

## Digital Video Manager Improving Performance and Safety with Integrated Video



Digital Video Manager monitors process and safety conditions and is the industry's only enterprise-grade digital video solution for process control systems. With a Smart Surveillance platform and Honeywell's integrated approach to process management, intuitive intelligence empowers process operators to do more with less.

Integrated with Honeywell's Experion® Process Knowledge System (PKS), Digital Video Manager (DVM) presents video as the next generation process sensor to the operator, saving time and money by automating the detection of events and improving the speed and accuracy of operator responses to process upsets. DVM applications range from systems supporting just one camera to very large systems with thousands of cameras being viewed and recorded. DVM's flexible architecture enables scalability and system integrity for single or geographically dispersed systems, and enables fast and secure access to video from anywhere in the plant.

### Digital CCTV that Fully Integrates with Operations

Customers have asked for systems that offer greater flexibility and easier integration with their existing systems on site. Honeywell has therefore fully integrated DVM with Experion PKS, enabling the use of video anywhere in the Experion operator HMI and providing an integrated workflow for the navigation of alarms and events making DVM more effective than standalone solutions.

In addition to the access of video from the Experion Stations, DVM also offers Internet Explorer-based secured access to video from anywhere on the network. This facilitates access by staff and management in other departments, and ensures that video is no longer confined to the control room. A plant manager can 'walk the plant' in the morning without leaving the office, and remote teams can access any recorded or live video instantly to investigate and support critical site issues.

### Smart and Flexible Integrated Surveillance Platform for a Large Variety of Applications

DVM's network based architecture and integration abilities deliver many far more benefits than traditional CCTV systems.

- Cost effectively view and control cameras anywhere on site utilizing network based architecture.
- Improve incident response times by providing contextual information with process alarms to operators, plant personnel and managers with seamless integration with Experion.
- Improve decision making ability by providing video and process information on the same screen.
- Ensure safety compliance by detection and monitoring activities in hazardous areas.
- Enable collaboration between field staff and control room operators and improve coordination between various teams with easy access to field video information.
- Improve operational efficiencies with the addition of cameras on site. Reduce the need for field visits while ensuring that all field activities are monitored.
- Enable corrective actions based on vital information provided by recorded videos.
- Increase detection rates with Honeywell video analytics for "smarter video," which activates recordings and raises alarms and events within Experion.
- Reduce storage cost and camera bandwidth consumption by using individually tuned camera settings, H.264 encoding technology and event based recordings.

- Seamlessly integrate multiple DVM systems for central monitoring in a central command and control room architecture while at the same time each system is free to be managed autonomously in each location.
- Never lose access to live video or recordings by using a proven redundant system architecture with minimal configuration overhead.
- Improve incident detection and faster event analysis with flexible views, simultaneous viewing of live and recorded videos and synchronized playback of multiple cameras.

## Intelligent Video Analytics Solutions - Ensure You Never Miss a Single Event

DVM's intelligent video analysis algorithms support the detailed and automated observation of all people, process, assets and locations on site. DVM delivers a high degree of automation, detecting unusual events and triggering alarms only when required, reducing the volume of data presented to operators and ensuring a higher rate of incident detection.

DVM offers simple motion detection as a standard feature. For more challenging outdoor environments, DVM offers a premium motion detection algorithm that successfully learns the scene and adapts to the environment, filtering out any variations in lighting and outdoor scene variations such as the effects of wind, swaying trees and rain.

DVM also offers a more advanced suite of analytics solutions provided by Honeywell's Active Alert Intelligent Video Analytics product range. These analytics, using patented technology to minimize false alarms provide automatic detection, analysis and classification of the behaviors of people and vehicles as they move through a scene. Active Alert Analytics can detect events such as:

- Persons entering restricted areas, persons climbing a fence, loitering in an area, moving in the wrong direction or running,
- A vehicle entering a restricted area, speeding or moving in the wrong direction, making an illegal U turn, or parking illegally,
- Objects left unattended, objects removed.
- Active Alert algorithms even count persons and or cars entering or exiting an area.

For each detected condition or combination of conditions, a set of DVM and Experion actions can be defined, such as starting a recording, raising an alarm and sending a camera or view to an operator's monitor.

Detecting camera tampering is an important functionality in any video system. Honeywell DVM includes optional camera tamper detection analytics. The algorithm analyzes the video stream (continuously or at set intervals) for tamper conditions, which may be due to natural causes like dirt built-up, or by malicious interference by people. The algorithm can detect tamper states like loss of video or change in the field of view, blurred image or camera blinded state. Camera tamper is also useful as a service aid, for example, letting personnel know when cameras may need cleaning. Camera tamper detection can be used to trigger a recording, and when used in combination with the DVM pre-record period, it can capture the action that caused the tamper alarm.

