

DeltaV™ IO.Connect for Rockwell I/O

- Preserve your Rockwell I/O investment as you convert from Rockwell PLCs to a DeltaV™ system with the DeltaV IO.Connect solution
- Seamless connection with Rockwell EtherNet/IP I/O adapters via a DeltaV PK Controller's industrial Ethernet interfacing network
- Reduce project capital and downtime by maintaining Rockwell EtherNet/IP adapters, I/O modules, and field wiring
- Gain immediate benefit from the DeltaV system and begin integrating today's state of the art digital technologies like DeltaV PK Controller and DeltaV Live Operator Interface
- Low-risk, easy path to a smart digital plant

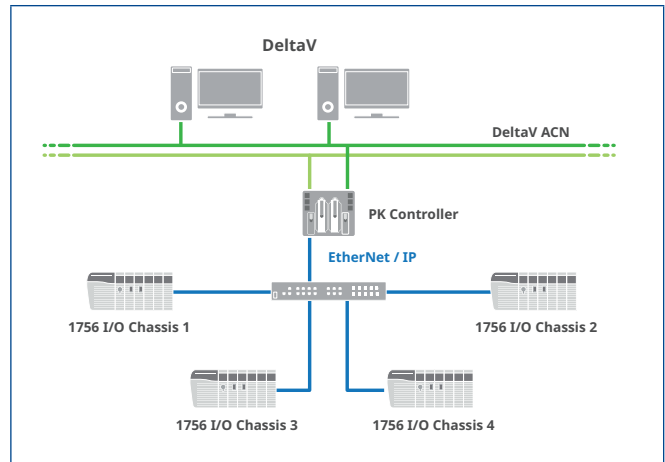


Figure 1. DeltaV™ IO.Connect protects your I/O investment as you convert from Rockwell PLCs to a DeltaV system.

