Studio 5000 Logix Designer
VERSION 33

Rockwell Automation
expanding **human possibility**®

PUBLIC

Agenda

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2 Logix Designer version 33 overview

3 Hardware support

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5 Productivity enhancements

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Studio 5000 automation and design environment

Studio 5000® Architect™ — Simplified system design and data exchange

Studio 5000 Logix Designer® — Collaborative system programing and configuration

Studio 5000 View Designer® — Integrated HMI with Logix

Studio 5000® Application Code Manager — System reuse and project builds
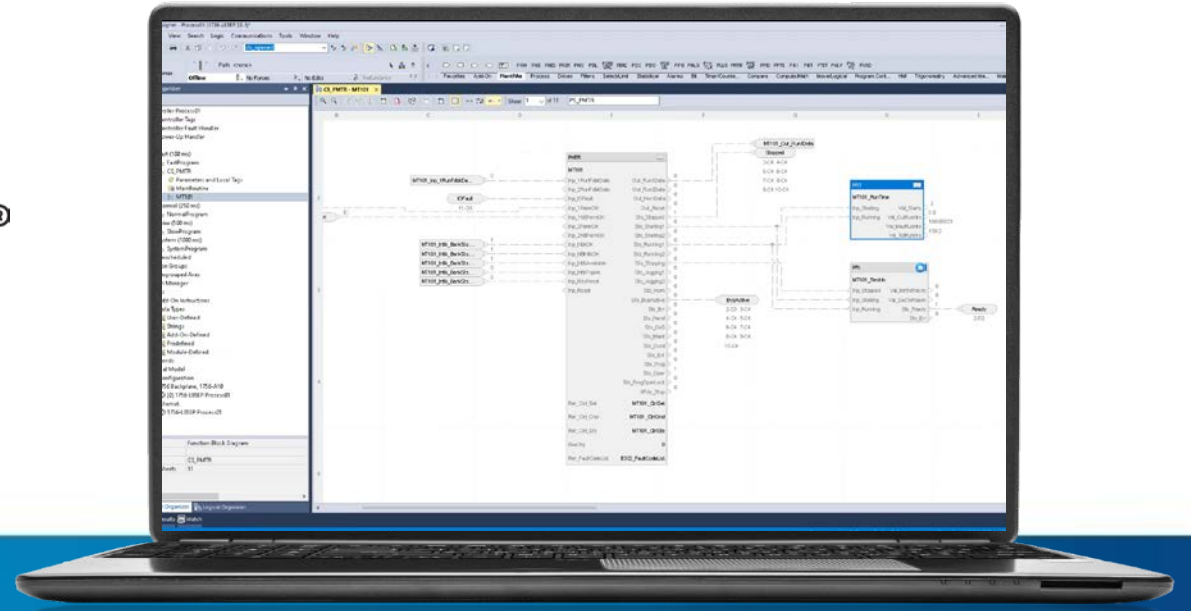
Studio 5000® Logix Emulate™ — Virtual design and operator training systems

Studio 5000® Simulation Interface™ — Logic connection to simulation models

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ONE PACKAGE

Whether you are working with standard, safety, motion control or more, Logix Designer is the single multi-discipline design environment for all Logix controllers.

INTEGRATED

Take advantage of an entire hardware and software portfolio where devices are created with Logix Designer in mind.

Start or expand your projects with ease with the proven value of our Integrated Architecture® offering.

HELPS PROTECT

Ensure that you have the right tools to help protect your application, intellectual property, and competitive advantage with scalable security and user permissions that span Logix Designer and other Rockwell Automation software.

Studio 5000 Logix Designer®

HARDWARE SUPPORT

- Support ControlLogix® 5580 controller redundant capability
- Process controllers
- No-stored energy controllers
- iTRAK® 5730

PROCESS APPLICATIONS

- Embedded process instructions
- Task modeling
- Instruction usage
- Highly integrated HART

PRODUCTIVITY ENHANCEMENTS

- Automatic diagnostics and data preserve download
- Default FactoryTalk® Linx communications
- Extended tag properties (AOIs/alarms)
- Display task period
- Enable/disable embedded webpage
- Version 32 feature expansion:
  - 64-bit data types
  - Function block functions

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Achieving high availability

Latest generation of ControlLogix hardware in redundant applications

Safeguard your operations and match your economic and performance requirements with ease. The combination of the ControlLogix® 5580 process controller and Studio 5000 Logix Designer version 33 software creates a frictionless user experience for process industries. Further reduce the time commitment and configuration steps previously associated with design environment projects. Rest assured that hardware and software supported in this release follow tested and trusted guidelines for the PlantPAx® distributed control system to deliver a characterized and consistent solution.

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The power of **ControlLogix 5580 and the redundant capability** in version 33

- Architecture compatibility
- Enhanced productivity
- Firmware simplification
- High performance
- Memory functionality
- Modernization
- Security capabilities
- Software capabilities

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Additional hardware support

Additional new hardware platforms are supported starting in version 33 of Logix Designer

iTRAK 5730

Our iTRAK solutions scale from the high payload, complex systems down to the new iTRAK 5730 small frame systems that enable small footprint and small pitch applications.

Additional Logix controllers

Work in hazardous locations with less than 200uJoules of energy discharge
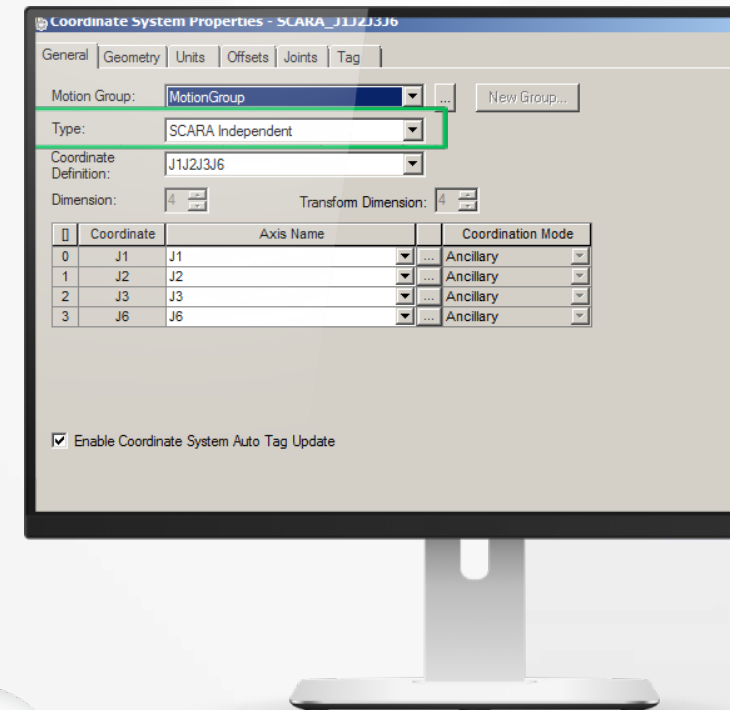

No stored energy

Maintain the same product standards at temperatures from -25°C to +70°C without fans or filters

Extreme temperature

SCARA robot control

High-performance Logix robot control that now includes 4-axis SCARA robot support.

