**Honeywell**

Experion Vista Overview

Experion Vista is a powerful and versatile software platform that incorporates innovative applications for supervisory control and data acquisition (SCADA). Built upon the proven technologies of the Experion platform, Experion Vista features are targeted for smaller unit process operations involving Honeywell's HC900 Hybrid Controller.

The Experion® Vista infrastructure improves operator efficiency and productivity in your SCADA application:

- Pre-built standard displays (including process group, point detail, trend, alarm, and set point programmer displays) reduce configuration time.

- Advanced HMIWeb display building tools enable customization of the process HMI to ensure process status comprehension and reduction of operator errors.

- User-configurable pull-down menus and toolbars promote easier, intuitive navigation to process data.

- Enhanced trending for up to 32 pens simultaneously and event markers for operator and process events provide operators with a more comprehensive view of the process.

- On-board historian collects history and events, enabling instant access to reliable and accurate process data.

- Open architecture based on commonly used industry standards and the Microsoft Excel add-in, providing greater choice in generating reports from process data.

- Integrated configuration environment enabling offline and online configuration changes to minimize process disruption.

- A database point build utility for standard and redundant HC900 controllers that uses HC Designer tag export files, reducing configuration costs.
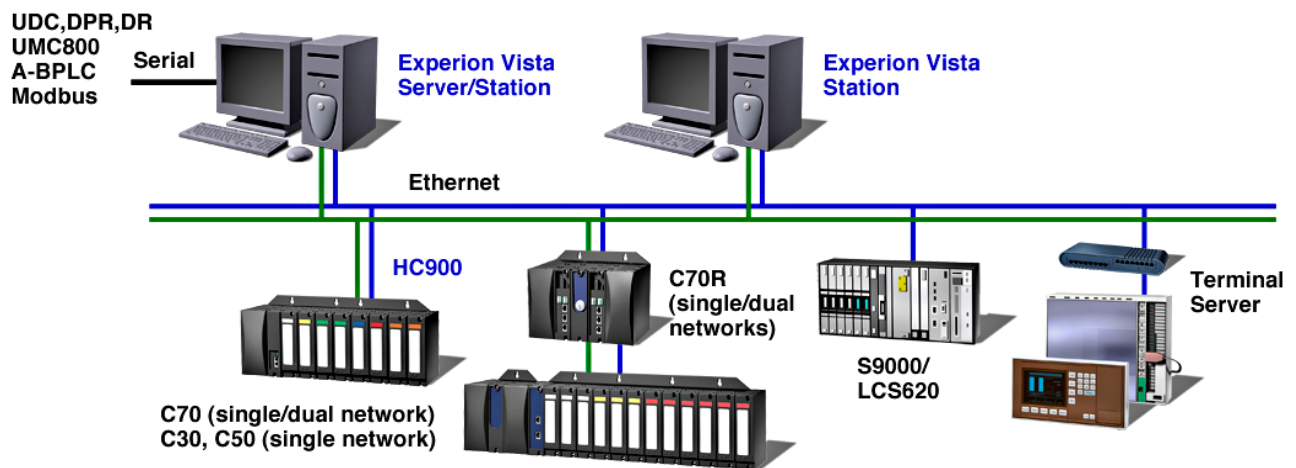
Complete Client/Server System Out of the Box

The Experion Vista platform allows users to simply configure the system instead of building it from the ground up. Operations can begin soon after point and hardware configuration is complete, using a single computer for the server as well as the client (Station) if desired.

Other client/server components of the Experion Vista system include:

- **Real-time database** – The database on the server provides data to a number of client applications including Experion Vista Flex Stations and applications.

- **Open connectivity** – The Experion Vista platform incorporates, as standard, open technologies to simplify integration with business and information systems. These technologies include the ODBC driver, Visual Basic scripting, the OPC Client interface, the OPC Data Display Client and the OPC DA server for read/write access to the database.

- **Advanced system infrastructure** –The Experion Vista platform includes, as standard, a complete infrastructure with an advanced alarm/event management subsystem, built-in system displays, configurable reports, extensive history collection and standard system trends.

