

EXPERION AND CONTROL EDGE PLC: REDEFINING PLANT-WIDE INTEGRATION

The Honeywell Experion® platform when combined with ControlEdge™ PLC provides an integrated control solution for optimized operations and maintenance efficiencies.

Introduction

Since their introduction, PLCs have evolved from simple input-output controllers to complete processor-based systems that execute complex control algorithms. The demand for additional features, precision, and connectivity on the factory floor has driven an increasing need for PLC integration with the control system.

Honeywell's new PLC is part of the ControlEdge family, a next-generation family of controllers providing unprecedented connectivity through all levels of process and business operations.

ControlEdge PLC, when combined with Experion reduces integration costs for balance of plant through dramatically improved startup and commissioning time and decreased cyber risks with embedded secure communication. The result is a lower total cost of ownership and a more reliable and consistent plant-wide operation.

Honeywell can serve as your single vendor for all automation needs, including the DCS, PLC, SCADA, Field Device Manager for asset management, and a Panel PC—all with seamless integration and support.

This whitepaper describes key integration features of Experion and ControlEdge PLC that enables a more Standardized, Flexible, Connected and Cyber Secure solution experience.



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Integration Challenges due to Aging PLCs



Your challenge

“Connect the PLC to my control system... with less effort”

“Integrate my control system with PLC over a Secure interface”

“Operate from the equipment or the control room... more easily without learning different sub-systems”

Our solution

IIoT ready controller with integration time reduced to minutes

Fully integrated Cyber-Security across all levels

Consistent Experion HMI for field and control room operations

For any plant, lack of modern age PLCs and robust connectivity infrastructure leads to various issues which accumulate and result in a high cost of ownership of systems. These issues include

- High maintenance cost due to complex/ loose integration of systems, interoperability issues
- No single point of ownership leading to higher troubleshooting time/cost
- Project schedule impact due to lesser adaptability to last minute project changes
- Poor connectivity leading to delayed service and downtime
- Higher risk to plant safety and availability due to cyber security risks
- Complex operator workflow and decision making due to lack of standard HMI solution across control room and field

ControlEdge PLC, a modern age controller supporting Honeywell’s IIoT-ready initiative along with the proven Experion HMI solution provides an integrated and standard solution across the plant. This provides an easy to use, lean, and flexible engineering environment for improved startup, commissioning and change management.

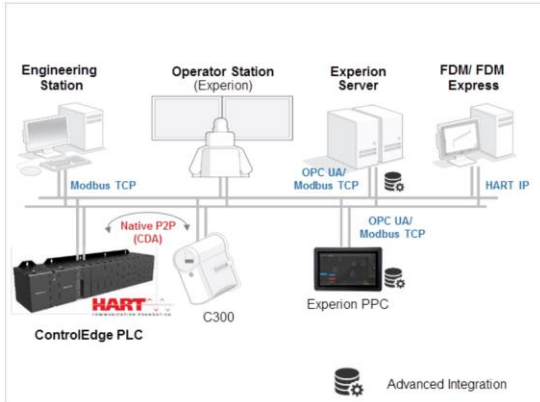
Designed to work with any SCADA system and a variety of interfaces, ControlEdge PLC unlocks a superior solution experience when used with Experion DCS/SCADA and Experion Panel PC over OPC UA. This integration provides an unprecedented connectivity through all levels of process and business for optimized operations and maintenance efficiencies.

The Industrial Ethernet enabled connectivity through OPC UA enables a dedicated data flow model which simplifies the integration architecture and reduces maintenance overheads. It also reduces the need for specialized hardware such as network gears, communication gateways etc. Also, the equipment serviceability and performance monitoring is improved through use of optional features like OEM cloud connectivity. Such improved connectivity comes with robust cyber security as well. Features like Secure boot, built-in firewall, and ISA 99 ready modelling helps reduce system vulnerabilities to cyber threats.

Fast and Lean Integration

Experion systems take the controller integration paradigm to the next level with the Honeywell ControlEdge PLC integrated over the OPC UA interface.

Enhanced ControlEdge PLC and Experion integration over an OPC UA interface offers pre-built PLC diagnostics in the Experion system, an integrated alarm summary for C300 controller and PLC, and integrated history, trend and reporting - resulting in fast and easy integration with significant cost savings and ease of plant operations.



