



# Ovation™ Operator Workstation

## Features

- Delivers multi-tasking operation
- Accesses up to 500,000 dynamic points
- Secure standard operating desktop environment
- Intuitive graphics configuration, modifiable to match changing plant configurations
- Easy navigation through alarms and displays
- Predefined templates available for faceplates, graphics, diagnostics, and trends
- Sophisticated alarm management
- Real time and historic trending
- Interfaces with a variety of third-party applications and components
- Secure remote desktop access through terminal services
- Supports multiple languages, character sets, and cultural conventions
- Provides context-sensitive help information specific to where the user is within the operator workstation application
- Saves and recalls user settings and preferences
- Print, print review, and data export to PDF, XLS, and other common file formats



## Introduction

Effective control requires a clear and concise picture of plant operations. Using Microsoft® Windows® technology, Ovation™ operator workstation software provides a dynamic view of all plant processes with the stability, performance, and flexibility needed to operate modern control systems.

High-resolution windows are used to present control graphics, diagnostics, trends, alarms, and status displays. Access to dynamic system points, historical data, general messages, standard function displays, event logging, and a sophisticated alarm management program are available through intuitive operator navigation tools using a

variety of techniques and features including hyperlinks, drag and drop, and contextually driven menus and toolbars.

The high-speed Ovation network transmits the latest plant process data every second, with access to up to 500,000 dynamic points in some configurations to provide real time information update. Ovation system security limits the access of critical information and plant control features to authorized personnel.

Operator software can be implemented on various PC configurations, providing flexibility in planning for optimum performance to match budgeting goals. Compatibility with many third-party applications and components makes the Operator workstation ready for upgrades to meet future plant requirements.

## Operator Applications

- Graphics Display system (process diagrams)
- Point menu
- Alarm management system
- Trends (live and historical)
- Point information
- Point review
- Operator event messaging
- Ovation error log
- Signal diagram
- System viewer
- Ovation utilities

## Graphics Display System

The Graphics Display system gives the operator direct interaction with process flow through system display diagrams. Dynamic use of color, shape, and size indicate status of the plant operations. Graphic windows can be formatted in various sizes and placed anywhere on the screen to suit specific work preferences. Up to 16 graphic windows can be displayed simultaneously over multiple screens in addition to Trend and Alarm windows.

Ovation supports connection of a single workstation, keyboard, and mouse to multiple monitors, expanding the plant view using less equipment. Individual monitors can be dedicated to specific operator functions such as alarms, trends, or graphics for constant monitoring of important points, processes, or equipment.

Navigation of diagrams is effortless through user-definable links and paging hierarchy. Creating a list of favorite graphics, such as the System Status display, is another method for quickly accessing diagrams that are used on a regular basis.

Point groups are previously defined sets of points that utilize the same graphics to represent different equipment with similar functions. Use of point groups provides easy configuration for multiple diagrams.

Custom diagrams, including conditional logic graphics developed with the Graphics Builder, are stored on the server class host PC hard drive. Completed diagrams can either be distributed to all Operator Stations or designated to specific workstation(s).

**Table 1: Graphics Display system specifications**

Component	Description
Graphics Display system quantity	More than 25,000
Graphics Display windows	Up to 16 (on multiple screens)
Dynamic fields per graphic	Unlimited— typically 25 to 250 points per graphic
Graphic update rate	Once per second

## Point menu

The Point menu provides immediate access to information on a particular point displayed at the Operator Station. You can access the Point menu from the Alarm, Alert Details, Point Information, Point Review, System Viewer, Trend, Historical Review, and Graphics Display windows.

By default, the Point menu is configured with standard menu items; however, menu items may vary depending on the application. Non-applicable options are grayed out. In addition, users can configure the Ovation Developer Studio to add up to nine additional custom menu choices. The Point menu is configurable at all levels of the Developer Studio system tree.