- **SCADA interfaces** – An array of standard drivers are provided with the Experion Vista platform. The primary focus for data acquisition and the supervisory control interface is the HC900 hybrid controller (both standard and redundant) via the Honeywell Universal Modbus or OPC Client drivers. Other Honeywell products supported in combination include the S9000/LCS620 controllers, DPR, DR and X-Series recorders. Legacy products include the UMC800 and UDC controllers. Allen-Bradley PLC, Modbus RTU interface (serial or Ethernet) and OPC DA client complete the standard set of drivers.

- **Scalability** – As system requirements change over the lifecycle of the system, and as your plant expands, so too can the Experion Vista platform. Starting with a standard 50 point database, the Experion Vista platform can expand up to 2,050 points with 100 point increments, supporting up to five Flex Stations. Because each analog point supports eight parameters, control loops can be defined with a single point (a composite point) to lower the number of points required in control applications.

On-board History Collection

The Experion Vista on-board historian is a fully functional history engine, providing extended historical data storage that is limited only by storage media size. Experion history data is seamlessly available for use across every Experion Station for trend displays, reports, custom displays, applications, spreadsheets and ODBC-compliant databases.

Experion Vista Flex Station's Versatile Operator Interface

The client-server relationship that is used to present process data to the user allows a Flex Station to be applied anywhere as long as it has a connection to the server (either on the same computer as the server or remotely over Ethernet). The Flex Station can be deployed in a number of ways: as the operator's view to the process, as an engineering configuration station, as a casual user interface or as a way of performing diagnostics.

When configuring Flex Stations you can choose between two different connection methods:

Static – Provides a permanent, dedicated link to the server. This is the recommended connection type for full-time operations.

Rotary – Provides an as required connection to the server. This is the recommended connection type for staff who do not need full-time access. Rotary connections are advantageous from a licensing point of view because the license only specifies the number of simultaneously connected Flex Stations (concurrent-use licensing). Rotary Flex Stations also provide the option of using the Experion Station interface or Microsoft's Internet Explorer. The Internet Explorer interface is ideal for staff that prefers to use familiar desktop tools to view the process and the same licensing and security mechanisms as used in Station apply.

Powerful Trending Increases Operator Effectiveness

Experion Vista trending enables operators to maintain appropriate situational awareness to keep the process within desired limits.

Trend with categorized list of events and associated icon marker on the time axis

Trends can be preconfigured or configured online as necessary by simply browsing the database and selecting the desired point and parameter (up to 32 pens per trend display). Any of the standard Experion Vista history collection intervals may be used as the basis for the real-time and historical trends.

Trends can display data in the following ways:

- Line graphs
- Bar graphs
- Numerical list of historical data
- X-Y plot of the value of one point against another

Trend functions include:

- View events/alarms in combination with trend data
- Select event and observe marker with description
- Generate operator-entered events/description
- Trend zooming, panning and scrolling
- Hairline readout
- Configurable trend density
- Simple recall of archived history (calendar, time)

- Trend protection
- Smart clipboard support for copy/paste of trend data into Microsoft Excel
- Flexible time period selectors
- Auto-scaling

The declutter feature enables individual traces on multi-type trends to be temporarily disabled for clearer viewing without having to reconfigure the trace. Real-time and historical data are presented together on the same trend. Archived history may be accessed automatically by simply entering the time period and time and date via a drop-down calendar with choice of time selector position (at right, left, center, or at both ends).

Adding related events to a trend further improves process analysis. For example, an operator might want to view the effect of changing a set point, or the start of a batch, or when an alarm occurred. With Experion Vista these events are clearly visible within the trend and filters allow listing only event types of interest.

Trends can also be embedded in custom displays.

