automation studio

Integrated Engineering Environment

Overview

Automation Studio is an “all-in-one” easy to use software that provides an open, productive and flexible engineering environment for the automation engineer or system integrator. It is the only required tool for Efacec automation products ranging from controllers and relays to gateway and HMI products.

It has been designed for the engineer working on simple one-man projects or for multiple distributed control system projects where cooperative teamwork is required.

All engineering activities from design, configuration and programming, through validation, testing and commissioning up to operation and maintenance are supported by the toolset, hence providing a single environment for all engineering roles during the entire system life-cycle.

It is based on modern engineering tool paradigms such as unified project system, single-click deployment, reconfigurable window layouts, copy/paste and drag/drop, wizards or visual designers.

Built for standardization and reuse through libraries, objects and templates, significant time savings are obtained by reducing configuration workload as well as testing and rework through improved quality output.

Extensively based on open standards such as IEC 61131-3, IEC 61850, COMTRADE or FTP, Automation Studio is an open tool that allows end-users to benefit from multi-vendor system integration without compromising engineering efficiency.

IEC 61131-3 flexible programming

IEC 61850 open design

Key Features

- Multiple Communication Options
- Distributed Automation According to IEC 61850
- IEC 61131-3 PLC Programming
- Built-in Control and Protection Functions
- Watchdog and Self-monitoring
- Web-based Interface
- Redundant and Hot Swappable Options
- Full-color HMI Option

Customer Benefits

- Single High-performing Platform
- Integrated Automation, Protection, Measurement and Recording
- Highly Adaptable
- Easy to Specify, Configure, Test and Maintain
- Flexible I/O Configurations
- IEC 61850 Process Bus Capable Architecture

Edition Overview

	automation studio designer	automation studio engineer	automation studio explorer
Testing, commissioning and operational support	•	•	•
Device and SCADA/HMI configuration and programming	•	•	
Team and system engineering	•		

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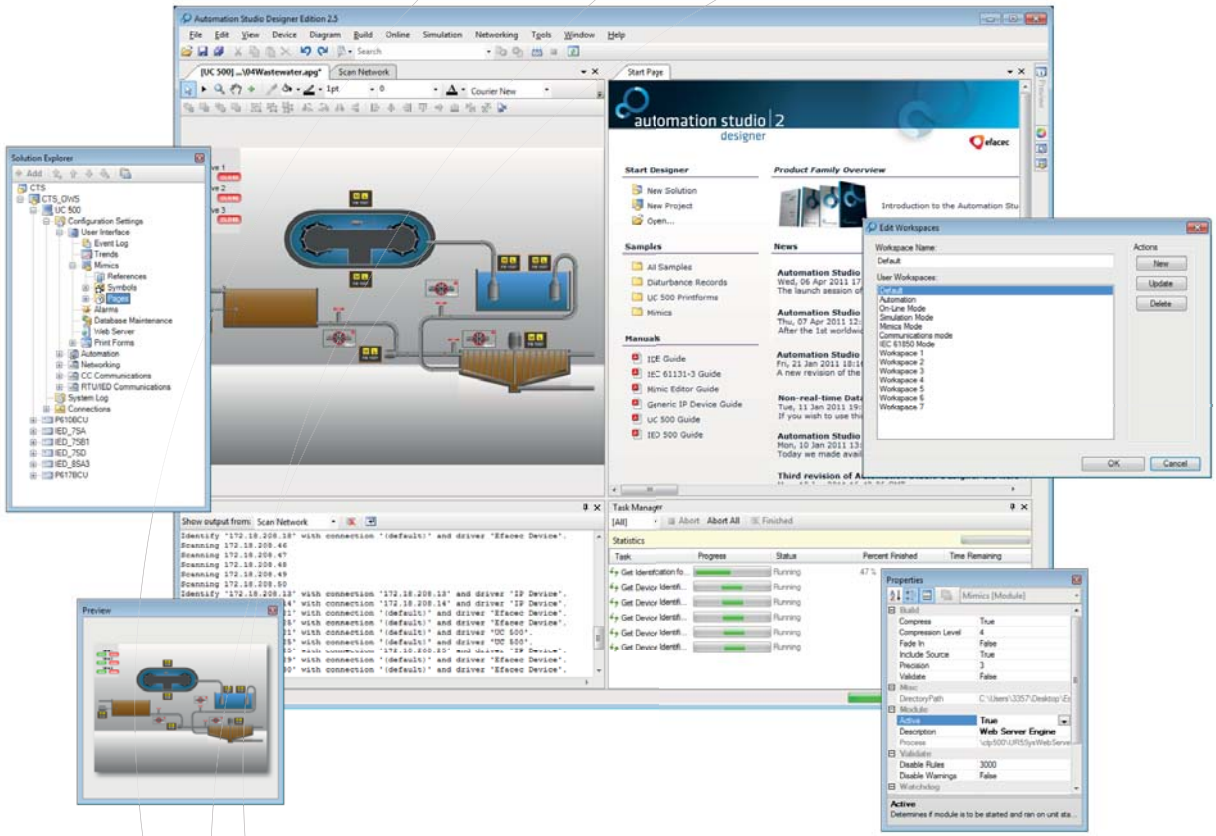
Integrated Engineering Environment