Right-click a point name or point value on any applicable window to display the Point menu. The standard Point menu consists of the following items:

- **Point information** — View or modify point data.
- **Trend** — View point activity for an individual point.
- **Signal Diagram** - View signal diagrams (control sheets) directly associated with the selected point.
- **Summary diagram** - View custom diagrams directly associated with the selected point.
- **Historical Review** - Execute the desired operation for the selected point on the default historian to view historical data.
- **System Viewer** - View the hardware status.
- **Remote Alarm Viewer** - View all the alarms for the remote network from which the summary point originates.
- **Alarm Guidance** - View Alarm Guidance information.
- **Alert Details** - View PlantWeb alerts.
- **AMS Device Manager** - View detailed information about PlantWeb alerts.
- **Ovation Developer Studio** - Opens the Ovation Developer Studio window.
- **Operations** (options are based on the point type)
  - **Acknowledge Alarm** - Acknowledge a point that is in alarm.
  - **Reset Alarm** - Reset a point whose value is no longer in alarm.
  - **Scan OFF/ON** - Remove a point from being scanned and updated by the Controller.
  - **Alarm Check OFF/ON** - Disable alarm checking for a point.
  - **Limit Check OFF/ON** - Disable the engineering range limit for a point.
  - **Shelve** - Shelve a point so it does not go into alarm.
- **History Edit/Annotate** - Launch the History Edit Tool (this item only appears if you are using Historical Trend or Historical Review functions).

## Alarm System

The Ovation Alarm System is a multi-process system that allows plant operators to monitor and detect abnormal plant conditions. Operators manage system alarms through different views and acknowledge functions.

An alarm can be a visual message and/or an audible sound that serves the following purposes in an Ovation system:

- Indicates an operator action is required.
- Helps maintain normal plant performance
- Recognizes and avoids hazardous conditions.
- Identifies deviations that could lead to financial losses.
- Provides better understanding of the conditions affecting plant processes.

The Alarm window displays different types of alarm lists that provide information about each alarm in the Ovation system:

- **Alarm list** - Displays the current system alarms and returns.
- **Alarm History list** - Contains the 15,000 most recent alarm events (alarms, returns, and state changes).
- **Acknowledged Alarm list** - Displays the current acknowledged alarms.
- **Unacknowledged Alarm list** - Displays the current unacknowledged alarms.
- **Reset list** – Contains a list of points which were returned and acknowledged from alarms.
- **Alarm Suppressed list** - Contains points that are suppressed from alarm because of being cutout, shelved, alarm check removed, or limit check removed.
- **Alarm Frequency list** – Displays the most frequent alarms that are detected on a workstation.
- **Icon list** - Provides a mechanism to group alarms based on their priority and their plant area.

Instead of a list format, operators can choose an Iconic alarm display, which groups alarms represented by preconfigured bitmap images (tiles). Bitmap images change colors to indicate alarm condition/status that are linked to process graphics for additional situation awareness.

Alarms can be sent to a Historian drop. You can then use this information to analyze events and to improve your alarm management policies.

## Alarm Management

Alarm Management is the process used to properly design, implement, operate, and maintain alarms in a plant. Successful alarm management provides for low alarm rates in the plant without losing any critical alarms that are required for safe plant operation. Ideally, under normal plant conditions, the goal should be to have no alarms occurring on an Ovation system; however, during actual plant operation, alarms occur periodically.

Benefits of good alarm management include:

- Safety increases in the plant.
- Environmental incidents decrease.
- Operators have increased effectiveness.
- Quality improves.
- Plant availability improves.
- Expenses decrease.
- Operators experience better job satisfaction and increased confidence.

Alarm management includes the following features:

## Alarm Filtering

Determines what alarms appear on the various alarm lists at the Operator Station, what alarms are sent to the printer, to audio, and what alarms are sent to the historian for storage. Filtering identifies and sorts alarms by specific, user-defined criteria such as network/unit, destination (plant area), alarm type, and priority under normal and/or priority mode in various alarm list tabs of the Alarm window.