Group Displays Provide Intuitive Operation

With standard group displays you can configure panel board-like displays.
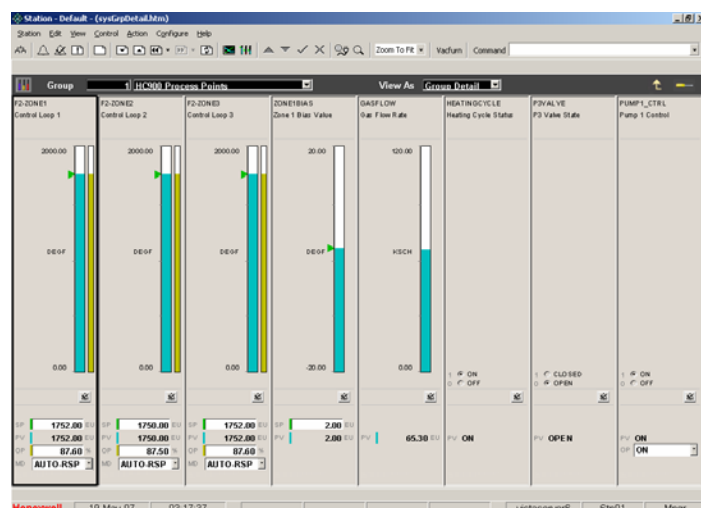
A standard group display enables intuitive control of multiple loops and view of associated points via SCADA faceplates

Each group contains up to eight points using standard faceplates for analog and digital status points. Group faceplates are consistent in design, functionality and appearance with the standard detail displays. Each group has three standard views available including faceplate, group trend (with control parameters accessible) and numeric trend.
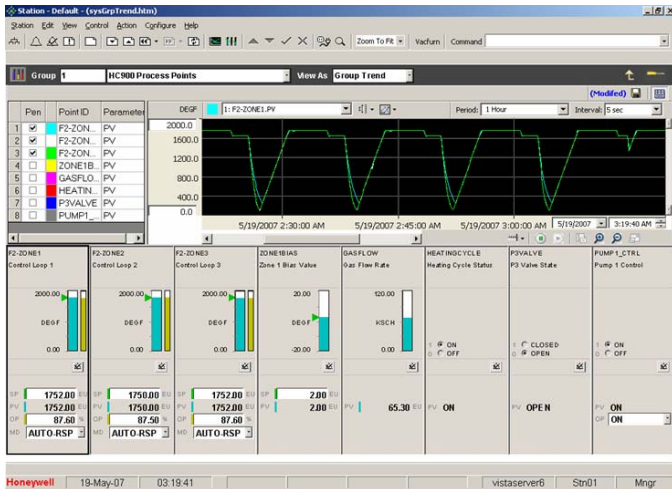
The standard group trend display combines point information with historical trend data.
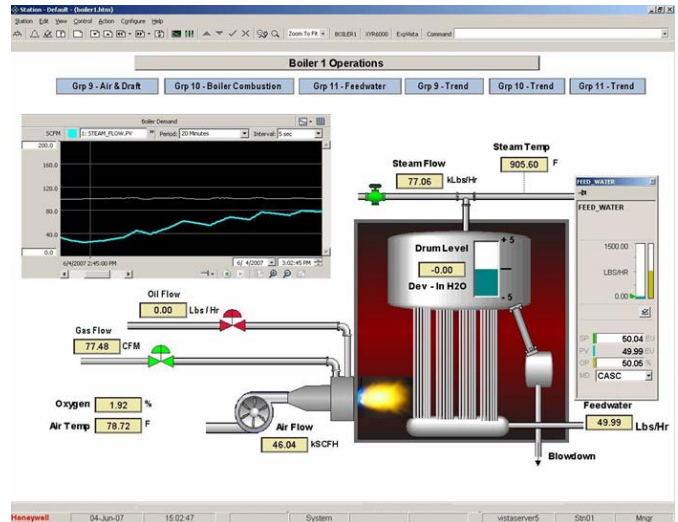
Custom Displays

The Experion HMIWeb technology provides the latest in object-based graphics for implementing custom displays online.

With this technology, which is based on Web standards using HTML as the native display format, you can provide process graphics within a secure Station environment or from Microsoft's Internet Explorer. Salient features of the latest release of HMIWeb Display Builder include:

- Shape library for plant equipment static objects and the use of shape sequences, dynamic shapes and popups including standard SCADA faceplates

- Advanced custom trend object enabling visualization of real-time and historical process information

- Point browser window allowing drag and drop assignment to objects, filterable by asset

- Visual Basic display scripting for advanced animation

- Extensive toolkit for drawing, alignment and rotation plus standard bar chart, button, combo-box and ActiveX import support selections

- Alarm, event, user-defined tables, alarm state insertion

The OPC Display Data Client allows the display designer to insert OPC data into a display without the need to purchase and build points. This is ideal for data that only needs to be visualized by the operator and does not need to be alarmed or historized. OPC data acquired in this way supports both reads and writes.