Unified Project System

All devices in each project can be organized in a system hierarchy, enabling integrated and easy to access actions such as build, device copy/paste, deployment or data retrieval, independently of device type. Multiple library and system projects can be accommodated in the engineering environment for cross-project editing.

Integrated Tools

Automation Studio integrates all engineering modules in the same environment without requiring additional or external tools for all required management, configuration, design, programming or analysis tasks.

Intuitive Environment

Extensive use of context-sensitive handling such as copy/paste, drag/drop, context menus or well-known commands and shortcuts provides unmatched ease of use.

Reconfigurable Window Layouts

The integrated windowing environment provides multiple content and supporting windows that can be laid out in auto-hide, floating or docked mode to best accommodate user computing environment, role and current task.

Simultaneous Editing

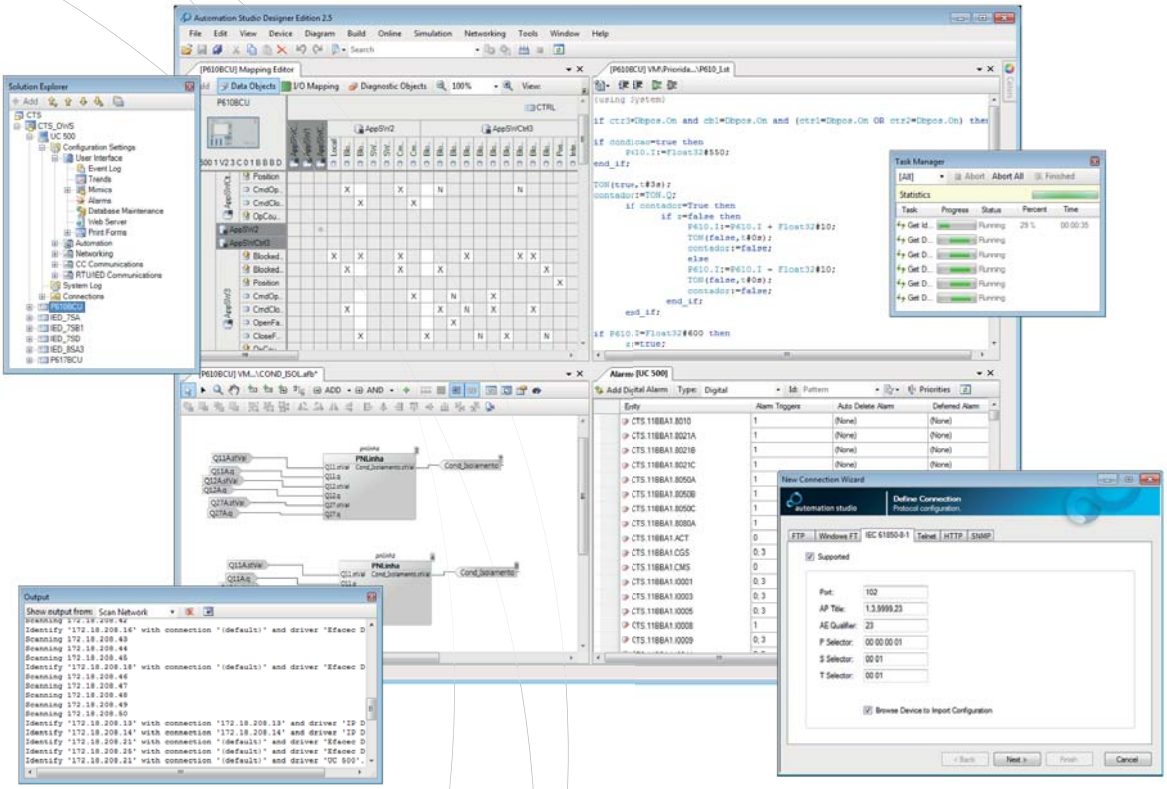
All configuration editors, programming windows or diagram designers can be simultaneously opened for one or more projects, device configurations or configuration elements. The user hence profits from the best handling options for the task at hand.