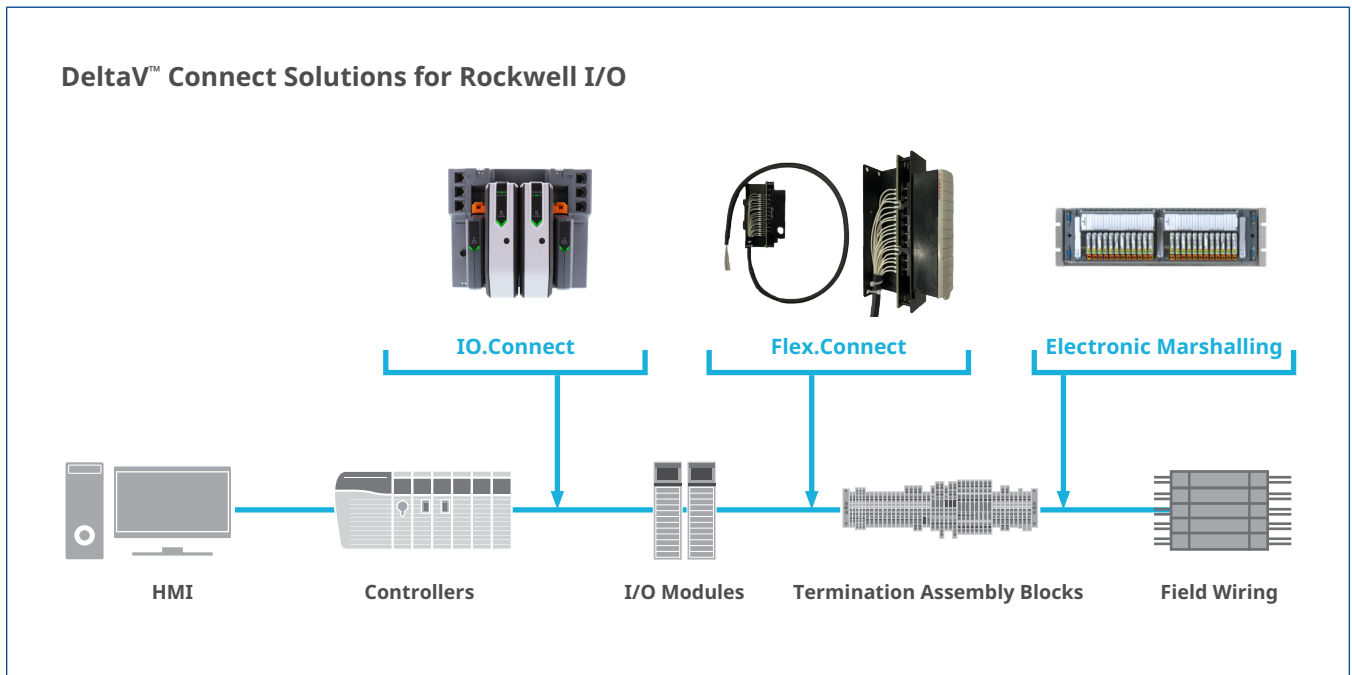


Figure 2. DeltaV IO.Connect for Rockwell I/O is part of the portfolio of Emerson's suite of Connect modernization solutions.

Introduction

If you are a Rockwell I/O user and find yourself wanting to modernize to a DeltaV system but are capital or downtime constrained, then DeltaV IO.Connect provides a pathway to easily modernize to a DeltaV system while preserving the existing legacy I/O and wiring.

A significant portion of the DCS installed cost lies in the I/O, the associated documentation, and the labor to de-terminate and rewire when it comes time to modernize the system. With DeltaV IO.Connect, it is now possible to preserve your I/O investment by keeping the I/O in place for now, while opportunistically transitioning to DeltaV I/O over time and with minimal budgetary and production impact.

The DeltaV IO.Connect solution replaces the existing Rockwell ControlLogix® family of controllers and connects directly to the POINT I/O™, FLEX™ I/O, and ControlLogix® I/O modules across an Ethernet network. A DeltaV PK Controller using EtherNet/IP now configures, communicates, and connects directly with Rockwell I/O modules.

The existing system analog and discrete I/O modules' data are modernized to DeltaV function blocks, and the control configuration from the Rockwell ControlLogix® PLCs is transitioned to DeltaV configuration using Emerson's DeltaV™ Revamp analysis and modernization software. This provides conversion tools from the legacy PLC program to a state-of-the-art DeltaV system.

With DeltaV installed, users can also take advantage of today's performance-enhancing technologies such as alarm management, embedded advanced control, self-diagnosing instrumentation, on-the-fly scalability, wireless communications, and plug-and-play business integration, without completely starting from scratch.

Benefits

Reduce business risks by minimizing process downtime. By preserving existing I/O and leaving wiring intact, this accelerates the new system transition by over 90%, enabling you to rapidly resume production. From DeltaV IO.Connect, cutover of I/O to native DeltaV I/O can be performed without changing the existing DeltaV control modules or operator interface HMI. Cutover to DeltaV I/O can be scheduled per staffing and fiscal availability in the future.

Save up to 40% of the Total Installed and Commissioned Cost vs a Full Rip and Replace.

Eliminating new device wiring saves money and reduces risk of errors. DeltaV IO.Connect utilizes the existing Rockwell Ethernet network and does not require any new/additional cabinets or space.

State-of-the-Art Operator Interface. Operators can monitor and control the DeltaV system data from the latest DeltaV Operator Stations once the IO.Connect solution is in place. Features include HTML5 graphics using DeltaV Live, event reporting, history collection, and enhanced alarming. Predefined faceplates are designed to ease the transition for operators.

Direct Transition to a Smart Digital Plant. DeltaV controllers and native I/O can be added at any time to take advantage of technologies such as predictive field device intelligence, wireless I/O and network communications, and integrated asset management. FOUNDATION Fieldbus, HART®, Profibus DP, PROFINET, DeviceNet, Modbus TCP/IP and EtherNet/IP can be easily integrated with the DeltaV system.

