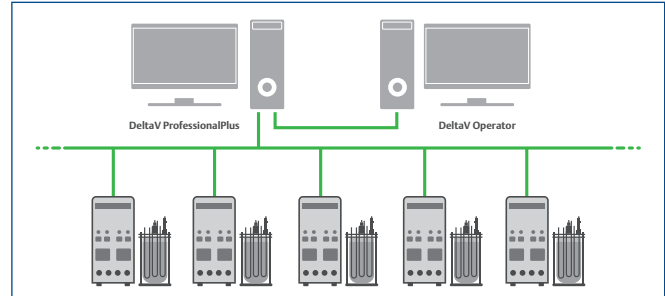


DeltaV™ Discovery for Life Science Research Laboratory Applications

- Improved technology transfer and faster process scale up using a common DeltaV™ platform for Research and Discovery through production
- Supports ISA-88 standards for batch execution and history collection
- Reduces DeltaV footprint with workstation-based control and I/O
- Flexible I/O supports OPC, Modbus TCP, and Ethernet/IP protocols



DeltaV™ Discovery provides control and monitoring of laboratory applications in a single DeltaV workstation.

Introduction

Pharmaceutical products often take more than 10 years to bring to market and must transition through many development and approval phases. Manufacturers are challenged to reduce this time to market by more efficient process scale up and technology transfer between development phases. The DeltaV™ Discovery platform will improve technology transfer and reduce scale-up time by providing a common control platform as the drug moves from research and discovery to product development, clinical trials, and commercial production.

DeltaV Discovery provides the power of DeltaV for non-production, non-GMP laboratory applications in a single workstation, reducing footprint with workstation based control and Ethernet I/O. Workstation-based Ethernet I/O supports OPC, Modbus TCP, and Ethernet/IP.

Benefits

- **Improves technology transfer and faster process scale up using a common DeltaV platform for research and discovery through production:** Standardization on a common control platform can reduce engineering effort to migrate between development phases. Procedures and control strategies can be developed and transitioned through the evolution of the product.
- **Supports ISA-88 standards for batch execution and history collection:** Easily add batch process control and automatic batch historical event collection using DeltaV Batch Executive, Batch Historian, and Advanced Unit Management applications.
- **Reduces DeltaV footprint with workstation-based control and I/O:** Lab environments can be space limited and a control system with controllers and I/O subsystems can consume valuable real estate. DeltaV Discovery reduces the control system footprint by providing workstation-based control and Ethernet I/O, eliminating the need for controllers and I/O cards.
- **Flexible I/O supports OPC, Modbus TCP, and Ethernet/IP protocols:** DeltaV Discovery supports multiple communication protocols to enable process I/O from different lab apparatus. Supported protocols include OPC-DA, Modbus TCP, and Ethernet/IP.

Product Description

DeltaV Discovery provides a cost effective automation solution for Life Sciences research laboratory applications. As a compact workstation solution, DeltaV Discovery provides the same DeltaV applications used widely in Life Sciences automation, but in a smaller footprint and reduced cost. With DeltaV Discovery, you can:

- Accurately control and reduce variability in key process parameters such as pH, dissolved oxygen, temperature, and pressure.
- Record and analyze process parameters with an embedded historian that simplifies real-time data collection and analysis.
- Interact with your laboratory applications using a powerful integrated operator user interface.
- Log process alarms and operating events with an integrated alarms and events historian.
- Easily integrate process measurements and other data sources with DeltaV Ethernet communications using OPC, Modbus, and Ethernet IP.
- Add on DeltaV's powerful batch control and event history collection for a comprehensive lab system of records which is easily transferred to production systems.