Experion Vista continues to support dsp-type displays (file extension of .dsp) you may have created in previous releases. The original Display Builder tool continues to be supplied with Experion Vista.


HMIWeb custom display with embedded trend object and interactive faceplate popup

Integrated Alarm and Event Management

The innovative alarm management solutions in Experion Vista improve the operator's ability to minimize process interruptions.

Alarm and event analysis feature improvements are based on research relative to technologies for improving the handling of process upset conditions. The standard Alarm Summary display enables operators to focus more clearly on the problem at hand.
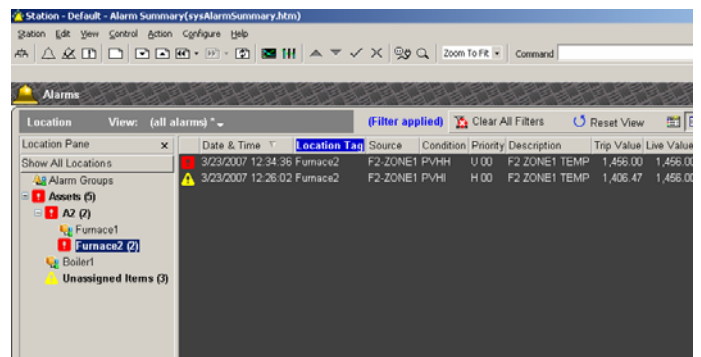
Alarm Summary page showing alarms for a particular asset

Experion Vista features:

- A selectable Location Pane shows extensive alarm condition details, supports rapid alarm filtering and provides summary alarm count details.

- Alarm summary columns can be customized to suit individual site or operator requirements. Fields can include the actual trip value and current live value among many other fields.

- A custom alarm summary configuration may be saved and recalled.

- Custom filters can be applied to each column in the alarm display, enabling rapid attention to be focused on problems.

- Alarms can be filtered by priority.

- Single line alarm processing keeps the Alarm Summary display from filling up with a chattering alarm. A single alarm includes details of the time that the alarm originally occurred, the time it last occurred and the total number of times the alarm occurred.

- Operators can easily add comments to alarms and events from the Alarm Summary display either individually or per page.

- Alarms can be acknowledged on an individual or per page basis from the Alarm Summary display or from custom displays.

- Custom alarm priority colors can be configured.

- The Event Summary display lists system events such as alarms, alarm acknowledgments, return to normal, operator control actions, operator login and security level changes, online database modifications, communications alarms, system restart messages and many other system events.

- Experion Vista archiving can be configured to store events online or to network servers or removable media for accessing at a later date.

- The System Status display provides operators with one place to review the health and status of all Experion Vista components.

Built-in Set Point Programmer/Profile Interface

The Experion Vista platform provides standard integration for the HC900 set point programmer (programmers 1–4) and recipe/profile management when using the Honeywell Universal Modbus driver. Each SP programmer, regardless of program size, requires only one database point. A programmer trend display and a tabular segment display allow easy program supervision by operators. On the programmer trend display, set points are pre-plotted over one page with the respective PVs plotted in real time on the same graph after the profile is started (stopped when in Hold mode). The tabular segment display format is used for both operation and profile setup.