Guardian Support from Emerson. Support for DeltaV IO.Connect is available through the Emerson Guardian Support program. With DeltaV IO.Connect, no licensed Rockwell software is required to configure and maintain the Rockwell I/O. The IO.Connect solution will use existing licensing associated with third party interfacing protocols on the PK Controller.

Product Description

DeltaV IO.Connect is an interface solution that replaces the Rockwell ControlLogix™ PLC with a PK Controller and directly interfaces with the Rockwell I/O via the existing Ethernet network with standard Ethernet cables. With this solution, there is no part of the Rockwell PLC left remaining aside from the I/O.

The DeltaV PK Controller is the perfect platform for running the IO.Connect solution, even in the harshest environments. All aspects of the PK Controller have been engineered for reliability in harsh environments. With high quality industrial components, a rugged design, and fanless operation, the PK Controller is a highly reliable process automation controller with a long lifecycle.



Figure 3. DeltaV PK Controller.

A simplex DeltaV PK Controller which is on the DeltaV Area Control Network (ACN) connects via EtherNet/IP directly to the Rockwell I/O. This replaces on a 1:1 basis the existing Logix family of controllers. There is no loss of native I/O module A/D resolution.

I/O Conversion, System Blocks and Module Templates

The existing Rockwell PLC's analog and discrete I/O point data is converted to DeltaV function blocks, and the control configuration from the Rockwell PLCs is transitioned to DeltaV configuration using Emerson's Revamp configuration analysis and modernization software. This provides a ladder logic tool to help convert from the legacy Rockwell Logix PLC to a state-of-the-art DeltaV system.

HMI Replacement

All existing Rockwell native or third party HMIs are replaced with state-of-the-art DeltaV Live Operator Interface. Existing obsolete panel nodes and networks are eliminated.

Transition Architecture

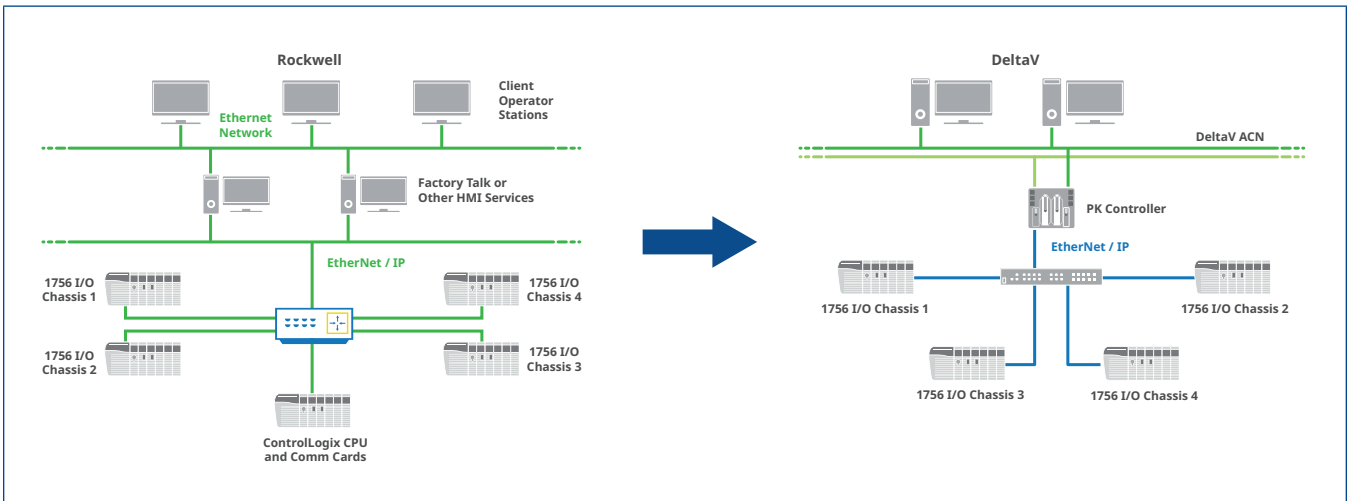


Figure 4. Once DeltaV IO.Connect is installed, the Rockwell PLCs and HMIs are all removed. Linear, Star and Device Level Ring (DLR) Topologies are supported.