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Process controllers in
CompactLogix and ControlLogix

Reduce deployment time and variability for process applications

> Leverage native features like embedded instructions and task modeling to minimize project design time
>
> Available in three ControlLogix catalogs and two CompactLogix™ catalogs

BENEFITS

- Out-of-the-box settings and instructions that follow PlantPAx guidelines
- Eight series Logix controller performance profile
- Intuitive workflows eliminate unnecessary rework, simplify design and deploy effort

Enhanced process capabilities

ControlLogix 5580 process controller and Logix Designer version 33

Meet the fast-changing specification demands of your customers simply and confidently with our latest hardware and software offerings. Start and end projects in compliance with PlantPAx guidelines with the new ControlLogix 5580 process controller and utilize the new capabilities of Logix Designer version 33 to simplify the design environment configuration process. With embedded process instructions, task modeling, instruction usage, and highly integrated HART, Logix Designer version 33 allows users to focus on what matters most.

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Plant PAx
Distributed Control System
5.0

Reduced footprint with optimized and embedded instruction set

Consistent delivery with pre-built configuration settings

Simplified workflows with controller alarming and automatic diagnostics

**Security focused** with IEC 62443

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Task model

Automatically create consistent task models in Studio 5000 Logix Designer

Start a project with out-of-the-box system periodic tasks

Tasks created with period, priority and names previously specified according to PlantPAx distributed control system guidance

BENEFITS

- Shorter time dedicated to project creation and layout
- Consistent project structure that aligns with PlantPAx distributed control system program guidelines
- More predictable performance estimates and planning

Process controller exclusive
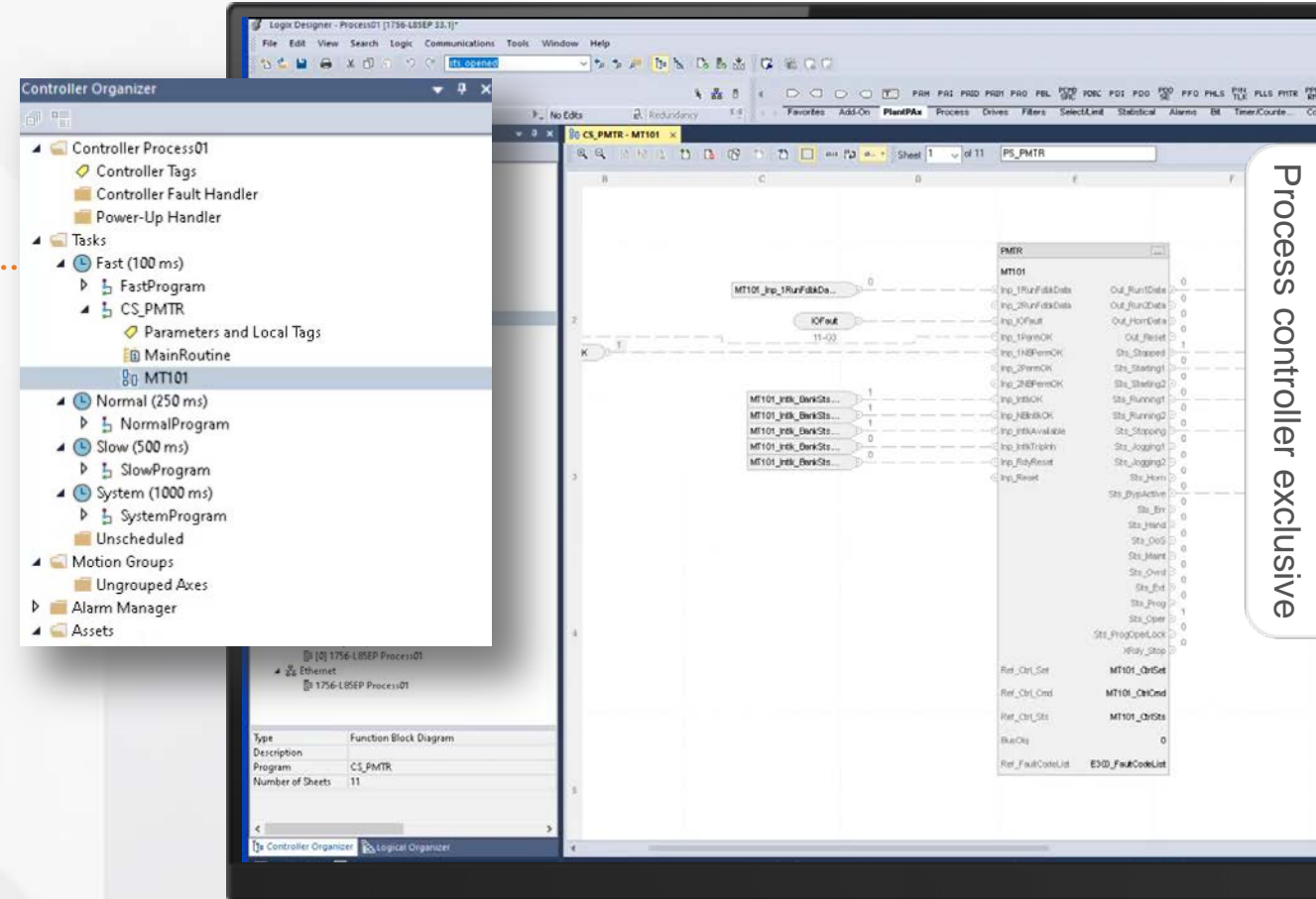
Instruction usage

See instruction usage per task for optimal task balancing and visibility

View a dashboard of each task and the instructions used

Use with embedded webpage to see CPU utilization and avoid task overlap

BENEFITS

- Consistent performance and visibility into task loading during project creation
- Easier identification of the number of control strategies

Process controller exclusive

Instruction Usage

☑ Hide unused instructions

Category	Instruction	Fast	Normal	Slow	System	Total
PlantPAx	PAI	7	0	0	0	
PlantPAx	PAO	3	0	0	0	
PlantPAx	PCMDSRC	0	2	10	0	
PlantPAx	PDI	4	0	0	0	
PlantPAx	PDOSE	1	0	0	0	
PlantPAx	PINTLK					
PlantPAx	PMTR					
PlantPAx	PPERM					
PlantPAx	PPID					
PlantPAx	PRI					
PlantPAx	PRT					
PlantPAx	PVLV					
PlantPAx	PVLVS					
PlantPAx	PVSD					
Process	DEDT					
Process	LDLG		3	0	0	
Total ⓘ		93	4	20	0	

Tasks
- Fast (100 ms)
- ▷ Normal (250 ms)
- Slow (500 ms)
- System (1000 ms)
- Unscheduled
- ▷ Motion Groups
- ▷ Alarm Manager

New Task...
Cut   Ctrl+X
Copy   Ctrl+C
Paste   Ctrl+V
Instruction Usage

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Process instructions

New instruction set added natively to the design environment

New process instructions available natively on the instruction pallet in Studio 5000 Logix Designer