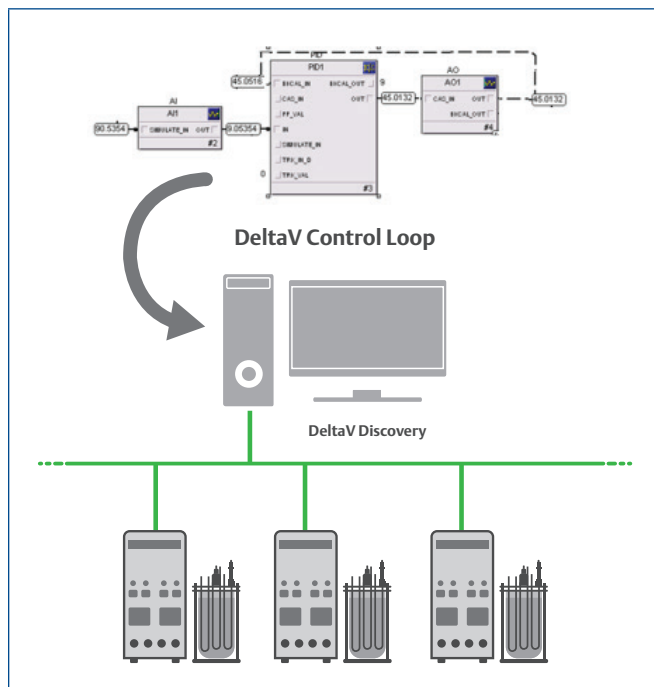


Figure 1. DeltaV Discovery workstation-based control.

Workstation-Based Control

DeltaV Discovery includes a workstation-based controller to execute control strategies and performance calculations. Control modules, which are normally assigned to a physical controller, are assigned to ProfessionalPlus or Application Stations, reducing footprint and the need for physical controllers.

Workstation-based control does not provide the same performance as physical controllers but is acceptable for most non-production, non-GMP laboratory applications. Specifically, workstation-based control is supported for a minimum of 1 second execution (vs. 100 milliseconds in physical controller) and controller redundancy is not available.

Ethernet-Based I/O

DeltaV Discovery supports Ethernet-based I/O which can further reduce footprint by eliminating the need for I/O cards and physical controllers. Ethernet-based I/O includes standard OPC communications as well as direct Modbus TCP and Ethernet/IP communications using Emerson's Virtual Ethernet I/O Card (VEIOC), which runs in the workstation.

- DeltaV OPC-DA communications using standard DeltaV OPC Client / Server applications are included in the DeltaV Discovery base license.
- DeltaV VEIOC is available in the DeltaV Discovery base license to provide direct access to devices communicating through Modbus TCP, EtherNet/IP, OPC UA client and EtherNet/IP Control Tag Integration. The VEIOC provides an easy way to integrate process data from smart instruments and 3rd party devices directly into the DeltaV system without physical controllers, I/O cards, or OPC servers.

DeltaV Discovery Ethernet I/O does not support I/O redundancy or IEC61850 MMS. Control loops implemented in DeltaV Discovery must reside in the ProfessionalPlus or Application Station and are not supported as independent control modules within the VEIOC.

Note: DeltaV Discovery Virtual Ethernet I/O Cards run on DeltaV workstations and do not require additional DeltaV Virtual Studio software.

Batch

DeltaV Discovery supports standard batch management functionality which can facilitate technology transfer from research laboratory to production scale operations.

- Advanced Unit Management supports class-based Unit Modules and Phases to make developing batch applications simple.
- Batch Executive software coordinates all batch processing activity, creates detailed batch history records and schedules recipes.
- Batch Historian automatically collects and stores batch recipe execution records and process alarms and events data.

DeltaV Advanced and Professional Batch functionality are available with the DeltaV Discovery Batch Unit License Add-on. See ordering information below.

Licensing

DeltaV Discovery is licensed as a workstation-based solution for Life Science research laboratory applications only. It is licensed by unit, where a unit is a single laboratory apparatus, limited to a vessel of less than 50 liters. Standard unit license limits for I/O and control function blocks are described in Table 1. A maximum of 32 units are supported on a single DeltaV Discovery system. Equipment licenses are also available for incorporating non-unit equipment such as transfer pumps.

The base license for DeltaV Discovery includes a DeltaV ProfessionalPlus workstation with capacity for a single lab unit including workstation-based control and I/O, history, alarms and events, control studio and other engineering applications, operator displays, and VEIOC and OPC communications. Additional scale-up unit licenses are available to increase the number of supported lab units and to add batch functionality for the lab units. Additional licenses are also available to add DeltaV Operator stations and DeltaV Application stations as needed.