ControlEdge PLC, Experion and Experion PPC Integration

This integration is fast and lean where the PLC configuration tool can be directly launched from the Experion engineering environment - either from the local HMI panel or from the control room desktop station. This provides seamless operability and user flexibility for doing the initial PLC configuration, or making changes during the operation or maintenance.

The engineered ControlEdge PLC variables are automatically configured in the Experion point database which helps eliminate the need to build your PLC variables again in the control system. Also, the Experion Analog and Status points are generated directly from the PLC Program thereby avoiding double entry of configuration in PLC and the control system.

With ControlEdge PLC and Experion, the configuration of any new control strategy or performing updates on an existing one is performed in minutes, thanks to its automated and efficient workflow and use of OPC UA interface. The 'Named Variable Access' feature of OPC UA interface allows direct mapping of the critical point parameters of the ControlEdge PLC to the Experion control system. This improves the

configuration time by up to 90% compared to conventional interfaces like Modbus and DNP3. The savings in configuration time and effort significantly reduces plant startup time.

Consistent, Plant-wide HMI Integration

Honeywell's new Experion PPC (Panel PC) Touch panel provides a single HMI across PLC diagnostics and Experion system displays. The touch user interface allows you to operate from the equipment or from the control room easily without having to learn different systems. Along with a consistent Experion User Interface, the Experion PPC shares a common set of engineering and HMI tools with Experion HS including faceplates, system and detail displays, HMI web solution packs, and more. This ensures seamless plant-wide PLC configuration and consistent Experion integration at machine, process, and system level for better plant startup efficiencies.

Depending on the system availability needs, the Experion PPC can perform as a remote Experion HS station, as an Experion HS Panel server with station, or as a remote thin client connecting to the engineering station. These flexible operation modes help meet different architecture needs, greatly improves startup and commissioning time, and reduces data integration costs.



Experion Panel PC for Field Operations

An Experion based consistent operator view and control for local operations provides a seamless data exchange across the plant. A combination of ControlEdge PLC, Experion PPC and a central Experion DCS or SCADA system works on Common HMI tools extended across the plants and helps plants with:



Fast and Lean Integration

- Easy configuration and change management
- Seamless operability and ease of operations
- Avoiding traditional PLC point mapping complexities in control system



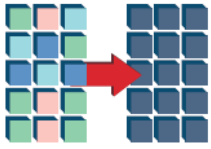
Plant-wide HMI Solution

- Honeywell's new Experion Panel PC for field operations
- Common HMI and tools
- Flexible operations, improved data flow and decision making
- Reduced engineering efforts, training and maintenance overheads



Asset Management

- Onboard HART UIO with HART-IP protocol based integration with Honeywell's FDM



Universal I/O

- Lean project execution
- Easily executed late assignment changes
- Remote configuration
- Reduced spares

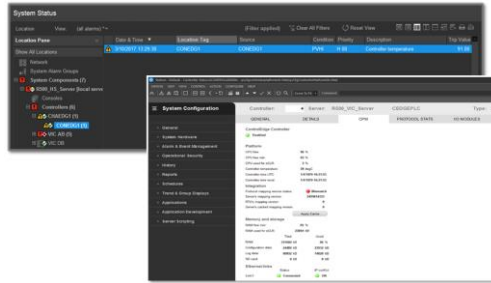


OPC UA Protocol

- Smooth device integration
- Easy configuration
- Cloud friendly open yet secure communication

- o Significantly lowered total cost of ownership with reduced engineering efforts, better design flexibility and optimized training and maintenance overheads
- o Improved operator interactions and the process workflow where the local operator can now interact with other related plant processes, ensuring a better emergency response
- o Improved lifecycle support by providing ease of system maintenance and change management

Experion HMIWeb Display Builder is the object-oriented tool for building and maintaining PLC HMI displays. It includes an object browser to easily navigate and make changes, a property window to enter and view parameters, and a structured list of shapes. Shapes can be dragged and dropped to quickly engineer new displays and modify existing ones.



