

**Digital Video Witness
System Description**

**ARCHITECTURE AND
ENGINEERING**

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SAY Security Group Commitment

- A) Manufacturers Equipment: All references to manufacturer's model numbers and other pertinent information contained herein are intended to establish minimum standards of performance and quality.
- B) The manufacturer of the DVW shall demonstrate a minimum of 2 years of continuous production of DVW systems in North America. Equipment specified herein shall be warranted by the manufacturer for a minimum period of 3 years.

Product Overview:

Digital Video Witness (DVW) is a recording system that does not need any conventional multiplexing and VCR. All video and audio information supplied from all cameras and audio sources will digitally record simultaneously at a recording rate of 30-480 frames per second (fps) and up to eight channels of audio. The server comes with a variety of features allowing users to integrate with point of sale, ATM, and card access.

The quality of the recording and viewing depends upon the maximum fps number (30 fps up to 480 fps) and the number of video inputs. The total frame rate per second is divided equally (can be readjusted) among the total number of cameras. Depending on the DVW series, the system has the capacity to have 4, 8, 16, or 32 camera inputs.

The physical capacity of the chassis will allow some systems to upgrade the hard drive to as much as 7.5 Terabytes. DVW is running on XOS, an embedded OS. The system can display live or playback recorded video on a full screen or 4, 9, 13, 16, or 32 screen divisions while continually recording onto the system's hard drive(s). None of the video operations interfere with one another. Recording does not stop during playback, live viewing, or backup of video information.

1.1. Basic Operation

- DVW requires very little human intervention except for periodic maintenance. DVW operates in a 110-240V-50/60Hz environment. Each DVW has a range of 1-32 camera inputs. Color, black & white cameras, PTZ cameras, infrared cameras, x-ray cameras or low light cameras can be connected to a single DVW unit simultaneously
- DVW has the ability to interconnect to provide an unlimited number of video and audio channels
- DVW is compatible with third party CCTV equipment
- DVW has the ability to record video based on schedule and various setup configurations

1.2. DVW Server Software Applications

- The DVW Server application is the main DVW system operating software
- DVW Server application runs on a XOS operating system
- DVW Server includes the following operation features:
 - Search: the user has the ability to search the video recording based on the type of recording (Continuous, motion, sensor or pre-alarm), by time, date or camera. This is done through a user-friendly interface.
 - Playback: The user is able to playback one or multiple cameras at one time
 - Backup: DVW allows to quickly locate and backup recorded video events according to the time and date specific
 - Video Export: The user has the option to export recorded videos in AVI format or to utilize our own method of compression
 - Still Image Capture: The still image option allows the user to capture still images from the recorded video

- Still Image Save: DVW Server application allows the user to save the captured image as a graphic file on any local, removable or remote media
- Still Image Print: DVW Server application permits the user to print a captured image with a local or network printer

1.3. Recording Properties

- DVW captures, digitizes, compresses, and stores video on a hard drive(s) and archives it for future use. Depending on a hard drive capacity, the video recordings are stored for certain amount of days after which they are overwritten.
- All video is recorded using Mpeg 4
- All audio is recorded using the PCM/ADPCM standard
- Depending on the model, each DVW has 0 -16 dry contact inputs and outputs.
- DVW sensor outputs and inputs are software activated
- Each sensor input can be individually configured to activate control output. Video recording can be associated with the sensor activation.
- DVW supports motion tracking cameras (NIKO 97)

1.4. Individual Camera Input Set Up

- Each audio input can be independently configured to record telephones, microphones, two-way radios or any type of analog audio source. The DVW has the capability of simultaneously recording all 8 Audio sources in real time
- Each camera can record at a maximum resolution of 640 x 480 pixels
- Each camera has individual brightness, contrast, and hue setup
- Each camera has individual Video Motion Detection setup (up to 5 areas)
- Depending on the DVW model, each camera can be configured to record with 1-30 fps

1.5. Individual DVW

- The DVW supports external and internal RAID
- The DVW hard drive works in a linear recording mode to allow new video clips to overwrite old recordings
- DVW's hard drives are separate from the OS and the video storage depending on the system set-up.

