Advanced Unit Management Software

- Integrated, multi-state, class-based phase logic
- IEC61131-3 sequential function charts, function block diagramming, and structured text
- ISA-88 and NAMUR NE33 standards
- Unit-relative software support
- Scalable software to meet any need



Advanced Unit Management control software provides class-based, multi-state phase control.

Introduction

DeltaV™ Advanced Unit Management software provides class-based Unit and Unit Phases to make developing unit-relative equipment strategies simple.

IEC 61131-3 control languages can be used to graphically assemble or modify control strategies using standard drag-and-drop technology. This makes learning and using the DeltaV system easy, and it allows you to improve the process while implementing your batch process controls.

Benefits

Integrated, Multi-State, Class-Based Phase Logic. Using sequential function charts (SFCs) and a built-in state transition diagram, you can create batch phase control using class-based phases. This easy-to-use structure includes predefined phase states, automatic state switching, built-in failure monitoring and a pre-configured faceplate to manually control your phases from the operator interface. Recipe management software also orchestrates the execution of phases including passing recipe parameters and collecting history data.

IEC61131-3 Control Languages. DeltaV software supports three IEC61131-3 graphical control languages so you can always use the tools most appropriate for the job. Function Block Diagrams (FBD), Sequential Function Chart (SFC), and Structured Text (ST) are all available, making control strategy development both intuitive and easy.

ISA-88 and NAMUR NE33 Standards. These standards are used throughout the DeltaV system. For example, both the physical and procedural models are used as a basis for building batch-related equipment and sequences. Control modules, equipment modules and process units can be created and used in conjunction with phases to carry out a batch process. Phases are executed within the controller and are tightly integrated with the recipe management software.

Unit-relative Software Support. Aliasing and dynamic path reference capabilities are key benefits of the DeltaV object-oriented batch architecture. By using the aliasing and dynamic path reference capabilities, users can create generic phase logic that may be executed on several different process units. Taking advantage of these capabilities can dramatically reduce software design, implementation, test, validation, and maintenance costs.

Standards-based Blocks. These blocks are used throughout the DeltaV system. Control strategies are developed using these powerful blocks, which minimize development time and maximize the system's performance. Many functions like override control, tracking, and state control are built in to save you engineering time. Plus, with busses you get the added bonus of decreased wiring costs and improved instrument diagnostics.

Scalable Software to Meet Any Need. As your needs grow, the DeltaV automation system is ready to expand with you. Additional capacity can be added online while you continue to control your process.

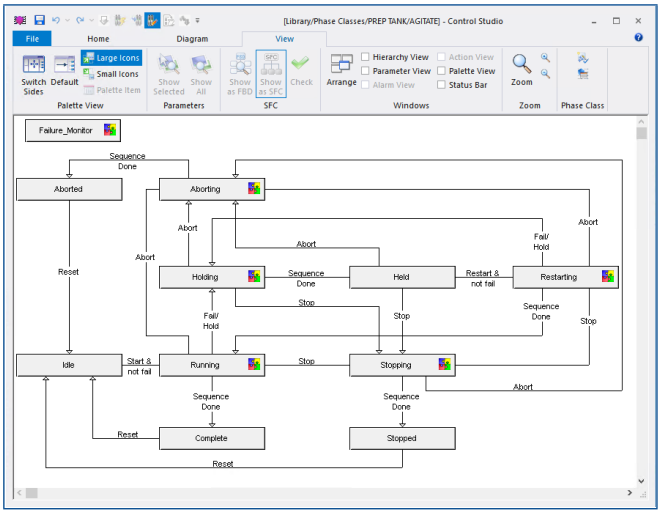
Control Language Typical Usage
Function Block Diagram (FBD) Monitoring and Alarming Continuous Calculations Analog Control (pressure, temperature, flow) Motor and Block Valve Control Totalizers
Sequential Function Chart (SFC) Charging Systems Startup/Shutdown Control Batch Sequences (fill, mix, heat, dump)
Structured Text (ST) Advanced Math Functions Complex Calculations Interlock Condition Detection If-then-else Decisions Looping (WHILE...DO) Bit Manipulations

Product Description

The Advanced Unit Management license provides users with the ability to build class-based units and phase logic to create unit-relative equipment control strategies. These licenses may be upgraded online while you continue to monitor and control your process.