HC900 SP programmer trend display with a pre-plotted profile

HC900 SP profiles may be defined and stored on the Experion Vista server, and then directed to a specific HC900 controller. Recipes involving up to 50 HC900 variables can also be defined, stored and then directed to a controller.
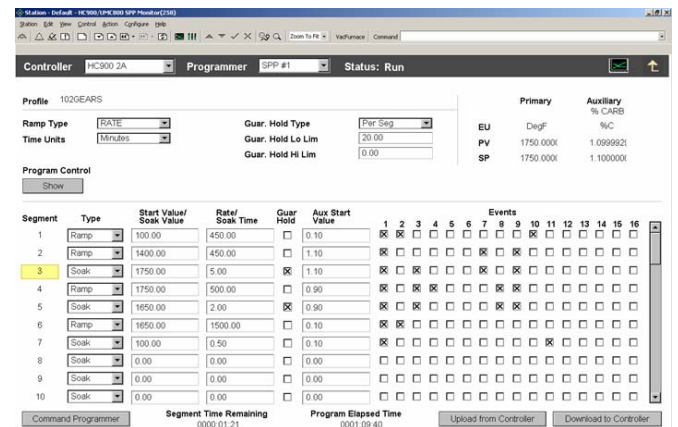
HC900 SP programmer operation/setup tabular display

Built-in Reporting

Experion Vista provides many built-in reporting functions to help document or analyze process and system events. Standard report descriptions include:

Alarm/Event Report - Reports all alarms and events in a specified time period. By using filters, this report provides operators or engineers with a point trace facility.

Alarm Duration Report - Reports the time of occurrence and elapsed time before return-to-normal for specific alarms in a specified time period.

Integrated Excel Report - Provides the ability to launch a report built with Microsoft Excel. Excel can access the Experion Vista database using Excel Data Exchange add-in.

Free Format Report Writer - Generates reports in flexible formats, which may include mathematical and statistical functions such as maximum/minimum and standard deviation.

Point Attribute Report - Reports on points displaying specific attributes, such as off-scan, bad data and alarm inhibit.

Point Cross-Reference - Determines database references for specified points to enable easier system maintenance when points are decommissioned or renamed.

Batch Reporting - Enables integrated reporting of batches or lots of a production process run (typically thermal in nature) to be compiled and archived automatically. This feature enables batch history for a set of points (up to 50) and events to be output either as a CSV file or directly into Microsoft Excel if available. Static batch data may also be added to the report such as batch number, customer name, lot size, etc. Multiple reports may be active, each event-activated.

Reports may be generated periodically or on an event-driven or on-demand basis and may be configured online. Report output may be directed to a screen, a printer, a file or directly to another computer for analysis or electronic viewing.

Enterprise Model Reduces Operator's Memory Load

The Experion Vista enterprise model enables users to navigate and manage the process from an intuitive hierarchical plant representation, reducing the operator's memory load when making diagnoses and decisions. Alarms are visualized based on the asset hierarchy in the enterprise model, enabling operators to efficiently navigate between high level and lower level alarm overviews.

Flexible Security Models to Control Access

Experion Vista Station's security options are part of an architecture that is best-in-class in the industry. System security enables you to control who has access to the system and what users can do within the system when access is granted. Experion Vista provides two types of system security:

Station-based security - Station-based security provides six different security levels ranging from view-only to manager mode. When a Station is configured to use Station-based security, users are prompted to enter a password when requesting a higher level of access.

Security levels can be assigned to server functions. For example, a button on a display might be assigned a security level of supervisor when a custom display is built so that operators cannot use the button unless the Station security level is supervisor or higher.

Operator-based security - With operator-based security you can assign a specific security level to each user. Users cannot access any Station unless they enter a valid ID and password. To access a higher security level than the one they are currently using, users need to sign on again as a different operator with the higher security level.

Operator-based security offers a variety of security strategies to suit different user needs:

The **traditional operator account** is defined in the Experion Vista Server. Authentication and authorization are performed by the Experion Vista Server.

The **integrated account** combines a Windows user account or Windows group account and an Experion Vista operator account. Authentication is performed by Windows while authorization is performed by the Experion Vista Server.

Existing enterprise-wide security policies may adopted in the following ways:

Using single sign-on - Single sign-on enables operators to log on to the Experion Vista Station computer and start by providing their operator ID and password only once when they log on to the computer. This is a configurable option that requires the use of operator-based security integrated with Windows accounts.