Aligned with the PlantPAx 5.0 distributed control system

BENEFITS

- Reduced footprint (simplification, strings, alarms)
- Localization (extended tag properties)
- Logix tag-based alarms
- Consolidation of libraries (GEMS, PlantPAx distributed control system, RAMS)
- Studio 5000 Logix Designer faceplate configuration experience

Logix tag-based alarms

Reduced footprint

Localization

Native configuration

Process controller exclusive

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Process instructions

Native instructions minimize extra compliance work in validated industries as an off-the-shelf solution

OFF THE SHELF

- Instructions can be referenced as a standard offering without needing "add-ons"

- Developed using a standard documented process with quality plan

- Standardized naming conventions

- Documented functional requirements and test requirements

COMPLIANCE

- E-signatures on operator actions (FDA 21 CFR Part 11)

- Audit trails on operator actions (FDA 21 CFR Part 11)

Process controller exclusive

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Process instructions

Supporting PlantPAx 5.0

25 INSTRUCTIONS INCLUDED

Analog Fanout
Analog Input
Analog Output
Analog HART
Boolean Logic w/ Snapshot
Command Source
Deadband Controller
Discrete Input
Discrete Output
Dosing
Dual Sensor Analog In
New PID
High/Low Selector

Interlock
Lead/Lag/Standby Motor Group
Motor
Multi-Sensor Analog In
Permissive
Pres/temp Compensated Flow
Restart Inhibit
Runtime
Tank Strapping Table
Valve
Valve Statistics
Variable Speed Drive
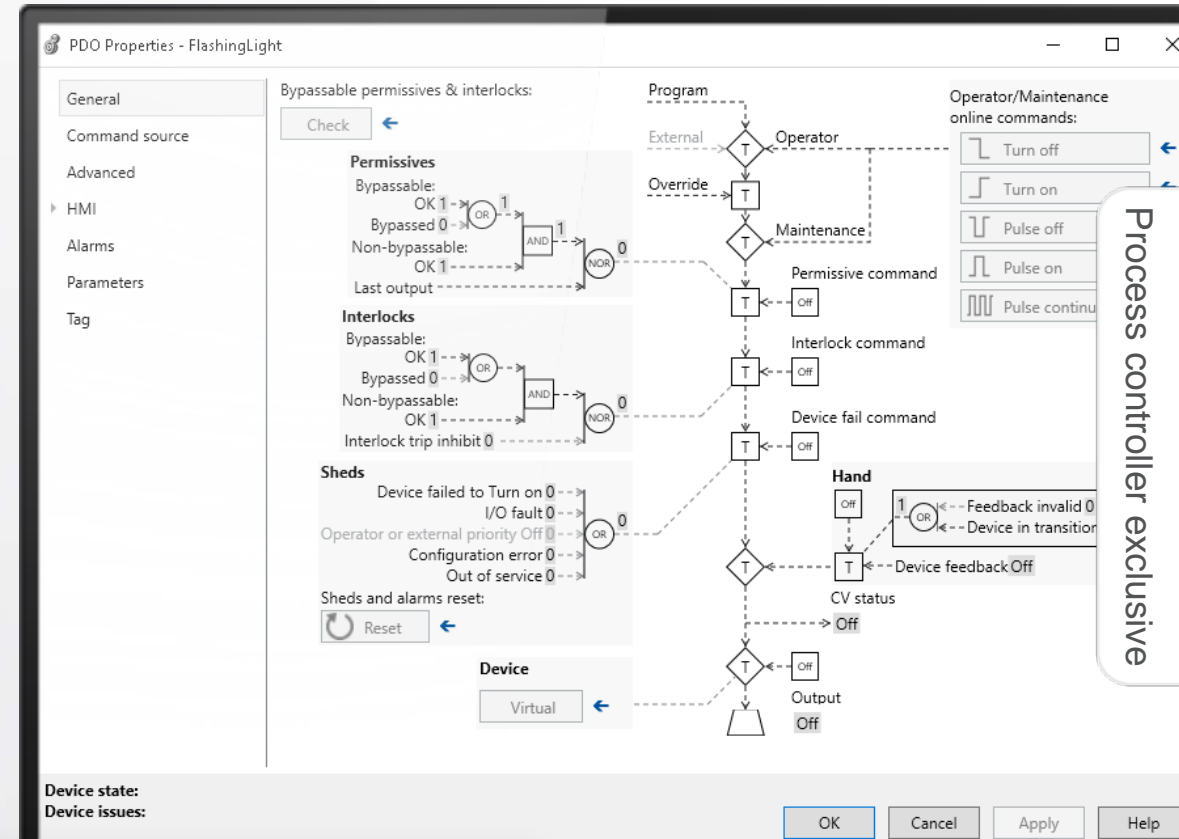
HART integration

HART integration enables smooth workflows with fewer software tools

Browse directly to HART devices in your I/O tree in Studio 5000 Logix Designer – similar to the EtherNet/IP devices process

Add a HART device per channel of your HART module directly to your I/O tree, which enables connection faults

Use dedicated instruction to configure HART module out-of-the box for PlantPAx 5.0

BENEFITS

- Less programming time spent in disparate tools and ability to add or replace HART devices online
- Familiar browsing method for HART devices native to Studio 5000 Logix Designer
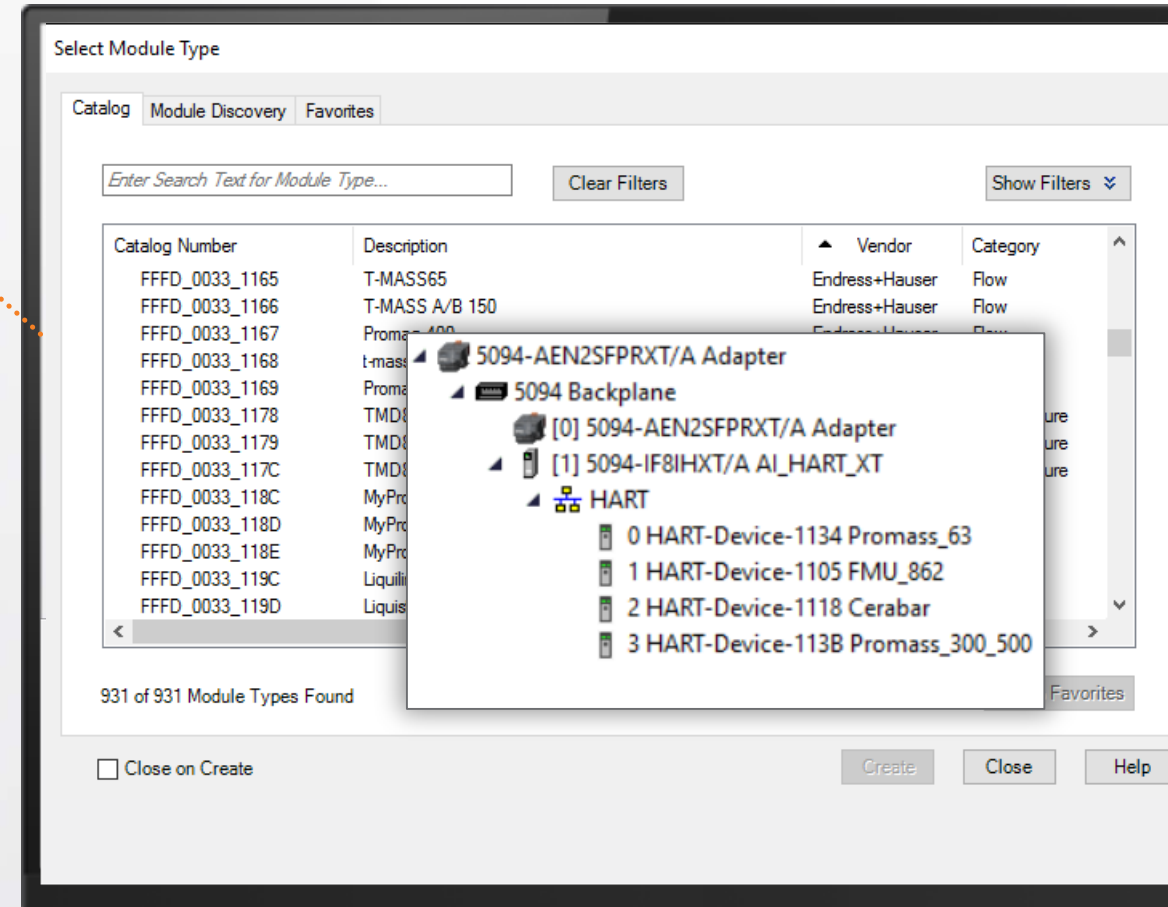
Increased productivity and expanded capabilities