Common Windows

Common windows, such as the solution explorer, preview pad, property window or output window, are shared among the different editors and modes, providing a uniform object select-view-edit paradigm throughout the whole user experience. The output window provides extensive feedback for all complex actions such as compiling, validating, refactoring or device communication.

Background Tasks

Long-running tasks such as builds or device communication are performed in the background, hence allowing the user to continue working without waiting for completion. Task progress can be monitored in both the output window and task manager.



SCADA/HMI Database Configuration

Configuration is performed through intuitive hierarchical and grid editors which include productivity features such as parameter validation, object and list copy/paste or maintenance of reference coherence after edit operations.

IEC 61131-3 Editors and Compilers

PLC programs, protection schemes or other user-defined logic are programmed in IEC 61131-3 languages through text or diagram editors and compilers, seamlessly integrated in the engineering environment.

Use of the standard function block library together with user-defined blocks and libraries allows the user to engineer sophisticated automation solutions.

IED Configuration

Controllers, RTUs and relays are configured with the help of convenient signal matrix and diagram editors.

Built-in or user-defined functions are object-oriented which allows straightforward adoption of modern object-oriented engineering approaches.

Import and Export Tools

Integration with external tools such as spreadsheets, SCL-compliant tools or XML processors is possible with integrated import/export features.

Device Templates and Automation Objects

Pre-designed or user-defined device configuration templates allow easy configuration setup when standardized designs are applicable.

Configuration through pre-defined automation objects is also available for SCADA/HMI or gateway applications.

Wizards and Refactoring Tools

Wizards such as the SCL wizard, I/O wizard or refactoring tools automate common configuration or reconfiguration processes when template-based engineering is not applicable.