1.6. Network Operation and Architecture

- The DVW does not require a separate network. The system's recording bandwidth allows the user to operate on the existing network, LAN 10/100 BT or WAN

1.7. Remote Software Installation

- DVW Remote software has the ability to operate with other applications running on the user's PC
- DVW Remote software uses a Windows based installation shield that allows to easily upgrade or uninstall the application without damaging other applications
- Access and view multiple cameras from multiple DVR's

1.8. Main Display

This is the startup GUI (Graphic User Interface) of DVW Server software and can be graphically customized. The startup GUI displays live video that can be viewed in 1, 4, 9, 10, 13, 16 or 32 screen divisions depending on the DVW model. User can activate the following features from the main display:

- Setup
- Search
- PTZ mode (in-cameo or interface control)
- Setup PTZ camera's preset and auto pattern
- Control outputs
- Full-screen video with no GUI

1.9. Search

DVW Server searching feature provides:

- Playback control buttons: play forward, play backward, frame- by-frame playback, skip to the beginning/end of the video segment
- Timeline: search video recording by browsing through the 24- hour timeline
- Quick backup: video recordings can be saved in AVI or Encrypted format with a context menu
- Watermark: still image formats are encrypted with a watermark, which detects any changes made to the original image
- Panorama: when searching on single camera, the video from the same source can be viewed frame-by-frame in 4,9, and16-screen division mode
- Image enlargement: when recording on 320x240 resolution rate, the image can be expanded to the 640x480 size
- Zoom: zoom in on a video recording/still image. To digitally zoom in up to 17x click on the screen while in playback or pause mode
- Refresh: this function updates the timeline(s)
- Printing: prints a single image, if the DVW Server is connected to a network or local printer
- Voice Playback: plays back synchronized audio data along with the video recording
- Save: saves single picture or recorded video segment on a floppy disk (still image only), hard drive, CD, DVD, or onto a remote drive. Still images can be saved in either JPEG or Bitmap format; video segment with synchronized audio can be saved in AVI or encrypted
- Bookmark: registers the location of the current search data for easy retrieval
- Skip: playback skips several frames at a time
- Delay: slows down the playback
- Full screen: any screen division can be shown with no GUI
- Index Search: searches the video recording based on the type of recording (motion, sensor, pre-alarm recording)
- Object Search: searches the video from the single camera source by identifying the change in the highlighted area in the 24-hour period
- Brightness: Adjusts brightness of a single picture
- Contrast: Adjusts black and white tones
- Smooth & Sharp: Cleans and adjusts rough and blurry images
- Noise Reduction: Increases and decreases noise from a picture/video
- De-skew: Flattens and rotates the image. This will enhance a picture that is recorded from an angle.
- Gamma Correction: Adjusts values between brightness and contrast. This is used when the color of a recorded image is not suitable for viewing.
- Restoration: Resets all changes made to the original picture

1.10. Setup

Hardware Setup – allows users to activate the following functions:

- Activate/deactivate camera inputs
- Label the cameras for easier identification
- Sensor and motion camera activation
- Integrated with over 60 PTZ cameras
- Return to auto pattern (1-60 sec) after remote user takes control of PTZ camera
- Up to 16 dry contact NO/NC
- Enable/Disable sensor alarm
- Activated sensors trigger customized audio alarm (WAV)
- Activated sensors/detected motion activates post-recording (1-60 sec)
- Up to 16 relay outputs for less than 12 DC and 100 mA
- Activated sensors trigger relay control output
- Linear rotation of 1-32 cameras (depending on a model) on an external (spot) monitor with a defined dwell time (1-10 sec)
- External monitor displays the cameras currently in full-screen mode on the main display

- Activate PTZ camera's preset with sensors. Each PTZ can have up to 10 presets, can be associated with up to 16 sensors

Motion Setup – allows users to activate video recording based on a detected motion in up to 5 defined areas of an image.