## Alarm Priorities

Assigning priorities distinguishes the importance of alarms and provides a mechanism for enforcing risk management in a plant. Assign priority levels based on the response required from the operator. Priority filtering provides an operator with visual effects to properly manage alarms depending on the seriousness of the alarm and the required operator response:

- Visual effects consist of using colors on the alarm screen to alert and inform the operator what and where the alarm is.
- Sound effects can be incorporated and consist of a unique sound that is clearly audible in the control room. This sound alerts the operators to a plant disturbance that requires attention.

## Alarm Suppression

Alarm suppression is a method to prevent an indication of alarm to the operator when the base alarm condition is present. The base alarm condition can be shelving, alarm check remove, or alarm cutout.

### Alarm cutout

Alarm cutout is an optional function that either stops a point from alarming or stops an alarmed point from displaying an alarm message. An example of using the alarm cutout function is to configure points with cutout in order to eliminate nuisance alarms under certain conditions such as during plant startup.

### Alarm check remove

Allows you to suppress a point from going into alarm. If you use the alarm check remove option, you are permanently removing the point from alarm.

### Alarm shelving

Alarm shelving is a method to temporarily suppress an alarm. It is similar to the alarm check remove functionality. However, the alarm shelving is not a permanent feature. It has a timeout period that is not saved after reboot.

## Trends

The Trend system shows samples of live, historical, or event data collected from the Ovation system for desired time span. Trends mainly consist of Cartesian graphs with a vertical axis (Y-axis) representing process values and a horizontal axis (X-axis) representing time values. Trends can be displayed in graphic, tabular, and radar format; however, there are many options available for customizing Ovation trends at the Operator Station to effectively visualize, monitor, and analyze process activity. The Trend display window can be launched from the Ovation Applications folder at the Operator Station, from a Point menu, or from a graphic. Live, historical, and event trends have many of the same features, but there are some features that are unique to each type of trend. In Live Trend mode, an Information tab is provided that shows the alarm limits associated with the assigned

points. In Historical Trend mode, a Summary tab is provided that lists the numerical results (for example, average, minimum, maximum, and so forth) for the entire trend time span. If events are present in the selected time span, an Event List tab displays triggered event occurrences and details for the selected occurrence. In Event Trend mode, an Event Details tab displays details associated with the triggered event occurrence being explored.

Common trend features include:

- Horizontal, vertical, X-Y, tabular, and radar/spider formats
- Crosshair cursor displays trend values
- Globally defined point groups
- Customized graphs with different colors, labels, chart types, scales, and fonts
- Zoom and pan for focusing on a certain trend area
- Printable table and graphs

**Table 2: General trend specifications**

Component	Description
Simultaneous trend windows	Limited only by the processing power of the PC
Points per trend window	32
Trend groups	No limit
Number of samples per point display	Up to 36000
View / save / print data	Yes

## Live Trends

Live trends access the Operator Station's Ovation trend buffer, which contains a local, recent history of values from the Ovation real-time data network. Real-time trends track the performance of plant data as it is happening. Trending can be performed from 10-minute to 33<sup>1/3</sup>-day durations with sample intervals ranging from one second to 80 minutes. In live trend mode, an Information tab is provided, which shows the top value, bottom value, and various alarm limits associated with the assigned points.

**Table 3: Real-time trend duration and sample intervals**

Trend Duration	Sample Interval
10 minutes	1 second
100 minutes	10 seconds
5 hours	30 seconds
10 hours	1 minute
100 hours	10 minutes
200 hours	20 minutes
25 days	60 minutes
33 <sup>1/3</sup> days	80 minutes

## Historical Trends

Historical trends access the Ovation Process Historian's (OPH) historical database to extract and present historical information of process point values for a specified time span. These trends display historical data of a specified granularity and data aggregation criteria such as actual value, minimum, maximum, and so forth.

