Honeywell

Digital Video Manager
Improving Performance and Safety with Integrated Video

Digital Video Manager monitors process and safety conditions as well as deterring security threats. Honeywell Digital Video Manager is the industry's only enterprise-grade digital video solution for process control systems.

Integrated with Honeywell's Experion® Process Knowledge Sysyem (PKS), Digital Video Manager (DVM) presents video as the next generation process sensor, saving time and money by automating the detection of events and improving the speed and accuracy of operator response 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 and geographically dispersed systems, and enables 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, enabling the use of video anywhere in the operator HMI and providing an integrated workflow for the navigation of alarms and events and operator displays, making the deployment of the DVM solution more cost-effective than standalone solutions.

In addition to station-based deployment, DVM also offers browser-based access from anywhere on the WAN, facilitating access by staff and management in other departments and ensuring that video is no longer confined to the control room. A mobile operator in the field can call up any camera as the need for monitoring arises, a plant manager can 'walk the plant' in the morning without leaving the office, and remote teams can access any recorded or live video instanty to investigate and support critical site issues.

Honeywell's DVM enables the site to:

- Cost effectively view and control cameras anywhere on site

- Improve incident response times by providing contextual information to operators, plant personnel and managers

- Increase detection rates by applying embedded 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 and H.264 encoding technology

- Seamlessly integrate multiple camera systems 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 applying a fully redundant system architecture with minimal configuration overhead

Forward x1

Intelligent Video Analytics Solutions

DVM's embedded intelligent video detection algorithms support the detailed and automated observation of the process, assets and locations. DVM delivers a high degree of automation, detecting unusual events and triggering alarms to reduce the volume of data presented to operators.

Besides the traditional 'pixel rate of change' motion detection, which is applied to indoor applications, DVM offers a premium motion detection algorithm that successfully learns the scene and filters out any variations of lighting and outdoor scene variations such as the effects of wind and rain. In addition, DVM's Active Alert algorithms provide security and surveillance solutions by detecting abnormal or suspicious behavior of people, vehicles and objects.

Honeywell Active Alert software is capable of monitoring and analyzing the behavior of up to 20 objects per camera view, both indoors and outdoors. Unlike other algorithms available, Honeywell Active Alert uses patented technology to minimize false alarms and does not require excessive computer hardware. Supported detections include:

- Persons entering a restricted area, on the fence, loitering in an area or moving in the wrong direction
- Car entering restricted area, speeding or moving in the wrong direction
- Counting events: cars, persons entering or exiting

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

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 old videotapes for a particular recording. The video images are stored in the system and referenced in the DVM database from where they can be quickly located and viewed using DVM's search capabilities.

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 video recordings provides a complete record.

Integrated navigation displays, menus and toolbars allow operators to navigate to the desired display, which may be process-specific, video-specific or a combination of both.

Benefits from the integrated DVM and Experion solution include:

- Experion alarms and events can automatically trigger a camera to move to a predefined position and trigger video recordings to start. This enables quick access to recent events by operators and remote personnel.
- High-quality video can be seen as full screen video images or can be combined with other process data in Experion custom displays.
- All DVM alarms and events, such as events detected using video analytics, appear within the Experion alarm and event summary display. The alarm and event summary display includes a DVM icon that displays a pop-up with the recording control embedded, removing the need for the operator to search for video information.
- An operator can see and control cameras on multiple sites including remote sites, while camera access can be restricted using asset profiles.
- Integrated operator-based and station-based security.

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, 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 conventional analog video technology. Digital CCTV carries many inherent benefits. For example, it is possible to simultaneously record a camera, view live video from that camera and also play back recorded video.

Using off-the-shelf components rather than proprietary components ensures that DVM can be easily integrated into an existing enterprise system support strategy, further simplifying and reducing the cost of ownership.
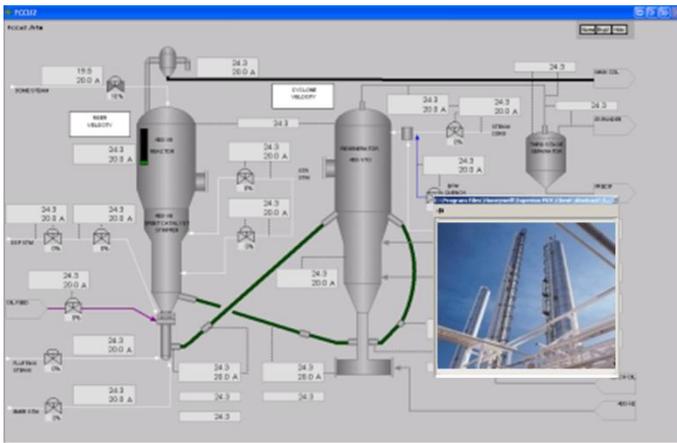
The DVM architecture uses TCP/IP Ethernet networks, eliminating the need for dedicated coaxial cables and making it easy to relocate cameras anywhere within the plant. Using standard switched networks simplifies network management. The switch connects each segment directly to the servers eliminating bandwidth sharing on the LAN.

DVM customers benefit from future-proof systems based on industry standards that leverage their investments and take advantage of new, advanced features.

Unprecedented Availability and Reliability

Process control and security are mission-critical applications. DVM is a network-centric, distributed video management solution, eliminating 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.

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.