- Motion detection sensitivity can be set individually for each camera input
- Alarm can be associated with motion detection on each camera input
- Relay control output can be associated with each camera input
- Brightness, Hue and Contrast can be adjusted for each camera input
- The recording can be set to monochrome or color recording
- Motion detection zones can be set/reset for all camera inputs with a single button
- Recording frame rate can be individually set for every available camera input
- Emergency frame rate can be activated for cameras, where motion has been detected. Frame rate of triggered camera(s) will be increased by distributing the total number of FPS resources
- Recording resolution can be set to 640x480 or 320x240
- Recording and Transfer quality can be configured for all available camera inputs (100%, 90%, 70%, 50%, 30%)
- Single or multiple cameras can be configured to display in the full-screen mode when the motion is detected
- Set dwell time for quad mode camera rotation on the main display

Schedule Setup – allows users to create a recording schedule based on continuous, motion, sensor or pre-alarm recording or any combination of them.

- Type of the video recording can be set based on weekday, Saturday, or Sunday/Custom holiday and based on the 24-hour clock
- Custom holidays can be set with the annual or monthly rotation schedule
- Recording schedule can be copied to one or more camera inputs

Screen Division – allows users to choose the display mode for the main screen. Screen divisions for 4, 6, 9, 10, 13, 16 and 32 camera inputs are available depending on the model.

Communication Setup – allows users to configure the remote viewing and setup emergency communication

- Video stream bandwidth can be set between 8 KBPS to no limit
- Up to 2 emergency phone numbers or 2 static IP addresses can be set for emergency communication such as sensors or motions
- The number of the emergency messages can be limited in 24-hour period
- Communicates over the existing network, Ethernet 10/100 BT

Server Information – a database menu that controls the main DVW Server display GUI

- Server ID and PAC ID are displayed in this menu
- Export and import global setting for the system
- Set system clock time (forward only)

Password Setup – monitors and creates unlimited usernames and password and Administrator can limit the user access to selected camera inputs and DVW Server software setup.

- Administrator can restrict user's security access to specific video/audio channel and/or to specific system operations (such as video monitoring, playback and or setup).

Audio Setup – synchronizing video and audio channels to be recorded.

- The DVW server has the ability to provide (2) two-way Voice Communication for alarm verification for up to 16 individual locations

System Setup – allows to configure other system and hardware function

Port Name	Port Number
MainControl Port	8080
MainVideo Port	8081
IntelliUpgrade Port	8083
HealthMonitor Port	8084
EmergencyMonitor Port	8085
Center Backup-Server Port	8090
Two-Way Audio(cmd) Port	3001
Two-Way Audio(Audio) Port	3005
EmergencyConnect Port	6911

- Configure system restart time on daily, weekly, or monthly basis
- Enable/disable video and still image watermark protection
- Configure automatic backup schedule to local or a remote media
- Configure Panic button/sensor backup - 5 minutes pre-activation and up to 5 minutes post-activation video recording
- Set the maximum number days for the video recording to be stored on the system (up to 30 days)
- Choose between NTSC or PAL video recording formats
- Set the alarm for detected video loss
- Set the output control for detected video loss
- Configure network port settings

Storage Setup – allocates/re-allocates selected drives or partitions for DVW DVR video recording

E-Map Setup – allows to lay out cameras on a map for quick launch

- detailed map of a facility can be imported in a *.bmp graphic format
- available camera inputs, control and sensor outputs can be overlaid on the e-map

View Log Records – allows monitoring the user activity

- Log files are stored in a chronological order
- Log files can be exported into a text format

Email Setup – allows setting the e-mail addresses for emergency call-out

- DVW Server will send an emergency text e-mail message in case of sensor activation
- DVW Server will send an emergency text e-mail message in case of the video loss on one or more cameras
- DVW Server can be configured to send the server status e-mail with included captured image

Motion Area Setup – allows the intelligent monitoring of the defined area

- Up to 5 surveillance areas for motion detection can be defined
- Motion areas can be configured to send an emergency e-mail message in case of the detected motion
- Motion areas can be configured to dial-out and play a pre-recorded emergency WAV message in case of the detected motion
- Motion areas can be configured to monitor the number of moving objects traveling in a specific direction from point A to point B. Up to 3 count regions can be set
- The Count database is exported to the PAC and can be exported to the text file

1.11. Remote Communication

DVW Server has the ability to communicate through 3 types of media:

1. DVW Remote software
2. Internet Explorer (WebDVR)
3. Personal Data Assistant (PDA)

Remote Viewing

DVW Server is capable to continuously record and archive video data, while also being viewed remotely. Up to 16 authorized users can simultaneously access the system and request video or audio, live or playback, from any workstations via the network or high-speed Internet.