Up to six security levels govern security access to Experion functions:

Security Level	Functionality
View Only	View-only mode
Acknowledge Only	View only mode with alarm acknowledgment capability
OPER	Operator mode
SUPV	Operator mode plus the ability to configure standard system infrastructure such as reports, history assignment, etc.
ENGR	Supervisor mode plus the ability to configure more settings, etc.
MNGR	Unlimited access

The security models available for Experion Vista Station can be further refined to limit operator or Station access to graphics, alarms and point data to assigned locations (assets). This provides a best-in-class plant partitioning mechanism for managing the scope of an operator's control and actions.

Scripting

The Experion Vista Platform makes extensive use of the VBScript scripting language throughout the supervisory system. Users can create a script that will run when a display is active or scripts can also be attached to server objects like point parameters, alarm events, report completion and other events.

Display Scripting

Users can extend the functionality of graphic displays by writing event-based scripts for display objects. Scripts are typically used to create animation that is not possible with standard functionality.

Server Scripting

The server scripting support allows the behavior of the server and its runtime objects to be extended. Examples of server objects are:

- Server
- Points and parameters
- Reports
- Areas
- Tasks

The user can configure scripts to be run by the server either periodically or when a specified event occurs. In addition, standard displays are supplied to allow users to monitor the status of running scripts.

Recipe Management

With Experion Vista standard recipe management (exclusive of Universal Modbus driver recipe support add-ins for HC900) you can create recipes and download them to nominated process units. Each recipe can have up to 30 items (database points with parameter selection) with recipes chained together to form larger recipes if required. Recipe items may be used to set ingredient targets, set alarm limits, set timers and place equipment into correct operating state. Items may be individually enabled for scaling. Alternatively, HC900 recipes (with up to 50 HC900 variables, not counted as points) may be created for HC900 controllers.

Flexible Access to Experion Vista Data

ODBC Driver
With the ODBC driver you can query the server database using SQL commands from ODBC client applications such as Microsoft Access. The server database is exposed as a number of read-only ODBC tables that include points, event history and process history. Driver features include:

- Open read-only access to real-time and historical data
- Throttling to prevent performance impact
- Fully functional examples for productivity improvements

Network Server
The network server provides efficient access to the Experion Vista platform database for network-based applications such as Microsoft Excel Data Exchange.

Microsoft Excel Data Exchange

Microsoft Excel Data Exchange allows users to capture real-time point value and history information from Experion Vista for display in an Excel spreadsheet via an integrated add-in.

Data can be retrieved from Experion Vista by using either the Microsoft Excel Data Exchange Wizard or through cell formulas. The captured data can be static or dynamically updating, and can consist of either point parameter or historical data from the server.

OPC Server

The Experion Vista OPC DA server allows a third-party OPC client application to browse the server database to establish links for read/write of server point parameters. The OPC server is included with all systems.

Experion Vista Alarm Pager Option

When important information needs to reach people outside the control room or site, the Experion Vista Alarm Pager provides the ability to use paging, SMS, e-mail or SNMP traps to escalate operational and system alarms. Alarms can be forwarded to one or multiple recipients, and can be further escalated to another recipient if an alarm remains unacknowledged. Asset and time profiles determine which points should be monitored at a given time and the locations that notifications should be sent. Alarm pagers can be configured to use a service provider or a local base station for the broadcast of pages or SMS messages. The information that is forwarded can be custom designed to include values such as time, date, point ID, alarm, priority, description and value.

Experion Vista Point Control Scheduler Option

The Experion Vista Point Control Scheduler allows supervisory control to be automatically scheduled to occur at a specified time. Schedules enable the control of analog or status points to be scheduled on both a one time only and periodic basis such as daily, on a workday, on a weekend, on a holiday or specific day of the week. For example, a pump could be scheduled to switch on at 4 pm and off at 6 pm each day, or a controller SP could be set to a lower value over the weekend.
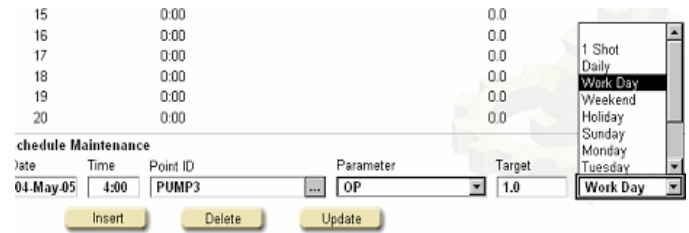