Updates making a significant impact

These days, removing roadblocks to efficiency is more important than ever. Finding ways to get more done in less time seems to be the new normal; and, Logix Designer version 33 delivers the goods.

Helping to improve productivity and time to market is at the core of the Studio 5000 Logix Designer version 33 enhancements. In version 33, all users will experience greater efficiency and ease of configuring and programming projects.

And, if you work in a process industry, get ready for a whole new level of productivity. When used with the new ControlLogix and CompactLogix process controllers, you can deploy process projects with more speed and consistency than ever before.

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Add-On Instruction extended tag properties
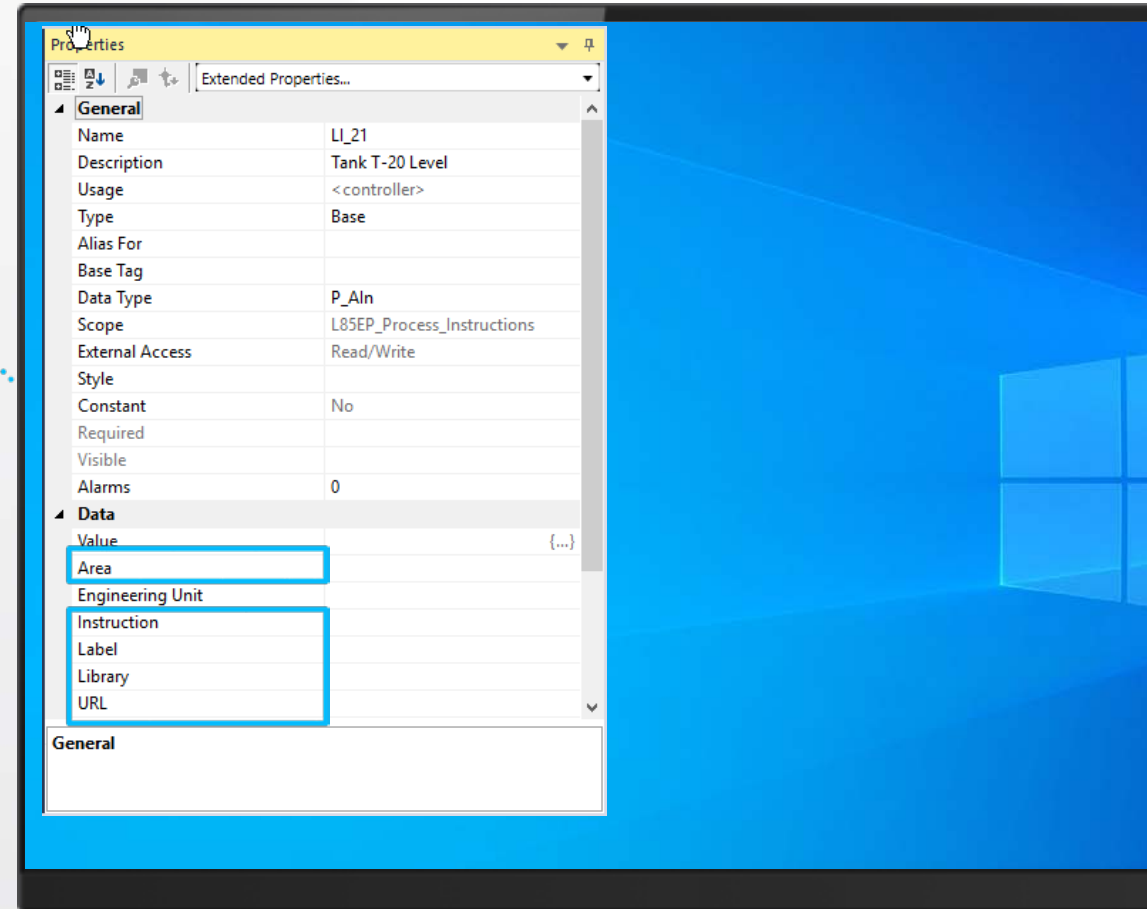
Add contextual data to Add-On Instructions

Access extended tag properties from Add-On Instruction that can be used to create HMI elements

Access layers of context data by referencing an instruction instance

Full Unicode support for non-ASCII character sets (Chinese, Korean)

BENEFITS

- Rapidly create HMI elements that use additional data without added programming
- Add contextual data without user code memory
- Localization

Add-On Instruction extended tag properties

Minimize work required for faceplate design while accessing more contextual data

| **Area** | Security area used by HMI for restricting access |
Instruction	Name of instruction
Label	Short name or description
Library	Identifies the library this instruction is associated with
URL	Web link to associated information

Extended tag properties in alarm messages

Using Logix tag-based alarms and FactoryTalk Alarms and Events

Access extended tag properties in the Alarm Message Editor of Logix tag-based alarms