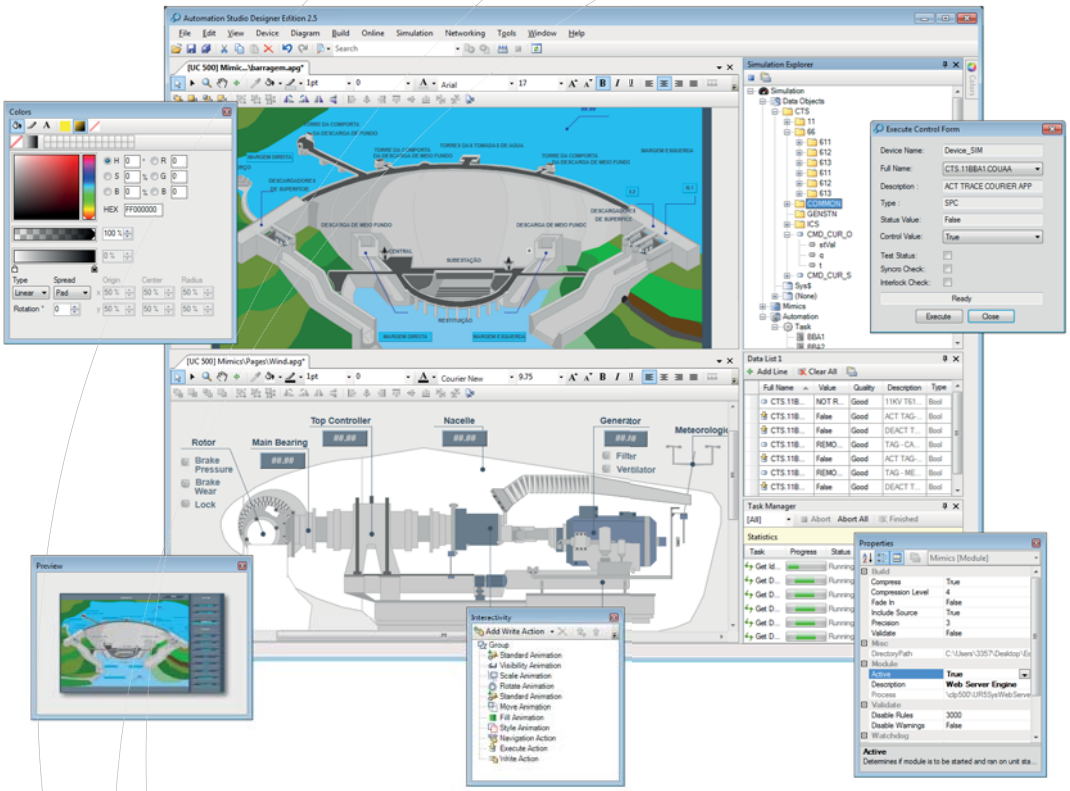
Validation and Comparison

Static validation of configuration parameters and configuration settings comparison allow early error detection and increases visibility for iterative engineering.

Revision and Version Control Server Integration

Features revision control, a centralized server, facilitate the integration of work of different members of a team and provide management / access to the complete history of all changes made.

Diagram Editing Tools, Simulation Mode



Mimic Displays

Device LCD, web-based GUI or full blown zoom-enabled desktop mimic displays are designed in the same editing environment. Displays may include 2D elements, paths, widgets, and bitmaps together with groups and layers.

Import

Standard SVG file format as well as several raster image formats can be imported into the designer to allow reuse of existing work or integration with third-party design tools.

Interactivity

Animations ranging from multi-states, style changes or 2D transforms can be attached to any graphic object, providing the flexibility to design the most demanding interactive applications.

Advanced 2D Designer

The mimic display designer and other visual editors are based on a zoom-enabled 2D vector graphics designer core sharing the modern set of 2D operations, commands and shortcuts as common design tools.

