular: 168 mm
  - Square: 85 mm
  - M30: 60 mm
  - M18: 30 mm

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<td>56RF-TR-8090</td>
<td>Rectangle Transceiver</td>
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RFID Tags

- ICODE ISO 15693 Compliant
- EEPROM / FRAM Memory
- 64, 112, 128, 256, 2Kbyte read/write tags
- Read/write speeds up to 500 bytes/s
- Passive tags (no battery)
- Reliable performance in harsh environments
- Different style tags
  - Label, Smart card, Disc, Square
- High temperature tags
- Mount on metal tags
- High impact resistant tags
Performing a System Upgrade or Creating a New System

- Customer upgrades a system component. An example would be moving her system from V16 to V17

- What other devices must be upgraded?

What other devices in the system are affected?

Are other software upgrades needed?

Will this break any part of the system?
NEW Compatibility Management Web Site

Reduce Time to Market and Mitigate Risk

- http://www.rockwellautomation.com/compatibility/#/scenarios
  - Identifies compatibility of firmware versions
  - Easier to locate downloads
  - Easier to locate release notes or other companion documents.

- Multi-Product Compare
  I need to upgrade one or more products and I want to check compatibility between the new product(s) and the other product(s) in my system.

- Replace a Product
  I need to replace a product in my system, and I need to know whether it can be replaced with a different product version.

- Feature Support
  View the products related to a selected product or system feature.
Encompass Partner custom Add-On Profiles are installed with Logix Designer

- No separate step for installation – installed automatically at the same time as RA AOPs
- Encompass Partner AOPs show in the same Module Select Dialog as RA devices
- Easier for users – no need to download & install separate AOPs from Encompass Partner web sites
- Provides more exposure to Encompass Partner offerings

- Partner AOPs added for V21:
  - AMCI
  - FANUC CNC
  - FANUC Robotics
Questions?