Scalable, Flexible Architecture

There may be situations where you are constrained operationally and/or economically to only modernize a part of your plant or console from Rockwell PLCs to DeltaV, e.g. there are five PLCs and only one can be moved to DeltaV IO.Connect. DeltaV offers flexibility and scalability in these situations.

If you still have Rockwell PLC infrastructure – see Figure 3 - a single HMI solution is available by integrating DeltaV over the top of the PLCs, which links the PLCs with DeltaV in a hybrid operating scenario. Controller-to-PLC communication is achieved with UCMM Logix Tags communications with PK Controllers.

Our Modernization consultants will be happy to discuss these options with you in greater detail; please contact your Emerson sales representative to set up a consultation.

Sizing and Performance

The EtherNet/IP interface in the PK Controller is a Scanner Device (Client) that read and writes data from EtherNet/IP Adapter devices (Servers). DeltaV IO.Connect for Rockwell I/O utilizes only the Implicit messages (Class 1) EtherNet/IP interface messaging connection. IO.Connect for Rockwell I/O uses EtherNet/IP available on P01 of the PK Controller, thus employs a Physical Device Tag (PDT) and Logical Device Tag (LDT) communication strategy.

A PDT, which specifies the Adapter device's IP address, is required for each Rockwell I/O chassis, while an LDT is required for each underlying Rockwell I/O module within the same Rockwell chassis as the PDT adapter. Each PDT requires an Ethernet connected I/O license for each device connected in port P01. Then one Device Signal Tag (DST) will be consumed for every LDT that is configured.

When sizing a system, the Rockwell I/O module count (LDT) is kept within the PK Controller DST size limit (ie. 100, 300, 750, 1,500). However, in terms of IO.Connect performance, a direct connection to Rockwell hard-wired I/O modules share a similar load as DeltaV I/O. Thus, an LDT count of greater than 1,500 channels will require an additional PK Controller.

Modernizing to DeltaV I/O

Once you are ready to switch to DeltaV I/O, the update can occur without interruption at the module level. As the wiring is moved over, the requirement to make the switch would include:

- Configure the I/O on the system
- Complete the wiring requirement
- Download the I/O within DeltaV
- Update the parameter path to the online

Mounting Options

The DeltaV PK Controller can be mounted in several ways, at a location to suit the existing system layout. A few examples are noted below.

One option could be for the DeltaV PK Controller to be mounted in the Rockwell PLC location vacated by the PLC chassis in Figure 5 as shown below.

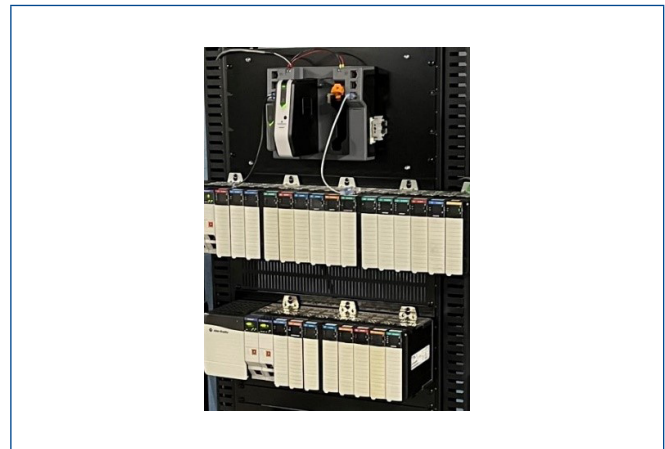


Figure 5. Rack Mounted I/O

An alternative mounting option would be to locate the PK Controller in new DeltaV cabinets remote of the PLC and I/O chassis.

Note that PLCs, HMIs, and other Rockwell infrastructure may be eliminated in these projects, providing additional space in the legacy cabinets.

Also please note that mounting options shown above are for illustration only. The specific mounting for your IO.Connect solution will be developed with your Emerson sales/proposal team.