The Advanced Unit Management control software provides class-based, multi-state phase control in addition to all of the other DeltaV monitoring, discrete, sequencing and analog control functions. Each state (such as running, holding, and aborting) is configured using standard SFCs, and branching between the states is fully automatic.

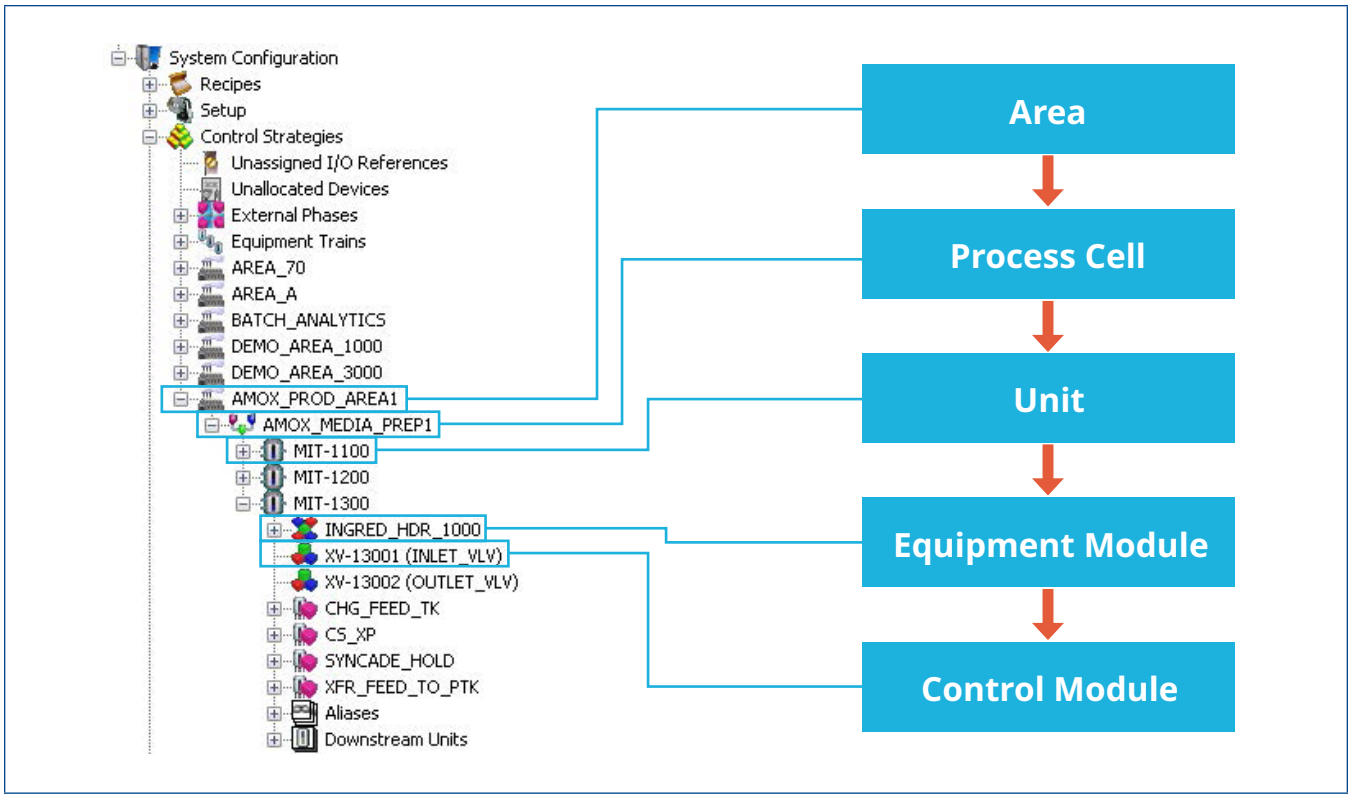
Additionally, the phase logic within each state can be written generically, using aliases or dynamic references in place of a standard DeltaV parameter path. Aliases are resolved at run time based on the unit module that is executing the phase. Dynamic references are also resolved at run time and can be used when the information needed to determine the parameter path is not available when the phase is configured. Phases can be used to generate controller based dynamic operator prompts, which allow the embedding of phase parameter values in the prompt string.