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 based on detections sensed by advanced video analysis algorithms.

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.

All recordings are stored on the camera server hard drives until they are either archived or deleted. These actions are configurable for each type of recording for each 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 10 frames/sec (fps), background recording at 2 fps, 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. DVM recordings or selected fragments of a recording can be exported and played in standard media players.

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.

Camera Tamper Detection

Automatically detecting camera tampering is important functionality in any video system. Honeywell DVM includes camera tamper detection algorithms which analyze a video stream (continuously or at set intervals) and perform preconfigured actions when loss of video or change in the field of view of the camera are detected. Camera tamper is also useful as a service aid, for example, letting system administrators 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.

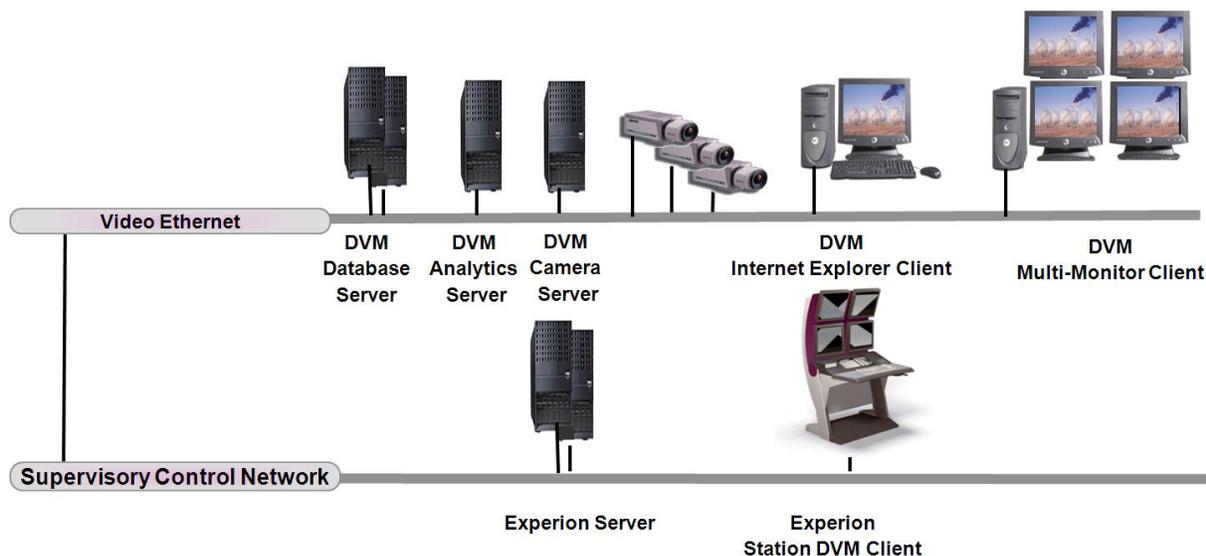### Multiple Monitor Control

DVM enables an operator to use a single keyboard to control the viewing of cameras on multiple monitors, allowing a Flex 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. This viewing area can be used to view a single camera or combinations of up to 16 cameras at once. Both standard and widescreen monitor configurations can be configured.

DVM allows any number of computer monitors or analog CCTV monitors to be connected, when using a video graphics card which provides a TV/analog output port.

Operators control the video that is displayed on the monitors, or the video can be cycled along different camera views and camera positions. Monitors can also be configured to show 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 and the DVM audit log. All exported recordings and the exported audit log are digitally signed to prove authenticity and integrity.

DVM R400 Features and System Requirements

Parameter	Specification
Number of cameras	DVM supports systems with as few as one to four cameras, and can scale to support over 1,000 cameras.
Network transport	TCP/IP (Ethernet)
Digital video format, resolutions, frame rates	Motion JPEG, DivX, MPEG-1, MPEG-2, MPEG-4, H.264 video formats and a wide range of resolutions including QCIF, CIF, 2CIF, 4CIF and VGA and mega-pixel. Supported frame rates may range from 1 frame every 10 seconds to 60 frames per second. Video formats, frame rates, quality settings and resolutions are configurable per individual camera. Different frame rate settings can be configured per camera for live viewing, background recording, event initiated recording etc.
Pan-Tilt-Zoom control	PTZ control is supported using a joystick, the mouse/trackball/touch screen in the live video window or a dedicated video keyboard - Honeywell Video Solutions Ultrakey Professional CCTV keyboard.
Monitoring of industrial hazardous areas	Several manufacturers supply hazardous approved camera housings, allowing cameras to be installed in zone 1 classified areas. Combined with Experion, DVM provides operators the ability to monitor video and control camera functions such as sun shield, wash and wipe functions from within the same display.
Low bandwidth requirements	DVM includes multiple features such as accommodating different frame rates and image sizes, and maximizing camera performance while minimizing network requirements. The support for MPEG4 and H.264 video compression further reduces bandwidth from remote locations.
System Requirements	Windows Server 2008 R2 (64 bit), Windows Server 2003 SP2 (32 bit), Windows server 2003 R2 SP2 (32 bit), Windows XP Professional (32 bit) SP3, Windows Vista Business (32 bit, clients only), Windows 7 (32 bit, clients only). Experion R400, R311, R301.

For More Information
To learn more about Honeywell's Digital
Video Manager, visit
www.honeywell.com/ps or contact your
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