Automated scheduling of points

Efficient Task-based Engineering Environment
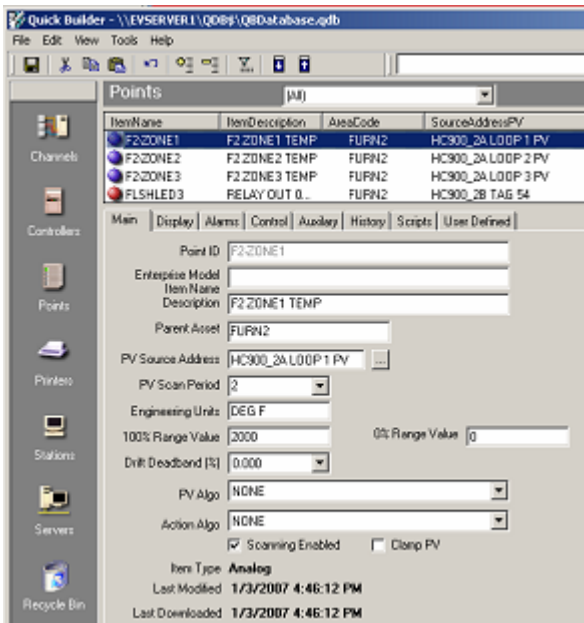
Configuration Studio

Experion Vista can be configured from an integrated engineering environment called Configuration Studio, which substantially improves configuration effectiveness. Configuration Studio exposes engineering activities as tasks rather than tools to the user. You can add to or modify an Experion Vista configuration while the system is online. All engineering data is stored on the server.
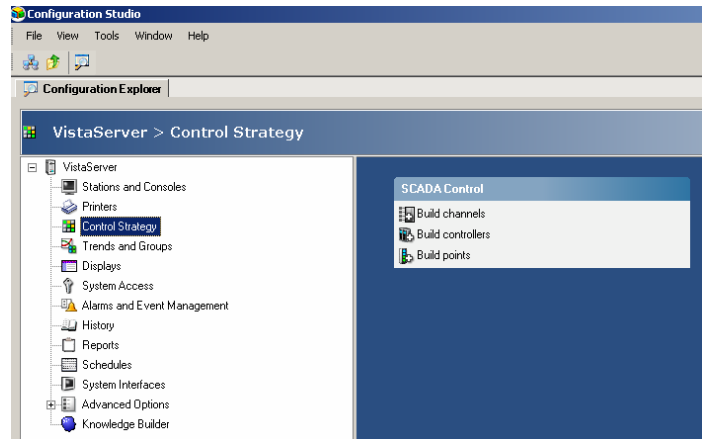
Configuration Studio's task-based approach to engineering

Quick Builder Database Tool

Quick Builder, a tool accessed via Configuration Studio, allows users to configure points, controllers, Flex Stations and printers for the SCADA application while the system is online. Quick Builder leverages a relational database engine to provide greater productivity through capabilities such as filtering user views and an intuitive Windows interface.

Quick Builder database – HC900 Points

Vista online documentation set that uses an HTML frame browser to find and access the desired information.

Knowledge Builder enables quick and easy access to the comprehensive documentation set.
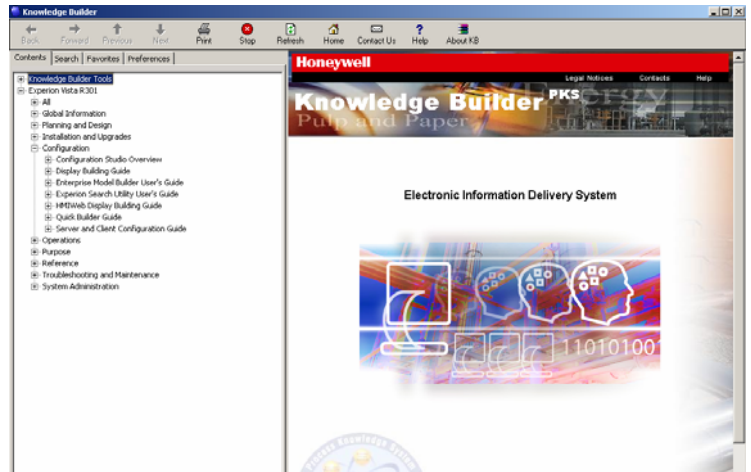
HC900 Database Support