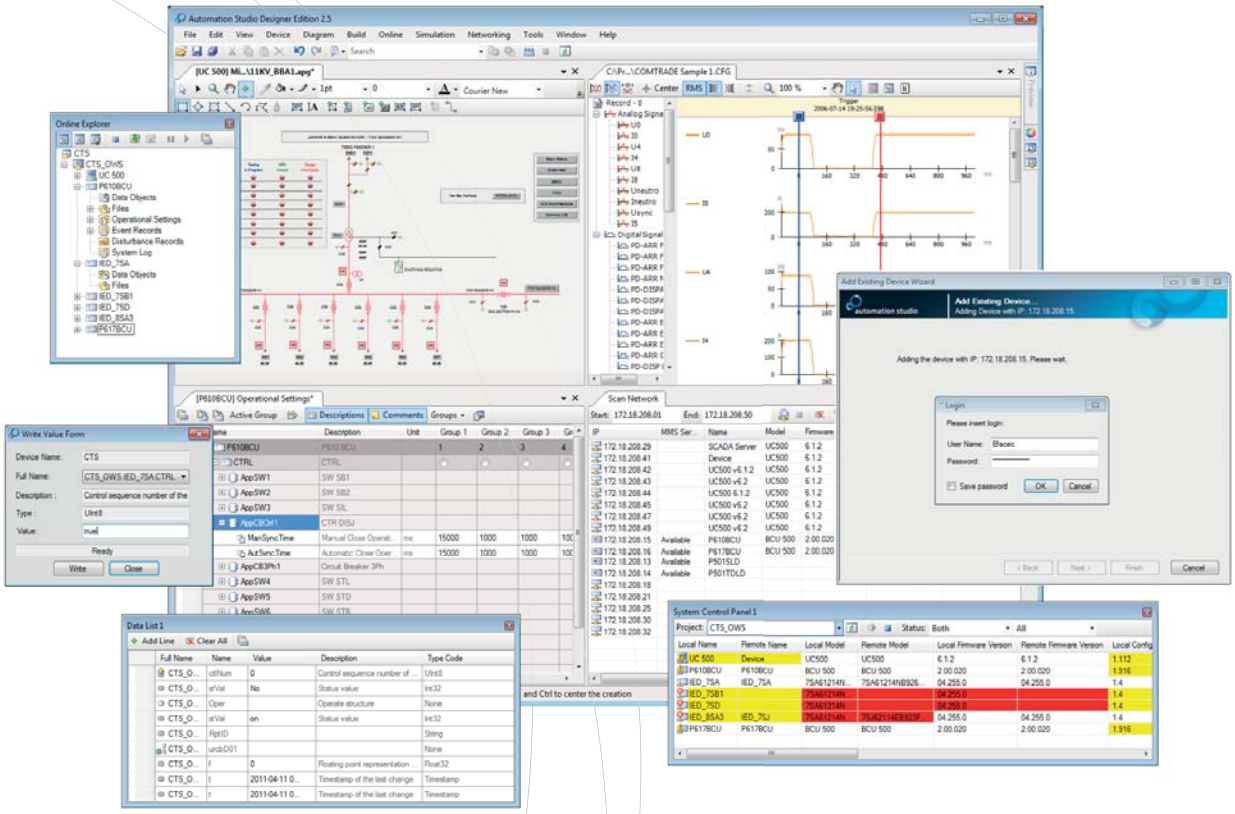
Symbols

Libraries featuring compound symbols that may accommodate any interactivity element, including other symbols, together with data mapping rules allow unprecedented productivity. Designing sophisticated process displays by object drag/drop with automatic data mapping increases productivity and massively reduces errors.

Simulation Mode

To validate individual mimic pages, symbols, IEC 61131-3 code blocks or full device applications including user code and GUI, Automation Studio includes a built-in fully interactive simulation environment that can be activated on a single click.

Online Management Tools, Analysis Tools



Device Actions

Operations such as adding live devices to projects, deploying or extracting configuration settings, managing operational settings and modes or extracting records are available on a single click.

Network Scanner and Commands

Network discovery and auto-identification is available together with common networking commands such as ping or web-views that are readily integrated in the environment.

System Control Panel

To facilitate system management the system control panel allows multiple simultaneous device actions to be initiated as well as immediate identification of configuration mismatches between the actual system and the current project.

Automatic Record Retrieval

For operational or testing purposes automated record or data extraction can also be enabled from the toolset.

Online Mode

For validating, testing or commissioning the toolset also provides an online mode where all status variables, files and controls available at each IED can be accessed without exiting the engineering environment.