Build up alarm messages using contextual data already available

BENEFITS

- Additional flexibility in building the alarm message
- Ensures consistent data throughout the control system
- Increases productivity due to data reuse
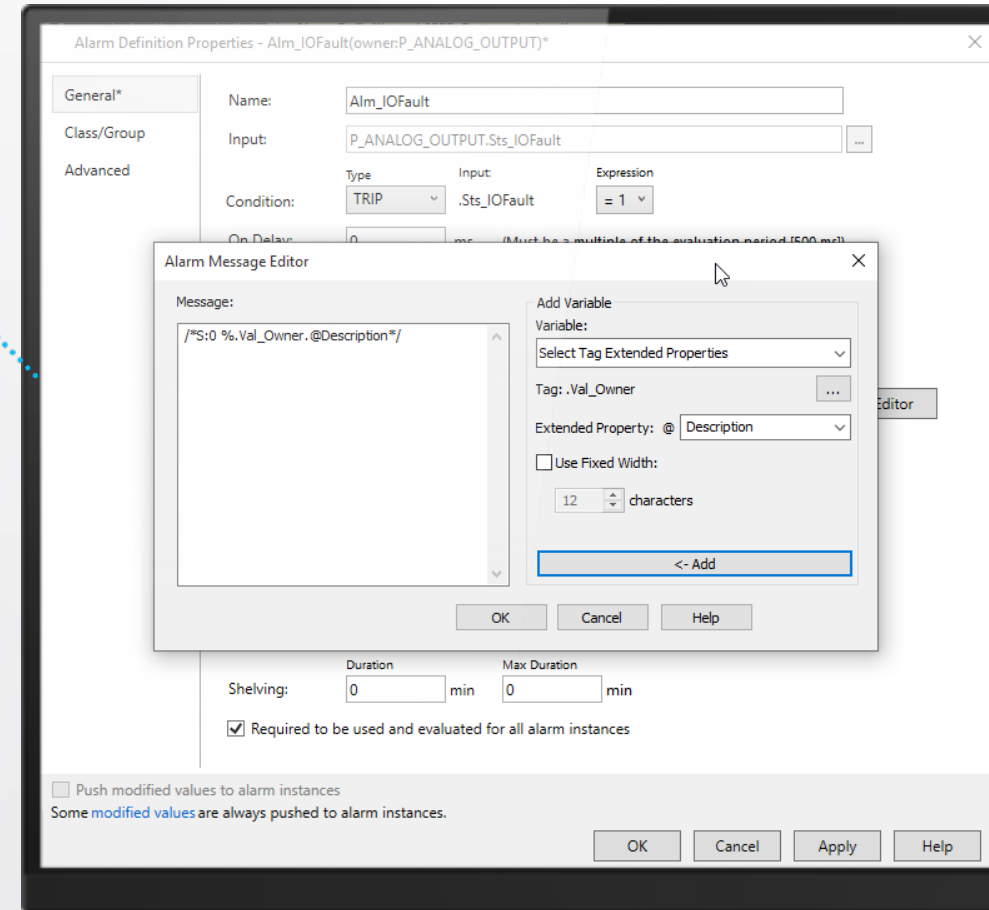
Automatic diagnostics

Access and display diagnostic information without additional programming

Diagnostics automatically created for all devices in IO tree

FactoryTalk® Alarms and Events provide both real time and historic diagnostic information

FactoryTalk® View Site Edition (SE) automatic diagnostics frame is automatically populated with device diagnostics events

BENEFITS

- No programming through alarms to get and display diagnostic information
- Provide contextual information from the Logix project with the diagnostic event
- Device diagnostics follow the lifecycle of the device
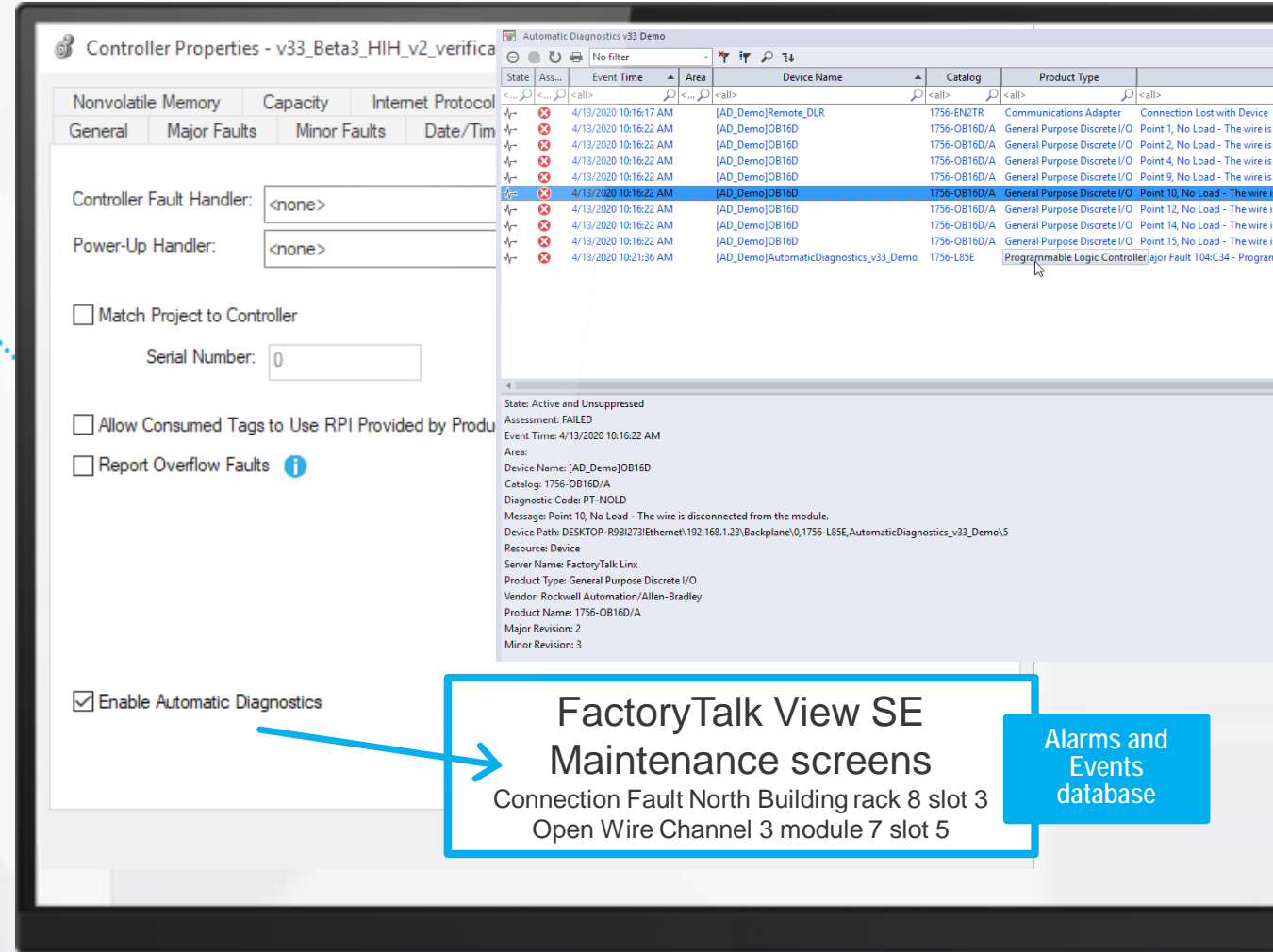
FactoryTalk View SE
Maintenance screens
Connection Fault North Building rack 8 slot 3
Open Wire Channel 3 module 7 slot 5