## Single, Information Rich User Interface

DVM puts advanced functionality at your fingertips to increase personnel productivity and responsiveness. Experion integration enables operators to view and control both the industrial process and the plant's cameras and recordings from Experion Station, never losing control of important plant information.

Staff will not have to spend time searching through hours of recordings for a particular recording. The video images stored in the DVM system can be quickly located and viewed using DVM's advanced search capabilities. Alarm and event activated recordings can be easily accessed from the Experion Alarm Summary.

With the event activation and video analytics features, cameras are another form of sensor for the control system. Video recordings, automatically activated by Experion alarms or events, and video events can be kept as visual records indefinitely. The

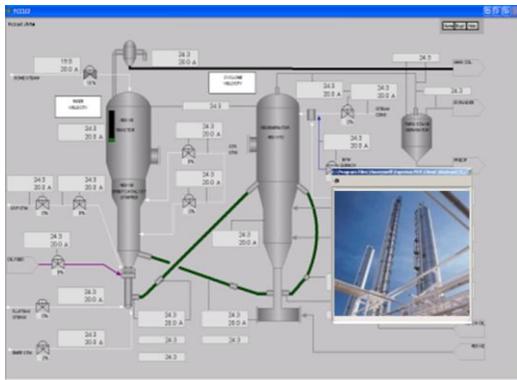


combination of Experion historical data, historical alarms/events and associated video recordings provides a complete record. Integrated navigation displays, menus and toolbars allows operators to navigate to the desired display with integrated video, which may be process-specific, video-specific or a combination of both.

### Benefits from the Integrated DVM and Experion Solution

Experion alarms and events can automatically trigger a camera to move to a predefined preset position and trigger video recordings to start. The alarm video can be sent or displayed on defined stations or dedicated alarm monitor. This enables quick access to recent events by operators and remote personnel.

Rich Experion custom displays can combine process and video data. Standard camera objects can be added to graphics, which can pop up to show live video, camera and recording controls as well as enable quick access to the recordings.



Recordings triggered by alarm and events in Experion or DVM alarms, such as process alarms or events detected using video analytics, can be directly accessed from the Experion alarm and event summary display, drastically reducing the time required by the operator to search for a related recording.

An operator can see and control cameras on multiple DVM systems including remote sites, while camera access can be restricted using asset profiles

Integrated operator-based and station-based security to access DVM makes it easy to manage access restrictions and system security.

With tighter integration of Experion and DVM cameras, servers are represented as points in Experion, enabling graphics and functionality using these points.

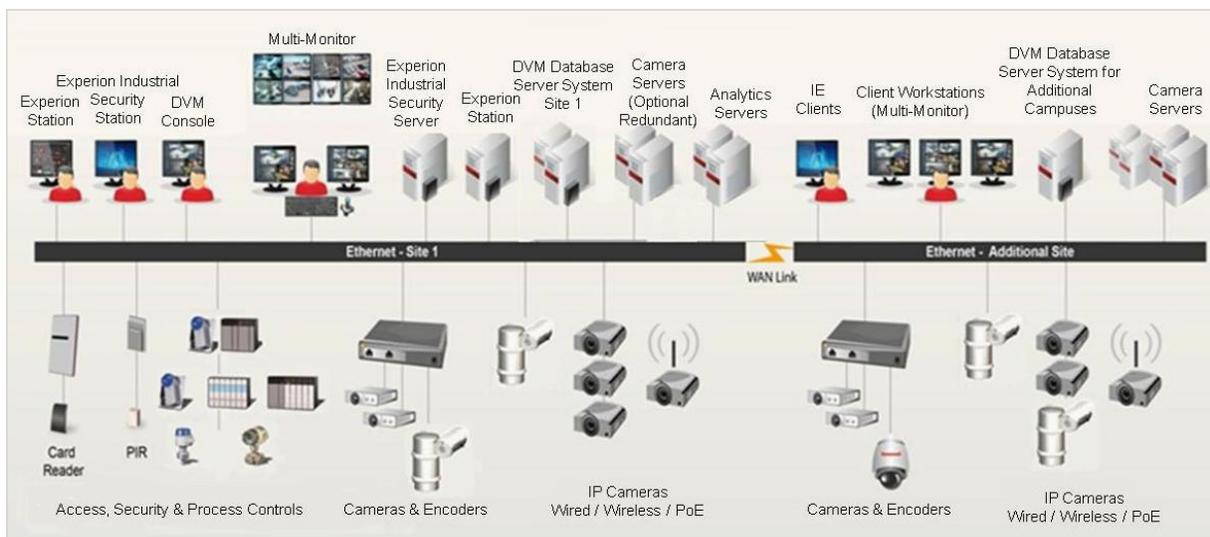
### Revolutionary System Architecture

Digital Video Manager is built upon industry-standard open networking, computer hardware and software applications, taking advantage of the most cost-effective and powerful components available.