Class-based, multi-state control.

Both phases and unit modules are fully integrated, with batch recipes automatically providing execution control, recipe and report parameter passing, and history tracking. Users do not have to map registers or write custom logic. Operator interfaces and alarm management are provided as standard features.

Advanced Unit Management control software includes the ability to display, trend, alarm, and collect history for values brought in through the controller's I/O subsystem.



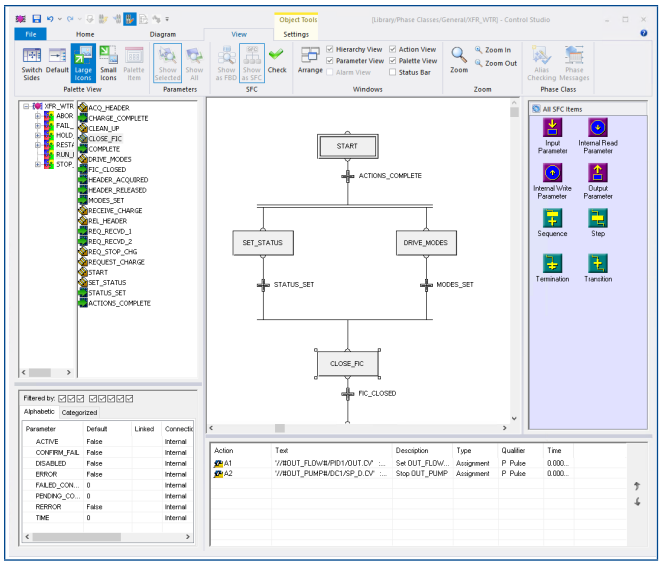
Integrated batch equipment.

Units and phases are integrated into the standard DeltaV Explorer hierarchy and can be used to organize the control modules and equipment modules that make up your system's database. Following the ISA-88.01 Physical Model, the database can be segregated into areas, process cells within an area, units within a process cell, and equipment and control modules within a unit. Phases are included as well. A list of phases that can run on a given unit appears under that unit in the hierarchy.

Class-based equipment modules and control modules are included with every DeltaV system and the Advanced Unit Management license is not required to take advantage of them. These class-based modules make it easy to manage multiple instances of the same functional control strategies. Users can configure and test the strategy once, then instantiate it for re-use as many times as they need it. If an update is needed, the update need only be made in one place for all members of the class to receive it.

Different control languages are optimized for various tasks, making control strategies simple to configure. The control languages can be mixed within a single DeltaV module, and the choice of control languages (FBD, SFC, and ST) allows you to use the tools most appropriate for the tasks at hand. All three languages execute within the controller in their native form without translation from one language to another. With these IEC61131-3 graphical control languages, control strategies are assembled and modified using standard drag-and-drop technology. Strategy development is visually intuitive, making it easy for first-time users to quickly become productive. Context-sensitive, online help is available for all functions.

Sequential Function Charts enable you to configure operator-independent time variant actions. An SFC comprises a series of steps and transitions. Each step contains a set of actions that affect the process. Transitions control when processing moves on to the next step(s). Both single-stream and parallel execution of logic are supported within SFCs.

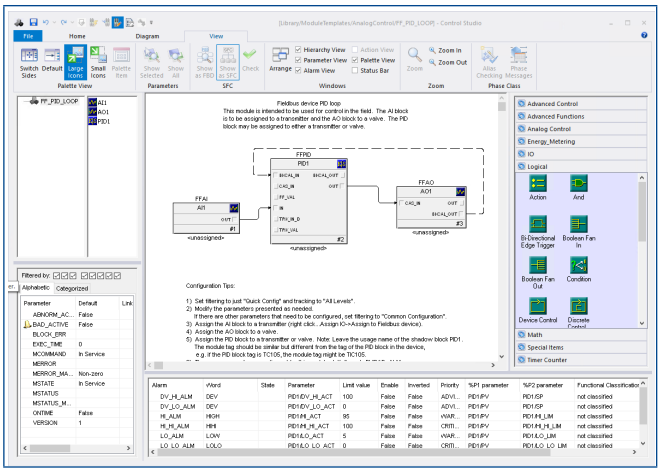


Sequential Function chart.