Alarms and Events database

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Function block functions

Optimized instructions

In version 32, the compare/compute/boolean logic functions were introduced for the CompactLogix 5380, 5480 and ControlLogix 5580 controllers
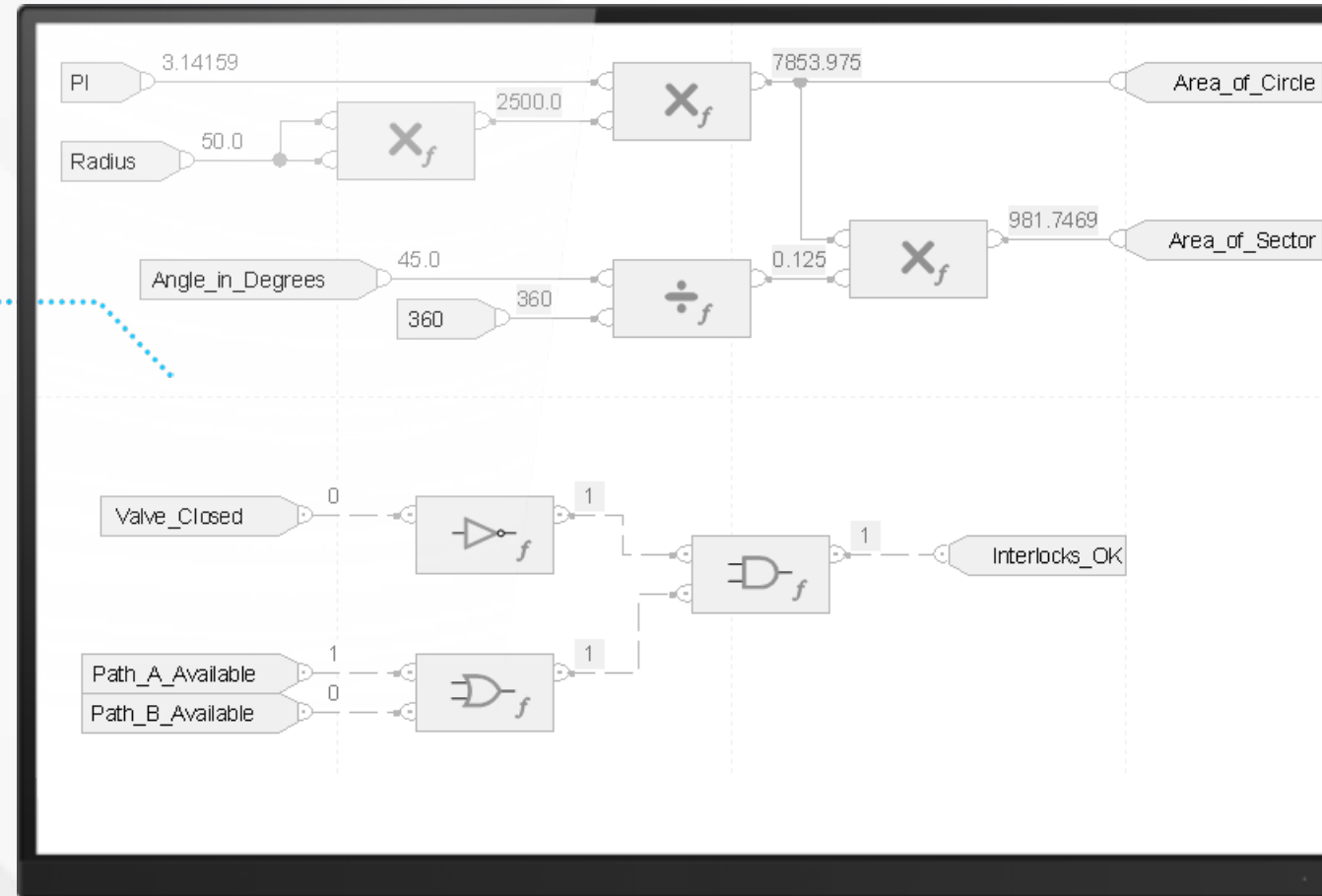
New in version 33
Move/logical/advanced math/trigonometric/data conversion functions are introduced

Visualize output for each function

BENEFITS

- Smaller visual footprint
- No backing tag
- More intuitive

64-bit data types

Full instruction support

In version 32, new data types were added for the the CompactLogix 5380, 5480 and ControlLogix 5580 controllers

New in version 33

Instruction support: equivalency 32...64-bit data types

Version 32		New in Version 33	
Boolean	BOOL	UNSIGNED SHORT INTEGER	USINT
Short integer	SINT	UNSIGNED DOUBLE INTEGER	UDINT
Integer	INT	UNSIGNED INTEGER	UINT
Double integer	DINT	UNSIGNED LONG INTEGER	ULINT
Real number	REAL	LONG REAL NUMBER	LREAL
		LONG INTEGER	LINT

BENEFITS

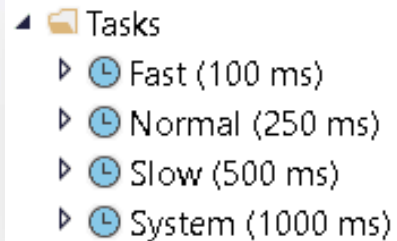Perform advanced mathematical calculations with greater precision
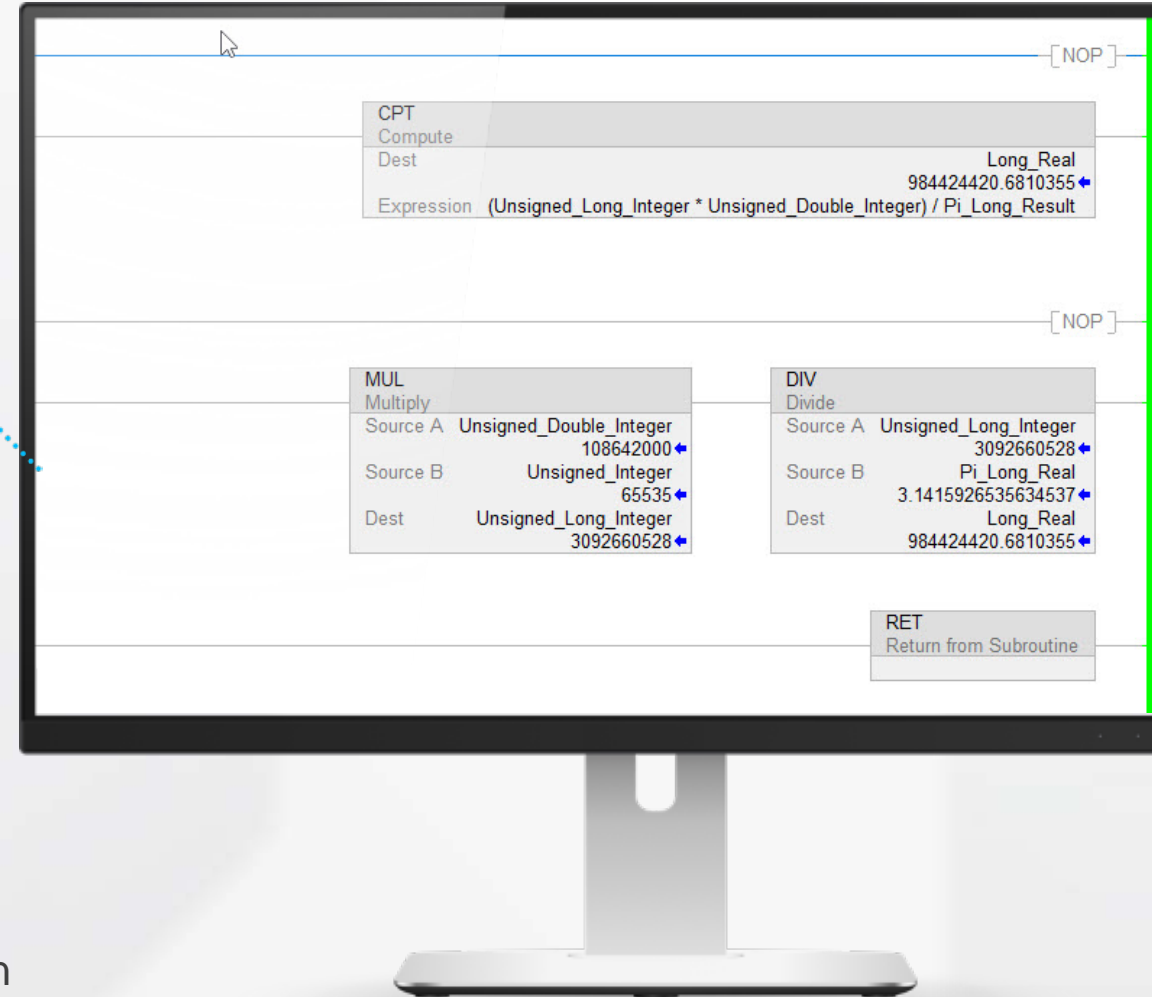
Productivity enhancements