Access to IP Devices

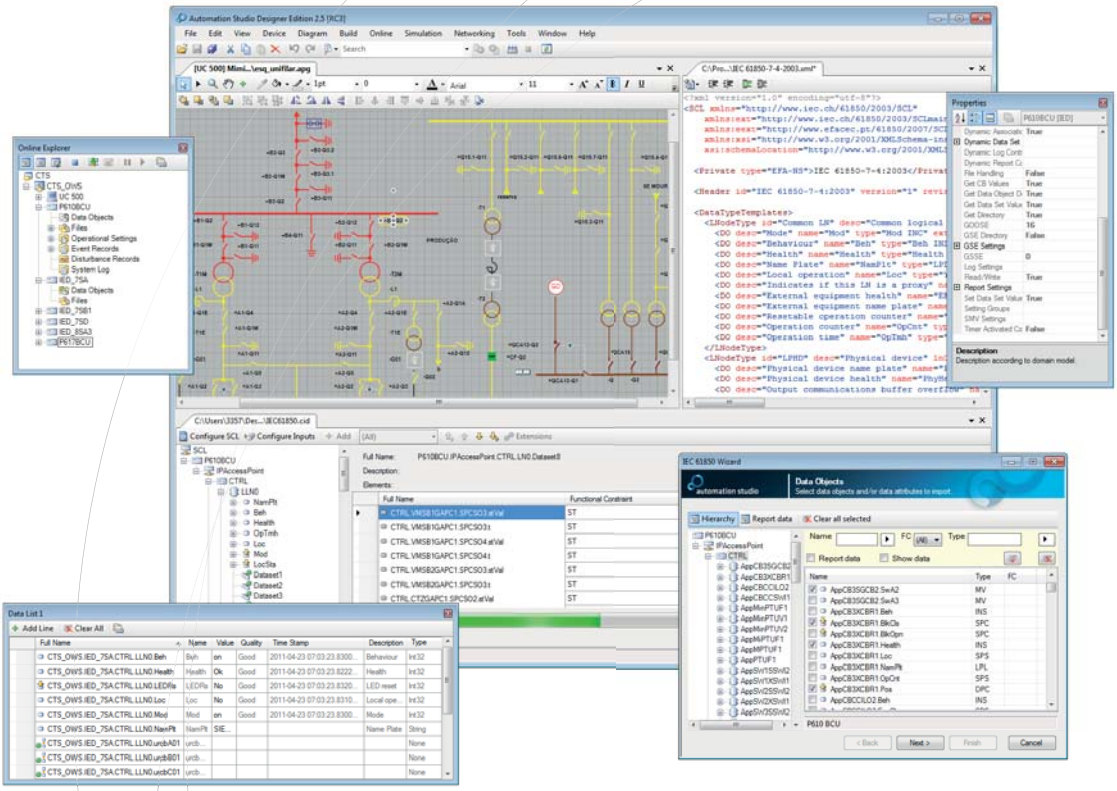
Devices such as router, switches or other IP-based equipment can also be integrated in system projects provided that open protocols such as FTP are available at the devices.

Operational Settings

Offline and online editing, extraction and updating of IED functional operational settings are available together with import and range validation features for operational purposes.

Analysis Tools

Sequence of events, COMTRADE records, fault reports, statistical and trend records are examples of data records for which specific analysis tools are available.



IEC 61850 Devices

Third-party IEC 61850 devices can be integrated in system projects through SCL files and accessed via IEC 61850 client/server services and GOOSE.

SCL Import/Export

Automation Studio supports import of IEC 61850 SCD, CID or ICD files for adding devices to projects. The SCD or CID export tool includes data type template restructuring for file size containment.

Communication Engineering

For communication engineering the toolset provides a GOOSE and Report Editor together with input mapping.

Create SCL from Online Device

If an SCL file is not available for a given device it can be constructed from the device using browsing services.

Validating

For iterative IEC 61850 system configurations the toolset provides a cross-device validator which ensures that version and input data are available and type consistent with receiving ends. All externally created SCL files can be statically validated according to the standard.

Device Browser

Fully integrated with the online mode, the IEC 61850 client component enables online access to any standard compliant device together with

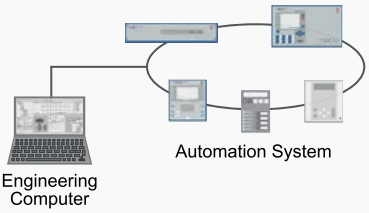
SCL Model Designer

For selected devices the user may define its own IEC 61850 object model according to existing domain models as well as specific customer models or extensions.