- DVW Server can also connect to DVW Remote through PSTN however, the DVW Server must run on XOS OS.

- User connecting through the Remote software can search or download recorded video on local drive, or view live video remotely
- Administrator or authorized personnel can go to the setup menu and makes changes to the DVW Server software
- Multiple locations can be activated from the remote software. Viewer can pick and choose the total number 32 cameras
- Viewing Health Statuses from a remote location reports if server is down, video loss, or if activity is normal.

Remote workstation requirements:

Item	Specification	Description
<i>CPU</i>	Intel Pentium Celeron 433MHz over	
<i>Memory(RAM)</i>	SDRAM 64MB or over	
<i>HDD</i>	100MB or over	
<i>O/S</i>	Windows98 SE / Windows ME/Windows NT/Windows 2000/ Windows XP	Limited Support
<i>Communication</i>	LAN, PSTN, ISDN, TCP/IP	
<i>DirectX</i>	V9.0 or over	The driver for VGA card should be compatible with Direct-X.
<i>VGA Card</i>	Video 16MB or over	VGA cards with less than 16MB of memory cannot display more than 8 or more cameras. Some channels will appear black.
<i>VGA Card compatibility</i>	ATI Rage/Xpert/RADEON chip set. nVidia Geforce chip set ATI Rage/Xpert/RADEON chip set. nVidia Geforce chip set	<u>Unsupported model</u> „ SIS VGA chipset. „ Trident VGA chipset. „ Intel Onboard VGA Chipset. <u>Reason.</u> „ SIS chipset and Trident chipset VGA Performance drops under Direct-X mode and some channels are not displayed. Intel chipset cannot display more than 9 channels and noise appears in the image.
<i>Driver</i>	Check if the VGA driver is compatible with that version of Direct-X.	Remote software program may not be able to display image properly if the VGA driver included in the package is not compatible with Microsoft's Direct-X.

Internet Explorer viewing (WebDVR) – Internet Explorer viewing is a remote viewing alternative to the Remote software.

- Internet Explorer has to be version 5 or higher
- The video can be viewed in the following resolutions: 320x240, 640x480 and 1024x768
- The screen division can be set to 1,4, 9, 16 or 32 camera inputs