Table 1. Standard Unit License Limits

DeltaV Discovery Unit License	Limits per unit
Workstation-Based VEIOC I/O	Maximum 5 devices (10 LDTs) and 400 parameters
Maximum Vessel Size	<50 liters
History	For all unit I/O and associated parameters
OPC Communications	Up to 200 parameters per unit

DeltaV Discovery license has the following restrictions:

- No physical controllers may be connected.
- No controller redundancy.
- Life Science laboratory applications must be non-production, non-GMP, with no products made for human consumption.

Ordering Information

Description	Model Number
DeltaV Discovery ProfessionalPLUS with Base License and Virtual Ethernet I/O Card Base License, 1 Lab Unit; includes DeltaV v15.LTS Software, English	VXD4114R15LTSL39
DeltaV Discovery ProfessionalPLUS with Base License and Virtual Ethernet I/O Card Base License, 1 Lab Unit; includes DeltaV v14.LTS Software, English	VXD4114R14LTSL39
Feature Pack 1 Update for DeltaV Discovery ProfessionalPLUS with Base License and Virtual Ethernet I/O Card Base License, 1 Lab Unit; DeltaV v14.3.1 or v14.LTS, English *For installation on an existing DeltaV Discovery v14.3.1 or v14.LTS system *	VXD4114R14FP1UL39
DeltaV Discovery ProfessionalPLUS with Base License and Virtual Ethernet I/O Card Base License, 1 Lab Unit; includes DeltaV v14.FP1, English	VXD4114R14FP1L39
DeltaV Discovery ProfessionalPLUS with Base License and Virtual Ethernet I/O Card Base License, 1 Lab Unit; includes DeltaV v14.FP1, Japanese	VXD4114R14FP1L23
DeltaV Discovery Unit Scale-up, 1 Lab Unit	VXD4101UPS01
DeltaV Discovery Batch Unit License Add-on, 1 Batch Unit	VXD4301S01
DeltaV Discovery, Upgrade Batch Units to Professional Batch functionality (system-wide)	VXD4302
DeltaV Discovery Equipment License, 1 Lab Equipment	VXD4401S01
DeltaV Discovery Operator Station Add-on	VXD4104S01
DeltaV Discovery Application Station Add-on	VXD4201S01
DeltaV Discovery Professional Station Add-on	VXD4102S01
DeltaV Discovery Virtual Ethernet I/O Card, Scale-up License, 1 Card	VXD4014UPS01
DeltaV Discovery VEIOC – EtherNet/IP Control Tag Integration Interface, 1 card	VXD4012
DeltaV Discovery VEIOC – OPC-UA client Interface, 1 card	VXD4013
DeltaV Discovery VEIOC – Modbus TCP/IP Interface, 1 Card	VXD4015
DeltaV Discovery VEIOC – EtherNet/IP Interface, 1 Card	VXD4016
DeltaV Discovery, Configuration Audit Trail (System Wide)***	VXD4139