Deployment Alternatives

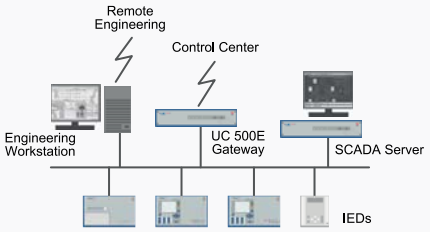
Standalone Application

Installed in each engineer's computer to be used offline or online.
Suitable for small teams or individual use.



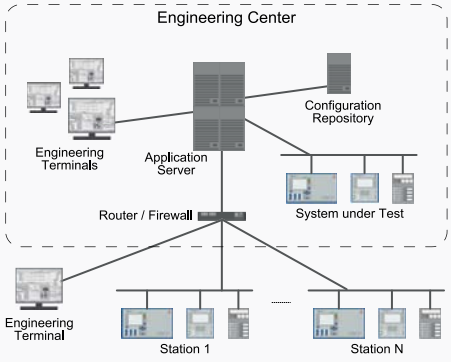
On-site Engineering Workstation

Installed at each station for local engineering and local storage of configuration files.
Suitable for operations and maintenance.



Engineering Center

Installed in a centralized location with system access for secure integrated engineering.
Suitable for larger system integration teams, maintenance organizations or utilities.
May also be deployed in conjunction with Windows Server Terminal Services.



System Requirements*

Recommended Minimum	1GB RAM; 200GB Disk, 15" Screen (1014x768), 1 CPU (1.8Ghz)
Recommended For High Performance	2GB RAM; 500GB Disk, 21" Dual-screen (1920x1200), 2 CPUs (2.8Ghz)

* Selection guideline overview, recommended configurations depend on user role and other usage requirements.

Example Applications

Edition Overview

	 automation studio designer	 automation studio engineer	 automation studio explorer
Supported Devices			
UC 500 Servers and HMI 500	●	●	
Efacec IED/RTU Series	●	●	
Other *	●	●	●
Configuration Settings			
Project and Build System	●	●	●
Library Projects	●	●	
Device Templates	Create and Use	Use	
Automation Objects	Create and Use	Use	
Validate Settings	●	●	
Excel Import/Export	●	●	
Compare Settings	●		
Configuration Wizards and Refactoring	●		
Revision Control System Integration	●		
Mimic Design			
Advanced 2D Designer	●	●	
Compound Symbols	Create and Use	Use	
SVG Import	●		
Scripting	●		
IEC 61131-3 Programming			
Code Editors and Compilers	●	●	
Standard Library	●	●	
Offline Simulation			
Database, User Code and Mimic Simulation	●		
IEC 61850 SCL			
SCL Import/Export	●	●	●
Create SCL from Online Devices	●	●	●
SCL Format Validator	●	●	●
GOOSE and Report Editor	●	●	●
Logical Node Designer	●		
SCD/Device Cross-Validator	●		
Operational Settings			
Settings Editor and Validator	●	●	●
Import/Export	●	●	●
Compare Settings	●	●	●
Online Device Monitoring, Testing and Debugging			
Monitoring and Control Execution	●	●	●
Online Device Management			
Parallel Driver Operations	●	●	●
Add Online Devices	●	●	●
Deploy/Extract Config. Settings	●	●	●
Manage Operational Settings	●	●	●
Extract Records	●	●	●
Manage Operational Modes	●	●	●
Network Scanner/Commands	●	●	●
Automatic Record Retrieval	●	●	
System Control Panel	●		
Record Analysis			
Disturbance/Fault Records	●	●	●
Statistical Data/Trends	●	●	●
SOE Records	●	●	●
System Logs	●	●	●

* Efacec or 3rd-party IEDs and IP Devices via IEC 61850, FTP, HTTP, COMTRADE, CSV or other standard interfaces.

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