Open technology advantages have dramatically increased digital video capabilities, with a choice of cameras to suit your application to support for latest hardware and software platforms, making digital video products the premier choice for any CCTV solution. The DVM digital architecture provides higher performance, higher quality, faster retrieval and lower storage cost compared to other video solutions.

Using off-the-shelf components rather than proprietary components ensures that DVM lowers the cost of ownership and can be easily integrated into an existing enterprise system support strategy, further simplifying and reducing the cost of ownership.

DVM's network based architecture eliminates the need for dedicated coaxial cables and makes it easy to relocate cameras anywhere within the plant using standard networking hardware and network design.



DVM supports server virtualization, enabling optimization of hardware and effective utilization of hardware resources. This reduces hardware cost and improves system availability and disaster recovery. Over the lifecycle, it reduces hardware upgrade cost of resources such as the CPU. RAM can be added to the VMware host and shared by the virtual machines reducing the cost of upgrades.

In addition, DVM customers benefit from owning future-proof systems based on industry standards that leverage their investments and take advantage of new, advanced features as they become available.

## Unprecedented Availability and Reliability

Process control and security are mission-critical applications. Therefore, DVM is a network-centric, distributed video management solution, eliminating any single point of failure vulnerabilities.

The DVM database and camera servers are available in a redundant configuration, ensuring that a server failure does not stop the DVM system from functioning.

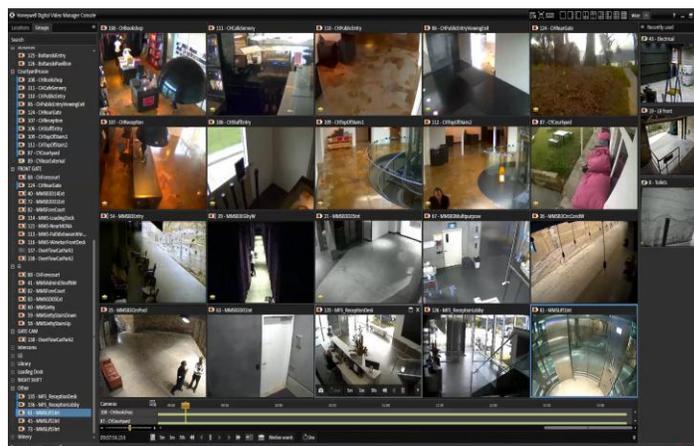
In addition, DVM server hardware incorporates standard redundancy features to ensure high system availability. The use of RAID-1 (disk mirroring) provides fault tolerance for the DVM database server software. The DVM camera servers may also use RAID-5 (disk striping with parity) or RAID 1+0 (mirrored sets in a striped set) to provide a fault tolerant video storage solution whereby a disk drive failure does not result in loss of video data. DVM supports virtualization of servers which enables higher system availability with faster recovery from failures.

## Flexible User Interface Options

DVM offers multiple flexible yet secure options for accessing the video in your plant. Operators can access videos from an Experion Station or from anywhere in the plant via a web based Internet explorer client. In addition, for users that benefit from extensive use of video and advanced video functionalities, DVM offers an advanced dedicated video client called the DVM Console Client.

## Advanced Professional User Interface

The DVM Console Client is a powerful and flexible user interface designed to address the advanced needs of control room operators.



DVM console delivers multiple benefits with its smart features:

### Fast access to cameras

- Logical sorting of cameras in a multilevel tree structure replicating the asset model in Experion or facility model in Experion Industrial Security create a familiar operating environment.
- User defined camera group creation to meet individual user requirements.
- Built in search filter to filter tree contents based on camera name; especially useful in case of large systems.
- List of recently removed cameras from the workspace with their scene image enabling operators to easily re-select and redisplay the camera in the workspace with a simple drag and drop operation.

### Improved situational awareness with flexible workspace:

- Create quick multi camera displays with a single drag and drop operation. Cameras or camera groups can be dragged to a work space, allowing operators to create their own views to meet situational requirements.
- Arrange cameras in the workspace to create a logical sequence of cameras.
- Multiple preconfigured layouts enable fast and easy view creation - up to 25 cameras on a single screen.
- Operators can control cameras, initiate recordings and access recordings for an individual camera/tile in the display.
- Use quick access and instant playback of camera or cameras in the display.

### Saving in forensic and incident investigation time:

- Having the same camera displayed in the workspace playing back at different time periods increases the ability to understand the incident and find the interesting clip portions of a recording.
- Simultaneous viewing of live video and recorded video for a camera enables investigating recordings of the camera without losing its live view.