Supported Rockwell I/O Families

DeltaV IO.Connect is currently compatible with the following Rockwell I/O families:

1756 ControlLogix® I/O
C200 Honeywell® PlantScape® ProcessLogix™ I/O
1794 FLEX™ I/O
S200 ABB SattLine® I/O
1734 POINT I/O™

***Note:** For 1771 PLC-5® and 1746 SLC™ 500 I/O please consider a DeltaV Flex.Connect wiring mounting alternative instead of communicating with and maintaining obsolete I/O.

Only Rockwell Ethernet adapters are supported by this interface. All ControlNet and DeviceNet bus cards should be replaced with their equivalent compatible Ethernet card.

System Compatibility

DeltaV IO.Connect is compatible with DeltaV release v15.FP2 or higher and is designed to work with the DeltaV PK Controller and DeltaV Live Operator Interface.

Specifications

Environmental

Environmental Specification	
Operating Temperature	-40°C up to +60°C
Storage Temperature	-40°C up to +85°C
Relative Humidity	5 to 95%, non-condensing
Protection Rating	IP20, NEMA 12
Airborne Contaminants	ISA-S71.04-1985 Airborne Contaminants Class G3 Conformal Coating
Shock (Normal Operating Conditions)	10g ½-sine wave for 11ms
Vibrations (Operative Limit)	1mm peak-to-peak from 5Hz to 13.2Hz, 0.7g from 13.2Hz to 150Hz

Dimensions

21.84cm X 18.84cm X 16.51cm

For additional information refer to the DeltaV PK Controller PDS.

Related Products

- **DeltaV PK Controller**
- **DeltaV ProfessionalPLUS Station Software Suite.**
Centralized operations, engineering, configuration database, and diagnostics on a DeltaV workstation.
- **DeltaV Application Station Software Suite.**
Integrate your DeltaV system with third party systems and applications on a DeltaV workstation. Includes a scalable DeltaV Continuous Historian and DeltaV OPC Data Access server.
- **DeltaV Operator Station Software Suite.**
Centralized operations and diagnostics on a DeltaV workstation.

Prerequisites

- DeltaV v15.FP2 or higher software.
- DeltaV PK Controller
- DeltaV ProfessionalPLUS PC and DeltaV ProfessionalPLUS software suite.

One or more DeltaV Operator Station PC(s) and DeltaV Operator Station software suite licenses, as required.

Ordering Information

Description	Model Number
DeltaV PK Controller or DeltaV PK Flex Controller	*
Ethernet connected I/O (EIOC and PK): XXX Physical Device (1 per Ethernet rack adapter)	VE4109SXXX
X-Year Product Support for One System up to XXXX DST	VE9041SXXXX

*Refer to the DeltaV PK Controller or DeltaV PK Flex Controller Product Data Sheet for ordering information.

EtherNet/IP is available in port P01. No license is required to enable this protocol. When integrated to a DeltaV system, adding Ethernet connected I/O (PK) licenses for each device connected in port P01 is required. Then one DSTs will be consumed for every LDT that is configured.

Services

For help in planning, justifying, or implementing your system migration, contact your local Emerson representative. Expert consultants are willing and able to advise you on a variety of concerns, including safety system design, implementation and standards compliance, digital buses, wireless applications, control performance, and process optimization.

Inquiries

For inquiries and detailed quotation, please contact your local Emerson sales office.

©2024, Emerson. All rights reserved.

The Emerson logo is a trademark and service mark of Emerson Electric Co. The DeltaV logo is a mark of one of the Emerson family of companies. All other marks are the property of their respective owners. Emerson is not affiliated, associated, authorized, endorsed by, or in any way officially connected with Rockwell Automation, Inc.

The contents of this publication are presented for informational purposes only, and while diligent efforts were made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. All sales are governed by our terms and conditions, which are available on request. We reserve the right to modify or improve the designs or specifications of our products at any time without notice.

Contact Us

www.emerson.com/contactus