Fast and Easy Prebuilt PLC Diagnostics

The Experion HMI incorporates features developed from extensive consideration of human factors by the Abnormal Situation Management consortium. These features are,

Integrated Cyber Security

- Security built into PLC and Experion
- Preserve safety and availability
- Industrial cyber security solutions and managed services

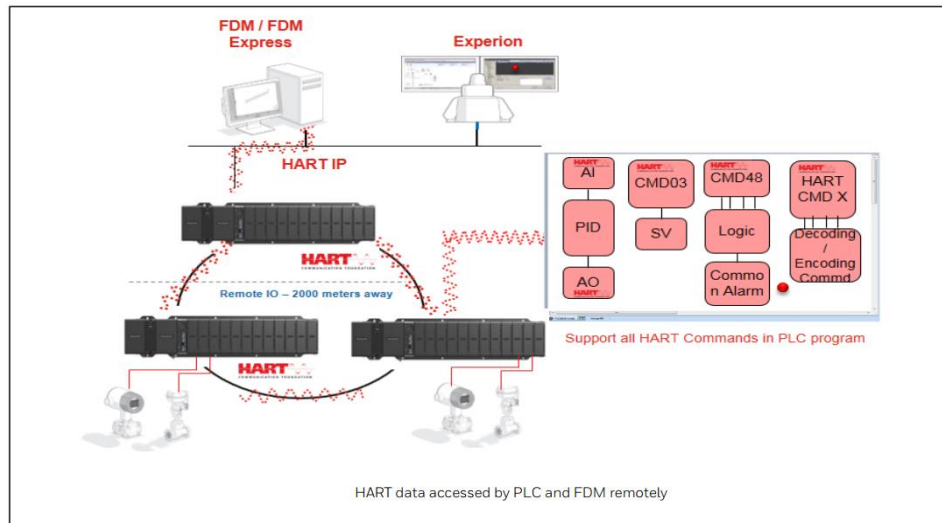


available both in standard system displays and user built displays using the HMIWeb Solution Pack library, and improve situational awareness of operators, minimize fatigue, and help in quick identification and response to abnormal situations.

Simplified Asset Management

ControlEdge PLC offers onboard HART support on any of 16 Universal IO channels and HART-IP protocol support. The Honeywell Field Device Manager (FDM) provides fast and accurate commissioning of HART field devices. Rapid maintenance decisions are afforded through simplified diagnostics and fewer site trips. The combination of FDM and HART-IP protocol offers design flexibility using the HART-IP open standard and investment protection through use of existing plant network infrastructure. Finally, FDM conveniently co-exists on the ControlEdge Builder workstation and is scalable to large sized projects.

The ControlEdge PLC and FDM can access both the HART device's digitally accurate secondary variable and its diagnostic data. The operator can use Honeywell's Field Device Manager to connect through to the HART device using HART IP.



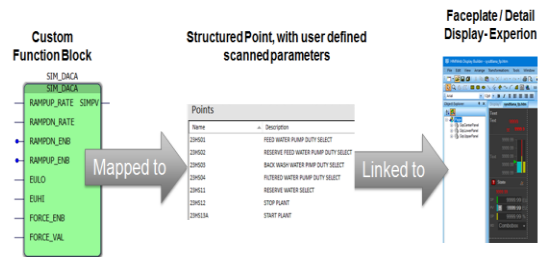
Greater Engineering Flexibility

Honeywell's automation experience and innovative LEAP methodology are the keys to increased flexibility – allowing industrial firms to optimize project execution. With LEAP, companies can realize significant capital savings on the total installed automation costs of a project, reduce rework costs, and minimize schedule delays.

Essential to the LEAP approach is the implementation of 16- channel Universal I/O modules (UIO) supporting HART signals, which offer flexibility in I/O type, eliminating the need for custom PLC hardware alignment with different I/O configurations and enabling simplified field device configuration and maintenance. Any field signal can be connected to any I/O channel. Deployment of UIO provides greater flexibility for late stage changes, such as configuration and design changes on a typical automation project.

The User Defined Scanned Parameters (UDSP) feature of Experion allows mapping structured data types and function blocks of the ControlEdge PLC under a single Experion IO point. It helps to reduce the cost of data ownership by accumulating all the related data at one place and making it available for operators for further analysis. These additional parameters can be set as dynamically scanned in order to optimize the communication network bandwidth utilization as necessary.

While generating Experion IO points directly from ControlEdge PLC program, the Experion engineering environment allows users to optionally deselect and override PLC IO tags and create own mapping for setting PLC point properties. Also, the comparison tools in Experion help track the changes made to an existing PLC program with user friendly options to regenerate and/or override. Together these features and tools provide engineering flexibilities for optimizing efforts and adjust to engineering changes.