You design control strategies that best meet your control application requirements. The wide variety of function blocks available provide comprehensive control strategies that incorporate interlocking, permissives field start-stop, hand-off-auto, and state control.

Finally, the DeltaV system's library of pre-engineered module templates, provided with the Configuration Suite, enables fast and easy control software implementation.

Using simple drag-and-drop features, it takes only seconds to create completed loop, motor, and valve modules. These pre-engineered modules provide a reliable, proven solution and incorporate all the alarming and operator interface requirements under the same tag. However, if they don't meet all your requirements, they can be easily modified and extended. Tracking these additions, as well as deletions and changes made to any item in the configuration database, is accomplished with the Version Control and Audit Trail add-on.



PID loop function block diagram.

Capacity

The DeltaV system provides the exact level of monitoring and control functionality your application requires. The Advanced Unit Management software is also scalable in size according to the number of class-based Unit Modules configured in the system.

System stress tests have proven that the DeltaV system is capable of providing the capacity and performance needed to handle applications of any size. While there are no fixed limits on the number of phases and units that can be created, these tests provide recommended guidelines for setting up your system. The DeltaV system provides the scalable solution to your process control software requirements.

Ordering Information

Description	Model Number
Advanced Unit Management Software License	VE3122Syyyyy
Additional Capacity	VE31UPS100 for 1 Unit
	VE31UPS101 for 5 Units
	VE31UPS102 for 10 Units
	VE31UPS103 for 20 Units
	VE31UPS104 for 50 Units
	VE31UPS105 for 301 to Unlimited Units

Where yyyyy is equal to the total number of class-based Unit Module instances configured in the system.
yyyyy is available in the following sizes: 2 Units, 5 Units, 10 Units, 20 Units, 30 Units, 50 Units, 75 Units, 100 Units, 150 Units, 300 Units, and >300 Units.

Related Products

- **DeltaV™ Batch Software Suites.** Basic, Advanced, and Professional Batch software suites provide the DeltaV Batch software needed to operate, historize, and integrate your systems.
- **Recipe Studio.** Powerful yet simple to use application for graphically configuring recipes (with formulas) for successful batch production.
- **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.
- **Campaign Manager.** Creates and manages a campaign by specifying the recipe, formula, equipment, and number of batches that are to be run within the campaign. A Service-Oriented Architecture Web Service is available to enable production-scheduling packages to initiate the creation of campaigns in the DeltaV system.
- **Recipe Exchange.** Provides an open, programmatic interface to the DeltaV recipe management system. Recipe Exchange uses a Service-Oriented Architecture Web Service.
- **Batch Redundancy.** Enables redundant DeltaV Batch capabilities for the Batch Executive and Campaign Manager, including automatic switchover to protect your batch operations from disruptions.
- **DeltaV Live.** Emerson's modern, built-for-purpose operator interface. DeltaV Live delivers a high performance HTML5-based operations experience and simplified graphics configuration, all in an intuitive and customizable format with out-of-the-box simplicity.
- **DeltaV Operate.** High performance operator graphics, trends and alarms offered in standard operating layouts and utilizing system-wide built-in security.
- **Version Control and Audit Trail.** A powerful tool that tracks changes and manages revision information for any item in the DeltaV configuration database, including Safety Instrumented System (SIS) items.
- **Configuration Software Suite.** Makes it easy to create Control Strategies and System Graphics to get your plant up and running quickly and efficiently.
- **Monitor and Control Software.** Provides a single user interface with industry standard control languages and functions for graphical control strategy development, testing, and deployment.

Prerequisites

One ProfessionalPLUS Station is required for each DeltaV system. Refer to the **ProfessionalPLUS Station Software Suite** Product Data Sheet.

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