Increase visibility and mitigate rework with new enhancements to everyday workflows

Task period display

Avoid confusion by showing the current period of each task next to its name.

Webpage configuration

Avoid programming webpage configuration by enabling/disabling controller webpages from within the controller properties.

Recent files

Stop searching and browsing for the file you just opened. View recent files from the File menu.

FactoryTalk Linx communications

Leverage the current and preferred communications platform out-of-the-box with FactoryTalk Linx communications enabled by default.
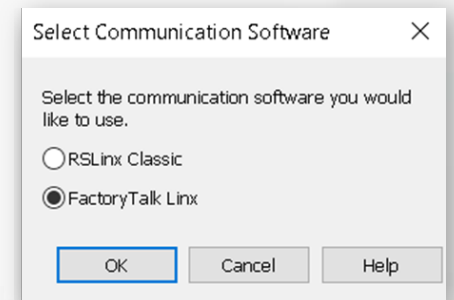
Productivity enhancements

Increase visibility and mitigate rework with new enhancements to everyday workflows

Online alarm sorting

Use the Alarm Manager that can now sort your alarm list while online. No longer requiring the user to go offline to sort and then back online.

Cross-reference alarm input

After navigating to the tag that is in alarm status, you can right-click (or hot key) and drive to input to see what is causing the alarm. Reduce time spent investigating while troubleshooting.

First destructive reference

Use hot keys (or right click) to navigate to the first destructive reference of a tag.

Next destructive reference

After navigating to first destructive reference use hot keys (or right click) to navigate through *all* destructive references of a tag.

Data Preserve Download (DPD)

Manage the download process by preserving controller tag values inside Studio 5000 Logix Designer

Enable controller's ability to preserve tag values during a download

Tag values can be saved to an XML file and later used to restore a base set of tag values

BENEFITS

- Tag values are preserved from changes in offline project leading to more consistent project management and more confident restore values
- Mitigate download time load without requiring tag values to be overwritten
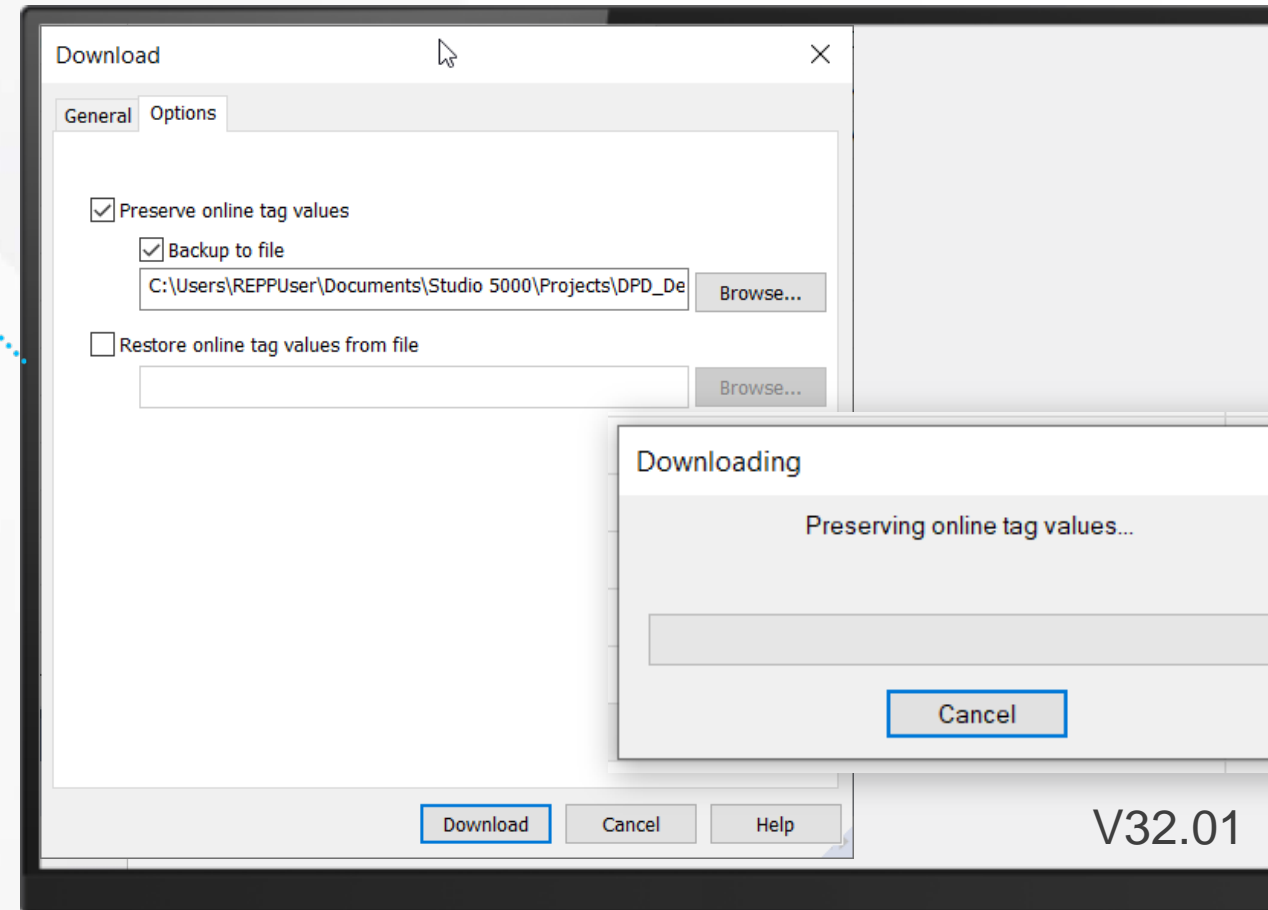
Process instructions notes

Helpful reminders and nuances

What about library 4.1?
Library 4.1 will remain available for non-process controller hardware.