- Synchronized playback of multiple cameras on a timeline enables viewing of the incident from multiple angles and aids investigations by recreating the sequence of events as well as identifying the interesting portions of the recordings across cameras.
- Motion search on recording tags on the timeline where motion is detected in a configurable region of the recorded image reduces the time required for reviewing recordings for an incident from hours to minutes. These recording portions are tagged on the timeline for quick review. Motion search can be performed on multiple cameras simultaneously, further reducing investigation time a valuable feature for customers using background recording or scheduled recordings.

### Intelligent Recording: Never Miss a Vital Incident

DVM allows operators and plant personnel to specify what types of recordings are captured and when. There are several methods of initiating recordings, such as recordings triggered by alarms or events, continuous recordings, scheduled recording, operator initiated recording and recordings triggered by video analytics.

Recordings can include not only what happened after the event (post-event recording), but also what happened prior to the event (pre-event recording). DVM keeps a video buffer, which is continuously overwritten. When a recording is activated, for example based on a camera tamper alert, this buffer is stored at the beginning of the recording. This allows video to be captured of what caused the event, not just what happened as a result. Pre-record functionality is available for operator or event/alarm triggered recordings.

During the heat of the moment, the operator while controlling the PTZ camera may miss initiating the camera recording. With DVM's PTZ activated recording option, the DVM system will automatically start recording when the operator controls a PTZ camera.

### Efficient Video Collection and Retrieval

DVM intelligent recording options optimize video archives by reducing the collection of redundant and irrelevant video recordings.

Users can configure the frame rate used for each of the viewing and recording scenarios. An example is to have live viewing at 25 frames/sec (fps), background recording at every 1 frame, and all other recordings (alarm-activated, operator-activated and video motion detection) at 25fps (full motion video), to ensure that as much detail as possible is recorded for incidents.

Users can define the time for archiving or deletion of recordings on per camera basis, automating the task of recording management and relieving the operator of the task.

### Input and Output Devices

Using the digital video I/O ports of video cameras and streamers, DVM can directly monitor and control light switches, washer/wipers, buttons, infrared beam detectors and proximity sensors. This is useful where digital video/streamer I/O devices deliver hardware or installation cost savings.

### Video with Intercom

Connecting a microphone and speaker to the video camera or streamer enables two-way communication between operators and the camera location. Calls can be initiated from either the Honeywell DVM client or the camera location. Intercom calls, both active and pending, are shown in the navigation pane in the DVM client. This provides quick access to, and easy management of, the intercom calls in the system.

### Multiple Monitor Control

DVM enables an operator to use a single keyboard to control the viewing of cameras on multiple monitors. DVM supports two types of multi-monitor configurations - surveillance monitors and alarm monitors. A surveillance monitor allows a station or standalone DVM client to be set up to mimic a traditional CCTV workstation. The live video on a monitor will expand to fill the entire viewing area of the physical monitor. If there is an alarm in an integrated system, the associated video or a view is displayed on the alarm monitor attached to the Experion station, reducing the time spent by the operator in searching for the right video. A multimonitor attached to a station can be configured as a combined surveillance and alarm monitor. Operators control the video that is displayed on the monitors, or the video can be cycled along different camera views in normal state. When the monitor receives an alarm video, it functions as an alarm monitor displaying the camera associated with the latest alarm. Once the operator acknowledges the alarm, the previously shown video on the monitors will be re-displayed.

### Video as Evidence

One of the crucial needs of a surveillance system is to use the video as evidence of an incident. The weight of this evidence depends on the ability to prove that the surveillance system was operational during the time and that no one has tampered with the video. Honeywell DVM provides this evidence using digital signatures. Recorded clips can be exported from DVM into Windows media player format. DVM also provides the ability to

export audit trails (log) of operator actions and system events. The recordings and audit trails are digitally signed for authentication and integrity.

## About Honeywell

Honeywell is the leading provider of control, safety, security solutions and advanced applications with expertise and experience both in process operations and business support domains. Honeywell delivers:

- Established capabilities in Process Control Network (PCN), IT infrastructure and security domains,
- Impeccable life-cycle support track record,
- Rich and tight integration with control, safety, security and advanced applications framework, and
- Globally consistent standards and practices for consulting services, project implementation, sourcing, deployment and support services.

### For More Information

Learn more about how Honeywell's DVM can help better business outcomes, visit our website [www.honeywellprocess.com](http://www.honeywellprocess.com) or contact your Honeywell account manager.

### Honeywell Process Solutions

Honeywell

1250 West Sam Houston Parkway South  
Houston, TX 77042

Honeywell House, Arlington Business Park  
Bracknell, Berkshire, England RG12 1EB

Shanghai City Centre, 100 Junyi Road  
Shanghai, China 20051

[www.honeywellprocess.com](http://www.honeywellprocess.com)