The standard Universal Modbus driver supports HC900 along with most Honeywell measurement, control and recorder products. Acronyms such as LOOP 1 PV and TAG 23 are used for reference instead of Modbus addresses when developing database point assignments. Both single and redundant networks are supported for HC900. The standard OPC client driver can also be used to interface with Honeywell's HWIOPC server for HC900, supporting single or redundant networks.

To reduce development time, an HC900 Point Build Utility is freely available to the user to import the HC Designer tag export database files and selectively develop HC900 points for Experion Vista. You can use the wizard to develop analog and digital status points for control loops, SP programmers, signal tags and variables. Hardware and point files, which are developed by the tool in minutes, can be imported into Quick Builder for database development, thus greatly improving productivity.

User Documentation

Comprehensive Experion Vista documentation is available via help menus and via Knowledge Builder, the electronic Experion

Expansions

You can expand Experion Vista systems to include more points (up to a maximum of 2,050), more Flex Stations (up to a maximum of five), or to include the Alarm Pager or Point Control Scheduler option without taking the system offline.

Upgrades to Experion Vista

Upgrading from older PlantScape$^®$ Vista and SCADA releases to Experion Vista is easy and efficient. Previous PlantScape Vista R400 Quick Builder database files and custom displays will fully migrate to Experion Vista.

Runtime Only Solutions

A runtime only license is available for 350-point or 2,050-point systems only. This license type is used for applications where access to development tools for changing the database is not required. Users can access Station for groups, trends, recipes, profiles and security, as well as normal supervisory functions (depending on the local Station security that is applied). A separate Experion Vista development/run-time license is needed to provide access to development tools such as Quick Builder.

Experion Vista Specification Summary

Item	Specification
Server and Client operating system	Microsoft Windows XP SP2
Server and Client hardware requirements	Dual Core Intel 1.86GHz, 2GB RAM computer (for detailed hardware specifications refer to the Experion Vista Specification FS03-200-301)
Controller	Honeywell HC900 Hybrid Controller
Points and Stations	Up to 2,050 points and five stations
Standard interfaces	- Honeywell UMB (Universal Modbus) driver supporting: - HC900 (Ethernet), single or redundant networks - UMC800 (Serial RS-485) - DR4300/DR4500 (Serial RS-485) - DPR180/250 (Serial RS-485) - UDC2300/3300 (Serial RS-485) - X-Series Paperless Recorder - Modbus (Modbus RTU, Modbus +, Modbus/TCP) - Honeywell S9000 (Ethernet) - Honeywell 620 LCS (Serial RS-485 and Ethernet) - Honeywell DPR 100 - Allen-Bradley (PLC-5, SLC5/xx, Logix555X) - OPC Client
Data access	- OPC DA Server (2.05 or earlier) - Microsoft Excel Data Exchange - ODBC Driver - OPC Display Data Client (OPC DA 2.05 or earlier)
Options	- Alarm Pager - Point Control Scheduler
Related solutions for the HC900 Hybrid Controller	**HC Designer configuration software** – Windows-based configuration software for the HC900. **559 and 1042 Operator Interface LCD display** – supporting operator access to the HC900 directly. **HWIOPC Server** – OPC server for HC900 supporting all controller types, single and redundant networks. **HC900 Pointbuild Utility** for generating a Quick Builder database using HC Designer tag export files. **Ver. 1.2** - supports fixed Modbus map for Universal Modbus driver only, uses named addresses (acronyms)) **Ver. 2.2** - supports fixed and custom Modbus map for Universal Modbus driver (uses Modbus hex addresses) and OPC Client drivers (for HWIOPC server, fixed Modbus map)

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More Information

For more information on Experion Vista, visit
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PN07-22-ENG
August 2007
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