Process controller only?
Yes, you will see the data types in non-process controllers version 33 and above, but the instructions will not be available. If you take a process controller project and morph the controller to a non-process controller, the instructions will not compile.

New string data types
String_16 and String_32. If they were used as a UDT, on conversion from a version 32 project, Logix will convert these to a pre-defined data type in version 33.

Alarms
Process instructions automatically create an alarm. Remember that you can have approximately 8,000 alarms in use. So while the database may have more than 8,000 alarms, only alarms in use are applied to the limit.

New process analog HART (PAH) instruction
Included in the process instructions is a new PAH instruction that allows the HART device's data structure to pass through the HART module directly to the instruction.

Automatic Diagnostics notes

Helpful reminders and nuances

Where can it be used?
Automatic Diagnostics (AD) are compatible with FactoryTalk View SE version 12 and above only.

Does it discover all devices?
Not necessarily. AD does not search a network for devices – it collects the data already available from devices that are AD-ready that you have in your IO tree.   All devices connected to the controller can report a loss of communication diagnostic.

What about historic diagnostic data?
Historic data is still found in the FactoryTalk Alarms and Events (FTAE) database. The data is subject to the same rules for historic data in FTAE.

What devices?
- ControlLogix 5x80 series controllers – CompactLogix and ControlLogix
- IO Platforms: 1756, 5094,1794
    note: 5069, 5380 in-chassis IO *not supported* today
- E300 Overload
- Coming soon – Stratix®, PowerFlex®

What about localization?
AD message text is localized at the device profile level while language switching is done at the HMI level.

How is it enabled?
AD-ready devices' profiles enable AD by default. It is de-selectable if desired. AD can also be disabled at the controller level.

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Highly Integrated HART (HIH) notes

Helpful reminders and nuances

What modules?

Today, only 5094 HART Modules have HIH.

Where is this available?

HIH is available starting in version 32.02 of Logix Designer. Version 32.02 and above supports HIH and version 33 will be the first major version with HIH available at launch.

Limitation

Logix Designer does not host the DTM in the software. FieldCare is still required to access DTM's. We do not have confirmed plans for DTM hosting in a specific version release right now.

Remember

One HART device available per channel. There are no restrictions on the types or manufacturers of devices, but a 5094 HART module is required.

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Instruction usage report notes

Helpful reminders and nuances

What instructions are shown?

All PlantPAx (new embedded instructions) as well as process palette instructions. Additional instructions can be added to show as well.

What is shown?

Only the number of each instruction tracked as it is used per task. It does not show any analytics or task balancing guidance.

Remember

If a routine is source protected, the task usage will ***not*** display. This is meant to avoid any permission conflicts or undesired visibility into a protected routine. A warning is shown when source protection is being applied.

Remember

Available in the process controller family only.

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Task model notes

Helpful reminders and nuances

Where is this available?

For process controllers, the PlantPAx task model is enabled by default. The setting is found in the controller properties in the new PlantPAx tab. "Use PlantPAx Task Model" will be checked automatically, but a user can disable if desired.

Staying in the guidelines

Task model rules are designed to keep uses within the PlantPAx guidelines. Disabling the task model will not change any settings in the project, but it will lift the restrictions that the task model enforces for the user to make deviations outside the PlantPAx guidelines.

If you re-enable the PlantPAx task model later, all tasks are moved to "Unscheduled." User must then distribute across the PlantPAx task model tasks as desired.

Rules of the task model

- Tasks cannot be renamed
- Only periodic tasks are used
- No safety tasks available today
- No adding of new tasks
- Periods can be adjusted, but relationships cannot change. Fast will always be fastest, highest priority, etc.

Migrating

New projects use the task model by default, but if you are migrating an existing project *into* a process controller, the task model will not be enabled by default.

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Miscellaneous notes

Helpful reminders and nuances

Logix tag-based alarms – extended properties
When navigating to a tag and the Alarm Message Editor, the dropdown of Extended Tag Properties (ETP) only shows the original ETP, but you can type in the new ETP you want from version 33 additions such as Area, Instruction, etc.

CompactLogix 5480 controller
This controller type was added in Logix Designer v32.01 which followed the initial version 32 release.

Controller webpage – controller properties
This is not available when using the ControlLogix 5580 redundant capability. The checkbox to enable this is removed when using with redundancy.

64-bit data types
These are not supported in motion instructions.

Function block (FB) functions
A PSA was released on FB functions that was resolved in version 32.02 and above.
- PN1086

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Miscellaneous notes

Helpful reminders and nuances

Extended Tag Properties

- ETP are properties associated to a tag – it cannot be written to in code.
- Only applies to Input and Output parameters.
- Can only be accessed by Rockwell products.
- Supports Unicode and language switching.

Online alarm sorting

Speed in sorting is subject to the number of alarms that you have. Users may see a different speed experience offline versus online. Offline sorting uses the data local on the personal computer (PC) while online sorting is calling for data from the PC.

Data preserve download (DPD)

There are exceptions to what instructions are supported by DPD. Instructions not supported are ignored by DPD and no tag data is stored for those instructions.

Users should reference the "Online Help" in Logix Designer to see the updated and complete list of supported instructions for DPD.

DPD is only available in the 5x80 platforms using Logix Designer v32.01 and greater.

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Logix Designer version 33 Software and Large Control

Feature	P Controller	5x80 Controllers	5x70 Controllers	ControlLogix 5580 Redundant Capability
L8 CLX Redundancy	Yes	Yes	-	-
Task Model	Yes	No	No	Yes
Instruction Usage	Yes	No	No	Yes
Embedded Process Instructions	Yes	No	No	Yes
Highly Integrated HART	Yes	Yes	No	Yes
Extended Tag Properties	Yes	Yes	Yes – AOIs No – Logix Tag Based Alarms (l5x80 only)	Yes
Automatic Diagnostics	Yes	Yes	No	Yes
Function Block Functions	Yes	Yes	No	Yes
Extended Data Types	Yes	Yes	No	Yes
Task Period Display	Yes	Yes	Yes	Yes
Webpage Config	Yes	Yes	No	No
FTLinx Default Comms	Yes	Yes	Yes	Yes
Path of Recent Files	Yes	Yes	Yes	Yes
V33 Data Preserve Download	Yes	Yes	No	Yes
ICE2 NSE Controller	No	Yes	-	Yes
Online Alarm Sorting	Yes	Yes	No	Yes
Cross-reference Alarm Input	Yes	Yes	No	Yes
First Destructive Reference	Yes	Yes	Yes	Yes
Next Destructive Reference	Yes	Yes	Yes	Yes

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Additional resources

www.rockwellautomation.com

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expanding **human possibility**

Factory automation system design software

Studio 5000® design environment

Controllogix 5580 controllers

iTRAK Intelligent Track Systems

SCARA Robot Control

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