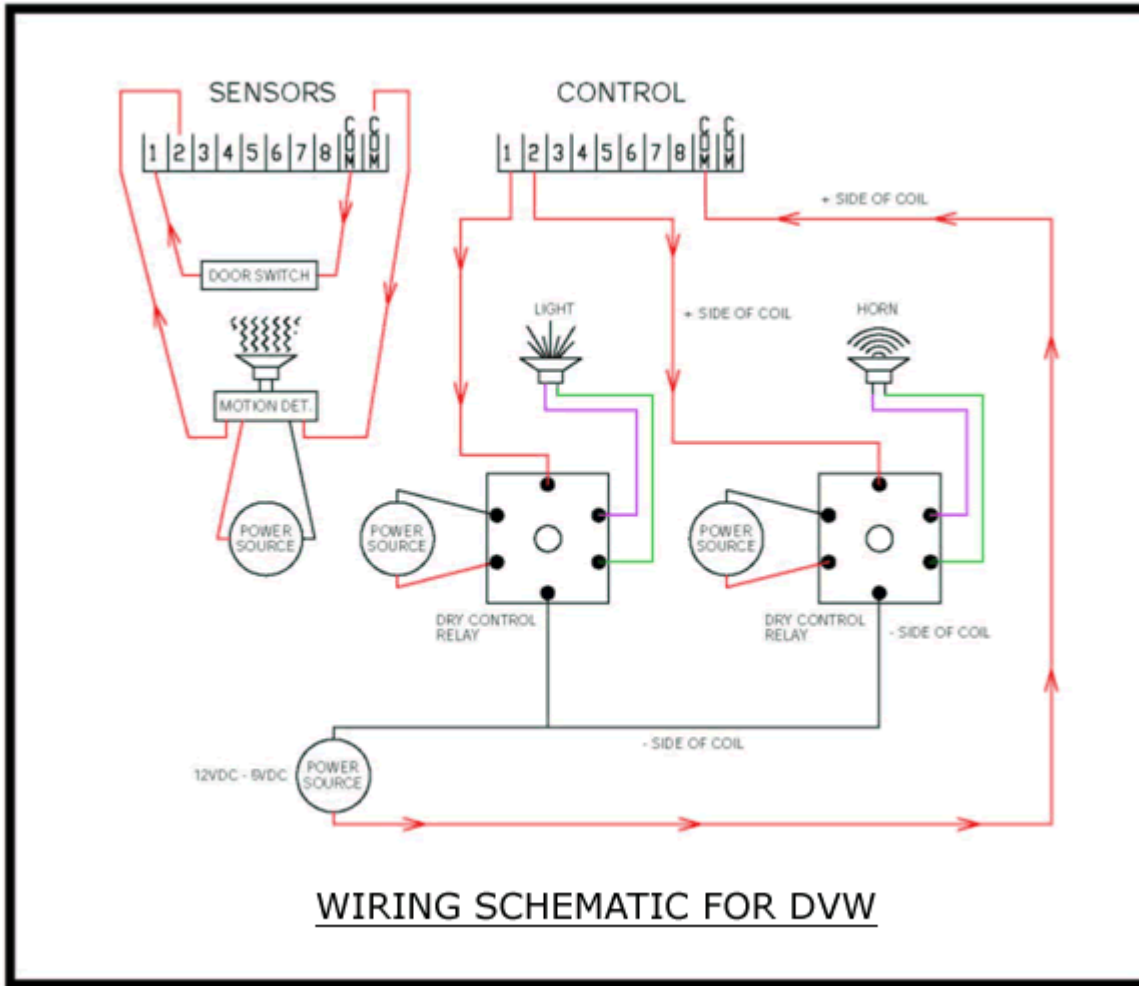
Personal Data Assistance

With Windows Pocket PC and more than 64Mb of memory, user can view one camera at a time via high-speed connection.

DVW Server Standard (Specification)

DVW Series	Lite	Compact	Rack
<i>Model</i>	LTI- xxCxxxXOS	DVW-xxCxxxXOS	DVW-xxRxxxXOS
<i>Chassis</i>	Compact	Compact	4U Rack
<i>Video Inputs</i>	4-16	4-16	4-16
<i>Video Standard</i>	NTSC/PAL	NTSC/PAL	NTSC/PAL
<i>Compression</i>	Proprietary	Proprietary	Proprietary
<i>Image Compression Dimensions (NTSC)</i>	320x240 = avg 2.5KB/frame)	320x240 = avg 2.5KB/frame)	320x240 = avg 2.5KB/frame)
<i>Resolutions</i>	320x240, 640x480	320x240, 640x480	320x240, 640x480
<i>Max Record Speed</i>	120 FPS	480 FPS	480 FPS
<i>Max Display Speed</i>	120 FPS	480 FPS	480 FPS
<i>Main Monitor</i>	SVGA (1024x768)	SVGA (1024x768)	SVGA (1024x768)
<i>External Monitor</i>	VGA x1	VGA x1	VGA x1
<i>Audio Inputs</i>	1 (up to 8)	1 (up to 8)	1 (up to 8)
<i>Connectivity</i>	LAN/WAN (modem optional)	LAN/WAN (modem optional)	LAN/WAN (modem optional)
<i>OS</i>	XOS	XOS	XOS
<i>Storage</i>	120GB (up to 800GB)	250 GB (up to 800GB)	250GB (up to 7.5TB)
<i>Back-up</i>	DVD-RW or remote via LAN	DVD-RW or remote via LAN	DVD-RW or remote via LAN
<i>Warranty</i>	1 Year Parts/Labor	3 Years Parts/1 Year Labor	3 Years Parts/1 Year Labor

Wiring Schematic for DVW Sensor Input & Output



PTZ Connection Diagram for IO Board