For Historical trends, many options are available to specify the overall trend duration and sample intervals. Historical trends can display up to 32 points in several different graphical layouts. Historical trends can also show various aggregate values based on point type as shown in the following table:

**Table 4: Historical trends**

Point Type	Trend Aggregate
Analog	Actual value Average value Integration value Maximum value Minimum value and more
Digital	Time on/off in hours Time on/off in minutes Number of Toggles (State transitions) and more

## Event Trends

Event trends access the historical record of Controller and Digital Excitation Controller (DEC) module-triggered event occurrences and details from the Ovation Process Historian.

COMTRADE (Common format for Transient Data Exchange for power systems) data files stored in the historian are used for COMTRADE event trend displays, and High-Speed Data Recorder (HSDR) files are used for HSDR trend displays.

When the Trend Display system is in Event Trend mode, an Event Details tab displays details associated with the triggered event occurrence being explored.

All types of trends can be saved to disk for accessing them at later time in Trend application.

## Point Information

Point Information shows a complete database record of a selected live process point. With proper authorization, adjustments can be made to point attributes such as scan status, alarm status, alarm limits, and value.

The Point Information window organizes related types of database fields into logical groupings with labeled tabs. Point Information's Where Used window contains a list of places and items that currently reference the selected point.

Tabs can be customized and point information may be displayed in multiple panes. Data on the various tab(s) of point information can be saved to a text, image, CSV, HTML, PDF, XML, MHT, RTF, XLS, or XLSX file.



## Point Review

Point Review displays point-related data views using request filters from the ribbon tool bar, such as points generated from a list with common characteristics, status conditions, and qualities. Authorized users can adjust the points' operating status. The request filters include:

- Value limits
- Engineering range limits
- Limit alarms
- Reasonability limits
- Value clamp limits
- Sensor limits
- SID alarm
- Alarm check remove
- Cutout disabled
- Cutout from alarming
- Engineering range check off
- Value clamp off
- Entered value
- External calibration
- Scan remove
- Tagged out
- Test mode
- Uncommissioned
- Good/fair/poor/bad quality
- Timed out

## Operator Event Messaging

Certain actions, including user log on and log out causes the Operator Station to send an event message to the historian. Operator event messages can then be retrieved for display on the screen or printed at a local printer. Every operator event message contains the event subtype, the date and time (to the nearest second), and the event description. Depending on the type of event, each message may include the following data:

- Point, device, or drop name
- Point description
- Old value/mode and new value/mode
- Loop number, algorithm name, and algorithm type

## Signal Diagrams

Signal Diagrams is an Ovation Operator Station application that monitors and tunes (if enabled) a control process. Once a control function (sheet) is created and saved in the Control Builder, it can be viewed online through a signal diagram. The following functions are provided by the signal diagrams:



- Monitoring analog and digital values.
- Monitoring algorithm mode, tracking, and limit status
- Tuning algorithm parameters
- Manipulating setpoint and MA station algorithms
- Using points through page connectors
- Navigation for control subsystems

## System Viewer I/O Graphic

This application automatically generates a real-time, live display of a drop's I/O from the Controller to the individual points or channels on the modules. This allows technicians, project engineers, installation engineers, and plant operators to monitor their I/O more effectively when operating, performing maintenance, and commissioning the plant.

## Remote Desktop Terminal Services

Ovation Operator Stations may be equipped with Microsoft terminal services to provide remote access to Ovation operator applications at desktop computers located throughout a facility. Remote desktop functionality provides authorized users with the opportunity to view or control an Ovation system from a position outside the control room.

Logins are secured through validated user identification and password protection. Secure system access varies for each user. Operator features can be configured to be activated remotely, locally, or both.

Use of the remote desktop function requires a Microsoft Windows Server operating system loaded on an Ovation Operator Station.

## Summary

The Ovation Operator Station is an intuitive software tool for displaying critical process information through control graphics, diagnostics, trends, alarms, and status displays.

Powerful applications provide access to dynamic system points along with historical data, general messages, standard function displays, event logging, and a sophisticated alarm management program.

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