DeltaV Discovery Spectral PAT Products	Model Number
DeltaV Discovery Spectral PAT Unscrambler MVA Base License 1st Year Subscription; includes 1 Function Block	VXD3157SR12
DeltaV Discovery Spectral PAT Unscrambler MVA Base License 1 Year Subscription Renewal; includes 1 Function Block	VXD3157SR12-R
DeltaV Discovery Spectral PAT Unscrambler MVA Function Block Scaleup 1st Year Subscription; 1 Block	VXD3157SR12UPS01
DeltaV Discovery Spectral PAT Unscrambler MVA Function Block Scaleup 1 Year Subscription Renewal; 1 Block	VXD3157SR12UPS01-R
DeltaV Discovery Spectral PAT Unscrambler MVA Function Block Scaleup 1st Year Subscription; 5 Blocks	VE3157SR12UPS05
DeltaV Discovery Spectral PAT Unscrambler MVA Function Block Scaleup 1 Year Subscription Renewal; 5 Blocks	VE3157SR12UPS05-R
DeltaV Discovery Spectral PAT Unscrambler MVA Function Block Scaleup 1st Year Subscription; 10 Blocks	VE3157SR12UPS10
DeltaV Discovery Spectral PAT Unscrambler MVA Function Block Scaleup 1 Year Subscription Renewal; 10 Blocks	VE3157SR12UPS10-R
DeltaV Discovery Spectral PAT Unscrambler MVA Function Block Scaleup 1st Year Subscription; 20 Blocks	VE3157SR12UPS20
DeltaV Discovery Spectral PAT Unscrambler MVA Function Block Scaleup 1 Year Subscription Renewal; 20 Blocks	VE3157SR12UPS20-R
DeltaV Discovery Spectral PAT SIMCA-Q Base License 1st Year Subscription; includes 1 Function Block	VXD3156SR17
DeltaV Discovery Spectral PAT SIMCA-Q Base License 1 Year Subscription Renewal; includes 1 Function Block	VXD3156SR17-R
DeltaV Discovery Spectral PAT SIMCA-Q Function Block Scaleup 1st Year Subscription; 1 Block	VXD3156SR17UPS01
DeltaV Discovery Spectral PAT SIMCA-Q Function Block Scaleup 1 Year Subscription Renewal; 1 Block	VXD3156SR17UPS01-R
DeltaV Discovery Spectral PAT SIMCA-Q Function Block Scaleup 1st Year Subscription; 5 Blocks	VXD3156SR17UPS05
DeltaV Discovery Spectral PAT SIMCA-Q Function Block Scaleup 1 Year Subscription Renewal; 5 Blocks	VXD3156SR17UPS05-R
DeltaV Discovery Spectral PAT SIMCA-Q Function Block Scaleup 1st Year Subscription; 10 Blocks	VXD3156SR17UPS10
DeltaV Discovery Spectral PAT SIMCA-Q Function Block Scaleup 1 Year Subscription Renewal; 10 Blocks	VXD3156SR17UPS10-R
DeltaV Discovery Spectral PAT SIMCA-Q Function Block Scaleup 1st Year Subscription; 20 Blocks	VXD3156SR17UPS20
DeltaV Discovery Spectral PAT SIMCA-Q Function Block Scaleup 1 Year Subscription Renewal; 20 Blocks	VXD3156SR17UPS20-R

Note: Product numbers ending in Lxx are for multiple language releases where “xx” is a two-digit code representing the language (e.g., 39 for English).

*DeltaV Discovery Base License includes license, dongle and DeltaV software media. Workstation hardware is not included. See DeltaV Workstation Hardware product data sheet for available workstations.

Guardian Support

Description	Model Number
1-year Guardian Support for DeltaV Discovery, up to 4 Units	VXDGSS04
1-year Guardian Support for DeltaV Discovery, 1 Unit Scale-up	VXDGSUPS01

Related Products

- **Advanced Unit Management Software:** Provides class-based Unit Modules and aliasing to make developing unit-relative equipment strategies simple.
- **Batch Executive:** The batch engine which coordinates all batch processing activity, creates detailed batch history records and schedules recipes and resources.
- **Batch Historian:** Automatically collects and stores batch recipe execution data from the DeltaV Batch Executive and process alarm and event data from the DeltaV Event Chronicle.
- **DeltaV Workstation Hardware:** Select from a variety of PC and server hardware, tested and preloaded with DeltaV software. See DeltaV Workstation Hardware Product Data Sheet for workstation information.
- **DeltaV Workstation Software Suites:** ProfessionalPlus, Application, and Operator Workstation software suites are available for use with DeltaV Discovery. See DeltaV software suite product data sheets for additional information.

- **S-series Ethernet I/O Card and DeltaV Virtual Ethernet I/O Card:** The S-series Ethernet I/O Card (EIOC) provides access to data from smart field devices that use Modbus TCP, Ethernet/IP, and IEC61850. The DeltaV Virtual Ethernet I/O Card provides EIOC functionality in a workstation for non-production environments. For more information, see product data sheet for S-series Ethernet I/O Card and DeltaV Virtual Ethernet I/O Card.
- **DeltaV Logbooks:** Application to capture electronic records of operator activity as well as plan and track operator tasks.

Prerequisites

- DeltaV v14.LTS or later is required for DeltaV Discovery with EtherNet/IP Control Tag Integration or OPC-UA communications.

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