Experion's UDSP Feature

Improved Connectivity

Built on a proven and capable platform, ControlEdge provides an IIoT-ready open platform that enables users to better leverage data across their assets. Use of the OPC UA protocol offers smooth integration to a broad range of instruments, equipment, and software from multiple vendors while providing built-in cyber security. Interoperable multi-level and multiplatform open communication provides flexible and scalable design, enabling standardization with less hardware.

An IIoT-ready platform enables more direct access to cloud- based applications for visualization and analytics. With direct access and reduced gateways, ControlEdge provides investment protection and easier maintenance, and therefore reduced cost and risk.

The Experion platform offers an Integrated alarm summary for C300 controller and PLC, and integrated history, trend and reporting - resulting in fast and easy integration with significant cost savings and ease of plant operations.

Native Peer to Peer communication between ControlEdge PLC and Experion C300 using CDA protocol eliminates protocol mapping errors and reduces integration time.



Lifecycle benefits through Honeywell

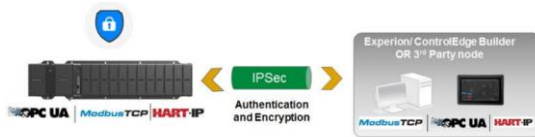
- Single vendor for DCS, PLC, SCADA, asset management and HMI panel
- Preserve safety and availability
- Easy upgrade paths
- Comprehensive Support and Services

Robust Cyber Security

Honeywell's embedded cyber security supports compliance higher availability, and reduces risk. ControlEdge is the first PLC that is ISASecure Level 2 certified. Features include secure boot to prevent uploading of unauthorized software, a built-in firewall to reduce exposure to denial-of-service attacks and message flooding, and a certified secure development lifecycle to ensure that security is built-in from the start.

In addition, PLC communication is secured using IPSec. This prevents man-in-the-middle attacks and protects ControlEdge PLC from unauthorized access. Encryption for critical data employs NSA Suite B recommended algorithms. This supports easy configuration and provides certificate-based authentication.

At the forefront of industrial safety and security, Honeywell offers Industrial Cyber Security Solutions and Managed Services that help protect the availability, safety, and reliability of industrial control systems and site operations. Honeywell improves business performance by reducing the risk of incidents, faults, and failures that disrupt normal operations. This means customers can have greater confidence in the security of their PLC installation.



PLC Communication with Experion- Secured with IPSec

Honeywell- Your Right Partner for Automation

With Honeywell technology, industrial sites have a flexible way to efficiently access data in a seamless manner, ensuring easy configuration and maintenance. Honeywell can serve as a single vendor for all automation needs, including the DCS, PLC, SCADA, asset management with Field Device Manager, and an HMI panel.

ControlEdge PLCs are tightly integrated with the Experion control system architecture. By partnering with an automation vendor offering both DCS and PLC solutions, users have a single point of contact from project inception to support, substantially reducing CAPEX and OPEX.

Choosing Honeywell provides distinct support advantages as well. Honeywell helps customers cost-effectively manage their control and safety infrastructure in the face of constantly evolving technology with extended lifecycle support, flexible and easy migration paths, and virtualized upgrade capabilities.

Honeywell has continually guarded customer investments by providing easy upgrade paths to the latest control system technology. Honeywell continues to evolve and innovate to bring significant advances in automation technology, while also providing a smooth migration path to today's technology when the time is right for you. We have a wealth of experience in migrating legacy control and safety systems, no matter who the manufacturer.

Every Modular Control System installation is backed by Honeywell's comprehensive one-year Warranty Support through our global Technical Assistance Centers (TAC). From installation and commissioning to start-up and ongoing operations, TAC has you covered with timely and expert local support. Factory trained and experienced TAC engineers provide telephone technical support, prompt answers to questions regarding procedures, documentation, operation, service, training, and system enhancements. TAC support also includes a review of operational procedures, software analysis, and diagnostic evaluations when required. For support services, ask for Total Care Services for Modular Systems. Extended support of installed assets has proven to be key to improved control system reliability, reduced downtime, increased plant availability, and lower operating costs.

For More Information

To learn more about how Honeywell Experion and ControlEdge can optimize your operations, visit our website www.honeywellprocess.com or contact your Honeywell account manager.

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